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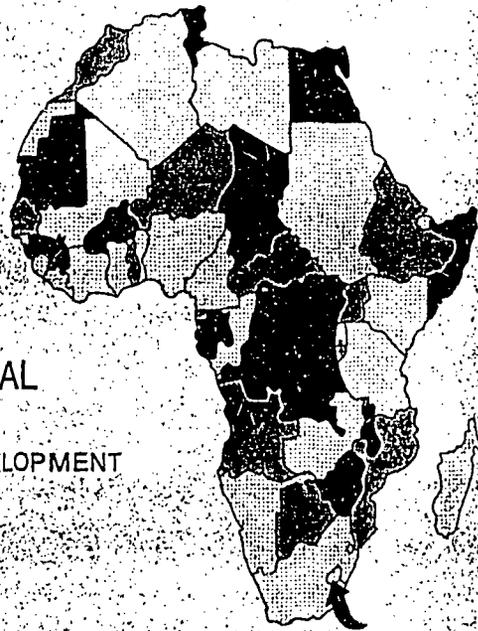
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LESOTHO AGRICULTURAL PRODUCTION AND INSTITUTIONAL SUPPORT PROJECT

LAPIS
END-OF-PROJECT REPORT

AMERICAN AG INTERNATIONAL

CONSORTIUM FOR INTERNATIONAL DEVELOPMENT
FREDERIKSEN, KAMINE & ASSOCIATES
LINDSAY/DEKALB INTERNATIONAL



LESOTHO

JUNE 1, 1986 TO
MAY 31, 1992



USAID PROJECT NO. 632-0221

ACKNOWLEDGEMENT

American Ag International Inc. (AAI), prime contractor, wishes to acknowledge the support the firm and its subcontractors received from the USAID Mission in Lesotho and the Government of Lesotho during implementation of the LAPIS Project. The support of two Agricultural Development Officers, Messrs Barry Hill and Curt Reintsma, was fundamental to the design, and later, the successful implementation of this multi-disciplinary and complex project. Credit must also be given to USAID in directing the LAPIS team building exercise and realigning certain project activities. This was crucial in further building project momentum and focussing the implementation of activities on the project goal and purpose. AAI, Inc. and the subcontractors are grateful for the high spirit of cooperation and support shown by these and other key officers at the USAID/Lesotho Mission on what was a sometimes bumpy road to implementation.

Appreciation must also be expressed to Mr. Reid Ntokoane (Principal Secretary), Ms. P. Ramagele (Deputy Principal Secretary), Department/Division Heads, and dedicated technicians from the Ministry of Agriculture, Cooperatives and Marketing. LAPIS was their project, and it is these individuals, and the farmers they support, that will ultimately harvest the fruits from the seedlings which LAPIS has planted.

Thanks must also be extended to the United States Peace Corps, who provided large numbers of PCVs in support of LAPIS. These individuals were highly productive and well integrated into LAPIS activities. The cooperative atmosphere between the USPC/Lesotho, USAID, and the LAPIS Project was exemplary.

AAI, Inc. appreciates the opportunity provided to the firm to implement such an innovative and important project. Implementation of a project with the size, magnitude, and complexity of LAPIS required good management skills, open communication at all levels, and dedication on the parts of all participants. This was a learning process for all parties involved, but was made easier because of the high level of effort put forth by the technical assistance team, short-term consultants, Peace Corps Volunteers, VOCA Volunteers, the Lesotho nationals recruited by the project, and the collaborative efforts of the staff of various MOA departments.

For many project staff, LAPIS marked a short, but productive period in a career. For others, Lesotho became a home away from home, where children were born and raised, and innumerable friends made. However, no matter the duration of our stay, we all take with us memories of the splendors of this beautiful, mountainous country and the warmth and friendliness of the Basotho people. For these memories, we express our deepest gratitude and our sincerest wishes for Lesotho's future prosperity.

L. (Liam) Weaver

L.C. Weaver
Chief of Party
AAI, Inc.

EXECUTIVE SUMMARY

In June 1986, the \$26.1 million, multi-component Lesotho Agricultural Production and Institutional Support Project (LAPIS) was launched as a major production and institutional-building project in Lesotho. The stated goal of the project was "to increase the income and employment of the rural population" and the purpose was "to provide direct production and marketing assistance to small farmers and to strengthen GOL institutional capacities in agricultural research and extension education for contributing to small farmer production". The project initially encompassed three components: Production Initiatives (PIC), Agricultural Research (ARC), and Agricultural Education (AEC). However following absorption of the range management activities of the Land Conservation and Range Development Project, a fourth component, the Range and Livestock Production Unit (RLPU), evolved.

The LAPIS Project was unique in its scope, structure and magnitude. It was intended to attain a broad purpose, macro-level improvement in agricultural production, and develop and mobilize agricultural institutions in support of small-scale producers. Significant progress was made in the project's major thrust, the institutional development of the Ministry of Agriculture, Cooperatives and Marketing (MOA). Given the complex nature of the institutional development processes, the development stage of MOA, and inadequate infrastructure for production and marketing existing at the onset of the project, LAPIS was successful in having a major impact on the institutions and infrastructure required for increased production by small farmers.

The LAPIS Project, through implementation of ten different programs, varying from range management to home garden food production, contributed to nearly all major MOA activities. The project was successful in assisting the MOA in developing a number of national strategies, policies, and institutional mandates and doctrines; thus, directly impacting increased production in the country. In addition, meaningful progress was made in the realms of vegetable marketing, agricultural research, agricultural education, livestock production and grazing management, and crop production. Concurrent with counterpart training and assistance, significant efforts were made towards upgrading the technical expertise in the agriculture sector through extensive degree level and in-service training.

LAPIS, in varying degrees, achieved its purpose of providing sustainable institutional and infrastructure improvement at several key MOA institutions, thus increasing their efficiency in responding to the needs of small producers. These institutions included: the Marketing Division (MD), Range Management Division (RMD), Lesotho Agricultural College (LAC), Agricultural Information Services (AIS), and Agricultural Research Division (ARD). However, institutional development, at the level perceived by the project designers, will be a long and sequential process -- one which cannot be expected to reach full fruition during the project's short lifetime.

Efforts have been made to quantitatively present certain project achievements in this report. However, the quantifiable impacts of the LAPIS Project on income generation, employment, and infrastructure development for serving small producers will require a longer period of time to be fully and realistically assessed.

OBJECTIVES AND ACHIEVEMENTS OF THE CROP PRODUCTION INITIATIVE COMPONENT (PIC)

The PIC was intended to serve as the leading edge of the LAPIS Project. The component's objectives were spelled out in the Project Paper as "to assist the establishment of production units using alternative organizational systems for individuals and associations, develop markets which will provide incentives for farmers to increase production, assist farmers to apply for credit from credit institutions, and assist farmers to identify sources of the proper mix of inputs required for specific crops". However, the Project Realignment of early 1989, determined that PIC should phase out direct support to farmers and its efforts should be directed toward developing a national marketing infrastructure, intensifying the training of the pertinent MOA staff and strengthening the MOA's capability in support of the small-scale producers. The PIC activities described in this summary and the main report responds to PIC accomplishments before and after the realignment. During the life of the LAPIS Project, the PIC-supported activities were implemented by a large pool of expertise including long-term and short-term TAs, VOCA Volunteers, Women in Development consultants, Peace Corps Volunteers and local-hire District Production and Field Marketing Officers.

1. Provide Direct and Extension Support to Vegetable Farmers

During the initial 18 months of the Project, 34 small scale individual and two association production schemes became operational. Their areas planted to irrigated vegetables and fruits were approximately 26 and 15 hectares, respectively. In addition, the two farmer associations produced approximately 17 hectares of traditional rain-fed crops. Project TAs' support included direct advice to farmers on site development, irrigation layout, securing inputs, cropping plans and marketing. Farmers received loans through local credit unions. Due to several issues arising from the MOA's shift in policy to supporting larger-scale area-based projects rather than small holders and the inability of the Lesotho Cooperative Credit Union League (LCCUL) in monitoring and collecting the loans, PIC direct assistance to producers was halted in early 1989. However, the PIC team continued to support the farmers and MOA field staff through numerous short-term and informal training activities. In addition, the PIC provided extensive technical assistance to other donors in the implementation of irrigated vegetable production in Lesotho, including: USC Canada, the Lesotho Initiative Support Project (LISP), BANFES Project, and Plenty Project among others.

2. Develop A Marketing Infrastructure, Particularly For Vegetable and Fruits

During the past four years, the PIC team supported the MOA Marketing Division (MD) and Department of Crop Services (DCS) in several areas. In 1989 the MD, supported by the project, formulated the Lesotho's National Marketing Strategy Statement. Approval of the policy statement by the GOL, and USAID's support of the statement, intensified project and MD's efforts in putting in place an infrastructure for vegetable marketing in the country. Follow up activities supported by the project included: formation of District Marketing Committees; establishing an extensive market information network; institutionalizing the positions of District Marketing Officers; extensive border surveys and monitoring for imported vegetables, fruits and fodder; extensive survey of areas under vegetable and fruit production and production estimates; and intensive training of the MD staff in data collection, pricing and marketing analysis, production forecasting, computers, and marketing extension.

The project supported the MD in field operations pertaining to establishing village and roadside marketing stands and planning for two regional pilot marketing centers, located in the Leribe and Mohale's Hoek Districts. Operational procedures for these two pilot centers were put in place and the project Marketing Specialist assisted the MD in start up activities.

3. Strengthen and Mobilize The Resources of MOA for Support To Small-Scale Vegetable Producers

The formation of a Production Coordination Unit was mandated by the Project Paper to serve as a central unit to mobilize MOA resources in support of small irrigated schemes. Formation of the PCU did not fully materialize during the first 18 months of the project. After the realignment, stronger efforts were made to form and institutionalize the PCU within the DCS. This was achieved in 1990. At the End-of-Project (EOP) the PCU was actively assisting the MOA to coordinate activities of DCS, DFS and the MD in support of small irrigated schemes.

In order to strengthen the MOA capacity to better respond to irrigated farmers needs, the project launched an intensive training program for 15 irrigation technicians and assisted the MOA to redesignate and place them within the DCS and the districts as Irrigation Resource Planners (IRP). IRPs, in essence, served as the extension arm of PCU and assisted farmers with various issues pertaining to irrigated cropping.

In an effort to further strengthen the MOA position in support of small producers, the PIC team assisted the DCS and MD to begin formulation of a National Crop Production Strategy. Such a strategy, once approved, will complement the existing Marketing Strategy and will identify, prioritize, and assign specific irrigation-related responsibilities to designated DCS divisions, sections and staff. Additionally, the strategy will enhance coordination of production, marketing, and extension activities between DCS, MD, and Department of Field Services (DFS) staff, respectively.

4. Increase Food Production and Nutrition Status of The Rural Population in The Mountainous Areas of Lesotho

The PIC team, in collaboration with Peace Corps and the Nutrition Division (ND) of MOA, successfully implemented the Home Garden Nutrition Program (HGNP). This activity was redesigned and expanded in 1989. The HGNP will be continued beyond the life of the LAPIS Project through a grant to Peace Corps and the MOA. This program significantly contributed to food production and improvement of nutrition in the more remote areas of Lesotho.

OBJECTIVES AND ACHIEVEMENTS OF THE RANGE AND LIVESTOCK PRODUCTION UNIT (RLPU)

The range and livestock production activities of the project began effectively in 1988 when the Range component of the former Land Conservation and Range Development Project was merged into LAPIS. RLPU successfully met its mandate, as specified by the Project Paper and the realigned scope of work, of increasing the livestock production and conserving the rangelands resources of the country.

1. Increase Livestock Production

The RLPU worked closely with the MOA Department of Livestock Services (DLS), Animal Production Division (APD) to increase the productivity of livestock raised in both intensive and extensive environs of production.

A variety of intensive livestock production packages, at various economies of scale, were developed for both private farmers and GOL parastatal organizations. Production packages were developed for the following enterprises: broilers, layers, swine, dairy, and feedlot operations for beef cattle and fat lambs. In addition to basic production guidelines, each package provided in-depth details on infrastructure needs and designs, proposed feed rations made from locally available feedstuffs, hygiene requirements, marketing, and the economic viability of the enterprise in Lesotho.

Extensive livestock production was supported through a variety of means. Assistance was provided to train staff from the APD Livestock Revolving Fund in the selection and procurement of improved breeding stock (Merino sheep, Angora goats, and dairy and beef cattle) from the RSA. LAPIS-supported grazing associations (Gas) were provided assistance in the identification, selection and transport of breeding stock (Drakensberg and Afrikaner bulls, Merino and Dohne Merino Rams, and Angora Rams) for their herd improvement programs. Advice and assistance was provided on improved animal husbandry techniques, and animal health services were made more accessible to GA members. And, livestock productivity was significantly enhanced for participants of the Range Management Area (RMA) Program through improved grazing management.

2. Conservation of The Rangelands

Efforts to improve Lesotho's rangelands were primarily channeled through on-the-ground assistance to the Sehlabathebe, Ha Moshebi/Ha Ramatseliso, Pelaneng/Bokong, and Sanqebethu/Mokhotlong Grazing Associations. The rangelands managed by these GAs encompassed approximately 130,000 hectares or 6.5% of all rangelands found in Lesotho, provided forage for more than 100,000 head of livestock, and residence to more than 18,000 people.

RLPU staff provided assistance and guidance to identification and selection of RMAs; organization of local livestock owners into community-based grazing associations; development of GA constitutions and by-laws; and development and implementation of grazing management, livestock improvement and livestock marketing plans for each GA. Additionally, extensive amounts of training were provided to GA members and herdboys on the basic principles of range management, livestock production and marketing, animal health, fodder production, etc. Forty-two training sessions, reaching an audience of 2,273 RMA farmers and chiefs were held. Training was supported by a massive extension program, with 295 pitsos (public meetings) being conducted to extend key messages to more than 20,000 participants.

Program outputs included substantial increases in rangeland productivity (ground cover, species composition, and condition scores), improvements in cattle herd dynamics, and the marketing of more than 2,000 head of livestock having a value of almost M1,100,000.

By the EOP, four GAs were functioning in this innovative and successful program.

3. Institutional Support to Department of Livestock Services (DLS)

Institutional support to the DLS was facilitated through an extensive long- and short-term training activities. LAPIS provided degree or diploma level training to 23 DLS staff members, and funded 116 short-term training events (short courses, workshops/seminars, and study tours) touching a total audience of 4,094. LAPIS TAs also participated in the development and articulation of pertinent DLS-related policies; the provision of coordination assistance through participation key MOA committees (National Livestock Task Force, STABEX, etc.); and commodity procurements.

OBJECTIVES AND ACHIEVEMENTS OF AGRICULTURAL RESEARCH COMPONENT (ARC)

ARC was the element of the Project responsible for the development and institutionalization of agricultural research within MOA. The ARC assisted the Agricultural Research Division (ARD) in the development of multi-disciplinary research and demonstration programs of the type needed to provide a sound technical foundation for the production of high-value crops in Lesotho.

1. Improve The Division's Administrative and Managerial Capabilities, Research Program Planning and Prioritization of Research Needs

The Research Division was reorganized from a structure that included thirteen discipline oriented sections to a structure that was based upon commodities and administered by program leaders, e.g. cereals, food legumes, fruits and vegetables, range and livestock, and natural resource management. In 1989, a National Agricultural Research Strategic Plan was prepared and approved by the Project Management Committee and forwarded to the Ministry. This was followed by the formation of the Research Advisory Committee, which was mandated to ensure that research and/or demonstration programs, conducted by the ARD, addressed the problems of the agricultural sector. The Committee advised ARD in establishing research priorities, approval of new programs, and review and approval of on-going research programs/projects. The Committee consisted of representatives from all ten districts, heads of MOA divisions, and agribusiness. In a follow up to the Committee's recommendations a formal internal review mechanism was implemented in 1990, to ensure that research and demonstration programs were multi-disciplinary in nature and included the socio-economic information so necessary to assure that recommendations made to farmers are appropriate to local conditions.

2. Institutionalize The Multi-Disciplinary Approach to Research and Demonstration Programs Responsive to The Farmers' Needs and With MOA Policy

The Project advised and assisted the Division in the development of multi-disciplinary adaptive research and demonstration programs designed to take advantage of existing technologies, ensure that these technologies were adapted to local conditions, and that they

improve the farmers' income. To achieve this objective, a balanced program of on-station and on-farm trials and demonstrations was implemented. The overall development of programs within the Division has been significant.

An example of a successful research program is the Pinto Bean program. The Project provided both technical and advisory support in establishing the national bean program. The Project also supported the program by importing certified seed from the USA, which was used in the evaluation trials and later in the seed multiplication program. After the acceptability and production studies were completed, several varieties were established. The Pinto Bean is now rapidly replacing traditional beans in Lesotho.

Another example is the MULPOC project, an on-farm demonstration program funded by the Multi-National Programming Operational Center for South African States. LAPIS Project TAs provided technical assistance to support this program. By 1990, the entire program was being supervised and carried out by an ARD staff member. The program demonstrated improved production practices for maize in farmers' fields throughout the lowland districts. In 1989 approval was received from the donor to expand MULPOC to include the collection and analysis of socio-economic data to assess the impact of this approach.

LAPIS successfully brought to the public attention the problems with the soil acidity. Acid soils comprise approximately 30% of Lesotho's arable land. LAPIS supported the development of a research and demonstration program designed to establish liming recommendations and demonstrate the advantages of liming to the farmers and extension agents.

3. Improve The Technology and Information Dissemination Capabilities of The Division to Generate Production-Oriented Publications Which Are Specifically Adapted to Farmer/Household Needs

As a result of the research conducted since the inception of the Project, numerous research reports, circular, handbooks and manuals were published. The project supported the publication of production guides for all major crops grown in Lesotho. This series was completed in early 1992 and included twenty-five production guides. These guides are heavily used by MOA headquarters and extension staff, project personnel, and farmers.

Many field-days were held in conjunction with both on-station research trials, and especially on-farm demonstrations, as a method of disseminating information on improved practices to the agricultural community. These efforts resulted in improved farmer awareness about the Division's programs and an interest in the improved practices demonstrated by both the farmers and extension staff.

The Project provided technical and advisory support to the Division in monitoring the socio-economic impact of MOA/LAPIS production initiatives in orchard, irrigated vegetable, home-garden, and extensive and intensive livestock production. The information generated served to facilitate effective implementation, assessment and evaluation of research and demonstration programs.

4. Establish and/or Improve Communication and Linkages Between The ARD and Other Divisions Within The Ministry, The farmers and The Agricultural Sector, and The Regional and International Research Centers

At the beginning of the LAPIS Project, the Division was isolated within the MOA. The Project provided support to assist the Division to develop the necessary linkages to function effectively within the MOA. The strengthening of linkages has succeeded to the point where, in general, the Division is having a positive impact within the MOA and the agricultural sector. ARD's activities have greatly increased, partly influenced by the heavy demand from GOL, and the public for technical information and assistance. By the EOP, ARD was providing technical advice to other donor-funded projects, in an effort to ensure that the information the farming community was receiving from those projects was consistent with ARD recommendations.

The Division became heavily involved in training both extension agents and farmers through their participation in technical meetings, district field days and workshops, and providing advisory services for other Divisions within the MOA.

Over the life of the project, the ARD developed, strengthened, and maintained close linkages with a number of international agricultural research centers, especially through its membership in SADCC/SACCAR. ARD staff participated in numerous international training sessions, workshops, seminars, and short courses sponsored by these organizations. ARD researchers cooperated in several regional research and/or demonstration programs in cooperation with AVRDC, CIAT, CIMMYT, CIP, ICRISAT, PANESA and MULPOC.

5. Develop The Practical Research Skills of The Division Staff

ARD research and technical staff received in-service training throughout the life of the project. Many of the staff participated in short courses in the areas of management and technical training. A program of regular in-service training was initiated in late 1989. These courses included such subjects as field plot design, research photography, data collection and statistical analysis, computer awareness, etc. On-the-job training of the ARD research and technical staff, greatly improved the Division's capability to plan, design, conduct and monitor research and demonstration programs. In an effort to improve the efficiency and productivity of the ARD research and support staff, the Project developed a computer laboratory at ARD and provided extensive training on software packages. These additions greatly enhanced the staff's ability to tabulate and analyze complex field trials and socio-economic studies, prepare reports and disseminate research findings, and to utilize the resources of the library.

Beginning in 1989, responsibility for designing, conducting, monitoring and evaluating the research and demonstration programs were increasingly turned over by the ARC TAs, to the ARD staff.

6. Upgrade The Division's Research Facilities In Accordance With Changing Research Needs

The Project has supported the purchase and/or improvement of a number of the Division's research facilities. A research greenhouse was constructed for insect and disease studies,

fertilizer and lime correlation trials, propagation of woody fruit material and seedling production. A new irrigation system was constructed to meet the long-term needs of ARD and greatly improved the Division's capability to conduct on-station irrigated research trials. The ability of the Soils Laboratory to process, analyze soil samples and make fertilizer and lime recommendations improved significantly during the life of the Project.

OBJECTIVES AND ACHIEVEMENTS OF THE AGRICULTURAL EDUCATION COMPONENT (AEC)

The AEC component's mandate was "to increase agricultural production, incomes and employment in Lesotho by strengthening the capacity of the MOA to provide improved agricultural education and to disseminate practical and applied agricultural information. Specifically, assistance is to be given to improving the quality and relevance of academic agricultural education, in-service training for MOA personnel, farmer training, and agricultural information services."

Component efforts to realize the expected outputs were focused upon a number of MOA institutions including: formal and nonformal training at LAC, AIS, Farmer Training Centers (FTC) and overall MOA informal training programs.

1. Strengthen The Capacity of The MOA to Provide Improved Agricultural Education

The bulk of the AEC effort was rendered toward strengthening LAC. This institution was and is the only MOA institution in charge of developing the agricultural manpower in the country. Key areas of project input and impact at LAC were as follows:

In strengthening the curriculum, the project supported four new three-year diploma programs in agriculture and home economics at LAC. Overall changes in the LAC curriculum were made to increase the practical to theoretical instruction ratio, and to give students more hands-on training relevant to their needs for working in Lesotho after graduation. Significant changes in the curriculum included the addition of student enterprise projects (SEP). The SEP program was initiated with Project technical and financial support complemented by a significant development of infrastructures on the Maseru campus. SEP, more than any other college offering, helped LAC meet its new mandate of training students for private sector rather than government employment. Over a five year period, 90 students completed projects, with the vast majority accruing profits. To assist graduates, a Follow-up Program was initiated at LAC in 1991. This was done with the realization that few SEP/LAC graduates were starting their own enterprises due largely to the external constraints of acquiring land, credit, and sufficient technical/financial guidance. In the first year of formal assistance, 29 graduates were assisted, with 5 starting enterprises and 10 others in the process of starting.

Implementation of a practical curriculum at LAC necessitated strengthening and improving the infrastructure at the College. Such efforts included significant physical improvements: construction of an extensive sprinkler irrigation system for the college farm, addition of new structures, construction of an A/V theatre with various educational materials and equipment, a heated greenhouse, considerable security fencing, expansion of the refectory, establishment

of two orchards, a multi-unit livestock complex, a computer laboratory, improvements and book acquisitions for the library, vehicles and tractors, and various administrative and farming equipment. Along with improving the physical facilities for practical training, the project TAs and LAC administrators cooperated closely to upgrade the overall administrative and management capacities at the college. As Project objectives encompassed development of the overall institution, there was little difference between AEC and LAC/MOA goals. Several specific areas of assistance included: significant staff computer training, computerization of many administrative/financial procedures and records, and a number of College committees were strengthened or established as a result of the Project support.

Eleven key LAC staff were carefully selected and received degree training in U.S. universities. More than 70 short-term training activities were conducted by AEC in support of staff development.

LAC was mandated by the MOA to assist with coordination and development of Ministry nonformal training. Subsequently, several members of the AEC team and LAC staff played key roles in implementing this mandate on behalf of the College. They represented LAC through establishment and membership on the MOA's Training Communications Coordination Committee (T/CCC).

2. Strengthen The Capacity of MOA for Information Gathering and Dissemination

The Project Paper identified AIS as the MOA institution for nation wide dissemination of agricultural information. LAPIS supported AIS for four years, and was the first donor to systematically do so. The purpose was institutional development, with the primary objective being concentrated on AIS's capability to produce extension publications. Prior to LAPIS assistance, the purpose of AIS was basically to provide public relations for GOL activities. Its revised mandate was to disseminate information to the agricultural community. Infrastructure improvements and equipment purchases of \$107,000 involved the expansion of the AIS building, and purchase and installation of offset printing press, computer typesetting equipment, and other materials for graphics and photography. Technical services were provided to the press section to enable AIS to produce printed training materials for distribution to farmers and extension staff. Other assistance included coordination of radio broadcast design, selection and procurement of various materials, repair of existing equipment and evaluation of the effectiveness of AIS services. Three AIS staff received Bachelor's degree training in the U.S. By the EOP, AIS was capable of providing quality information services to the agricultural community.

3. Provide In-Service Training for MOA Personnel and The Farmers

Nonformal, Project-supported short-term training has been an evolving activity. During the first two years of the Project, nonformal training for MOA staff and lead farmers was coordinated by AEC and supportive of production initiatives. Later, training support was directed toward institutional development. The creation of the T/CCC was an attempt to coordinate and institutionalize major MOA training efforts. During the term of the Project, roughly 6000 persons received a wide range and diverse array of short-term training in management and technical skills. The targets included selected farmers, MOA staff and individuals from the business community.

4. Strengthen Selected Farmers Training Centers (FTCs)

The primary objective of Project assistance to FTCs was to upgrade facilities to better accommodate Project related farmer training workshops, and also to make general MOA activities at these institutions more self-sufficient. In doing this, all AEC TAs made a sizeable technical contribution, and the Project spent \$58,000 for commodity procurement and infrastructure improvement. The Leribe and Mohale's Hoek FTCs received the greatest support, with Matela also receiving modest assistance.

OBJECTIVES AND ACHIEVEMENTS OF DEGREE LEVEL TRAINING

With a cost of approximately US\$ 3 million, the project, successfully, trained a cadre of 75 MOA staff by providing undergraduate and graduate level academic training at the US-based universities. The trainees, mostly holding middle level management and technical positions, were selected through carefully-set procedures and their academic performance were closely monitored in the United States. Ninety seven percent of the trainees completed their studies and most are now serving the agriculture sector in Lesotho at senior and mid management levels. The impact of such a large number of technicians, trained in various areas of agricultural production and marketing, on the agricultural institutions of the country has been immense. Undoubtedly, their presence will increase, significantly, the efficiency of the MOA in responding to agricultural needs of the country.

CUMULATIVE IMPACTS, ACHIEVEMENTS, CONSTRAINTS AND SUSTAINABILITY

The past six years have been a dynamic time in the institutional development of the MOA, characterized by case-specific and systemic advances as well as persistent constraints. The project fostered a more clear definition of functions in MOA to the extent that responses to opportunities to better serve the changing needs of the agricultural sector in Lesotho are being reflected in new, more appropriate MOA programs. The project helped the growth of MOA's inventory of physical and human resources. However, MOA budgetary and programming limitations will continue to impact negatively on the use of those resources. Yet, given the budgetary and programming limitations, the institutions of the MOA is working more effectively overall.

The blend of TAs, training and commodity support provided through the project has varied among programs, but these elements have been integrated within each to foster the MOA's institution-building process. Technical assistance served largely as a technology transfer mechanism, conveying substantive technology through counterpart relationships, in-service training and written materials of various types. The Project TAs were key factors in transferring managerial technology and helping counterpart administrators to prioritize activities in the face of real budgetary and resource constraints. The project team's contributions to leadership, program development, planning and programming, and establishment and maintenance of linkages was important across the board, and impacts in the areas of internal structure, doctrine, policy development and resource mobilization were significant in many MOA programs.

Project-supported degree training had a significant impact on human capital in supported institutions. Degree-level and in-service training advanced acquisition of substantive technology and had additional, spin-off effects on leadership and managerial technology. The formidable amount of farmer training supported by the project was a central aspect of the current services generated during the life of the project.

Project commodity support was contributed mostly in the realm of inputs, temporarily alleviating budgetary constraints to demonstrate the potential of supported programs, funding substantial development of physical capital, and helping reduce human-capital constraints. Commodity support was also an important factor in the MOA's increased acquisition of technology.

The LAPIS Project was successful in fostering the institutional development of the MOA. Given the scope and magnitude of project efforts and the functional relationships linking them, these achievements had positive impacts on the institutional capability of the MOA as a whole and accounted for many Ministry-wide advances. Alleviation of budgetary and programming constraints will require longer-term efforts. Upward accountability and downward support should increasingly characterize the MOA's administrative functioning if the models for improved institutional performance put in place during the life of the project are to be institutionalized. The essential linkages which were established should be sustained and replicated as appropriate. Institutional development takes time. The MOA as it is presently structured and several ministry organizations are all relatively young. Most project-supported programs are new. Much new technology and trained personnel are only recently in place, and the term of the LAPIS Project, while long by some donor standards, has been brief relative to its mandate. The cited advances and constraints in the institutional development of the MOA and the impacts of LAPIS Project assistance have come to bear differentially on the sustainability of project-supported programs for several reasons. The developmental stage and critical needs of MOA programs and their sponsoring organizations varied at the onset of the project. The consistence of project-supported programs with past or on-going activities of these organizations has differed. The magnitude and inherent difficulty of program objectives have not been the same, nor have the qualitative and quantitative aspects of project support provided. As a result of these factors, the prospects for sustainability and the needs to improve those prospects vary among programs at this point in time.

ACRONYMS

AAI	American Ag International
AEC	Agricultural Education Component (LAPIS)
AETR	Academic Enrollment and Term Report
AIS	Agricultural Information Services
APD	Animal Production Division
ARC	Agricultural Research Component (LAPIS)
ARD	Agricultural Research Division
ATS	Appropriate Technology Section
AVRDC	Asian Vegetable Research and Development Center
CBB	Common Bacterial Blight
CIAT	International Center for Tropical Agriculture
CIDA	Canadian International Development Agency
CIMMYT	International Center for the Development of Maize and Wheat Improvement
CIP	International Potato Center
CMO	Chief Marketing Officer
DANIDA	Danish International Development Agency
DAO	District Agricultural Officer
DCO	District Crop Officer
DCS	Department of Crops Services
DEM	Department of Economics and Marketing
DFS	Department of Field Services
DHE	Diploma In Home Economics
DHEE	Diploma In Home Economics Education
DIA	Diploma In Agriculture
DIAE	Diploma In Agriculture Education
DLS	Department of Livestock Services
DMC	District Marketing Committee
DMO	District Marketing Officer
DNO	District Nutrition Officer
DPO	District Production Officer
DPS	Deputy Principal Secretary
DTS	Department of Technical Services
EA	Extension Agent
ECA	Economic Commission for Africa (United Nations)
EEC	European Economic Community
EOP	End of Project - (May 31, 1992 for purposes of this report)
FAO	Food and Agriculture Organization (United Nations)
FINIDA	Finish International Development Agency
FMU	Food Management Unit
FMO	Field Marketing Officer
FSSP	Food for Self-Sufficiency Project
FSRP	Farming Systems Research Project
FTC	Farmer Training Center
GA	Grazing Association
GOL	Government of Lesotho
GPA	Grade Point Average

GSSA	Grassland Society for Southern Africa
HAC	Health and Accident Cover
HB	Halo Blight
HBCU	Historically Black Colleges and Universities
HGNP	Home Garden and Nutrition Program
ICRISAT	International Crop Research Institute for the Semi-Arid Tropics
IDRC	International Development Research Council
IFAD	International Fund for Agricultural Development
IITA	International Institute for Tropical Agriculture
ILCA	International Livestock Center for Africa
IPT	Information Production Team
IRP	Irrigation Resource Planner
ISAS	Institute for Southern African Studies
ISNAR	International Service for National Agricultural Research
ISAQR	Inter Laboratory Soil Analysis Quality Control
LAC	Lesotho Agricultural College
LADB	Lesotho Agricultural Development Bank
LAPIS	Lesotho Agricultural Production and Institutional Support Project
LAPSP	Lesotho Agricultural Policy Support Program
LCCUL	Lesotho Cooperative Credit Union League
LCUP	Lesotho Credit Union Project
LCRD	Land Conservation and Range Development Project
LPMS	Livestock Product Marketing Services
LNDC	Lesotho National Development Corporation
MAMC	Mananga Agricultural Management Center
MD	Marketing Division
MOA	Ministry of Agriculture, Cooperatives and Marketing
MULPOC	Multinational Programming and Operational Center for Eastern and Southern Africa
NA	Nutrition Assistant
ND	Nutrition Division
NARS	National Agricultural Research System
NIARE	National Institute of Agricultural Research & Education
NUL	National University of Lesotho
OIT	Overseas Institute of Training
OIT/W	Overseas Institute of Training/Washington D.C.
OPIC	Overseas Private Investment Corporation
PANESA	Pasture and Agronomy Network of East and Southern Africa
PCU	Production Coordination Unit
PCV	Peace Corps Volunteer
PDF	Participant Data Form
PIC	Production Initiatives Component (LAPIS)
PP	Project Paper
PS	Principal Secretary
RAC	Research Advisory Committee
RCO	Regional Contracting Officer
RLPU	Range and Livestock Production Unit (LAPIS)
RMA	Range Management Area

RMD	Range Management Division
RSA	Republic of South Africa
RSTTP	Rural Science Teacher Training Project
SADCC	Southern African Development Coordination Conference
SACCAR	Southern African Center for Cooperation in Agricultural Research
SARCCUS	Southern African Regional Commission for the Conservation and Utilization of the Soil
SARBEIN	Southern African Regional Bean Evaluation Nursery
SARMEIN	Southern African Regional Maize Evaluation Nursery
SARWEIN	Southern African Regional Wheat Evaluation Nursery
SDSU	South Dakota State University
SEP	Students Enterprise Project
SIDA	Swedish International Development Agency
SMS	Subject Matter Specialist
SRA	Society for Range Management
STABEX	EEC Export Stabilization Program
SWaCAP	Soil and Water Conservation and Agroforestry Project
TA	Technical Assistant
TOU	Technical Operations Unit
UA	University of Arizona
UBLS	University of Botswana, Lesotho and Swaziland
UNDP	United Nations Development Programme
UNICEF	United Nations Children Foundation
USAID	United States Agency for International Development
USD	United States Dollars
USDA	United States Department of Agriculture
VOCA	Volunteers in Overseas Cooperative Assistance
VWS	Village Water Supply
WDC	Water Development Component
WID	Women in Development
WMF	Wheat Monetization Fund
WOCCU	World Council of Credit Unions
WSU	Washington State University
WUSC	World University Services of Canada

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PART ONE:

LAPIS PROJECT BACKGROUND

A. INTRODUCTION

The Lesotho Agricultural Production and Institutional Support (LAPIS) Project began in June, 1986. The goal of the \$26.1 million LAPIS Project was to increase agricultural income and employment of Lesotho's rural poor. This was to be achieved by providing assistance to small farmers and strengthening the Ministry of Agriculture, Cooperatives and Marketing (MOA) institutional capabilities in agricultural research, education, and production.

The LAPIS Project was unique in its scope, structure and magnitude. It was intended to attain a broad purpose, macro-level improvement in agricultural production, and develop and mobilize agricultural institutions in support of small farmers. This approach was facilitated by working through three separate, but complementary components. The Production Initiatives Component (PIC) was the leading edge of the project, providing technical assistance (TA) and commodity support to MOA staff in the Department of Crops Services (vegetable and fruit production), Department of Economics and Marketing (marketing), the Department of Field Services (extension), and the Department of Livestock Services (livestock production and rangeland conservation). The PIC was complemented with supportive assistance to Agricultural Research Division (agricultural research) and the Lesotho Agricultural College (agricultural education).

Technical assistance and commodity support were augmented with an extensive long-term training program and reinforced by numerous short-term training courses, workshops, seminars, study tours, and the day-to-day interaction between TAs and their counterparts.

American Ag International, Inc. (AAI) of Tucson, Arizona was the prime contractor, having overall responsibility for LAPIS Project implementation. AAI was assisted by subcontractors: Consortium for International Development (CID), who provided research and education expertise; and Frederiksen, Kamine & Associates and Lindsay/Dekalb International, who provided assistance to production activities.

AAI's contract to implement LAPIS became effective on March 14, 1986, and ran through May 31, 1990. Later a fifth and sixth year were added to the contract, leading to an anticipated contract termination date of May 31, 1992. Finally, the contract was amended to include a six-month extension of the contract (through November 30, 1992) for select TAs in order to bridge future USAID activities in Lesotho.

This End-of-Project Report covers the period March 14, 1986 through May 31, 1992. Following the final contract termination in November, 1992, AAI will submit an addendum to this report to update pertinent activities and costs.

The report has been organized into four parts. Part One provides background information on the LAPIS Project, inclusive of: a chronology of contractual events, TA team composition, the Scope of Work for the Project and expected Project Outputs, and the revised outputs following the Project Realignment in 1989.

Part Two details the LAPIS Project implementation activities and accomplishments, and has been subdivided into three sections. Section I discusses institutional support rendered to the MOA in the forms of organizational assistance, staff development, and infrastructure development. Section II highlights the LAPIS Project long- and short-term training effort. While Section III summarizes production outputs for each of the LAPIS components.

Part Three provides insights on the LAPIS Project impacts and presents the Contractor's recommendations, as a result of having implemented the project.

The fourth and final part encompasses the annexes to the main volume of the End-of-Tour Report, and includes voluminous details which are administratively important to the EOP Report.

The report submitted herein, in essence, only touches upon the wide and diverse range of activities implemented during the life of the project. Unavoidably the authors of the report had to limit themselves to presenting only those activities and achievements that were perceived of highest priority for the USAID Mission and MOA. Many lesser activities and have been left out in order to reduce the size of this report to a readable format and length. More detailed knowledge of LAPIS activities can be acquired through reading the individual technical reports which were generated by project TAs and are listed under the Publications Section (Annex 1) of this report. These reports may be obtained through the relevant MOA institutions, or through the USAID/Lesotho Mission, where a copy of each report has been left on file.

B. CHRONOLOGY OF CONTRACTUAL EVENTS (1986-1992)

DATE PROJECT AUTHORIZED

March 5, 1985

DATE PROJECT AGREEMENT SIGNED

August 30, 1985

DATE OF CONTRACT AWARD

February 26, 1986

DATE CONTRACT SIGNED

March 6, 1986 By Mr. B. Freeman, President of AAI, Inc.
March 11, 1986 By Mr. Fred Obey, Contracting Officer
The Effective Date of Contract was March 14, 1986

DATE PROJECT ACTIVITIES STARTED

June 1, 1986

DATE OF FIRST EVALUATION

January 25 to March 4, 1988

DATE OF PROGRAM AUDIT

Audit performed between April 20 - June 1, 1989
Final Audit Report issued September 14, 1990

DATE PROJECT REALIGNMENT DOCUMENTATION COMPLETED

April 17, 1989 by approval of Mr. Jesse Snyder, USAID/Lesotho
Mission Director

DATE OF SECOND AND FINAL EVALUATION

March 30 to May 12, 1992

DATES AND PURPOSES OF CONTRACT AMENDMENTS

See Table One

Table One: Dates and Purposes of Amendments to Contract No. 632-0221-C-00-6017

AMENDMENT NO.	DATE	PURPOSE
1	June, 1986	Level of T/A effort increased, level of long-term participant training increased, amount of commodities increased.
2	June, 1987	Funds obligated under the contract increased.
3	Aug., 1988	Key personnel list modified, level of T/A effort increased, level of locally hired personnel identified, funds obligated under the contract increased.
4	Jan., 1989	Defining authority of RCO on administrative details of personnel.
5	Feb., 1989	Change of policy regarding settling-in allowances, shipping, storage of HHE and private vehicles.
6	Mar., 1989	Funds obligated under the contract increased and appropriation numbers listed.
7	June, 1989	Level of effort modified and key personnel listing modified.
8	Aug., 1989	Funds obligated under the contract increased, Home Gardens outputs modified.
9	Sep., 1989	Funds obligated under the contract increased.
10	Nov., 1989	Description of Project Assistance revised. Project Goal, Purpose, End of Project status outputs defined, level of effort modified, and Year 5 targets defined.
11	July, 1990	Establishment of Indirect Cost Rates defined.
12	Aug., 1990	Appropriation numbers listed, funds obligated under the contract increased.
13	Nov., 1990	Level of effort increased, job titles and responsibilities modified, extension of contract to May 31, 1992, Year 6 targets defined, and funds obligated under the contract were increased.
14	May, 1991	Home Gardens support and two position descriptions defined.
15	May, 1992	Level of effort modified, contract extended to November 30, 1992, and Year 7 targets defined.

C. TECHNICAL ASSISTANCE TEAM COMPOSITION, DATES OF ARRIVAL, AND LEVELS OF EFFORT

1. ORIGINAL TECHNICAL ASSISTANCE TEAM

The original Technical Assistance team commenced arrival in Lesotho in June, 1986, and were for the most part in place by September, 1986. Exceptions included the Livestock Advisor, who arrived in September, 1987, and the Range Management specialists, who transferred from the LCRD Project in October, 1988. Table Two summarizes these staff members by position, component, arrival date, and level of effort each TA contributed to the project.

Table Two: Designation, Arrival Date, and Level of Effort Provided By Original LAPIS Project Technical Assistance Team

NAME	DESIGNATION	COMPONENT	ARRIVAL DATE	LEVEL OF EFFORT
B. Freeman	Chief of Party	ADM	02/06/86	48
B. Arnold	Admin. Manager	ADM	26/06/86	71
F. Rooyani	Team Leader	AEC	02/06/86	36
	Chief of Party	ADM	01/06/90	12
J. Rusk	Oper. & Mgt. Spec.	AEC	07/08/86	27
B. Tyson	Extension Ed. Spec.	AEC	02/08/86	58
W. Nishek	Irr. Agric. Engineer	AEC	08/09/86	45
P. Forrest	Agronomist/Soils	AEC	15/07/86	36
S. Goertz	Ag. Curr. Dev. Spec.	AEC	18/08/86	70
J. Mare'	Team Leader	ARC	02/09/86	18
E. Loomis	Horticulturist	ARC	25/09/86	23
	Team Leader	ARC	16/05/88	47
G. Massey	Agronomist	ARC	19/08/86	69
H. Homan	Pest Mgt. Spec.	ARC	02/09/86	24
W. Schacht	Animal Scientist	ARC	20/09/86	34
B. Badamchian	Soils Scientist	ARC	01/08/86	54
C. Franck	Team Leader/Sen. Hort.	PIC	02/06/86	36
G. Hunt	Market Dev. Spec.	PIC	02/07/86	14
D. Bosley	Horticulturist (1)	PIC	05/07/86	05
M. Woods	Horticulturist (2)	PIC	12/06/86	43
H. Moore	Irrigation/Farm Planner	PIC	21/06/86	42
C. Weaver	Sr. Rge Mgt. Spec.	RLP	01/10/88	32
	Chief of Party	ADM	01/06/91	13
S. Deffendol	Rge Mgt. Spec.	RLP	01/10/88	23
C. Drew	Sr. Livestock Advisor	RLP	11/09/87	63

2. ADDITIONAL TECHNICAL ASSISTANCE TEAM MEMBERS

Amendments to the AAI contract provided for the creation of 17 new LAPIS Project TA positions. Twelve of these positions were filled with expatriates contracted from overseas, and five were satisfied with locally hired expatriates. In addition, several new TAs were periodically hired throughout the life of the project to replace TAs who had satisfied contractual requirements and returned home. Table Three summarizes these individuals, their positions, affiliated components, arrival dates and contributed levels of effort.

Table Three: Designation, Arrival Date, and Level of Effort for LAPIS Project Technical Assistance Staff Who Replaced Original Team Members or Were Added Through Amendments

NAME	DESIGNATION	COMPONENT	ARRIVAL DATE	LEVEL OF EFFORT
F. Rooyani	Deputy Chief of Party*	ADM	01/06/89	12
A. King	Animal Scientist*	AEC	01/09/86	57
	Agric. Business Advisor*	AEC	01/06/91	12
N. Artz	Social Scientist*	PIC	13/07/87	30
	Social Scientist*	ARC	01/01/90	17
	Range Social Scientist*	RLP	01/06/91	12
P. Gray	RMA Spec./Sehlabathebe*	RLP	01/10/88	20
	Seh. Training Spec.*	RLP	01/06/90	12
J. Hunter	Range/Lstk Economist*	RLP	10/12/88	17
L. Beno	RMA/Adjudication Spec.*	RLP	06/10/88	03
R. Buzzard**	RMA/Adjudication Spec.	RLP	18/05/89	36
J. Campbell	Ag Economist*	ARC	14/02/89	28
G. Marlowe**	Horticulturist	ARC	11/11/88	20
S. Martin**	Animal Scientist	ARC	14/07/89	23
P. Mowbray**	Horticulturist (1)	PIC	18/03/87	16
	Team Leader/Sen. Hort.	PIC	01/06/89	36
G. Feaster**	Marketing Specialist	PIC	06/06/88	53
J. Sunta	Irrigation Engineer*	PIC	25/03/91	14
B. White	Home Garden Specialist*	PIC	29/08/89	24
P. Rhodes**	Home Garden Specialist	PIC	01/08/91	12
M. Augur	Home Garden Coord.*	PIC	15/07/91	14
D. Stevenson	Home Garden Coord.*	PIC	01/08/91	12
C. Franck	Special Projects Coord.*	ADM	01/06/89	07
F. Bobbit**	Organizational Mgt. Spec.	AEC	01/09/88	09
	Team Leader	AEC	01/06/89	15
M. Nishek	Computer Spec.*	AEC	01/09/88	42

* Designates new positions added to the LAPIS Project Contract through amendments.

** Designates individuals who replaced departing Technical Assistance staff.

D. SCOPE OF WORK AND PROJECT OUTPUTS

1. THE PROJECT CONTRACT

The USAID funded Lesotho Agricultural Production and Institutional Support Project (LAPIS), Project No. 632-0221, was launched in June 1986 and is due for close out in November 30, 1992. The Project contract was awarded to AAI, Inc., prime contractor, and its subcontractors: Consortium for International Development (University of Arizona as lead), Lindsly International/Dekalb, and Frederiksen & Kamine Associates Inc. The total funds allocated to AAI, Inc. contract was US \$23,462,187 through Amendment No. 15, dated May 15, 1992. The level of effort provided to this contract has been 1,447 person months of long-term technical assistance and 267 person months of Home Office Support. The funding for commodity support and degree level training has been US \$1,888,300 and US \$2,933,973, respectively.

2. PROJECT GOAL AND PURPOSE

The goal of the project was "to increase the incomes and employment of the rural population". The purpose of the Project was "to provide direct production and marketing assistance to small farmers and to strengthen Government of Lesotho (GOL) institutional capabilities in agriculture research and extension education for contributing to small farmer production". The Project was separated into three closely linked components, the Production Initiatives Component (PIC) was to provide support to small farmers undertaking high-value agricultural production, the Agricultural Research Component (ARC) was to provide the technical foundation for introducing new technology and improving production, and the Agricultural Education Component (AEC) was responsible for improving the capacity of MOA personnel to transfer technical information to the farmers. It was planned for the Land Conservation and Range Development Project (1981-1988) to phase into LAPIS, at a reduced level of effort, in 1988 in order to complement the PIC team in livestock and range production. In addition, it was planned for the Lesotho Cooperative Credit Union League (LCCUL) to provide credit to target farmers funded through a cooperative agreement, US \$1,898,700, between USAID and the World Council of Credit Union (WOCCU). This sub-component, LCUP, operated through LCCUL. Through a second cooperative agreement, US\$629,200, between USAID and CARE, it was planned for CARE to provide support to establishing five cooperatives of tree and vegetable nurseries, ICFARM subcomponent.

The LAPIS Project was designed to assist the GOL to expand the commercial horticulture and livestock production of small farmers while continuing to strengthen the institutional capacity of MOA to facilitate, coordinate and foster agricultural development in Lesotho. MOA was expected to facilitate the project implementation through providing extension support to the target farmers, to establish a Production Coordination Unit (PCU) within the MOA, and counterpart to the technical assistance team.

3. PROJECT OBJECTIVES

The overall objectives of the project were as follows:

1. Farming households are involved in intensive horticulture, cash crops, and livestock production activities, which have measurably contributed to increased employment and income.
2. A coordination structure is operating within the MOA to facilitate support to smallholder production projects.
3. The MOA Research Division is capable of addressing the constraints to smallholder agriculture, testing and developing improved packages, and assisting in the dissemination of these packages to small farmers.
4. Training institutions are capable of training MOA extension and technical staff, farmers, and public and private sector personnel involved in smallholder agriculture including input supply and marketing operations.

4. PROJECT COMPONENTS' MANDATES AND EXPECTED OUTPUTS

The LAPIS Project Paper, issued in October 1984, described in detail the rationale and mandate for the three major components of the project, and the quantifiable and qualitative expected outputs. Certain outputs were revised during the project realignment in 1989 (to be discussed later). The following is a summary of the project component mandates and the originally-set outputs.

4.1 Production Initiative Component (PIC)

This component was designed to increase the support to small holders undertaking production and marketing of high-value crops and livestock products through provision of extension services, technical services, credit, training, access to inputs and produce markets. In a more fundamental sense, this meant the PIC was to assist the Government of Lesotho (GOL) to accelerate the transition from a traditional subsistence agriculture to production and marketing of high-value horticultural, fodder or livestock products. The PIC was intended to be the leading edge of the LAPIS Project.

The Project Paper described the followings as outputs for the PIC.

1. The Ministry of Agriculture (MOA) has the ability to mobilize and coordinate its resources for the activities and programs designed to increase high value crop/livestock production.
2. Individual farmers use improved technology and small water catchments for irrigated production of fruits, vegetables and/or fodder for home consumption and the local market.

3. Seven farmer associations producing up to 70 hectares of fruits, vegetables and/or fodder for sale using improved technologies.
4. Over 1500 heads of households establish home gardens which are producing fruits and vegetables for family consumption and local sales.
5. Five nurseries produce and sell fruit trees, fuel wood trees, and vegetable seedlings which are used by the Basotho farmers to establish fruit tree orchards, on farm tree plantings, and small vegetable plots.
6. Twenty-five local credit unions provide an integrated program of credit, input supplies, technical and educational assistance, equipment rental and assistance with marketing services.
7. Association(s) of livestock farmers produce and market larger numbers of higher quality animals and animal products while conserving the nations water and land resources.

Outputs number 5 and 6 were the mandate of CUNA/WOCCU and CARE, respectively.

The realignment of 1989, significantly changed the quantifiable outputs of the crop, credit, and ICFARM subcomponents of PIC and their mandate. These changes have been discussed in the Section I.D of this report. The PIC began field implementation activities during July-August, 1986. The Project Paper allocated 29.75 persons/year to the PIC. This figure included 4 persons/year for the LCUP sub-component and was contracted outside AAI's contract. The actual level of efforts for PIC, through the term of the project, has been 41.08 person years (not inclusive of local hire effort). Also, the project allocated a commodity budget for PIC operation, mostly devoted to market development.

4.2 Agricultural Research Component

The ARC sub-goal, as stated in the Project Paper, was to develop and extend improved agricultural technologies to farmers. The component was to directly assist the Agricultural Research Division (ARD) to produce tested, production-oriented technical packages. The ARC assisted with strengthening the ARD's capability in the areas of research station management, research program development, prioritization and accountability, technology and information dissemination, publication and communication, long-term training, and upgrading research facilities. Emphasis was placed on adapting and/or developing improved production practices and introducing these technologies to the Basotho farmer through improved and appropriate technology transfer methods, and increasing the number of farmer field-days and on-farm demonstrations.

The ARC expected outputs as described in the Project Paper were as follows:

1. Research priorities are based upon, and responding to, systematic assessment of farmers' constraints and goals.

2. Use of on-station and on-farm trials to test the validity and applicability of research results is increased.
3. Additional production technical/management packages are tested and recommended by research, and transferred to the farmers.
4. Research institutionalization, Farmers System Research (FSR) capacity, skills and supporting services are improved.
5. Linkages among researchers, extension workers, farmers, production input services, agriculture policy/planning personnel and other supporting institutions are improved.
6. Soils laboratory is equipped, staffed and effectively performing its role.
7. Feedback from ARD is linked to curriculum planning and training systems.

Although several areas of the Project were modified during the realignment of 1989, there were no significant changes in the mandate and sub-goal of ARC program. The FSR approach that was followed during the first 18 month of the project was modified in order for ARC to respond to more immediate institutional needs and weakness at ARD. The level of effort allocated to ARC in 1986 was 20 person/years. The composition of the component TA team was later modified and the level of effort and commodity allocation increased substantially during the subsequent amendment to the AAI's contract. ARC's total level of effort reached 29.75 person years by May, 1992 when the component was phased out.

4.3 Agricultural Education Component

The mandate of AEC was to strengthening the capacity of the MOA for increased agricultural production through providing improved agricultural education and dissemination of practical and applied agricultural information. Specifically, assistance was to be given to improve the quality and relevance of academic agricultural education, in-service and pre-service training for MOA extension personnel, farmer training, and agricultural information services.

The expected outputs of AEC listed in the Project Paper were:

1. Teaching, curriculum, and administration at the Lesotho Agricultural College (LAC) are improved.
2. Training programs for MOA field staff, farmers and other public/private sector personnel engaged in agricultural production are improved.
3. Agricultural Information Services (AIS) capacity to develop, publish, distribute and broadcast agricultural information is increased.
4. Facilities at LAC, two Farmer Training Centers (FTCs) and the AIS office are improved.

5. Formal communication linkages are enhanced among the MOA agricultural/information institutions and the MOA technical advisors.

Implementation of AEC activities largely followed the Project Paper. Some modifications were made in the initial allocation of Project resources to the program; the level of effort of the component Technical Assistance (TA) was increased over time; and the original training, commodity and construction budgets were increased. This effort comprised 30.4 person years, 12.4 years in excess of the amount stipulated in the Project Paper. It was determined that this extra level of TA was essential to the ultimate sustainable success of many programs implemented by this component.

In addition to long-term TA, there was a considerable amount of project sponsored "local-hire" assistance. Ten individuals served for varying periods of time as basic sciences, animal science, veterinary science, and sociology lecturers, special programs bookkeeper, A-V materials specialist, and an agricultural engineering technician.

E. PROJECT REALIGNMENT AND REVISED OUTPUTS

The crop subcomponent of the PIC and the associated credit and nursery production subcomponents underwent significant redirection after 18 months into the project implementation. The processes leading to revising the scope of work and the outputs of those subcomponents began with the first project evaluation, followed by a program audit, and finally the project realignment of 1989. Herein is a summary presentation of the results of those developments and the impact on project outputs. More detailed analysis on the issues above can be obtained from the evaluation, audit and realignment reports at USAID Mission.

1. PROJECT EVALUATION

The comprehensive outside evaluation of February-March 1988, summarized the findings as follows" the project has been successful in meeting its quantifiable targets, eg. number of irrigated farms established and number of trainees sent for training, but has been less successful in making progress toward the achievement of its institutional objectives with the exception of the work at LAC". Further, the evaluators raised their concern in the following areas:

1. "The institutionalization of project achievement". The issue concerns the presence of project Tas in absence of a large number of MOA staff departed for degree level training. Apparently a problem with the project design and scheduling of TA/counterpart overlap.
2. "Level of MOA field support and the relevance of the project to current GOL agricultural development strategies". The statement referred to the stated shift in GOL policy of supporting the large-scale irrigated schemes rather than small-scale holders.

The shift was perceived as a key factor for splitting the limited resources of MOA in extension and support to activities pertaining to small producers. This was a question of relevancy of the donor support programs to the policies of the host government.

3. "The utilization of farming systems research methodology". This statement referred to ARC's greater emphasis on strengthening the ARD than FSR during the first 18 month of the project.

4. "The marketing of crops produced with project support". The evaluators referred to the need for a systematic approach to marketing and market development instead of direct support to individual producers. They emphasized the need for a national marketing strategy for vegetable crops.

5. "The need for strengthening the project management and supervision of project activities". The evaluators recommended the creation of a Deputy Chief of Party position.

The evaluation report commended the training and education activities of the project as well as the level of support the project rendered to the target farmers in spite of inadequate MOA field extension support. Immediately after the evaluation, the project was worked on eliminating the concerns raised by the evaluators.

2. THE PROGRAM AUDIT

The LAPIS Project Program Audit, conducted during May-June 1989, made recommendations for significant realignment of the PIC crop and the mandate of the credit and ICFARM subcomponents. They recommended:

1. Phasing out three TA positions involved in direct support to irrigated farmers.
2. An orderly and gradually phasing down of all direct field technical and extension support to the LAPIS Project supported farmers. The field extension responsibilities were recommended to be turned over to the MOA district staff.
3. The elimination of credit support to the project supported farmers and phasing out of the LCUP and ICFARM subcomponents.
4. Transfer the PIC Rural Sociologist TA position to ARD in order to strengthen the socio-economic aspects of the research programs.
5. Stronger emphasis on training and institutional development.
6. Formation of a trust fund at LAC and transferring the credit fund in support of SEP from LCCUL to the trust fund.

The program audit recommended the extension of the successful components and subcomponents of the project for an additional one year. The rationale behind the program audit recommendations was two fold:

The lack of MOA field extension support perceived to have a negative impact on the sustainability of PIC vegetable production activities. The MOA, particularly the Department of Crops Services's (DCS), focus on expanding area based irrigated schemes in fact exhausted the limited extension resources available at district levels. Consequently leaving the task of support to small-scale producers to the project staff. A question, therefore, was raised concerning the sustainability of the project initiated production activities after the life of the project.

The lack of an effective credit institution(s) to support the high value vegetable production implementation activity remained a constraint in spite of the efforts of LCUP subcomponent's efforts in reorganizing the LCCUL.

The program audit set the stage for project realignment and modifying some of the project outputs in order to maximize the impact of the project inputs. The LCCUL was to provide funds to the local credit unions through a USAID grant and make loans to farmers. The loans were for the purchase of the required inputs including irrigation equipment, seeds, fertilizers etc. The inability of the LCCUL and the local credit unions to manage, monitor and collect their loans became a major constraint to implementation of direct project support to producers.

3. PROJECT REALIGNMENT AND THE REVISED OUTPUTS

The realignment maintained the project goal as was described in the Project Paper. However the project purpose was modified to reflect the new circumstance, with "direct" support to PIC-initiated vegetable schemes being eliminated in the absence of MOA field support. The new project purpose was defined as "The emphasis for the remaining life of the project will focus on strengthening the MOA institutional capabilities relative to supporting small holder agriculture". Other modifications pertaining to project management and cross-component issues included:

1. Reactivation of the Project Management Committee;
2. Increasing the project's effort in collecting and analyzing fiscal and economic data for evaluation of project-recommended production packages;
3. Directing the project TA resources more to in-service and counterpart training;
4. Beginning a planned, gradual and smooth handing over process for key project activities and commodities involving close collaboration with the counterparts; and
5. Creation of a Deputy Chief of Party position and appointment of a TA to serve in that capacity.

The revised project activities and outputs pertaining to specific components follows:

3.1 Modifications Pertaining to PIC (Crop)

PIC was the main target for realignment, and as such, significant changes were introduced in the outputs of this component:

1. Phasing out the LCUP, ICFARM, and three PIC TA positions involved in direct support to vegetable production schemes. The move necessitated the modification of quantifiable outputs set forth in the Project Paper.
2. Increased emphasis on developing marketing infrastructure: market information network, national marketing strategy, plan for establishing market centers to be managed and guided by district marketing committees (planned to be elected private sector bodies).
3. Expansion of Home Garden and Nutrition Program (HGNP). The Program was to receive much stronger financial and staff support. Sixteen PCVs were added to the program and the program was successfully expanded beyond the outputs identified in the Project Paper.
4. Activation of the Production Coordination Unit (PCU), as was perceived in the Project Paper, to coordinate the marketing, production and irrigation activities of MOA in support of viable small producers. The PCU was successfully established within the DCS and began its function as mandated in project covenant.

As a result of realignment, the project TAs directed their efforts more toward institutional development of a number of MOA departments and within a two year period, 1989-1991 achieved impressive results in the areas of marketing, crop production and importation monitoring, developing a number of key strategy statements, and a highly intensified training program. During the course of the audit and realignment the following developments in other areas of project's concern took place:

3.2 Formation of a Range and Livestock Production Unit (RLPU)

The RLPU, in essence, was responsible for implementing activities merged into LAPIS from the Land Conservation and Range Development Project (LCRD) in late 1988. RLPU, as a new project component, operated independent from PIC. The PIC activities remained in the areas of crop, marketing, home garden and irrigation training. RLPU continued support to two existing Range Management Areas (RMA) and developed two new RMAs. Meanwhile, RLPU provided support to the DLS in the development of intensive livestock production packages and staff and farmer training.

3.3 Modifications Concerning ARC

With the exception of a few minor alterations, the implementation of the ARC program essentially followed the guidelines outlined in the Project Paper. These modifications were required as a result of the actual situation which existed at the ARD and within the MOA in June, 1986. Without the existence of a functioning FSR program, the ARC, utilizing the components which were available within the ARD, began to build a multi-disciplinary research and on-farm demonstration program. This research and demonstration program was based upon adaptive research, which would produce and deliver a continuous flow of information and improved technologies, to the farmers of Lesotho. Because the ARC, either directly or indirectly supported virtually all of the research institution's activities, a great deal of effort was made to develop multi-disciplinary research programs which included all the

disciplines and services within the ARD. More specifically, the ARC's activities were more concentrated in the following areas:

1. Further refinement of the recently introduced procedures that formalize the system for submission of proposals, review/selection of research topics, interim progress reporting for on-going research activities, and final reports on completed research activity. Developing a Research Advisory Board which included representation of farmers and other agricultural professionals will be established.
2. Provisions to include economic, social, and market analyses at appropriate stages in the research program.
3. Accelerating the process of transferring program responsibilities from ARC staff to ARD staff (especially for returning trainees from overseas training programs).
4. Increase the level of effort for skills transfer to ARD staff from ARC staff (on-the-job training approach). Continue to devote approximately 20 percent of staff time to training in LAC.
5. Prioritize the research programs with the aim of addressing the immediate problems related to crop and livestock production/marketing endeavors of the MOA.
6. Continue to focus research efforts toward adopting off-the-shelf technologies to local conditions.
7. Progressively transfer the responsibility for recurrent costs associated with ARC to the MOA. The first step in this process will be to include research budgets in research proposals. The costs for research projects would form part of the annual ARD budget submission. Also included would be costs associated with special facilities or programs (i.e., Soil Testing Laboratory).

3.4 Modifications Concerning AEC

The realignment did not recommend any changes to the AEC mandate and outputs. The only modification came as a result of USAID's decision to phase out the LCUP from LCCUL, the source of loan for Students Enterprise Projects at LAC. The recommendation was to form a Trust Fund at LAC, which was funded originally by USAID to provide loans for SEP activities.

With the background presented herein, the remaining sections of this report have been allocated to project achievements and project's impact on agricultural institutions in Lesotho.

3.5 Creation of a Deputy Chief of Party Position

A Deputy Chief of Party position was created and filled, the Project Management Committee resumed its bi-annual meetings for the remaining life of the Project.

PART TWO:

**LAPIS PROJECT IMPLEMENTATION ACTIVITIES
AND ACCOMPLISHMENTS**

PART I

**INSTITUTIONAL SUPPORT (ORGANIZATIONAL
STAFF, AND INFRASTRUCTURE DEVELOPMENT)**

A. DEPARTMENT OF LIVESTOCK SERVICES

1. SETTING

Livestock play an important role in the livelihood of rural Basotho, and are the major contributor to agricultural income, employment, export earnings and use of the land resource base. For this reason, the LAPIS Project identified livestock production (together with high value crops) as a focus for generation of income and employment. As a result, extensive amounts of LAPIS Project institutional support were channeled to the Department of Livestock Services (DLS), the MOA institution responsible for developing Lesotho's livestock industry.

The Department of Livestock Services (DLS) is comprised of a Directorate and three divisions, covering: Animal Production, Range Management, and Animal Health. At the onset of LAPIS, a fourth division, Livestock Product Marketing Services (LPMS), was closely aligned with the DLS. However, LPMS has since transferred into the Department of Economics and Marketing.

LAPIS Project technical assistance to the DLS began at a later date than the remainder of the project. It was not until September, 1987, when the LAPIS Livestock Advisor arrived in country, that such assistance began. On October 1, 1988, five additional range and livestock specialists from the Land Conservation and Range Development (LCRD) Project were incorporated into the LAPIS Project. These specialists combined with the Livestock Advisor to form the project's Range/Livestock Production Unit (RLPU). During the remainder of the project RLPU staff worked closely with DLS staff, primarily targeting the Range Management (RMD) and Animal Production Divisions (APD) for support; and to a lesser degree, the Livestock Product Marketing Services (LPMS) and the Animal Health Division.

From its inception in 1988, until the conclusion of the LAPIS project in 1992, the RLPU was the home of a variety of specialists in range management, livestock production, rural sociology, agricultural economics, data processing, and horizontal well drilling. These individuals focused their efforts in the following areas: Range Management Area (RMA) development; intensive/extensive livestock production; livestock marketing; training; research, in cooperation with ARD/LAC; LAC/SEP supervisory assistance; data management and analysis; water development; and institutional support to DLS/RMD/APD.

2. RLPU IMPLEMENTATION STRATEGY

It was the RLPU's intention to facilitate livestock production through a number of approaches:

1. In accordance with LAPIS Project Output No. 1, RLPU specialists were to assist the MOA to mobilize and coordinate activities and resources which supported increased livestock production.

2. In accordance with Output No. 2, RLPU specialists were to introduce improved technologies and small water catchments.

3. In accordance with Output No. 7, RLPU specialists were to help associations of livestock farmers produce and market larger numbers of higher quality animals and animal products, while conserving the nation's water and land resources.

4. All of the above activities were to be ingrained through extensive long-term training programs and intensive, custom-tailored short-term training courses.

3. RLPU STAFF COMPOSITION

Upon the unit's creation and through the end of its first operational year, May 1989, it was staffed by the following technical advisors: Senior Range/Livestock Specialist; Range Management Specialist, Mokhotlong/Sanqebethu RMA; Range Management Specialist, Adjudication/Pelaneng RMA; Range/Livestock Specialist, Sehlabathebe RMA; Livestock Advisor, and Range/Livestock Economist. During its second year, through May 1990, the unit grew with the addition of a data management specialist and two technicians in horizontal well drilling (a US Peace Corps Volunteer, and one local hire Mosotho). The ranks were reduced to six positions once again during the unit's third year, through May 1991, when the positions of Range/Livestock Economist, Computer Specialist, and Range Management Specialist, Mokhotlong RMA were terminated. At the same time, the Range/Livestock Specialist, Sehlabathebe RMA was transferred to RMD headquarters and was assigned the duties of RMA Training Specialist. His tour subsequently ended in May 1991. During the project's last year, through May 1992, the Senior Range/Livestock Specialist departed the unit to become the project's Chief of Party, the project's Social Scientist transferred in from ARD, and an additional PCV horizontal well driller joined the team.

4. RANGE MANAGEMENT DIVISION

4.1 Background

At the onset of LAPIS, the Range Management Division was one of the newest MOA institutions, having begun its life in 1979. The RMD was initially introduced to the Ministry as a sister organization to the Conservation Division, with both divisions being given the mandate to conserve Lesotho's soil and water resources. In 1983, the MOA was reorganized and the RMD was established as a body independent from other MOA departments and divisions. This situation continued until 1987, when the Ministry again reorganized and moved the RMD into the DLS.

By 1988, the division has grown into one of the strongest and most active organizations in the Ministry. The RMD's development had been rapid, and largely resultant of strong institutional support provided through the USAID funded LCRD Project, which began in 1981. LCRD sent 11 RMD staff away for BSc degrees and the Chief Range Management Officer for an MSc degree. LCRD also provided extensive training in basic range management principles and initiated the National RMA Program.

Until recently, the RMD had difficulty in receiving acceptance from its fellow MOA divisions. The RMA Program's involvement in livestock production and management has, in particular, lead to rivalries and "turf protection" battles from DLS staff. And, it is only now, three years after physically moving the RMD offices into the DLS Headquarters compound, that the division is becoming fully integrated into the DLS. Joint planning and implementation of activities by Range and Livestock staff in the districts still remains a problem.

4.2 Institutional Assistance to The Range Management Division

RLPU staff assisted the RMD with a number of activities including the National RMA Program, range inventory and analysis, establishment of a District Management Section, national policy development, infrastructure development, and coordination/planning of resources and activities. All activities were implemented through RMD staff, thereby facilitating institutional acceptance and memory of the processes.

4.2.1 National Range Management Area Program

The National RMA Program was initiated by the LCRD Project in 1982. LAPIS assumed support to this ongoing program in October, 1988. The RLPU provided the following assistance to the RMA Program:

1. Financial and technical assistance to the Selabathebe and Ramatseliso RMAs (RMAs No. 1 and 2) through May 1990;
2. Financial and technical assistance towards the organization, development, and implementation the Pelaneng/Bokong and Mokhotlong/Sanqebethu RMAs (RMAs No. 3 and 4) through May 1992;
3. Identification of proposed RMAs No. 5 and 6, and implementation of a baseline socio-economic study in these two areas;
4. Development of a socio-economic survey methodology to identify potential RMAs, and monitor the attitudes of grazing association members;
5. Development of an activity and natural resource monitoring system to allow quantification of activity levels and changes in resource bases as a result of introduced management; and
6. Development of an internal monthly reporting system, thereby enhancing feedback on the effectiveness of grazing association activities between RMD field and headquarters staff;

4.2.2 Range Inventory and Analysis

Assistance was provided to the RMD Range Inventory Section in the development, refinement and institutionalization of a range inventory methodology system. This methodology was

applied on a national level and within individual RMAs to allow quantification of such factors as species composition, rangeland condition, range trend, soil condition, etc.

4.2.3 Establishment of A Data Management Section

With the growth of such national programs as Grazing Fees, Rangeland Adjudication, and the RMAs, it was necessary for the RMD to develop computer and data management skills. The LAPIS Project provided a Computer Management Specialist to train RMD staff in computer and software literacy over an 18 month period. The goal was to familiarize all professional staff members with word processing programs (Word Perfect 5.0 and 5.1), and emphasis was placed on training Data Management staff in specialized software such as d-Base, Lotus, and the GIS Program.

The TA was supplemented with specialized training courses in GIS, which were conducted by computer specialists from the Institute of Natural Resources in Pietermaritzburg, RSA. This was a jointly coordinated activity between LAPIS, the RMD, and the RSA funded Drakensberg/Maluti Project.

LAPIS also provided limited amounts of computer hardware, software and support supplies to the Data Inventory Section.

4.2.4 National Policy Development

RLPU staff played instrumental roles in the development of the National Livestock Policy, and afterwards in the development and articulation of the National Livestock Policy Implementation Plan. RLPU staff assisted with the conceptualization of the National Rangeland Adjudication and Grazing Fee Programs, as well as the National RMA Program. RLPU staff participated as members of the Natural Resource Management Subgroup of the National Livestock Task Force in formulation of the above policies. The RLPU Coordinator served as the Task Force's Secretary, and was the editor responsible for compiling the National Livestock Policy Implementation Plan.

4.2.5 Infrastructure Development

The LAPIS Project provided funds to construct numerous facilities in the RMAs:

1. Construction of the Pelaneng/Bokong Headquarters facilities was initiated by the LCRD Project, but completed by LAPIS. These facilities included two rondavels, an office, a storage shed, and a water distribution system. LAPIS supplied approximately US \$31,000 towards completion of these facilities;
2. Livestock handling/saleyards facilities were constructed for both the Pelaneng/Bokong and Sanqebethu/Mokhotlong RMAs. Approximately US \$ 28,000 was expended on these facilities;
3. A small office/meeting hall was constructed at the Ha Moshebi/Ha Ramatseliso RMA Headquarters, costing LAPIS approximately US \$3,000;

4. Fencing of breeding pastures was paid for by the LAPIS Project for the Ha Moshebi/Ha Ramatseliso, Pelaneng/Bokong, and Sanqebethu/Mokhotlong RMAs. A total of US \$56,000 was spent on fencing materials;

5. RLPU staff prepared a proposal to acquire USAID Wheat Monetization Funds so that the DLS Headquarters offices could be expanded and the Sehlabathebe Training Center could be constructed. Funds acquired through this proposal were approximately M900,000; and

6. LAPIS was responsible for supplying the Sehlabathebe Training Center with office equipment, furniture, a solar hot-water system, and a propane lighting and cooking system. Approximately, US \$65,000 was expended on this effort.

4.2.6 Coordination/Planning of Resources and Activities

RLPU staff played active roles in assisting the RMD to coordinate the use of its limited resources and planning to ensure complementary and interaction of RMD activities. This was accomplished by participation through a number of committees, programs, and monthly meetings:

1. National Livestock Task Force - RMD and RLPU staff participation in this key working group resulted in formulation of the National Livestock Policy and Implementation Plan. This group provided the basis of role definition, planning and coordination between all MOA institutions involved with livestock production or marketing in Lesotho. The Task Force resulted in integrated, long-term planning and implementation between all DLS divisions, LPMS and the National Abattoir/Feedlot Complex, as is largely responsible for the strength of the DLS today.

2. Lesotho Agricultural Policy Support Program (LAPSP), Livestock Program Implementation Committee - As a result of the National Livestock Task Force effort, USAID funded LAPSP. The RLPU Coordinator was a formal member of the Livestock Program Implementation Committee, helping the Ministry to plan LAPSP activities and coordinate resources.

3. Drakensberg/Maluti Program - The RLPU Coordinator assisted the RMD to coordinate with RSA members of the Drakensberg/Maluti Program to conduct an extensive natural resource inventory of Lesotho's high-mountain watersheds bordering the Drakensberg Escarpment, and to develop national policies on the creation of an internationally recognized Managed Resource Area and World Heritage Site. Inputs were also made into a park management and tourism development plan for the Sehlabathebe National Park.

4. Monthly RMD Staff Meetings - RLPU staff participated in monthly RMD staff meetings and the RMA monthly meetings, providing status updates and feedback to the various RMD activities.

5. ANIMAL PRODUCTION DIVISION

5.1 Background

The Animal Production Division is one of the oldest and most established MOA divisions. It is comprised of six sections, including: Poultry, Cattle, Small Stock (sheep and goats), Pigs, Fish-cum-duck and Rabbits, and Equine Sections. Each section also has a supporting institution: the National Poultry Rearing Plant, Botsabelo Dairy, Mokhotlong and Quthing Sheep Studs, a fish and duck hatchery, and the Basotho Pony Project.

The APD plays a central role in the development of Lesotho's livestock industry. As a result, it has historically been the recipient of many donor-funded activities. A number of projects operated concurrently with the LAPIS Project: the Lesotho Canada Dairy Development Project; the Basotho Pony Project; the National Abattoir & Feedlot Complex; FAO/German expansion of pullet rearing; and FAO Fish-cum-Duck. Some of the area based projects, such as Mphaki, Matalile and Semonkong Rural Development Projects had livestock components and interfaced with the DLS. In addition, several programs supported the DLS: STABEX, USAID/FMU Wheat Monetization Fund, and USAID LAPSP. The DLS was also an active participant in SADCC, SARCCUS, IMA, etc. Some long- and short-term training was supported by other donors, including WUSC, the Netherlands and Sweden.

At the onset of LAPIS, most of the Section Heads were approaching retirement. The majority of these individuals had low academic qualifications, but had been in service for many years. The academic qualifications of the top eight staff (Director, Chief Animal Production Officer, and six Section Heads) were three B.Sc.s and five Diplomas. Hence, LAPIS provided a timely opportunity for the DLS to select replacement candidates and train them to degree level through LAPIS funding. By the EOP, five of the Section Heads had been replaced by LAPIS long-term trainees.

5.2 Institutional Assistance to The Animal Production Division

The LAPIS TA provided assistance to the APD in several forms, including: technical advice on intensive and extensive livestock production enterprises; national policy development; infrastructure development; and coordination/planning of resources and activities.

5.2.1 Intensive Livestock Production

LAPIS supported several intensive livestock production enterprises, including: poultry (broilers and layers); dairy; pigs; and feedlot production (beef and lamb). Feedlot lamb production was a new enterprises introduced to Lesotho by LAPIS.

Production packages for each of these enterprises were developed at various economies of scale. In addition to basic production guidelines, each package provided in-depth detail on infrastructure requirements and designs, proposed feed rations made from locally available feedstuffs, hygiene requirements, marketing, and the economic viability of the enterprise in Lesotho.

Technical guidance was provided to the MOA parastatal Poultry Rearing Plant on updating and revising costs of operation to reflect true cost-recovery charges.

5.2.2 Extensive Livestock Production

Extensive production systems in Lesotho include the rearing of sheep, goats and cattle, relying predominantly upon the rangeland resources. Extensive production inputs were complemented by the project's range management objective of improving rangeland condition, thereby resulting in higher output and better quality of livestock and livestock products on a sustainable basis.

RLPU TAs supported extensive livestock production in a number of ways:

1. The DLS Livestock Revolving Fund was assisted through TA support in the selection of breeding stock. TA participated in buying missions for angoras, merinos, dairy cattle, and feeder cattle and lambs. In the process, such TA provided insights to DLS staff on important physical and economic traits which contribute to animal quality and productivity;
2. Guidance was provided to DLS staff at the Quthing and Mokhotlong Sheep Studs on animal selection, culling, supplemental feeding, and diagnosis of mineral deficiencies.
3. TAs provided guidance and assistance to grazing association members in the selection and procurement of breeding stock, including Drakensberger and Afrikaner bulls, and merino and angora rams.
4. Assistance was rendered to DLS staff in the organization and implementation of study tours to pertinent livestock enterprises in the RSA, and local livestock shows and training courses.

5.2.3 National Policy Development

The LAPIS Livestock Advisor was a core member of the Animal Production Subcommittee of the National Livestock Task Force, which was responsible for developing the National Livestock Policy and Implementation Plan.

Additionally, the Livestock Advisor prepared the National Livestock Feeds Regulations, thereby facilitating development of the local agroindustry in support of livestock enterprises.

5.2.4 Infrastructure Development

Largely through non-LAPIS funding, the DLS now has better facilities. These include the new office wing at DLS H/Q, livestock holding and handling facilities at H/Q, and an upgraded National Pig Breeding Facility. Construction of these facilities was initiated and, for the most part, supervised by LAPIS TAs.

5.2.5 Coordination/Planning of Resources and Activities

RLPU staff assisted the APD to coordinate and use its limited resources and plan so that their use was complementary and inter-related to other DLS activities. This was accomplished by serving on a number of committees and participating in several programs and monthly planning meetings.

1. National Livestock Task Force - The Livestock Advisor assisted the APD with long-term planning through participation as a member of the National Livestock Policy Implementation Plan.
2. STABEX - The Livestock Advisor was an active member in the STABEX Committee to plan the use of more than M7,000,000 of stabilization funds received from the EEC.
3. Monthly Staff Meetings - The Livestock Advisor participated in monthly DLS staff meetings, providing status updates and feedback on various activities.

6. LIVESTOCK MARKETING

6.1 Background

Marketing of extensively reared livestock and livestock products (i.e. cattle, sheep, goats, wool and mohair) is facilitated by the Livestock Product Marketing Services (LPMS). LPMS organizes sales of live animals and provides auctioneering services throughout Lesotho. In the case of wool and mohair, LPMS acts as both a handling agent and price regulator. Private traders are also active in the purchase of wool and mohair.

Many intensively produced livestock commodities are marketed through statutory bodies, and in some cases (eggs and milk) there are gazetted prices and import controls. Milk is sold to Maluti Maid Dairy and eggs are sold through the Egg Circles (Poultry Coop Societies).

Livestock marketing under LAPIS was an "activity", rather than a component or subcomponent. It was supported for approximately 18 months by the project's Range/Livestock Economist.

6.2 Institutional Assistance

Institutional assistance to the livestock marketing sector was limited to policy development and coordination/planning of resources and activities.

6.2.1 National Policy Development

The Range/Livestock Economist sat as a member of the Marketing Subcommittee to the National Livestock Task Force. As such, he had significant inputs into the marketing section of the National Livestock Policy Implementation Plan.

6.2.2 Coordination/Planning of Resources and Activities

As a member of the Marketing Subcommittee, the Range/Livestock Advisor was responsible for input into planning and coordinating marketing activities so they were complementary to other activities being conducted by the DLS.

7. STAFF DEVELOPMENT

7.1 Long-Term Training

The LAPIS Project made a substantial contribution to the professional qualifications of DLS staff. Within the APD, a total of eight staff received degrees; one MSc and seven BScs. The RMD received even greater assistance, with 15 staff members receiving long-term training. This included one MSc.s, six BSc.s, and eight diplomas. Table Four summarizes LAPIS supported DLS trainees, the degrees obtained and period of absence from Lesotho.

7.2 Short-Term Training

Short-term training was a major focus of RLPU staff, targeting DLS technical staff, MOA extension staff, and farmers. Training efforts included short courses on intensive livestock production enterprises (broilers, layers, piggery, dairy, fat lamb production, beef cattle production, etc.), basic range management and animal husbandry principles, animal health, livestock marketing, fodder production, community and group organization and management, and many more. Over the period October 1, 1988 through May 31, 1992, RLPU staff assisted with the organization and implementation of 116 training events. These training events can be broken out as 72 training courses (51 for range participants and 21 for livestock participants), 17 seminars or workshops (10 for RMD and 7 for APD), and 27 study tours for farmers and DLS staff (11 with a range focus and 16 with a livestock focus). A total of 4,094 participants were touched by RLPU training efforts, which were conducted during the course of 532 days.

Table Four: DLS Staff Supported by LAPIS for Long-Term Training

Name	Degree/Specialization	Period out of Country
C. Rasekila	MSc/Poultry Science	Sept 1987 - Jan 1990
S. Mashapha	BSc/Fisheries	Aug 1984 - June 1988
L. Pheko	BSc/Animal Production	Aug 1986 - Dec 1988
M. Mokonyana	BSc/Animal Production	Aug 1986 - June 1988
C. Mafisa	BSc/Animal Production	Aug 1986 - May 1988
H. Molapo	BSc/Poultry	Sept 1988 - June 1991
P. Ranthimo	BSc/Piggery	Sept 1988 - July 1991
V. Matsie	BSc/Animal Science	Aug 1987 - Dec 1989
M. Sekoto	MSc/Range Management	Sept 1987 - Jan 1990
J. Malephane	BSc/Communications	Aug 1984 - June 1987
S. Boleme	BSc/Range Management	Aug 1984 - Dec 1986
B. Lekhela	BSc/Range Management	Aug 1984 - Dec 1986
M. Matsoso	BSc/Range Management	Aug 1984 - Sept 1988
F. Ntlale	BSc/Range Management	Aug 1984 - Dec 1987
L. Thulo	BSc/Range Management	Sept 1987 - Dec 1989
M. Molawa	Dip/Range Management	June 1986 - June 1987
M. Mabaleha	Dip/Range Management	Aug 1984 - Aug 1986
S. Rasello	Dip/Range Management	June 1986 - Aug 1987
C. Ntsiki	Dip/Range Management	June 1986 - Aug 1987
P. Lebesa	Dip/Range Management	June 1986 - Aug 1987
C. Mantutle	Dip/Range Management	June 1986 - Aug 1987
D. Moeletsi	Dip/Range Management	June 1986 - Aug 1987
T. Moremoholo	Dip/Range Management	June 1986 - Aug 1987

B. DEPARTMENT OF CROPS SERVICES (DCS)

1. SETTING

The vegetable and fruit production program was implemented through a coordinated effort by the Department of Crop Services and the District Agricultural Offices (DAOs) of the Department of Field Services (DFS). The DCS, one of the older MOA institutions, was not institutionally strong at the onset of LAPIS, particularly, in the wake of the Ministry's restructuring. The DAOs had only recently been established, and were in the initial phases of institutional development. Traditionally, the DCS had been more concerned with the provision of contract assistance for maize and wheat production through the Technical Operations Units (TOU). To a lesser extent, the DCS provided fruit and vegetable expertise. It was staff from these two sections that were targeted for LAPIS assistance.

The department's field operations are carried out through a relatively large cadre of District Crop Officers (DCO) and extension agents. DCS's vegetable production activities are supported by a number of donor projects, which are mostly district based and community specific, and a network of large area based irrigation schemes producing fodder and vegetables, which are operated under the DAOs' direction. During the life of LAPIS, the DCS and DAOs did not develop effective and integrated infrastructure to support vegetable production, and this situation remained at the EOP. In addition, it was not until the last months of the project that the DCS began to develop a long-term national strategy to address fruit and vegetable production in Lesotho.

Prior to the implementation of the LAPIS Project, the MOA expressed a desire to develop a comprehensive program for the production of high value cash crops by using the water resources in the country. This was in response to Lesotho's heavy dependence on RSA imports and to increase employment and income. The program was to help the small-scale farmers convert from subsistence production to more intensive and commercial vegetable production operations. However, in 1986 the GOL introduced a program to consolidate parcels of productive arable lands in the lowlands into area-based irrigated schemes. This revised focus of supporting the new area-based schemes was contrary to the LAPIS Project's small-farmer focus and institutional building. And, it resulted in a diffusion of already scarce MOA physical and manpower resources, i.e. at the time, DSC had only one irrigation engineer.

The mandate of the PIC, promoting new types of commercial production among small farmers, was a lofty and difficult one. Initially, LAPIS Project support to the vegetable program largely bypassed the DCS. Instead, project activities were implemented by working directly with selected farmers. Thus, PIC's initial activities had little direct institution-building impact. Since the realignment, project inputs were reduced and redirected toward the most salient elements of the institutional development of the DCS and DAOs. As a result of these factors, the initial vegetable program shifted from a major LAPIS effort to a lesser, but more collaborative one, with better prospects for long-term sustainability.

Please note this section of the report only addresses those project activities that had institutional building implications and impacts. The project's activities pertinent to "production" are presented in Section II-C.

2. PIC (CROP) INITIAL IMPLEMENTATION STRATEGY

Section I of this report presented a summary on the mandate, objectives and the outputs of the project Production Initiatives Component. The project management in May 1986, submitted a five year implementation plan to MOA and USAID. It was the intent of the LAPIS Project's five year implementation plan, that PIC's year one activity be spent on establishing the institutional support mechanisms that would be required later during the implementation of vegetable production schemes. These support institutions included:

Establishment of the institutional linkages between the necessary MOA Departments and the PIC TA staff;

Institutionalization of the Production Coordinating Unit (PCU), to coordinate the key inter-divisional/departmental activities required for launching a sustainable production program,

Institutionalization of marketing system(s) in support of both the LAPIS Project activity and a broader National Market System;

Provision of credit and development of farmer selection criteria;

Development of appropriate procedures for the organization of farmer association(s); and identification of the necessary training requirements for the designated groups;

Preparation of crop planting schedules and appropriate economic analysis; and

Organization of the necessary working groups and task forces mandated in the project paper in support of the project implementation activities through the PCU.

3. PIC STAFF COMPOSITION

The PIC original team comprised of a team leader, two horticulturalist, a marketing specialist, and three locally recruited technicians, designated District Production Officers, and two PCVs. In 1987, the Social Scientist, through AAI, and the Pomologist, through a cooperative agreement between the Government of Israel and USAID, were added to the PIC team. The Livestock Advisor also started in 1987, but was transferred to the RLPU in October, 1988 when the LCRD range staff merged with LAPIS.

The two subcomponent of PIC: LCUP/WOCCU, and ICFARM/CARE were established in LCCUL and CARE office, respectively. LCUP, through the credit advisor TA, began providing loans to the first group of farmers prior to arrival of the PIC team. The ICFARM advisor initiated the formation of five tree and vegetable nurseries around August 1986. The PIC operations began in July 1986.

The PIC technical team was housed within DCS offices, with the Team leader being housed at MOA headquarters to serve as counterpart to director of DFS. The MOA's only irrigation engineer was transferred to DCS in order to work closely with the PIC engineer. The two horticulturalists were initially assigned counterparts by DCS. However, these counterpart arrangements were very loose, and for the most part, the PIC horticulturalists and Team Leader functioned in isolation to DCS staff. The irrigation TA lost his counterpart to area based projects in 1987. The MOA extension and field support, as specified in the project covenants, did not materialized fully until late 1987. However, the Pomologist and Marketing specialists enjoyed excellent and consistent relationship with their colleagues at DCS and MD, respectively.

4. INSTITUTIONAL SUPPORT TO IRRIGATION ACTIVITIES

4.1 Direct Support to Farmers and Associations

In early 1986, the LCUP/LCCUL Advisor selected eight farmers to be supported in the development of small-scale irrigation schemes. Prior to the PIC TA team's arrival in July, 1986, all eight farmers had received LCCUL loans and were ready to begin installation of their irrigation systems. None of the farmers had been screened for technical competence, nor had they been provided with training. In addition, no plans existed for initiating extension support.

The PIC TA team arrived to be confronted with the above situation, and immediately commenced with the provision of assistance by developing summer cropping plans, designing and implementing the irrigation schemes at each site, and providing intensive training on a wide range of cropping and marketing topics. This was contrary to the LAPIS Project implementation plan, which designated year one as a period in which crucial institutional linkages were to be developed.

By the project's second year, more farmers had joined the MOA/PIC initiatives, bringing the total to 34 individuals and two small associations participating in LAPIS irrigated vegetable production schemes. At that time, individual farmers were irrigating approximately 26 hectares. Total capital costs, covered by loan through LCCUL, were approximately M234,620 or an average of M6,096 for each individual farmer. The estimated gross sales from these enterprises was M403,894, yielding an estimated net revenue of M169,85.

The area under irrigation for the two associations was 6 hectares. The associations, with a peak membership of 70, returned gross revenues of M78,145. The annual expenses for the vegetables were estimated to be M35,119, thus yielding an estimated net return to labor and management of M25,414.20.

The PIC's direct support to vegetable growers covered only two summer cropping seasons, 1986 and 1987. During this short period the farmers produced a variety of vegetables, including: cabbage, carrots, beet root, potato, winter peas, curled kale, collards, green maize, mixed greens, onion and tomato. Many of these vegetables were tried for the first time by individual farmers. The PIC team and their MOA colleagues put forth an extensive effort to introduce these crops.

The performance of the 34 farmers varied widely. Several farmers exceeded the expected crops yields, while others fell short of expectations. There was and is a positive relationship between management ability levels, effort rendered and successful crop production. For example, farmers rapidly adopted low-input technologies pertinent to cropping of traditional vegetables e.g; cabbage, greens, potato and pumpkin. In contrast, high input and intensive management technologies such as those required for tomatoes were not readily accepted.

The two associations performed well with the technical issues of crop production. However, there were a number managerial and internal conflicts which adversely impacted performance. In several instances, the project intervened through management and community development training, thereby mitigating the impacts of these issues.

4.2 Factors Inhibiting Small-Scale Irrigation Production

A number of factors reduced the effectiveness of the LAPIS Project's efforts to introduce small-scale irrigation schemes to Lesotho's small farmers. Following is a brief summary of these factors:

1. Lesotho's marketing system was poorly developed. At the onset of LAPIS, the MOA had no institutional capacity to provide current market information, technical training, or market-related extension to farmers. In addition, the ready availability of RSA supplies made it difficult to develop market outlets for produce raised commercially in Lesotho. Hence, a severe shortage of market outlets existed.
2. Credit was difficult for small-scale farmers to secure. Banking institutions required high collateral, and even when collateral was available, the slow processing of loan applications often resulted in loans being untimely i.e. after the planting season. The refusal of land as loan collateral exacerbated procurement of credit.
3. Extension support was frequently weak, or in some cases, altogether missing. This resulted from a number of factors, including: lack of MOA commitment to the small-scale approach; shortages of trained manpower at the DAO and Headquarters level; and shortage of transport in the districts.
4. In most instances, the level of technology introduced was not appropriate. Pump-driven irrigation systems were found to be difficult to maintain and very expensive to initially purchase.

The above factors, in combination, negatively influenced project crop production outputs, and eventually resulted in a realignment of PIC crops' activities.

5. REALIGNMENT OF PIC SUPPORT TO VEGETABLE PRODUCTION

In 1989, after the program audit, the project was realigned. The realignment curtailed PIC direct field support to irrigated schemes, and the LUCP and ICFARM subcomponents of the PIC were phased out by the end of 1989, approximately 2.5 years after the beginning of LAPIS. The realignment document presented a revised output for the PIC and directed the PIC's efforts toward institutional building in the areas of marketing and irrigation. Training,

support to the staff of DCS, an expanded HGN program, and expanded support to development of marketing infrastructure formed the main areas of PIC's input during the remaining three years of LAPIS.

6. INSTITUTIONAL ASSISTANCE

Following the Realignment, PIC TAs targeted specific DCS activities for institutional support. Emphasis was placed on strengthening the Production Coordinating Committee, the Irrigation Resource Planners, developing a National Crop Production Strategy, and broad-based support to the DCS Pomology Section.

6.1 Production Coordinating Committee (PCU)

6.1.1 Background

After the realignment, the reactivation of PCU became a high priority, and on March 2, 1990, the PCU held a re-organization meeting. The primary purpose of this meeting was to adopt a purpose statement and approve the re-defined terms of reference. The re-organization documents were approved by the Principal Secretary, and new procedures were forwarded to all DAOs.

The PCU's purpose was to identify and assist market-led producers of Lesotho in providing production of an adequate supply of fresh vegetables and fruits for the existing and planned market outlets. The PCU was intended to facilitate coordination between marketing and production efforts. The terms of Reference for the PCU were:

Serve as a coordinating unit for screening requests for assistance in vegetable and fruit production originating from DAOs or other sources. Identify and select those which are economical/and technically viable. Production and marketing assistance will be given to those sites which have a sound marketing base. For those identified and selected producers, assist in providing guidelines and work plans for market led production initiatives.

Provide advisory support in technical areas (e.g irrigation design, cropping plans, marketing plan, business plans) and appropriate training for selected producers.

Provide leadership in mobilization of services and the support of other departments where and when required to assist in implementation, and activities at the selected sites.

Closely monitor the effectiveness of production/marketing of selected sites.

Review production/marketing/credit related pilot schemes and process, approve and implement those which are found to be viable.

6.1.2 Core Membership

The PCU core membership included: Chief Agricultural Officer (chairman), Chief Marketing Office/Senior Marketing officer (Vice-Chairman), Department Crop Service Horticulturist,

Chief Extension Officer, and appropriate LAPIS TAs. A representative of the Department of Field Services (DFS) was invited to rejoin the PCU core committee. This was the original intent of the LAPIS Project planners.

In early 1992, the Director of the DCS designated Ms. L. Sello, Horticulturist, the responsibilities of the PCU Secretary. In preparation, Ms. Sello was given extensive computer training. By April, 1992 Ms. Sello, in cooperation with Mr. Cekwane from Marketing Division was coordinating the crop planning and monitoring activity. Also, Mr Sedio, Irrigation Resource Planner, assumed the engineering responsibilities at the end of the LAPIS Project. A representative of LAC was also participating in PCU meetings, as it supported the Student Enterprise Project (SEP) activity.

6.1.3 Current Responsibilities of PCU

The activities supported by the PCU at the end of the LAPIS Project included:

Advisory support to the MOA Marketing Division in implementing the National Fruit and Vegetable Survey.

Support to the MOA Crop Planning and Monitoring activity, being carried out by the DCS and the Marketing Division.

Support to the DCS in formulating Lesotho's National Crop Production Strategy/Implementation Statement.

Continued support for the Irrigation Resource Planners (IRP).

Support to the completion of the two Pilot Marketing Centers in Leribe and Mohale's Hoek Districts.

By the end of the LAPIS Project, the PCU had received 36 irrigation resource plans which had been completed by the district and headquarters based Irrigation Resource Planners. The plans had been submitted from five districts in the lowlands, including: Berea, Mafeteng, Mohale's-Hoek, Leribe and Quthing. Sixteen plans were implemented in the Quthing and Maseru Districts. The appropriate MOA Divisions had assumed selected project activities.

6.2 Irrigation Resource Planners (IRP)

6.2.1 Background

The IRP development program was a major contribution of the LAPIS Project to strengthening the DCS in support of irrigated vegetable production in Lesotho. Developing a cadre of IRPs was a direct response to the lack of an irrigation engineer(s) within the DCS. The program began with the selection of 15 SMSs and EAs from the field offices of DCS and DFS in June, 1989. The selected individuals were given a four and one half month classroom training session, which had been specifically designed to meet Lesotho's basic irrigation needs. The primary subjects included: irrigation, horticulture, mechanics, economics, extension, surveying, developing a resource plan, mathematics and preparation of an irrigation

engineering plan. The objective of the IRP training effort was to meet the need for strengthened leadership in irrigated crop production at the district level. Since completion of the formal classroom activity, the 15 resource planners have received 2.5 years of follow-up field support. The support took the form of direct one-to-one training, reinforced by group quarterly meetings. The latter provided the trainees the opportunity to come together and discuss common implementation problems and to develop solutions to these problems.

6.2.2 Field Operations of IRPs

Upon completion of the training program the IRPs were posted in the districts. At least one IRP was posted in each of Lesotho's 10 districts. In addition, two IRPs were based within the DCS headquarters in Maseru.

By EOP, Irrigation Resource Planners were playing a key role in bringing additional land under irrigation. Resources invested in making IRPs more competent will have long lasting benefits for farmers in Lesotho. During year six of the project's activity, the Irrigation Engineer's work concentrated solely on assisting the IRPs. Special emphasis was placed on the most active districts, including: Maseru, Mafeteng, Quthing, Leribe, and Thaba Tseka. The seven IRPs found in these districts were the most motivated in the program and received the most support and leadership from their respective district offices. The level of activity in the five remaining districts was minimal, even though three IRP's (including Mr. Makhetha at the ARD/LAC system) were making important contributions to the operation and maintenance of large-scale irrigation projects in their respective districts. The remaining IRPs still retain the ability to make positive contributions to irrigation development in Lesotho if they are adequately supported by their DAOs. A summary of the IRPs' planning activities is presented in Table Five.

Attempts were intensified during year six to link the IRP activities with other donor-supported projects within their districts. The Mafeteng IRP completed two resource plans and received approval for their implementation. They will soon be implemented through EEC and UNDP funding, respectively. Also, contacts were established between SWACAP and the three IRPs in the DCS Irrigation Section to enable small gravity systems to be implemented through Swacap funding. By EOP, one system had been designed and approved using this route and more were expected in the future.

As the numbers in the above table indicate, the overall progress has been sporadic, depending upon the support made available to the IRP, the IRP's level of interest, and the time the IRP or his supervisor allocated to this specific activity. However, the IRPs have made significant impacts in promotion of small scale irrigated schemes, and have been recognized by the farmers, DAOs and other donor project officers. Demand for their services is increasing. Development of this cadre of field technicians has been a major sustainable achievement of the PIC team.

Table Five: Summary of IRP-Supported Sites, January, 1989 Through May 31, 1992.

District	Requests	Surveyed	Designed	Submitted	Installed
Maseru	52	31	15	8	2
Mafeteng	21	12	10	5	0
M. Hoek	23	9	7	4	0
Quthing	32	32	17	17	14
Qacha's Nek	8	4	1	0	0
Berea	14	9	4	1	0
Leribe	19	8	3	1	0
Butha-Buthe	13	11	1	0	0
Mokhotlong	16	5	0	0	0
Thaba-Tseka	28	12	5	0	0
TOTAL	226	133	63	36	16

6.2.3 Constraints Facing IRPs

The IRPs' performance depended largely on the level of support they received from the DAOs in the field and DCS in Maseru. Some DAOs did not take full advantage of this new important technical expertise. In contrast, some small donor projects recognized their value and made good use of the IRPs in the implementation of their irrigation activities. Some of the IRPs frequently complained of a lack of material support at the district level (e.g; stationary supplies and difficulties in obtaining transport for on-site work). But a more important problem was the inadequacy of leadership at both the district and headquarters levels in supplying direction and motivation to the resource planners. Although the MOA see irrigation as a great hope for increasing Lesotho's self-sufficiency in crop production, it seems unable to include resource planning as a program of the DCS and MOA at large.

For example, the Thaba Tseka resource planner was not only competent in technical matters such as surveying and hydraulic design, but also was able to critically analyze site and farmer potentials and prioritize his district's requests. His DAO was aware of the need for resource planning in Thaba Tseka and supported his IRP as much as he possibly could. Conversely, very little work on resource planning was done in the Mokhotlong and Qacha's-Nek districts where DAOs seemed unable to accommodate even the most basic needs of their IRPs.

Another major difficulty experienced by the IRP'S was the lack of a qualified MOA Irrigation Engineer. This situation requires immediate attention since the LAPIS supported Irrigation Engineer departed in late May, 1992. The naming of the Lead IRP as his counterpart through the end of the project contributed significantly towards providing leadership to the program.

However, it is crucial that a university trained engineer to be positioned at DCS to respond to technical issues which will be raised by the IRPs.

The project Irrigation Engineer and his MOA counterpart recently submitted a "Situation Report" to the Director of DCS. The report outlined the existing constraints in the IRP activity and proposed solutions. The report also addressed personnel issues related to the IRPs. Implementation of this report's recommendations will vastly improve the IRPs' productivity.

6.3 National Crop Strategy Statement

6.3.1 Background

Through the life of LAPIS, it was apparent that a need existed for the MOA to prioritize and coordinate resources in support of crop production. Early in the life of LAPIS, the MOA issued a Crops Policy Statement, however no planning was made to systematically enact the policy. As a result, DCS activities altered little and they continued to be implemented in a non-systematic and weakly directed fashion.

With a change of DCS leadership in late-1991, the need for developing a National Crop Production Strategy Statement was revitalized, and assistance was requested from the LAPIS Project to support development of the Statement.

6.3.2 LAPIS Project Assistance to Development of The National Crop Strategy Statement

The MOA decided the Crop Strategy Statement should follow the format used in developing the National Livestock Implementation Strategy. This required the DCS was to: inventory both physical and human resources at the District and Headquarters level, and determine critical areas of weakness; identify all DCS on-going activities, their locations, and donor involvements; and to prioritize activities in relation to the resources and finances on-hand to implement the activities.

LAPIS and LAPIS TAs played a facilitative role in drafting the Strategy Statement by assisting with the organization and funding of three workshops, and providing technical inputs into the design and content of the Statement. By 31 May, 1992, the Strategy Statement had only been partially drafted. Completion of the final draft was anticipated by September, 1992.

6.4 DCS Pomology Section

6.4.1 Background

The fruit production effort of the Production Initiative Component (PIC) was not separated as an independent activity in the LAPIS Project Paper. Rather, it was included as part of the total output requirements for the PIC component. The Pomologist arrived in Lesotho during February, 1987. The TA's tenure in Lesotho was completed in April, 1989. He was replaced by a second pomologist from Israel with a one month overlap. The second Pomologist remained with the LAPIS Project until its completion in May, 1992. The project Pomologists operated through the term, along with dedicated and competent MOA counterparts.

6.4.2 Field Operations

The fruit production effort during the tenure of the first TA, was concentrated on working closely with selected progressive individual farmers and farmer associations. Much of his effort for example, was devoted to Pulane Association, Colonel Letsie, and the Queen's orchard. The overall project's contribution to fruit production is summarized in Table Six.

Table Six: A Summary of the Fruit Producers Assisted During The Initial Two Years Of Project; June, 1987- December 31, 1989.

District	Individual Farmers	Number of Associations
Mohales-Hoek		3 (410 Trees)
Leribe		2 (375 Trees)
Mafeteng	1 (75 Trees)	
Quthing		1 (150 Trees)
Maseru	5 (1580 Trees)	6 (2240 Trees)
Berea	2 (220 Trees)	2 (750 Trees)
Butha-Buthe	7 (744 Trees)	2 (450 Trees)
TOTAL	15 (2619 Trees)	16 (4395 Trees)

As a result of project realignment in June, 1989 the second Pomologist was asked to pursue a different direction in supporting commercial fruit production activities in Lesotho. The mandate to eliminate all direct farmer support effective December 31, 1989 allowed the TA to become more active in extension efforts and institutional activities. The PIC Pomologist and counterpart receive numerous requests for extension assistance. The requests, in many cases, was in the form of improving an existing orchards, i.e. the planting of high density orchards. In addition, many requests from individual fruit producers required specific training in proper cultural practices, e.g. variety selection, pruning, pest control and proper planting techniques. The TA pomologist and counterpart cooperated with several other projects including CARE, Plenty Lesotho, SWACAP, LISP. The TA also offered technical guidance in the establishment of new orchards.

In addition to providing extension and technical support to fruit producers, the PIC introduced the high density planting concept in selected orchards, including:

A demonstration high density orchard for farmers was planted in Maseru district. In total, 770 apples, 66 peaches and 33 pears trees were planted at a spacing of 2 meters between the rows.

One hundred and eighty peach trees were planted at a spacing of 5 x 2 meters in the queen's orchard in Matsieng. Also, a low pressure drip irrigation system was installed in the orchard of the Queen in Matsieng. The system operated at a pressure of 0.5 - 0.7

atmospheres and was connected to a water tap. An Israeli water filter, designed to prevent clogging of the drippers was also installed.

In the Pulane village, Berea District, a densely planted, apple orchard established. This orchard was planted at a spacing of 2 x 2 meters, with strawberries inter-planted in the rows of apple.

In the Maseru Research Station a densely planted peach orchard at a spacing of 1 x 5 meter was established.

Other promotive field operations included:

1200 strawberry plants were donated by Israel and distributed. There were eight varieties: Aliso, Chandler, Douglas, Dorith, Ofra, Osogranada, Silva, Dover A. They were stored for 1.5 weeks in the Basotho Pride cold room at 5 degrees celsius. Many were planted at Research and LAC. The remaining were distributed among advanced farmers in Lesotho. The Pomologist, assisted by the MOA Horticulturist, produced a one hectare budget for strawberry production in Lesotho as follow up to promotion of strawberry production.

The project supported the Pulane fruit growers association since 1986 in various capacities. This included installation of a solar fruit dryer. By EOP, the association was drying approximately 10 percent of their annual production. This included apples, peaches, prunes and apricots. Approximately 250 kg of dried fruit was being sold locally or in the Maseru Market.

6.4.3 Fruit Tree Inventory and Import Monitoring

The project Pomologist and his counterpart actively participated in the fruit tree inventory and monitoring of fruits imported into Lesotho and cooperated with the project and MD's surveyors. A summary the survey's results was covered under marketing and production sections of this report. In brief, there were approximately 174 individual farmers and 45 associations producing on about 41 and 17 hectares of fruit, respectfully. The two year summary for the fruit imports (1990-91), indicated that on the average, the annual fruit imports were approximately 13,514 mt. Generally, apples were the largest single imported fruit with an average of 41%. Apples were followed by oranges 31%, bananas 15%, pears 7%, peaches 3% pineapple 2%, grapes and others represented 1%. The gap between the production level in Lesotho and the level of importation was evident.

7. STAFF DEVELOPMENT

7.1 Long-Term Training

During the tenure of the LAPIS Project, a number of SMSs received degree-level training in the United States. They all returned and assumed mid-management or senior positions with MOA. Table Seven designates the MOA, DCS staff provided with long-term training, the types of degree achieved, and their period of absence from the country.

Table Seven: PIC Staff Supported by The LAPIS Project for Degree Training

Name	Degree/Specialization	Period out of Country
L. Mothokho	BSc/Horticulture	Sept 1987 - June 1990
M. Tsiu	BSc/Farm Management	Aug 1987 - Aug 1990
M. Khoabane	BSc/Ag. Science	Aug 1987 - May 1990
M. Mosiuoa	BSc/Crop Prod.	Sept 1988 - Aug 1991
G. Makhale	BSc/Agronomy	Aug 1987 - Dec 1990

7.2 Short-Term Training

In addition to long-term training, the project provided regional and U.S. based short term training for a number of DCS and DFS staff involved in crop production. Almost all DCS and DFS field technicians received in-service training through the project. The project's extensive and continuous training of Irrigation Resource Planners, now serving DAOs and DCS in support of vegetable producers, has been discussed in detail in the subsequent section of this report.

C. MARKETING DIVISION (MD)

1. SETTING

The Marketing Division (MD) is a young but extremely dynamic institution that has evolved, significantly, during the life of the project. It is housed within the Department of Economics and Marketing (DEM) of the MOA, which was created in 1987. Prior to 1987, the marketing activities of MOA were carried out by the Marketing Section of the MOA Division of Planning.

The Marketing Division is headed by the Chief Marketing Officer (CMO), who reports to the Director of DEM. Second in command is the Senior Marketing Officer, and reporting under this position are three Commodity Marketing Officers, an Agricultural Inputs Information Officer, two Marketing Inspectors, and a Regulations Control Officer. In addition, 10 district Marketing Officers, 5 Statistical Assistants, and a Computer Specialist are under the auspices of the Senior Marketing Officer. In total the MD has 25 staff members, composed of 19 professional staff (9 at headquarters and 10 in the districts) and 6 statistical support staff.

The Commodity Marketing Officers are assigned to the specific areas of crops (grains), horticulture, and livestock. The Statistical Assistants are responsible for monitoring specific commodity industries including eggs, poultry, dairy, and the flour mill. The Computer Specialist is responsible for computer support and for preparing data for agricultural situation reports. The staff academic qualifications include: 5 MSc, 2 BA, 11 Diploma/Certificate, 1 2 yrs University studies, 6 High School Diploma holders. District Marketing Officer (DMO) positions were created in 1990. The District Marketing Officers are responsible for advising farmers on marketing and the collection of prices, and crop monitoring. Issuing trading licenses for agricultural commodities and import permits for controlled agricultural commodities are their duties also. They report to the DAO through the District Extension Officer. Coordination and technical supervision of the District Marketing Officers are done by the Marketing Division at the Headquarters.

Before the LAPIS Project, the Marketing Division did not exist as a Division. Rather, the marketing activities of the MOA were undertaken by the Marketing Section and Statistics Section of the Planning Division. There was a Section Head for the Marketing Section and four staff members (three Market Inspectors and one Regulations Control Officer). There were six staff members in the Statistics Section. The functions and responsibilities of the Marketing Section were primarily in the areas of regulation, import control, and pricing of controlled commodities such as grains, milk, and eggs. Total staff in the Section were 13, with three holding BA degrees.

In 1987, both the Marketing Section and Statistics Section of the Planning Unit became part of the new Marketing Division. The LAPIS Project Marketing Specialist in 1986, assisted in drafting working papers and job descriptions which became inputs for the creation of the new Department of Economics and Marketing.

2. MARKETING IMPLEMENTATION STRATEGY

LAPIS marketing inputs fell under the auspices of the PIC. The purpose of the PIC marketing effort was identified in Component's purpose statement: "Strengthened agricultural market structure and firms selling inputs, servicing agricultural equipment, and marketing agricultural outputs". The scope of work for the Marketing Specialist, as described in the Project Paper follows:

1. Advise the MOA with respect to marketing policy and programs.
2. Design the input/output marketing structure for the production initiative and other LAPIS components.
3. Assist with establishing farmer wholesale/retail markets in selected areas of Lesotho.
4. Coordinate the marketing program with the MOA, LAPIS Project components, input suppliers, and existing marketing services.
5. Provide in-service and on-the-job training, for GOL personnel and farmers.

The Marketing TA, in 1986, initiated a series of meetings and contacts to address the mandate of his scope of work and the Section, and the larger macro marketing system for Lesotho. In October 1986, the Marketing Specialist prepared an outline for the LAPIS marketing work plan. Parts of this plan were implemented, including the gathering of marketing data, a study tour to Bloemfontein wholesale market, field extension to vegetable producers, marketing training for EA/SMS (January 1987), developing credit information (LADB) and market development.

The LAPIS TA devoted a significant amount of time to conceptualizing marketing strategies and made various proposals. However, at that time (1986/87) the Ministry, USAID, and LAPIS had not agreed upon a national marketing program. Also, the MOA had limited marketing staff, particularly at the field level, to support a national marketing program. Hence, the LAPIS TA devoted the majority of his time in direct support to PIC vegetable production activities. His primary responsibility was to assist LAPIS supported farmers with marketing their produce (discussed in the previous section). The farmers generally had limited financial resources, no marketing experience and no transportation.

By the end of the first year's activities, May 1987, it became apparent that it would be necessary to make choices relative to the basic approach to the LAPIS marketing program. Most notably, the benefits of providing marketing support for a relatively few vegetable producers had to be weighed against providing assistance towards organizing a national marketing institution, thereby addressing recognized national marketing problems. Meanwhile the project continued with the training of three FMOs recruited by the project. By mid-1988, the project's efforts were thrust into defining Lesotho's needs relative to a national marketing system versus continuing support for a small number of small irrigated vegetable producers. Concurrent with those efforts, the MOA upgraded the Marketing Section to Division status in 1987. The new Chief Marketing Officer (CMO) and the LAPIS TA were

compatible in their ideas and plans began to progress toward a national marketing plan for Lesotho. The National Marketing Plan (Phase I) was completed in July 1989.

From 1988 onward, the Marketing Division has developed into a strong institution with well qualified staff. During years 3, 4, and 5 of LAPIS marketing support, considerable progress occurred. This was made possible for several reasons, including:

1. Marketing in MOA became a function of a Division rather than a Section.
2. A stronger counterpart relationship was established between the CMO and the Marketing TA.
3. The Marketing Specialist was housed in the Marketing Division and fully integrated into the Marketing Division.
4. Marketing was recognized by the MOA as a major constraint that had to be addressed with long-term goals and objectives.
5. The need for a National Marketing Plan, including pilot market centers, was recognized and accepted.
6. Returning LAPIS long-term trainees were immediately placed in responsible positions.
7. The willingness of the Marketing Division to fill the necessary positions to support the effort, including both field and office support staff.
8. The willingness of USAID and LAPIS to support a national marketing system, rather than direct assistance to LAPIS-supported farmers.

3. MARKETING STAFF COMPOSITION

The project paper provided for a marketing TA position for the first four years of the LAPIS Project. The LAPIS Project had two Marketing Specialist during its tenure. The first arrived at site in June 1986. The second Marketing Specialist arrived in June 1988. As of May 31, 1992 a total of 61 person months of long-term marketing technical assistance had been provided by the LAPIS Project.

4. INSTITUTIONAL DEVELOPMENTS

As previously mentioned, during the first phase of the LAPIS Project, the Marketing TA was directed primarily toward LAPIS-supported farmers who were producing irrigated vegetables. This included advising on crop scheduling, pricing, and transportation. This was in accord with the original project paper. During the second phase of the project the project's marketing efforts were directed toward the development of a national marketing system and institutional support.

4.1 National Marketing Plan and Strategy

In 1989, an MOA National Marketing Plan and Strategy was developed with LAPIS assistance. The plan included a review of vegetable production and marketing in Lesotho and a marketing strategy. The plan noted that domestic production was low and most fruits and vegetables were imported. It observed that traders preferred to import vegetables because RSA markets are convenient and dependable. The lack of domestic marketing infrastructure, (central/wholesale markets), was identified as a major constraint to vegetable production. The Marketing Plan (Phase I) proposed the construction of market centers at Maseru, Leribe, and Mohale's Hoek. The markets were to serve as a central location for farmers to bring their produce and a place for local wholesalers and retailers to buy produce. The MOA and USAID agreed on the marketing plan and USAID agreed to fund the pilot market centers through the LAPIS Project.

The marketing strategy included background information on demand for vegetables, local production, imports, and marketing policy. The national demand for vegetables was estimated to be approximately 55,000 tons. Imports were estimated at about 37,500 tons for 1988. Only about 400 hectares of irrigated vegetables were planted on large schemes in 1988. Major constraints to vegetable production were identified as the lack of market facilities and lack of transport.

The marketing plan proposed that new market centres be established on a pilot basis in the first phase of the program. The operation of the pilot markets were to provide insight into the problems of lay out and design, as well as management. This knowledge was to be used as an input for the next phase of the program for replicating the agricultural marketing institutions through out the country.

4.2 Marketing Committees

Marketing Committees were established in each of the ten districts in Lesotho. The committees were elected by the District farmers in each district, with each Committee being comprised of ten farmers and five traders. The purpose of the committees was to promote marketing improvement in each district. In districts having market centers, the committees were to be responsible for operating the markets.

The Marketing Committees received training in group organization and management under the LAPIS short-term training program. District committees having market centres received training in operating the market centres. They also made a tour of a farmers' market in the Republic of South Africa and to learn how to operate a market. DMOs worked with the committees. There was and still remains a need for continued support of these committees until they are fully established and have developed income-generating activities.

4.3 Pilot Market Centers

A pilot market centre was constructed in Leribe. A second market center remains under construction in Mohale's Hoek. The market centres are the first phase of market infrastructure development for fruits and vegetables in Lesotho. The Leribe market was intended to be a regional market for the Northern districts of Leribe, Butha Buthe, and Berea.

The Mohale's Hoek Market was sited to serve the southern districts of Quthing, Mohale's Hoek and Mafeteng. The pilot market centres are part of the national marketing plan. The markets will serve as central points where farmers can bring their produce for sale either to a wholesaler or on selected days by farmers themselves. The markets are also a central place for traders to purchase local produce. In the past, local traders went to RSA for vegetables because there was no central place in Lesotho to get vegetables. Lack of market facilities has been a common complaint of local farmers and a reason that farmers have not expanded their production, or in some cases, even reduced their production. The market centres will assist farmers to market their production. Thus, it is anticipated that the markets will stimulate additional local production in the future.

In January 1990, a short-term wholesale market planning consultant, funded by the Project, helped plan the markets and identify potential sites for the markets in Leribe, Maseru, and Mohale's Hoek. Sites near bus stops for the market centres were identified in each of these towns. Requests for sites in Maseru, Leribe, and Mohale's Hoek were made to the Lands and Survey Department of the Ministry of Interior in March 1990.

The sites for the Leribe and Mohale's Hoek markets were transferred to the MOA by February 1991. However, the Lands and Survey Department would not grant a down-town site for the Maseru Market. Although much time and effort was expended, a suitable site for the Maseru market was not acquired.

Building plans for the markets were drawn by the Ministry of Works. The plans were reviewed and approved by USAID. The markets were made of steel and were of open design. Each market was 10 X 30 meters with an office and toilet. There may be some low half walls in the future to accommodate wholesale traders. Each of the market sites was enclosed with a security fence. Completion of the market centres was delayed more than 6 months due to poor performance of the contractor.

The pilot market centers are to be operated by the District Marketing Committee, with a market manager being responsible for daily operations. A manager for the Leribe market center was hired. The manager hired has a diploma in Agriculture. His formal training included a student enterprise project (SEP) at LAC where he grew and marketed vegetable seedlings. The manager received on-the-job training, working with a local wholesaler for two weeks prior to being hired. The manager trainee also observed market operations of RSA markets as part of his training program.

Proposed operating procedures were developed by a LAPIS Project supported short term consultant. Both farmers and wholesalers are to operate in the market. Approximately one third of the market is to be allocated to large wholesalers, one third for medium size wholesalers, and one third for farmers. Wholesalers are to pay rental on a monthly square meter basis and farmers on a daily basis. The rental rate was determined at M12.50 per square meter for wholesalers and M6.50 per day for farmers using a small stall. The markets are to be privately managed and are intended to operate on a self sustaining basis. However, it is felt that one or two years of operation will be required to reach target volume levels. There remains a need to promote increased production of domestic vegetables and to coordinate production and marketing in the districts near the market centres.

4.4 Market Information System

A wholesale price information system for vegetables was established in Lesotho, being operated entirely by the Marketing Division by the EOP. Wholesale vegetable prices are collected and reported weekly in each of the ten districts and from the Bloemfontein wholesale market in the RSA. Prices are reported for cabbages, potatoes, tomatoes, onions, carrots, and beet root. Prices are reported by size and grade for potatoes and onions. Tomatoes are reported by grade. Bloemfontein prices are reported as reference prices. Marketing Extension Officers collect prices in their respective district each Wednesday. Prices are called in to the Marketing Division in Maseru on Thursday and Friday. At headquarters the prices are entered into the computer and average prices are calculated. In addition, high and low prices are provided, and change in average price from the previous week are calculated. Price reports are taken to Agricultural Information Services each Monday morning for printing. Twenty copies of the price report are sent to each district for distribution. In addition, 30 copies are distributed to MOA personnel, traders and other interested parties. The market prices are also broadcast each week on radio.

In addition to weekly price reports, seasonal and annual prices analyses were made for Maseru wholesalers and Bloemfontein markets. Weekly prices were used to calculate monthly prices. Annual price analyses for 1989, 1990, and 1991 were made for cabbage, potatoes, onions, and tomatoes for the Maseru and Bloemfontein markets.

The weekly prices were used to calculate monthly prices, which were used in break even analysis to evaluate potential profitability. The monthly price for a vegetable was compared to the estimated unit production cost to see if expected selling prices (revenues) exceeded production cost, and if so, by how much. This was to help growers or potential growers to evaluate profitability and identify months of the year which were most profitable. Extension of this information will eventually help farmers to plan production so harvest and sales occur during months where potential profit is greatest, if feasible.

Prices from the market information system were also used to compare and evaluate Lesotho and RSA wholesale prices. This analysis was useful because most vegetables sold in Lesotho are bought in the RSA. The Bloemfontein wholesale prices are representative of RSA prices and are an indicator of what traders are paying for produce in RSA. Thus, the RSA prices are a rough approximation of how much traders would be willing to pay local farmers for similar produce.

The market price system was initiated in February 1989 for Maseru wholesalers and for the Bloemfontein Market. At that time there were no MOA District Marketing Officers. In Mid-1990 DMOs were assigned to the districts and these officers began reporting district wholesale prices.

The LAPIS Project assisted the Marketing Division to establish the market information system and supported the activity for two years. Two MD staff were involved in the collection, reporting, and analysis of weekly market prices. LAPIS withdrew direct support to the information system and by EOP, it was operated completely by MD staff.

Computer based market reporting systems were developed for livestock auctions, the abattoir, and the National Feedlot. These systems were installed and tested. Marketing Division staff were identified to operate the systems, and data was collected.

4.5 Marketing Extension Program

A marketing extension program was developed for Lesotho, with each of the ten DMOs playing a key role. The system became operational in 1990 when the district marketing officer posts were filled. The duties and responsibilities included assisting farmers with marketing, the collection of prices, and crop monitoring. The Marketing Officers advise farmers on crop planning, where to market, pricing, transportation, harvesting, and packing. By the EOP, the DMOs were trained relatively well and had the necessary knowledge for assisting farmers. In addition, they were doing a good job of collecting prices. However, dissemination of prices to farmers needs to be improved. Crop monitoring also needs to be improved. Because of transportation limitations, the DMOs feel that demands on them are excessive. The effectiveness of the extension program has not been fully realized. This is primarily because of transportation constraints, management ambiguities, and lack of cooperation/coordination of other specialists in the districts. Because of decentralization, the DMOs are responsible both to district and headquarters management. The MD is addressing the management problem by having the Senior Marketing Officer coordinate directly with the districts to provide guidance and follow-up. Reporting and accountability needs to be improved.

There is a need for the DMOs and Crops/Extension Officers to work more closely in the districts. This includes planning and scheduling of production according to market requirements. There also remains a need for district personnel to identify target commercial farmers and to concentrate their efforts on these farmers.

LAPIS assisted in the establishment of the marketing extension program. The LAPIS TA prepared draft job descriptions for the District Marketing Officers. Two of the ten District Marketing Officers were employed and trained by LAPIS prior to being employed by the MOA. These two Marketing Officers worked with LAPIS for the period 1986 - 90. They were assigned to districts and worked directly with LAPIS farmers, assisting them to market their produce at farm gate and in villages and towns. LAPIS continued training of all marketing extension officers for the period 1990-92. The training included periodic, two-day training programs and a one week training program on pricing, transport and demand.

4.6 Village and Road Side Market Stands Program

The need to provide local market outlets for farmers with limited production was identified. A prefabricated low cost market stand (2 meters X 2 meters) was designed, consisting of two side panels with materials for bracing and zinc for the roof. Components for two market stands were provided to each district for village and roadside marketing. Five market stands were erected in the districts. The erection and use of the market stands was not been as rapid as expected. The Marketing Division, with LAPIS assistance, delivered the market stand components to each district. The responsibility for selecting sites, getting approvals and erecting the market stands was left up to the DMOs and District Marketing Committees.

There was minimal participation and involvement by TA and headquarters staff, other than delivering the components to the DAOs' offices. The plan and strategy was to allow the local marketing officers and farmers to decide when and where the market stands should be erected, rather than the program being implemented from headquarters.

The FAO Project also was and still is providing market stands at selected locations. In this program, FAO is involved directly in site selection and FAO delivers the completed market stand to the site. This is the quickest and perhaps the best way to get the market stands erected. The FAO market stands were larger and more expensive.

4.7 Border Survey and Crop Monitoring

The LAPIS Project helped the Marketing Division to plan and implement the border surveys. LAPIS supported two enumerators who conducted the surveys in 1990 and 1991. One of the enumerators analyzed the data. If possible, the Marketing Division should continue the border surveys, at least for the Maseru border gate which receives the most imports.

A crop monitoring program was initiated in cooperation with the DCS. Information on the 91/92 summer season was collected and analyzed. At the time of this report writing, information on the winter season was being collected. Plans were made to design and install a computer based system for analyzing and reporting the crop data. There was and is difficulty in obtaining comprehensive crop data on crop production from District Crops and Marketing Officers on a timely basis. The MOA should assign some one with the responsibility of following up and coordinating this important activity.

4.8 Capital Expenditures

A total of \$121,811, was budgeted for capital expenditures in support of PIC marketing activities. As of May 31, 1992, \$50,701 had been expended. It is expected that the balance of \$59,166 will be expended on two pilot market centres now under construction. The major items of capital expenditure were as follows:

1. Five field marketing sheds. The sheds were installed at the following locations: Pela-Tsoeu (Leribe District), Mekaling (Moiiales Hoek District), Maphohloane Association (Mohales Hoek District), Maluti Foods Association (Berea District) and Lesotho Agricultural College. Approximate total cost: \$16,000. These structures were turned over to the respective MOA Departments/Divisions.
2. Two pilot wholesale market centers located in Leribe and Mohale's Hoek. Each market center was 300 square meters. The estimated cost for each market centre is \$49,000 (final construction was still pending at the time of this report's compilation). The basic Leribe market structure had been completed and the Mohale's Hoek market center was about 50% complete.
3. Office furniture and computers.

4. The project supplied one 4 x 4 double cab and made an additional vehicle available to the Marketing Division on a priority basis for marketing extension, crop monitoring and import monitoring activities.

5. STAFF DEVELOPMENT

5.1 Long-Term Training

During the life of the project five employees attended Universities in the USA and received degrees in Agricultural Economics or related fields. These persons returned to work in Lesotho. By EOP, three of the long-term trainees were still working in the MOA, while the remaining two left the MD to assume positions outside the MOA. Table Eight identifies MOA, Marketing staff provided with long-term degree training, the types of degree achieved and their period of absence from the country.

Table Eight: Marketing Staff Supported by The LAPIS Project for Degree Training

Name	Degree/Specialization	Period out of Country
M. Phoofolo	BSc/Statistics	Aug 1987 - May 1990
M. Mokati	MSc/Ag Economics	Jan 1987 - June 1989
M. Motsamai	MSc/Ag Economics	Aug 1987 - Sept 1989
A. Makenete	BSc/Marketing	Sept 1988 - May 1991
H. Phororo	MSc/Marketing	Jan 1989 - Dec 1990

5.2 Short-Term Training

During the six years of the LAPIS Project, the project assisted with the training of both marketing staff and farmers. Most of the training sessions took place in Lesotho. However, some took place outside of Lesotho (primarily Swaziland). LAPIS short-term marketing consultants assisted in a number of the courses. As of May 31, 1992, there had been 33 short-term marketing related training activities, attended by 432 "persons". Many of the headquarters and district staff attended more than one course. Of the total, 169 were female and 240 were male. Overall, there were 1,642 person days of short-term training.

Both headquarters and district marketing staff were trained. The training records show that 109 SMS were trained and 150 headquarters staff. Most of the SMS staff attending the courses were District Marketing Officers. The training summaries also show that 98 farmers received training. These training sessions were often held at district Farmer Training Centers (FTCs) and included applied marketing instruction. Subjects covered were post-harvest handling, packing, sorting, pricing, and transportation. Also, in attendance at farmers' training were additional support persons from other institutions including DPOs, FMOs, and PCVs. The emphasis during the farmers' training was to have the trained Extension Agents and Subject Matter Specialists do the farmers' instruction in Sesotho. The LAPIS-supported

farmers also received informal training at their individual production sites during the first three years of the project.

Training was also focused on the marketing committee members. The committees were comprised of both farmers and traders. Training in committee organization and management was provided by the Lesotho Distance Training Centre. Committee members in Maseru, Leribe, and Mohale's Hoek also received training in market management.

Short term-training included study visits to produce markets in South Africa to observe how formal produce markets operate. Two market tours were attended by a total 31 persons. Persons attending included farmers, traders, and marketing staff. One tour was to the Bloemfontein wholesale market, which is a large market and uses the traditional market agent system. The other was to a smaller farmers' market in Nelspruit, RSA. This tour was attended by 16 persons including marketing committee members and marketing staff, and the Leribe market manager.

Some of the short-term training courses were conducted by LAPIS through Mananga Agricultural Management Centre (MAMC). MAMC is a training institute located in Swaziland and it specializes in management courses. MAMC has regular scheduled courses in management and also provide special management courses as required. Four Marketing Division staff members attended project Analysis courses taught by MAMC in Swaziland. In addition, MAMC conducted special courses in Production and Marketing Economics and Market Centre Management in Lesotho for Division personnel and Marketing Committees.

Marketing Extension training was another area emphasized by short-term training. There were regular quarterly marketing extension training courses which covered such topics as extension training methods, price reporting, and crop monitoring. In addition, a specialized marketing extension course covering the topics of pricing, transportation and local demand was taught by a short-term marketing extension specialist.

Computer training was an area of emphasis in the short-term training program. The computer courses were attended by professional and support staff. Both introductory and advanced computer courses were attended. Various staff attended basic computer courses and went on to more advanced courses. Computer courses included Lotus 1,2,3 and D Base. The computer courses were particularly helpful because it enabled the staff to summarize and report market information and to undertake market analysis in their various areas of responsibility.

Five senior managers received leadership training. In addition, one manager attended a course at Harvard Institute in Food and Agricultural Policy. Two senior managers also made a study tour in the U.S. to observe vegetable production and marketing in the United States, and the USDA inspection function for vegetables imported from Mexico at U.S./Mexican border.

D. AGRICULTURAL RESEARCH DIVISION (ARD)

1. SETTING

Agricultural Research, prior to its establishment as the Agricultural Research Division, consisted of seven loosely affiliated operational sections which fell under the Department of Crops Services (DCS). In order to develop a coordinated and effective research capability in Lesotho, the MOA established the Agricultural Research Division, placing it in the former Department of Technical Services. The result of this action was a single organizational unit which would be responsible for conducting all the agricultural research in Lesotho.

The same year in which the ARD was established, the USAID-funded Farming Systems Research Project (FSRP) was implemented. Although the FSRP was originally designed to establish a farming systems research unit within the ARD, the Project was later amended and expanded to include the strengthening the entire Division. Throughout the project, there was a heavy emphasis placed on establishing on-farm research trials, on the development of three prototype stations, and construction of facilities at the Maseru Station. There was very little effort made to develop applied multi-disciplinary research programs either at the Maseru Station or the sub-stations. The FSRP was completed in June 1986.

Between 1979 and 1986, 20 staff members were sent to the LAC for diploma-level training or to the U.S. for degree training at the BSc. or MSc. level. The staffing situation, existed at the beginning of the LAPIS Project, was extensively discussed in the 1986 FSRP Final Evaluation which stated, "Progress has been made in many areas in strengthening the Research Division and its linkages to other MOA divisions and farmers. Nevertheless, the Research Division does not yet have the institutional capacity to carry out an effective adaptive research program without continuing technical assistance. The critical mass of personnel is lacking in all sections and collectively. Some disciplines received little, if any, support from the FSR Project. Capacity to plan, lead, and implement an effective, well-balanced, adaptive research program is a critical need."

When the Division was established in 1979, it included the main station at Maseru and 10 sub-stations scattered throughout Lesotho, many of which were and are relatively unimproved, consisting only of land and possibly housing for a caretaker. Between 1979 and 1986, there was a significant improvement of the facilities at ARD Station in Maseru with the construction of a main building where offices, a small library and two laboratories, a maintenance shop and storage areas were located. Three prototype stations at Siloe, Nyakosoba, and Molomong were also established. Each of these stations were equipped with three houses and a storage/lecture building. In 1984, the Division's soil laboratory underwent major upgrading and improvement.

Assessment of existing organizational and research capabilities, on-going experimental research trials, and on-farm research programs when the LAPIS Project started, revealed that:

1. There were no organizational structures established or sufficient experienced staff available within the ARD necessary to conduct a sustained farming systems type of approach to research.

2. The procedural components normally associated with the farming systems approach to research were not present within the ARD. For example, there were no procedures to: 1) target and select research areas; 2) identify problems and develop a research base; 3) plan and conduct on-farm research programs; 4) analyze on-farm research; 5) extend the results of the on-farm research.

3. The few on-farm research trials which were on-going consisted of discipline orientated trials conducted in isolation. There were no on-farm research studies which were of the multi-disciplinary type normally associated with the farming systems type of program.

4. There were very few on-station research programs at Maseru or the branch stations which would have normally been expected to provide the technical and support information used in the development and support of on-farm research programs. As a consequence, on-farm research trials were often based on untested technologies, resulting in very high failure rates.

5. Although ARD research staff had participated in the FSRP on-farm demonstrations, they lacked sufficient training and experience to function as independent researchers without technical assistance. As a result, the on-farm research work rapidly declined towards the end of, and immediately following the completion of the FSR Project.

This was the situation that existed prior to commencement of the LAPIS Project, and it significantly affected the implementation of the ARC activities. It had been assumed that the MOA, with FSR Project assistance, had developed long-term research policies which could serve as a basis for implementing LAPIS. Furthermore, it had also been assumed that there were on-going sub-station and on-farm activities. Both assumptions proved incorrect.

2. AEC IMPLEMENTATION STRATEGY

The ARC was to build upon the efforts of the previous USAID-funded Farming Systems Research Project. The component was to directly assist the ARD to produce tested, production-oriented packages, and to institutionalize means of transferring these packages and associated technologies to rural Basotho farmers. However, given the weaknesses identified above, it was apparent that a major institutional building effort was in order. Hence, the following objectives were pursued:

1. Improve the Division's administrative and managerial capabilities, research program planning, and ability to prioritize research needs;
2. Institutionalize a multi-disciplinary approach to research and demonstration programs responsive to farmers' needs;
3. Improve the technology and information dissemination capabilities of the ARD to generate production-oriented publications which were specifically adapted to farmer/household needs;

4. Establish and/or improve communication and linkages between the ARD and other MOA divisions, farmers, the general agricultural sector, and regional and international research centers;

5. Develop practical research skills for ARD staff; and

6. Upgrade the ARD research facilities in accordance with the changing research needs of the Division.

3. AEC STAFFING

The ARC was initially staffed with six TAs, all arriving in August - September, 1986. These TAs included: Team Leader, Horticulturist, Agronomist, Pest Management Specialist, Animal Scientist, and Soils Scientist. In 1989 and 1990, an Ag Economist and Social Scientist, respectively, were added to the team.

4. INSTITUTIONAL ASSISTANCE

ARC TAs supplied extensive amounts of institutional assistance to the following aspects of the ARD: Administration and management; ARD organizational development; research program development and prioritization; ARD infrastructure development; establishment of regional and international linkages; improvement of ARD services; and technology transfer and information dissemination.

4.1 Administration and Management

At the onset of the LAPIS Project, there seemed to be a feeling within the Research Division and the Ministry as a whole, that there was a lack of direction and a mandate within the ARD. Efforts began to create an awareness, and to stimulate discussions within the MOA, concerning the establishment of a national agricultural research strategy, and to develop the research mandate for the ARD. As a result, a series of meetings and communications took place internally and between ARD and the MOA management. ARD prepared two documents which were submitted, through the Principal Secretary, to the Minister of Agriculture. The first paper, responded to the proposed decentralization of the ARD staff and activities, which were part of the MOA's policy to decentralize the Ministry, moving many of the staff, functions, and services to the districts. This paper also included a proposal for a scheme of service for research officers, so that a researcher could be promoted within his area of expertise without having to transfer out of research for a promotion. The second paper proposed an agricultural research policy for the Division.

These papers received wide circulation within the Ministry and served as a basis for further discussions. They also created an awareness within the MOA, as to the functions of ARD, and the kinds of information and services it could provide to the agricultural sector. By involving the rest of the MOA in the development of these papers, the Division began to break down the barriers which existed between the ARD and the rest of the Ministry.

In May, 1988, after some preliminary internal discussions, it was decided to develop a formalized mechanism to formulate research programs and report the results. The final draft

of this plan was agreed upon in late 1989, and included a formal mechanism for problem identification, research program planning, prioritization, monitoring and evaluation. The plan also established the Research Advisory Committee (RAC), an autonomous group to review, prioritize, and approve research programs and trials. At the same time, formats for research program proposals and proposed experiments, demonstrations and studies were developed. All programs and experiments currently being conducted at ARD have been structured using these formats. Formats were also developed for interim reports and final reports. All these reports and documents are used by the RAC to prioritize, approve, monitor and evaluate proposed and on-going programs. The composition of the committee was decided and an organizational meeting held in mid-1989.

In May, 1989, as part of the Division's efforts at reorganization, and to make the transition from discipline-oriented research programs to multi-disciplinary research programs, the MOA invited the International Service for National Agricultural Research (ISNAR) to come to Lesotho and review the Agricultural Research System. The purpose of the mission was to review Lesotho's research capacity in relation to the priority needs of the country, and to determine the appropriate size and scope for a sustainable research system within a country the size of Lesotho. The review was conducted by ISNAR in conjunction with a task-force from the ARD, LAPIS, and USAID. Their final report was submitted to the GOL in November, 1989. The recommendations in this report included many of the proposals and plans previously identified by the ARD administration. This report provided much needed support for continuing to implement proposals which had been agreed upon by the ARD. The report's immediate recommendations for the strengthening of agricultural research and education were as follows:

1. The ARD should proceed with a consolidation of its research effort into five commodity-based, systems-orientated programs.
2. The ARD should improve dialogue and inputs from policy-makers, clients and stakeholders at the Ministerial level.
3. The ARD should create a National Programs Advisory Committee, composed of representatives of clients, DAOs, department heads, farmers, and projects.
4. The MOA & ARD should propose a scheme of service for agricultural research officers to provide incentives and ensure staff development and stability.
5. The ARD, MOA, LAC and NUL should consider the strengths and weaknesses of the proposed options for linking agricultural research and agricultural education. They should consider ways to avoid weakening or dispersing the existing capacity in both areas.

In late 1989, a draft agricultural research strategic plan was developed by the Division and circulated throughout the Ministry for review. The final draft of the 'National Agricultural Research Strategy' was submitted to the LAPIS Project Management Committee where it was reviewed and approved. The Committee then forwarded the report to the MOA for final approval. The national agricultural research strategic plan was reviewed by the Ministry and published in April, 1991. This document proved beneficial in developing plans for improving

the Division and in discussions with donors regarding the development and design of new projects.

Starting in 1989-90 season, the ARD Research Officers were increasingly given the responsibility for planning, implementing and conducting their research/demonstration programs as the ARC Specialists significantly reduced their direct involvement in their respective research/demonstration programs and functioned more in an advisory role. In line with the LAPIS Project realignment, there was an increase in the amount of time the ARC Specialists spent on training activities and the publication of reports, production guides, etc. which resulted from the research programs initiated during the Project.

During the same period, a significant effort was made to ensure that the research/demonstration programs, administrative, structural and organizational changes will remain in place and continue to function after the LAPIS Project has been completed. In the future all research and/or demonstration programs, experiments, studies will include annual budgets. Preliminary budgets were developed and were included in the ARD budget submission for the fiscal year 1990-91. Operation and maintenance costs for the Soil Testing Laboratory were submitted by ARD in the 1990-91 fiscal year. Because of the structural adjustment imposed on the GOL by the IMF, budgets were not increased, so the increase in funding was not approved and was resubmitted the following year.

During the fifth year of the Project, the ARC concentrated its efforts towards improving and developing the Division's capability in the areas of research station management, research program development, prioritization and accountability, technology and information dissemination, publication and communication. As the year progressed and ARD staff members returned from overseas degree training programs, responsibility for these activities were increasingly assumed by the ARD staff. By the end of May 1991, ARD Research Officers were fully responsible for planning, implementing and conducting their research and/or demonstration programs. During the final year, the two remaining LAPIS ARC Specialists functioned in an advisory role only.

In June 1989, a series of meetings were held with ARD administration and Program Leaders in an effort to further institutionalize the multi-disciplinary research programs within the Division. Terms of reference were drawn up for the newly established positions of Program Leader and Senior Principal Research Officer. Understanding of this approach to research is becoming more and more clear to the ARD staff. The availability of international grants which are available to ARD Research Officers for conducting research, were also discussed, and the need for preparing grant proposals emphasized. Also, methods for controlling and monitoring the supplemental research grant funds received by researchers were discussed and adopted. To this end, an account was established at the Lesotho Bank to keep these funds. This account is now used by other research staff who receive external grants.

4.2 ARD Organizational Development

At the beginning of the LAPIS Project, the Research Division was organized into thirteen 'sections', many of which consisted of only one or two staff members. In view of the management and communication problems posed by such a diffuse structure, it was decided to reduce the number of sections to improve communication and cooperation among the staff

of different disciplines. In late 1987, it was agreed to reduce the number of administrative units from thirteen to five sections. This resulted in formation of five sections: Agronomy and Soils, Horticulture and Plant Protection, Range and Animal Science, Farm Management, and Agricultural Engineering. Each of these new sections consisted of from eight to twelve staff members from closely related disciplines.

Although this re-organization improved cooperation and efficiency a great deal, because of the limited manpower, several of the sections were still well below their optimum staffing levels. It was also found that communication between the discipline oriented sections was still a problem, and although there was a Division policy to develop multi-disciplinary research programs, each section tended to operate independently and the development of cooperative research was left to the individual. In an effort to improve communication and to facilitate and institutionalize the multi-disciplinary approach to research programs, it was decided to restructure the Division around five program areas under the direction of Program Leaders. It was during this process that ISNAR was invited to Lesotho to review the agricultural research system. In early 1990, after extensive discussions within the ARD and MOA, the sections were replaced by five programs: Cereals, Food Legumes, Vegetables and Fruits, Range and Livestock, and Natural Resource Management. In June of the same year, Program Leaders were appointed for each of the programs.

The implementation of the commodity type of multi-disciplinary approach to research, has resulted in institutionalizing cross discipline cooperation among research officers. Although there was, and still is, some resistance to this type of research, there is now a general recognition among researchers as to the need for the inclusion of several disciplines into a research program. This cooperation has been facilitated by the introduction of a formalized mechanism in the planning and prioritization process, discussed in detail in the following section.

In 1986, the Division had twelve sub-stations scattered throughout the country, many of which were under-utilized, and poorly maintained. A number of these sub-stations consisted of undeveloped land only. In May, 1987, a fourteen-member task force was established to develop a plan to more effectively use the sub-stations, to evaluate the need for this number of sub-stations, and to determine the best way to develop the remaining sub-stations in order for the ARD to efficiently carry out its regional and on-farm research and demonstration programs. As a result of the task force recommendations, the Division decided to concentrate its efforts on four primary branch stations. These include the two FSR prototype stations at Nyakosoba and Siloe, plus the station at Thaba Tseka which was to be transferred from the DCS to the ARD, and a proposed new station in the northern low-lands. Although the latter station was to be developed under the LAPIS Project, this activity was not carried out because of the lack of funds to properly develop the site. They also recommended that each of the primary branch stations be staffed with Research Officers, technical support and appropriate facilities. Unfortunately, at this time the ARD does not have the staff or resources to go forward with the development of the facilities or the increased staffing. As a result, all research/demonstration programs are still managed from Maseru.

4.3 Research Program Development and Prioritization

As alluded to earlier in this report, the emphasis of the FSRP was the development of on-farm demonstrations on or near the three proto-type areas. As a consequence, when the LAPIS Project started, there were very few replicated research trials being conducted on either the main research station or the branch stations located in the several agro-ecological zones of Lesotho.

Recognizing this lack of balance in the research being conducted, in 1986, an effort was made to re-establish on-station research trials at Maseru and the branch stations. This effort continued through 1989 when a balance was reached between the trials being conducted on the main station in Maseru, on the branch stations located in the three ecological zones in Lesotho and in farmers' fields. At this time approximately 25% of the trials were being conducted on the main station, 30% were placed on the branch stations, and the remaining 45% were on-farm demonstrations.

The research and demonstration programs developed during the early stages of the Project included a wide range of research activities which, in most cases, were developed by individual sections in response to needs and requests of the agricultural sector.

By 1989, it was recognized that a mechanism was needed to correct problems of planning and coordination, and to insure that the research programs being conducted at ARD were responsive to the needs of the farmers, MOA and the agricultural sector. In response, an external advisory committee, the Research Advisory Committee (RAC), was established in 1989. Its function was to assist in establishing research priorities on a continuing basis and to approve research programs in high priority areas. The committee's mandate was to ensure that ARD research and demonstration programs addressed the real problems of the agricultural sector and were in accord with the Ministry policies. To accomplish this task, the RAC would approve new programs, experiments, studies and demonstrations, review and approve on-going projects on an annual basis, advise ARD in establishing research priorities and developing research projects, and assist in identifying researchable problems.

The RAC held its organizational meeting in early 1989 to determine the Committee's membership, select officers, and establish the Committee's terms of reference. The membership of the RAC is as follows: Five DAOs, Five farmers, ten heads of the Divisions or their representatives, and one representative from the agribusiness sector. It was also agreed that the Committee would meet at least twice a year; once to evaluate and approve research programs for the upcoming season and a second time to monitor the progress of these programs during the year.

The RAC met in June, 1990 to finalize the Committee's terms of reference, re-emphasize the importance of the Committee in determining the scope and direction of ARD's research program, and to familiarize the Committee members as to the procedures to be used during the prioritization meeting.

The following terms of reference for the RAC were agreed upon and finalized:

1. The committee shall ensure that research and/or demonstration programs address the problems of the agricultural sector and are in accord with Ministry of Agriculture policy.
2. The committee will assist in identifying researchable problems and advise the ARD in establishing research priorities and developing research programs.
3. The committee will approve new programs, review and approve on-going research programs on an annual basis, and it will also suggest possible areas/locations for on-farm demonstrations.
4. The committee will advise the ARD in other matters related to possible training and information dissemination.

The Research Advisory Committee met in September 1990, to review and prioritize the current and proposed ARD research agenda. The committee approved, with one exception, all on-going research projects and all of the proposed projects. The major benefit from this meeting was that the research programs which were approved by the Committee, were much more focused, of the highest priority, multi-disciplinary in nature, and addressed the problems identified by MOA field staff and farmers.

ARD/ARC staff organized several meetings with other MOA and international research organizations to exchange ideas on the research work being done in Lesotho. Participants included representatives from MOA and almost all of the major agricultural donor supported projects, eg. LISP, SWaCAP, Matelile, etc. Ways of coordinating and cooperating in practical research and demonstrations in the future were discussed and agreed upon.

4.4 ARD Infrastructure Development

Soon after the arrival of the ARC team, an assessment was done to determine what, if any, additional equipment and facilities were needed, at the Maseru Station and the branch stations, to increase the research capabilities and increase the efficiency of the ARD research staff.

ARD/LAC Irrigation System: After the 1986/87 season, it was decided that there was an urgent need for an irrigation system which was capable of irrigating individual research plots at the Maseru Station. The existing irrigation system was completely inadequate for research. In the latter half of 1987, it was decided to combine the ARD irrigation system with a proposed system for LAC. The original ARD system was modified by the LAPIS PIC Irrigation Specialist and incorporated into the LAC system, which was designed to meet the research, teaching, and production needs for both ARD and LAC.

In April 1988, the contract was let to a local firm, which agreed to complete the system within four months. Construction continued throughout 1988-89, and after numerous delays the ARD/LAC irrigation system was completed in April 1990, and formally turned over to the Ministry. The completion of this system significantly improved the Division's ability to conduct on-station trials, especially in the area of the irrigated production of high value cash crops. Prior to the construction of the irrigation system, Mr. Brian Makhetha, who was being paid by the LAPIS Project, was selected to become the irrigation technician responsible for

the operation and maintenance of the system. During construction, he worked with the crew and the LAPIS Engineer, becoming familiar with the way the system was constructed. He also participated in a six-month irrigation training course which was sponsored by the LAPIS project. Mr. Makhetha has been solely responsible for the operation and management of the system since it became operational. He has done an excellent job and the irrigation system has functioned very well under his management, enabling the Division to continue its research program throughout the severe droughts which occurred during the past several seasons. In an effort to institutionalize Mr. Makhetha's position within the ARD as the Irrigation Specialist, a sustained effort was made to create a position for him within the Division. In March 1992, Manpower Planning did approve a Farm Manager position and the Director of ARD agreed to fill this position with Mr. Makhetha, retaining his services within the Division.

During the first year of the Project, the Horticulture researchers conducted a number of trials at the foothills sub-station in Nyakosoba. Due to the inadequacies of the irrigation system several of the trials were lost. To elevate the water problems, and to ensure the success of further trials, a small drag-line sprinkler system was designed, and installed at the branch station in February 1988.

At the onset of LAPIS the Maseru Station had no livestock facilities. Hence, the Lekubane sub-station was the only location where the Division could conduct small-stock research. As there were no structures on the station, significant improvements were needed before any research program could be initiated. Major improvement of the housing and livestock facilities at the Lekubane Research Substation were planned and designed in late 1988. Construction of the small-stock pens, shelters and shed was completed in 1989.

In 1988, efforts to develop livestock research facilities at the Maseru Station were initiated. Plans for a prefabricated small-stock research facility were submitted to USAID for approval. However, due to numerous delays in receiving approval from the Ministry of Works, construction was not begun until late in 1991, and finally completed in April, 1992. These facilities will greatly enhance the research capabilities of the livestock research staff to conduct small-stock research under controlled conditions.

With the exception of four small hobby type greenhouses, there were no facilities at ARD to conduct experiments in a controlled environment. With the return of research staff from degree training programs, there was a need for a facility capable of supporting insect and disease studies, insect economic threshold studies on vegetable and agronomic crops, fertilizer and lime correlation studies, development of propagation techniques for woody fruit material, and the production of high quality seedlings for research and on-farm demonstrations. To provide the environmental flexibility needed, it was decided to construct two, eight by thirty meter greenhouses joined by a common wall with a connecting door. Construction of the research greenhouse, begun in July 1989, and was completed with the installation and testing of the electrical system in late February, 1990. The greenhouses were equipped heaters, exhaust fans, and an evaporative cooling system, which provided year-round temperature control. Each house had temperature controllers capable of programming different day-night temperatures and day lengths. Each house operated independently so that different temperature regimes could be maintained in each greenhouse. One of the houses was equipped with metal benches, while the other consisted of three ground beds, for large plants

or small trees, a mist propagation bench for the propagation of woody plant material, and metal benches along the parameter walls.

In addition to the research greenhouse, two of the original fiberglass structures were reassembled near the main greenhouse for use during the spring and fall for seedling production, isolation studies with disease and insects, etc. A three-bin structure was built to hold and process compost, and soil media for use in the greenhouse was also constructed next to the main greenhouse.

As the Horticulture Section was to be one of the major users of the research greenhouse, Mr. T. Rankhasa of the Section, was assigned the task of supervising management of the greenhouse facility. He was sent to Italy for a year of training, six months in farm mechanization, and six months on greenhouse operations. Upon his return Mr. Rankhasa assumed the role of greenhouse manager.

In 1988, a research demonstration area was selected at a site near the old office building. The ARC Horticultural Specialist assisted in the development of the research demonstration area. The demonstration area consists of, numerous tree species of both general purpose and horticultural types and a number of small plots where new crops, technologies, practices, etc. are shown to visitors. The research demonstration area is now used on a regular basis to show visitors examples of research being conducted on fruit and vegetable crops.

Field and Support Equipment: Following the arrival of the ARC TAs, a needs assessment was completed to determine the equipment needs for conducting the research and demonstration programs being developed. As manpower and labor shortages were limiting the number of trials that could be conducted, equipment was purchased to reduced the labor requirements and speed up the field operations. Equipment included two tractors, precision planters, a rotovator, two walk-along tractors, a rotary slasher, a disk harrow, two fertilizer spreaders, a thresher, as well as numerous pieces of ox-drawn equipment and hand-tools.

The ARD had a very limited computer capability when the LAPIS Project began. Their equipment consisted of a Hewlett-Packard computer, one IBM compatible Columbia computer, and an IBM portable. Except for SPSS, a complex data analysis program used in the social sciences, there were no programs for the analysis of research data. In 1988-89 a total of four computers were purchased. Software for Word Perfect 5.0, LOTUS 123, LOTUS Freelance, MSTAT 4.0, and presentation graphics were loaded on all ARD computers. ARD computers which did not have the division standard I/O configuration were upgraded as required. All ARD computer systems may now utilize mouse-based graphic software recently purchased by the Project. An HP Laserjet III printer was purchased in May 1990, and ARD staff given training to familiarize them with its operation. In addition to two new computers, upgraded software programs were purchased in 1990-91 and installed on all ARD computers for word processing, spreadsheet, graphics, data analysis (MSTAT-C), and anti-virus (SNIPER). A plan for the development of the ARD computer lab was completed in late 1990. As part of this plan, computer tables, supply storage cabinets and disk storage boxes were purchased and installed. Printer sharing equipment was also purchased and some miscellaneous equipment made, including a security system for protecting all of the ARD computer hardware from theft.

In 1988, a computerized cataloging system for the National Agricultural Library was purchased. This system utilizes the Library of Congress system and remains available for cataloging all the books within the MOA.

In July, 1990, the Rural Sociology Specialist coordinated the ARD Agricultural Survey Database consultancy with MISER Consulting Pty. This program was an effort to establish a database of the sociological work which had been conducted in Lesotho in the recent past. The system was installed in May 1991. As part of this effort, an additional computer and required hardware was purchased, set up, software installed and integrated into the ARD computer lab.

In early May 1991, an inventory of the equipment purchased by the LAFIS for ARD was conducted with the LAFIS accountant. Following this inventory, all the equipment, with the exception of two computers, was turned over to ARD/MOA.

4.5 Establishment of Regional and International Linkages

Development of international linkages between ARD research staff, and professionals in other countries, allows for the exchange of ideas and information necessary to keep researchers current with relevant research being conducted in neighboring countries, and was an important part of the LAFIS ARC program. Over the life of the project the ARD developed and maintained very close linkages with a number of International Agricultural Research Centers, especially through its membership in SADCC/SACCAR. As part of its research programs, the ARD researchers actively participated in a number of regional trials and/or demonstrations with AVRDC, CIAT, CIMMYT, CIP, ICRISAT, MULPOC, PANESA, and several South African institutions.

Agronomy, Farm Management, Horticulture, Livestock, Rural Sociology and Soils were involved with several international research programs including: CIAT - bean varieties were being tested from around the world for local adaptability. Recently, bean varieties from the eastern African areas were included in these trials; ICRISAT - sorghum breeding and agronomic practices; AVRDC - evaluation of tomatoes and leafy green varieties for local adaptability; CIP - evaluation of true potato seed production, MULPOC - on-farm demonstrations of improved production practices for maize; and Pioneer Hybrids International (PHI) - the inclusion of some of their maize and vegetables for variety evaluation. Additional programs originating from South African organizations included wheat, oats, maize, sorghum, beans, peanuts, sunflower and chickpeas.

The participation of the ARD professional staff in internationally-sponsored workshops and seminars, enabled them to become aware of research being done within the region. The researchers were then able to incorporate this information into their own research programs and/or recommendations. Members of the research staff attended and presented papers at research workshops and seminars sponsored by AVRDC, CIAT, CIMMYT, ICRISAT, IITA, ILCA, ISNAR, SACCAR, and SADCC. Because of the availability of funding from other sources, LAFIS usually did not need to provide any additional support for staff members to attend the majority of these meetings. ARD researchers also participated in a number of regional research and demonstration programs in cooperation with CIAT, CIMMYT,

ICRISAT, PANESA and MULPOC. In most cases these programs received funding from their respective institutions.

In 1988, the Division in conjunction with CIAT, conducted five bean trials. Dr. Massey, as a member of the steering committee, attended the Bean Steering Committee meeting in February, 1989 to discuss research findings from these trials. In 1990, the bean program included several entries from the eastern African areas (AFBYAN). The cooperative program with CIAT continues to be a very successful Agronomy program and cooperation with this organization is excellent.

In 1987, an agreement was reached with ICRISAT to support a program with sorghum variety evaluation and agronomic practices. They agreed to provide a technician, along with funds to purchase inputs. This has amounted to about USD 10,000 annually, and enabled the Division to conduct a very successful sorghum research program. During the course of this cooperative program, the ARD has tested a large amount of material for ICRISAT, identifying a number of sorghum varieties which have a lot of potential for production under Lesotho conditions and are highly acceptable to the local population.

The MULPOC on-farm demonstration project was initiated in 1986. The major objective of this project was to demonstrate improved maize production technologies to the farmers in Lesotho. This program was funded for USD 50,000, by the Economic Commission for Africa (ECA) for four years. As part of effort to incorporate a structured on-farm demonstration program into the Divisions research program, the ARC TAs supported this program with technical and advisory assistance. By the time the LAPIS Project ended the entire program was being conducted by ARD researchers.

The MULPOC Project Advisory Committee, which consists of representatives from ARD/ARC, FAO, UNDP and ECA, met each year to assess the progress of the project. In 1988 they agreed to utilize unused funds to extend the project for another two years. They also agreed to the ARD/ARC suggestion that some of these funds be utilized to collect economic information related to the introduction of the improved technologies. During the meeting held in late August 1990, the ARD/ARC Agronomy and Farm Management staff presented reports on work completed during the past year and reviewed the project as a whole.

In 1989, the ARD met with Pioneer Hybrids International and agreed to participate in variety evaluations, as part of that company's plan to develop a seed improvement program and seed processing facilities in Lesotho for maize and possibly other crops important in the country. In 1990, the first year cooperative maize research trials, conducted by the ARD for the Pioneer Hybrids International (PHI) at Maseru and Leribe, were completed, and several promising hybrids which significantly out-yield the standard PNR-473 have been identified. Pioneer had assured the Division that no inferior varieties will be introduced into Lesotho. As a result of the success of the first year's cooperative trials, Pioneer agreed to provide a technician and additional funding to support the evaluation trials. They are in the process of building a seed processing plant and are now locating fields where their seed multiplication (maize, beans, etc) will be planted. As a result of the high degree of cooperation between ARD and PHI, it was decided to expand the cooperative efforts to include the evaluation of selected vegetable seeds. In January 1991, the International Monetary Fund (IMF) visited

Lesotho to assess progress of PHI and met with ARC/ARD staff to discuss cooperation with PHI and were pleased with the high degree of cooperation that existed between the two organizations.

The Division also conducted cooperative studies with South Africa (SARWEIN, SARMEIT, SARBEIN) on maize, wheat, oats, sorghum and beans. There is excellent cooperation and well adapted hybrids and varieties for Lesotho are coming out of these programs. Their scientists have also been extremely helpful in providing technical information to the Division, saving us from a lot of unnecessary duplication of work.

As a result of the Refried Bean Marketing Survey conducted in July 1990, by Mr. Y. Danziger, Langeberg Foods Ltd., a major South African processor and distributor expressed further interest in the refried bean product. Their representative, Mr. J. R. Burg and Mr. Y. Danziger met with ARD/LAPIS staff to discuss further steps. It was agreed that: 1) There was a need to conduct a more focused marketing acceptability study using two of the six original recipes. 2) The Lesotho Cannery would process and can a test run of five cases of each recipe following their asparagus run. 3) Langeberg Foods Ltd. would conduct a marketing survey using its own staff.

In 1991 the Lesotho Cannery processed a batch of refried beans to be used by Langeberg in their survey. The survey was conducted in late 1991 and the refried product was found to be acceptable in the RSA market. In February 1992, the ARD/ARC participated in a follow-up meeting with Langeberg (RSA) and the Basotho Cannery to discuss the next step in the development of a refried bean product to be marketed in the Republic. The main focus of the meeting was to discuss the costs of production for the refried beans submitted by the Basotho Cannery to Langeberg. The Basotho Cannery indicated that they would be able to process the beans from the beginning of April, after the green beans are finished. Despite the problems which have been encountered during the development of the refried bean product, both parties are still interested in following through with the project.

In the fall of 1988, the Farm Management Section held extensive discussions with, Delkab/Pioneer International in association with OPIC regarding the feasibility of seed production in Lesotho. In 1989, formal contacts were established with the Agricultural Economic Association of Southern Africa. Several papers were submitted by MOA/LAPIS staff under a sub-theme of "Development in Lesotho" presented at their annual meeting in Durban in late 1990. Contacts were also established with the Agricultural Economics Association of Namibia. ARD and ARC Rural Sociologists presented papers at their annual meeting in Namibia in July, 1991. The Social Science Specialist assisted in the planning of the regional SADCC/MOA/USAID/LAPIS Conference on Common Resource Management, held in late May 1990, and presented a plenary paper on constraints to management of common resources.

In July 1990, the ARC Rural Sociology Specialist presented a paper entitled "The LAPIS Project (Lesotho) Irrigated Vegetable Program: Impact on Household Economies" at the International Association of Agricultural Economists Inter-conference Symposium, The Restructuring of Agriculture in Southern Africa, Swakopmund, Namibia.

Two papers were presented at the Agricultural Economic Association of Southern Africa held in Durban in September, 1990, by the ARC Farm Management Specialist and the Farm Management Research Officer on the topic of development in Lesotho. The papers were titled: Purchasing Patterns of Milk and Poultry in Rural Lowlands of Lesotho, and Returns and Adoption of New Maize Technology by Basotho Farmers.

The Rural Sociology Specialist and the MOA Chief Range Management Officer, Bore Motsamai, who is the U. S. Society for Range Management (SRA) Lesotho host country liaison, attended the first international conference hosted by the Grassland Society for Southern Africa (GSSA), May, 1991, in Pretoria on "Meeting Rangeland Challenges in Southern Africa in the 1990s". They met with representatives of the GSSA executive committee to begin establishing formal, professional linkages between the SRM and the GSSA. The Rural Sociology Specialist also presented two papers entitled: Lesotho's Range Management Area (RMA) Programs: Changes in Herdsmen's Perceptions and Relevant Management Practices, and Developing Effective Community Participation in Communal Range Resource Management.

The Horticultural Specialist initiated contacts with several international organizations in order to establish effective linkage between them and ARD. To this end, communication and germ plasm exchange on behalf of the ARD was initiated in 1989, with various research institutes in: the Republic of South Africa; several states in the U.S.A.; the Horticultural Research Center in Suweon, Korea; the Asian Vegetable Research and Development Center in Taiwan; and with numerous commercial vegetable seed companies in R.S.A., U.S.A, Israel, Korea, Taiwan, Netherlands and Japan. The collection of publications and seed for variety evaluation of vegetables in the various eco-zone of Lesotho is to be continued and expanded following closure of the LAPIS Project.

In 1989, contact was established with the CIP, who agreed to provide seven lines of true potato seeds. This was a new technique of propagating potatoes, which was developed by CIP in the early 1980's, where the true seed is used, rather than the large bulky seed pieces (tubers) commonly used. This allowed evaluation of the seven lines with respect to their adaptability to Lesotho's growing conditions. By the EOP, several lines were being grown out in the fields. If successful, this new method will help establish a virus-free seed potato program in Lesotho.

The range and livestock researchers developed a cooperative program and began conducting collaborative research with ICRISAT and PANESA (ILCA Network) in fodder crop production in 1987. In 1989, a research proposal written by the Range/Livestock Specialist was approved for funding (\$45,000) by PANESA. The research program concerns the development of fodder crop production and utilization systems appropriate for Basotho livestock owners. This project got off to a slow start and finally stopped altogether, when Mr. Sefika left for degree training in August, 1990.

Over the life of the Project, the Range and Livestock Section hosted tours for groups and individuals from ICRISAT, PANESA, FAO and ILCA. Research centers in R.S.A. were often visited or contacted, providing technical and laboratory analyses assistance. In 1988-89, papers were presented by the Range and Livestock Specialist: 1) on Lesotho's animal science research program at the SACCAR/ILCA Livestock Production Workshop, Harare, Zimbabwe;

2) on production and utilization of fodder sorghum at the SADCC sponsored workshop on developing a sorghum promotion program in Lesotho, held in Maseru; and 3) on fat lamb production at the 28th Congress of the South African Society of Animal Production, Ermelo, R.S.A.

In 1989, Mr. Sefika began working with Dr. J. Cox, of the USDA, on a fellowship with the Grasslands Research Center in Pretoria, with organization, importation and planting of 1000 *Erograstis* samples. When he left for training in August 1990, the Livestock Specialist continued to coordinate with and assist Dr. Cox with his trials in Lesotho. Due to severe drought conditions at the Tsakholo Research Substation, the site of the original plantings, samples were planted at the ARD Maseru Station. Dr. Cox completed the last planting in May 1991, shortly before he returned to the U.S.A. Over the next 5 years, Dr. Cox will make annual visits to Lesotho to measure the adaptability of the grasses to Lesotho conditions.

The Soil Laboratory's association with the Inter-Laboratory Soil Analysis Quality Control Scheme (ISAQC), administered by the Soil Science and Plant Nutrition Department of the University of Pretoria was maintained throughout the project, assuring the Laboratory maintained a high standard of analytical results. The Division agreed to pay the membership fees in this organization beginning January 1991, to ensure that the quality of the analyses done by the laboratory remain high.

The Soils Specialist collaborated with the University of Torino (Italy) for analysis of soil samples from Lesotho on phosphorus-fractions to determine the phosphorus-retention on red acid soils. The results of this study indicated serious problems associated with the availability of phosphorus in these red soils.

Throughout the life of the Project the ARD/ARC Staff cooperated with representatives and/or consultants from numerous donor supported organizations who were either currently operating in Lesotho or interested in developing projects in the near future. These included organizations such as FAO, IFAD, CIDA, SIDA, EEC, FINIDA, UNDP, etc. One of the major benefits of these contacts, was that the donors were made aware of ARD's needs, in terms of projects. While some donors still insisted on developing their own project, many incorporated the ideas from the ARD/ARC staff into their projects. This resulted in less overlapping and better involvement of the Division in the projects. The staff was also heavily involved in providing advice and recommendations and/or cooperating directly in the development of joint programs with a number of internationally funded projects in Lesotho. These projects included: LISP, SWaCAP, Matalile, OPIC, SADCC/SACCAR, etc.

4.6 Improvement of ARD Services

The ARD has been providing soil analysis, plant, insect, and disease diagnostic services to the farming community and the rest on the agricultural sector for several years. The extent to which ARD has been able to provide these services, has fluctuated over the years, depending upon the availability of ARD staff to carry out the analyses or evaluation at the time. Returning degree staff and other training programs attended by the ARD staff, improved the Division's ability to respond to these requests and provide better service. The Soils Testing Laboratory will continue to provide nationwide soil testing services for Lesotho.

The major clientele consisted of individual farmers, MOA district staff, development projects and ARD researchers.

As a result of an increased public awareness of the Division's capabilities and expertise, the public demand for advisory, technical and diagnostic services from the ARD increased significantly over the past year. This was especially true in the areas related to problems related to crop and livestock production. The Division also continued to provide soil analysis and plant, insect, disease diagnostic services to the farming community and the others in the agricultural sector.

Other services provided by the research staff increased significantly over the last several years. ARD staff taught a number of courses at the Lesotho Agricultural College (LAC). The Division often received requests for its staff members to provide instruction for training courses, workshops, and seminars for district extension staff, farmer groups, MOA headquarters staff, and others in the agricultural sector, e.g., Depot managers of Co-op Lesotho and Peace Corps Volunteers. Division staff also participated in weekly radio broadcasts, farmer field-days, seminars, workshops and agricultural shows. Publications became increasingly important and Research Officers were involved in the preparation of production guides, circulars, handbooks, etc. which were then made available to other research organizations, extension staff, farmers and the general public.

4.6.1 Soil Laboratory

The Agricultural Research Soils Laboratory, is the only soils laboratory in the country capable of providing soil and plant testing services. Between the years 1986 and 1990, the laboratory received an annual average of 2000 soil samples. Each year approximately 6,000 analyses were completed. Following the soil analysis, the laboratory developed reports which included recommendations for fertilizer, lime, and manure. On the average, 50% of the samples received were from Ministry staff, 25% were from farmers, and 25% were from other development projects. Although soil samples were received from all ten districts, the majority came from the lowland districts of Maseru, Leribe, Mafeteng and Butha-Butha.

With the departure of the Soil Specialist in February, 1991 the Soil Testing Laboratory began operating entirely with ARD staff. Although in the year following the Specialist's departure there was a significant decline in the number of samples analyzed, the operation of the laboratory has continued uninterrupted. An interesting trend, which occurred over the past year, was the increase in the percentage of samples analyzed for farmers. The use of the Soil Laboratory by farmers is critical, as ultimately, their use of the laboratory will be the only justification for the continued existence of the Laboratory.

4.6.2 Production Advisory Services

At the beginning of the LAPIS Project, there were few requests for information for production information and recommendations. Over the past several years there was a significant increase in requests for information and recommendations from ARD by other divisions and departments within the ministry, farmers and donor projects. This was especially true during the past two years, as farmers and the general public became much more aware of the ARD's activities. Examples of the types of requests include:

The ARD/ARC regularly provided assistance and advice to the staff of several companies and donor funded projects including SWaCAP, LISP, Pioneer Seed (RSA), Matalile Project, FSSP, Agrivet, Garden Center, Coop Lesotho, etc.

The Agronomy Specialist, along with the Agronomy Staff worked regularly with Pioneer Hybrid International in support of their efforts to establish a seed processing enterprise in Lesotho. The Section advised on increasing bean seed, provided new varieties for increase.

Because of the drought which persisted for the past several years, the Division continually received requests from individual farmers, District extension staff and MOA headquarters staff for recommendations to provide the farmers with crop alternatives as it became more apparent that there was going to be a general maize crop failure in Lesotho.

4.6.3 Plant Diagnostic Laboratory

The services of the Plant Diagnostic Laboratory were available to farmers, researchers, extension staff, MOA staff, development projects and other members of the general public. Research staff diagnosed insect, disease and other plant-related problems, and provided appropriate recommendations to correct these problems. Over the life of the Project, the availability of this service varied a great deal, depending upon the availability of pathological and entomological expertise at the Station. During the first two years of the Project, an average of 500 requests for this service were made from the public. The departure of the Pest Management Specialist and the ARD Plant Pathologist (degree training) in mid-1988 curtailed these services.

The ability of the Plant Diagnostic Laboratory to provide diagnostic services to the farming community and general public were improved significantly with the return of Dr. Qhobela in Plant Pathology in April, 1990. Development of this service was expanding until the untimely departure of Dr. Qhobela in March, 1991.

4.7 Technology Transfer and Information Dissemination

Once research is completed, the dissemination of the results are critical if the technologies and recommendations generated by the research institution are to be adopted by the agricultural sector. Throughout the life of the Project, the capacity of the Division to conduct field-days, on-farm demonstrations, workshops and seminars was developed and expanded. The same was true with the publication of reports, bulletins, circulars and production guides, which are now available to the general public.

4.7.1 Field-days

From the beginning of the Project, the ARC encouraged efforts to develop ARD's capacity to organize and conduct field-days. These field-days were held at the Maseru Station, many of the branch stations such as Lekubane, Nyakosoba, Siloe and Machache, and on farmers' fields. They were used to provide the farmers and agricultural community in general, with up-to-date information on the latest production practices and recommendations. In many cases, they included demonstrations of improved practices which the Division was encouraging.

The first annual ARD field-day was held in January 1987, and was attended by about sixty farmers and MOA staff. Beginning in 1988, with each passing year, the ARD research officers participated more actively in the preparation of information material, explaining the research results and answering questions. In February, 1992, the Horticulture Section sponsored a horticultural field-day, which was followed in a week by the sixth annual ARD field-day. Both field-days were planned, coordinated, and conducted by ARD staff. Prior to the field-days, the organizers contacted a number of businesses and organizations who agreed to provide financial support for these field-days. Both field-days were conducted in Sesotho, by ARD staff. The Horticulture field-day was attended by 100 farmers and 30 MOA staff. The Annual ARD field-day was attended by 150 farmers and 100 MOA staff and individuals from other projects. A list of the field-days held over the life of the Project can be found in the following table.

Field-days and Agricultural Shows, June 1986 through May 1992.

Subject	Date	Location	Participants
<u>June 1986 - May 1987</u>			
Fodder sorghum production	Jan 87	Leribe	50 farmers/MOA staff
ARD Annual Field-Day	Feb 87	Maseru	60 farmers/MOA staff
District Agricultural Show	May 87	Mulumong	120 general public
District Agricultural Show	May 87	Nyakosoba	85 general public
<u>June 1987 - May 1988</u>			
District Agricultural Show	Jun 87	Siloe	50 general public
Insect/diseases/pesticide safety	Sep 87	Nyakosoba	35 vegetable farmers
Lamp production, Auction	Aug 87	Maseru	40 farmers/MOA staff
Insects & diseases of crops	Oct 87	Siloe	40 farmers
Soil sampling and liming	Nov 87	Nyakosoba	35 farmers
Fat lamb production	Jan 88	Maseru	70 MOA staff
Fodder crop production	Jan 88	Maseru	80 extn agnts/MOA staff
Pinto bean production	Feb 88	Machache	75 farmers
Fodder production demonstration	Feb 88	M. Nthuse	10 farmers
ARD Annual Field-Day	Feb 88	Maseru	70 farmers/agents
General crops field-day	Mar 88	Maseru	65 MOA staff
Improved technology, maize	Mar 88	Berea	100 farmers
Perennial grasses & legumes	Apr 88	Leribe	40 dairy farmers
Soil sampling and liming demo	Apr 88	Maseru	34 extension agents
Liming vegetable & crop plots	May 88	Nyakosoba	25 farmers
Royal Agricultural Show	May 88	Matsieng	2000 general public
District Agricultural Show	May 88	Siloe	170 general public
<u>June 1988 - May 1989</u>			
Spring feeding trials	Jun 88	Maseru	15 farmers/MOA staff
Winter & spring forages	Oct 88	Ts'akholo	80 farmers/MOA staff
Liming techniques, maize	Nov 88	Machache	33 farmers
Spring & summer forages	Nov 88	Maseru	120 farmers/MOA staff

Subject	Date	Location	Participants
Spring & summer forages	Nov 88	Maseru	15 farmers (executive committee of Wool-Growers Assoc.)
Liming techniques, lucerne	Dec 88	Mantsebe	35 farmers
Wheat, oat, bean, maize trials	Jan 89	Siloe	80 farmers
Dairy cattle feeding program	Feb 89	Maseru	100 farmers/staff
Maize, bean, sorghum, trials	Feb 89	Maseru	60 farmers/MOA staff
Summer forage/confined feeding	Feb 89	Maseru	15 farmers (executive committee of Wool-growers Association)
Maize response to liming	Mar 89	Machache	41 farmers
Estab of oats, annual ryegrass	Mar 89	M. Nthuse	10 farmers
Wheat/oat/bean/maize res. trials	Mar 89	Machache	55 farmers
Wheat/oat/bean/maize res. trials	Mar 89	Mafeteng	60 farmers
Dairy cattle feeding program	Mar 89	Maseru	30 Leribe farmers
Matsieng Royal Agricultural Show	May 89	Matsieng	general public
District Agricultural Show	May 89	Siloe	general public
District Agricultural Show	May 89	Nyakosoba	general public
<u>June 1989 - May 1990</u>			
District Agricultural Show	Jun 89	Maseru	general public
Liming techniques	Jun 89	Berea	9 farmers
Liming techniques	Jul 89	Khololikane	56 farmers
Liming techniques	Aug 89	Thaba Patsoa	7 farmers
Lucerne, response to lime	Nov 89	Nyakosoba	23 farmers
Liming techniques, on-farm	Nov 89	Ha Hlajoane	11 farmers
Thinning of vegetables	Dec 89	Khololikane	24 farmers
Liming of acid soil	Dec 89	Mafeteng	141 farmers
Lucerne, response to lime	Dec 89	Maseru, Nyakosoba	15 Land Use Planning
Oat & wheat evaluation	Dec 89	Mafeteng	125 farmers
Oat & wheat evaluation	Dec 89	Ts'akholo	3 farmers
Tomato mulching & staking trials	Jan 90	Maseru	30 District
Tomato & Cabbage research trials	Jan 90	Maseru	19 Agric. Industry
Lucerne, clover, beans, liming	Jan 90	Nyakosoba	41 LAC students
ARD Annual Field-Day	Feb 90	Maseru	250 farmers, 50 MOA staff
Field crops	Mar 90	Qeme	75 farmers
CIAT bean evaluation nursery	Mar 90	Maseru	20 CIAT representatives
Agronomy research program	Mar 90	Maseru	40 farmers
Small stock research trials	Mar 90	Lekubane	18 farmers, 2 MOA staff
Hybrid evaluation, Pioneer Int'l	Apr 90	Maseru	18 LNDC, USAID, U.S. Embassy
District Agricultural Shows	May 90	Siloe	general public
	May 90	Nyakosoba	general public

Subject	Date	Location	Participants
<u>June 1990 - May 1991</u>			
Central Agric. Show	Jun 90	Moriya	5000+ gen public
Horticulture/Agronomy	Jul 90	Maseru	80 PCVs
MULPOC Improved Maize	Oct 90	Tlokoens	15 farmers
MULPOC Improved Maize	Oct 90	Qoqolosins	16 farmers
MULPOC Improved Maize	Nov 90	H Mahobons	15 farmers
Agronomy/Fodder Trials	Feb 91	Maseru	35 farmers
ARD Annual Field-Day	Mar 91	Maseru	325 farmers 100 MOA, others
MULPOC Improved Maize	Apr 91	Ha Selomo	400 farmers
Fodder trials	Apr 91	Maseru	16 participants
MULPOC Improved Maize	Apr 91	Thababosiu	30 farmers
<u>June 1991- May 1992</u>			
MULPOC Field-day	Dec 91	Leribe area	50 Farmers
MULPOC Field-day	Jan 92	Mateseng	35 Farmers
MULPOC Field-day	Feb 92	Sefikeng	62 Farmers
ARD Horticulture Field-day	Feb 92	Maseru	100 Farmers 30 MOA staff
ARD Agronomy/General Field-day	Feb 92	Maseru	150 Farmers 100 MOA staff

4.7.2 Workshops/Seminars

The quantity and the type of training programs organized or participated in, including seminars and workshops can be found in section II-B. The ARC team and counterparts actively participated in development of training materials and implementation of the workshops. It is noteworthy to briefly describe the ARC team's efforts in disseminating the research findings compiled into a number of Production Guides. Publication of each guide was followed by an intensive workshop for the MOA departments and field staff:

The first in a series of four, three-day in-service training workshops was held in late October 1990, for 30 participants in Maseru. These workshops were intended to provide a "walk-through" of the production guides produced by the ARD/LAPIS Staff to district officers, subject matter specialists and MOA headquarters staff. The Horticulture Section presented the following production guides: Tomato Production Guide, Cabbage Production Guide, Onion Production Guide, Potato Production Guide, Carrot Production Guide, Mulching and Production of Transplants. The training not only included production practices but details on production economics and marketing which were presented by the Farm Management Specialist.

The second, three-day seminar on the field-crop production guidelines was held in February 1991. Detailed discussions were conducted on the production, economics and marketing covered in the following production guidelines: Maize Production Guide, Wheat Production Guide, Dry Bean Production Guide, Sorghum Production Guide, Sunflower Production Guide, and Oat Production Guide.

In March, 1991 the third, three-day workshop was conducted on five horticultural production guidelines: Beetroot Production Guide, Leafy Greens: Mustard Production Guide, Cabbage Production Guide, Peach Production Guide, and Apple Production Guide. The Farm Management Specialist presented sessions covering the crop productions cost, returns and Lesotho specific marketing advice.

In April, 1991 the fourth, two-day workshop on the fodder production guidelines was presented for the following guides: Fodder Sorghum Production Guide, Oats (Seed and Fodder) Production Guide, Lucerne Production Guide, Perennial Ryegrass Production Guide, Annual Ryegrass Production Guide, and Bana Grass Production Guide.

4.8 Institutional Assistance to LAC

During the first four years of the LAPIS Project, the ARC Specialists spent approximately 20 % of their time with teaching responsibilities at LAC. In the fifth and sixth year, this activity was phased out as the teaching responsibilities were turned over to the LAC teaching staff.

For three years, from 1989 through 1991, six LAC students, during their vacations, were assigned to ARD for a work study internship and worked with agronomy, farm management, horticulture and range/livestock staff members. These students assisted in data taking, data reduction, literature search methods, and compilation of information from statistical sources, as well as other research related tasks. The hiring of student workers was mutually beneficial, for the student acquired practical, hands-on experience with pay and the ARD received much needed assistance. At the end of their internship, each student wrote a report concerning his/her experience. This program was an excellent mechanism for the student to gain on-the-ground work experience and developing an awareness of the function of the Research Division.

The ARC Specialists were available to LAC students to provide assistance with their enterprise projects. The Horticultural Specialist contributed time dealing with problems related to vegetable crops, and assisting in the development of a soil media system for LAC seedling production.

For detailed description of the research programs and results conducted in support of crop production during the life of the project refer to Section II-C

4.9 Publications

During the life of the Project, several types of publications were produced. The research bulletins, research reports, handbooks, and manuals published were technical and included detailed information. A series of twenty-five production guidelines were also published. After a lot of discussion, it was decided these guides should be fairly technical and contain as much information as was known about each crop. In this way, they would serve as a basis for other, and possibly simplified guides for extension agents and farmers with limited technical skills. The majority of the guidelines included a section on the economics of production and the profitability of the crop, and where possible, marketing information was also included. The production guidelines were targeted towards those who could read and understand english, e.g. headquarters staff, subject matter specialists, and extension agents

with some advanced training. A number of circulars were also published, these were three or four page documents on specific subjects written in simple english. ARC/ARD staff also published numerous articles in the Temo Times, a monthly newsletter published by the MOA/LAPIS.

The ARD staff were encouraged to write the reports, guidelines, etc. In the last years of the project several of the ARD researchers were using the word-processing and graphics programs to publish professional documents. A list of the publications written by the ARC Specialists can be found in the Appendix. Many of the reports, bulletins, circulars, and especially the production guidelines, were and are in great demand, especially by MOA departments, projects, and other individuals planning agricultural work.

5. STAFF DEVELOPMENT

ARC put forth considerable time and effort into ensuring that Division staff receive adequate training to support their research activities. This training has included: Degree training of staff in disciplines in which severe deficiencies existed; short-term training, in areas where the staff need to have their skills improved and up-graded; and finally in-service training, which was an on-going program of short courses either formal or informal, individual or group, to ensure that the research staff are fully capable of independently planning and managing their research programs.

5.1 Long-Term Training

Conducting agricultural research in a developing country, requires a cadre of highly trained staff who are experienced in the methodology of carrying out applied, adaptive field research. At the beginning of the Project, excluding staff still out of the country for training, there were a total of eleven degree holders, four MSc's, six BSc's, and one BA. Two of the MSc's and the BA were involved in administration leaving only eight degree holders who had research responsibilities. In addition, there were twenty three technical support staff without degrees. Between June 1986, and the end of the LAPIS Project in May, 1992, the Project funded fifteen ARD staff members for degree training (Table Nine).

Throughout the project life there was a significant amount of movement of ARD staff members. Staff returned from training, others left for training, there were transfers in and out of the Division, a few new hires, and several resignations.

Including all degree training, from LAPIS and other sources, and taking into account all these movements, at the end of the Project there were a total of seventeen degree holders, one PhD, four MSc's, and twelve BSc's at ARD. In addition, there were four staff members, not funded by LAPIS, still out of the country on training. This included one PhD, two MSc's and one BSc. While this represents a significant improvement over the situation in 1986, it is still below the critical mass of researchers required to develop and maintain the type of sustained national research program necessary to meet Lesotho's agricultural development and production needs. From the onset the ARC team worked closely with the returning staff in an effort to assist them in the planning, development, and implementation of their research and demonstration programs. In most cases the returning research officers

were assigned the responsibility for specific crops within their respective program areas. Those with sufficient training and experience were encouraged and assisted in applying for research grants which were available within the region.

Table Nine: ARD Staff Supported by the LAPIS Project for Degree Training

Name	Degree/Specialization	Period out of Country
M. Majoro (FSR)	MSc/Economics	Sept 1985 - May 1990
P. Matete (FSR)	MSc/Nutrition	Oct 1984 - Sept 1986
D. Mathaba (FSR)	BSc/Soils	Did not return to Lesotho
T. Matopo (FSR)	MSc/Rural Sociology	Sept 1983 - Dec 1986
L. Motjopi (FSR)	MSc/Animal Science	Jan 1984 - Dec 1986
L. Pomela (FSR)	MSc/Plant Pathology	Jan 1984 - Feb 1987
M. Makhata (FSR)	BSc/Horticulture	June 1984 - Dec 1986
M. Motsamai	MSc/Marketing	August 1987 - June 1989
K. Mohlakoana	BSc/Animal Science	August 1987 - June 1989
M. Ranthamane	BSc/Agronomy	August 1987 - Dec 1990
M. Pomela	PhD/Agronomy	Jan 1988 - Dec 1990
M. Alotsi	BSc/Agronomy	August 1987 - May 1990
M. Mohloboli	BSc/Horticulture	August 1987 - May 1990
F. Mabusa	BSc/Pomology	Sept 1988 - June 1991
M. Ramasike	BSc/Entomology	Sept 1988 - Dec. 1990
C. Lebusa	BSc/Range Management	August 1986 - Dec 1989
P. Sefika	BSc/Range Management	August 1984 - June 1988

5.2 Short-term training

Short-term training courses, seminars and workshops, often held in other countries within the region, were also considered to be an important part of the development of the human resources within the Division. Exposure of the ARD staff to information and ideas from a wide range of countries was very important to the continuing educational development of the research staff, as they become part of the growing network of agricultural researchers in Southern Africa. The majority of these events were sponsored by other international organizations such as SADCC, SACCAR, CIAT, CIMMYT, CIDA, DANIDA, ICRISAT, IDRC, ILCA, ISNAR, UNICEF, PANESA or SARCCUS. In 1986-87, 24 staff members from the ARD attended 33 international short courses, workshops, seminars and meetings. In 1987-

88, 21 staff members from the Research Division attended more than 36 international courses, workshops, seminars and meetings. In addition to the externally donor funded short-term training, the LAPIS Project supported short-term training where gaps existed, either with its own funds or utilizing funding from other sources. This short-term training fell into two broad categories, management training and technical training.

Management Training: In March, 1989, five ARD research officers participated in a three week workshop entitled "Research/Extension Collaborative Field Diagnostic Workshop" sponsored by CIMMYT and LAPIS.

In 1989-90, key people within the ARD management attended a number of management training courses and workshops during the year. Section Heads from Horticulture, Pest Management, Nutrition, and Range and Livestock were sent for research management training courses held in countries in the southern African region.

In May, 1991, the Director, Deputy Director, and members of MOA planning and ARD staff attended a research management ISNAR sponsored workshop in Swaziland.

The Director, Deputy Director and Research/Extension Coordinator completed a two-week regional tour of research institutions in July, 1991. The trip included Botswana, Zimbabwe, Malawi, and Swaziland. The objectives of the tour were to learn: 1) What type of organizational structure they had and how they fit into the MOA; 2) How they planned their research programs; 3) Their linkages with policy makers; 4) What linkages they had with extension and how these linkages were maintained; 5) The structure of extension and what, if any, inputs they had into research program planning; and, 6) How research-generated information was passed through extension to the farmers. The meetings with the research institutions were very informative.

Technical Training: In 1988-89, four ARD staff members received training in Computer Appreciation, MSDOS and Word Perfect. Approximately 8 research officers received training on MSTAT, a statistical analysis program, in a course conducted in Lesotho sponsored by CIMMYT.

In 1989 and 1990, a number of the ARD staff members attended short to medium-term training courses which were conducted both in-country and overseas:

The Acting Deputy Director, Ms. Ntoanyane, who was responsible for improving the publication and dissemination of research generated information to the MOA and its clients, attended a course in communications and media strategy, held at Iowa State University.

In March 1990, Mr. M. Makhata (horticulture) and Mrs. Lepheana (plant pathology) have completed a five month training course at AVRDC in Taiwan of vegetable production research methodology. This training greatly increased their confidence and ability to conduct their respective programs.

Mr. Lethoko attended a 10 week IITA sponsored course in "Maize Research and Technology Transfer" held in Ibadan, Nigeria.

Selected staff members participated in study tours/field trips to the RSA to familiarize the ARD, LAC, Crops and other MOA field staff with the production and research activities being conducted in the Republic.

With the increased availability of computers at the ARD, approximately 20 staff participated in a series of in-country computer training courses in MSDOS, Lotus 1-2-3, and Word Perfect.

The irrigation technician, Mr. Makhetha attended a thirteen week irrigation training course conducted in Lesotho.

In June, 1990, a three week training program for ARD staff was conducted including introductory computer use, intermediate DOS, Wordperfect, Lotus 1-2-3 and Printgraph. A total of 130 person-days of training were provided. As part of the ARD/ARC effort to improve the computer skills, two follow-up training programs for ARD staff were conducted in November, 1990. Subjects included introductory and advanced Word Perfect, Advanced Lotus 1-2-3 and Printgraph, and Freelance Graphics programs. A total of 80 person-days of training were provided during this activity.

Between September and November of 1990, five additional ARD personnel attended six scheduled computer training courses at Quadrant Computer Training Center, on MS-DOS and WordPerfect 5.1. In February, 1991, one ARD staff member from the Accounts Section attended an introductory computer training course at Quadrant Pty. in Maseru. She will ultimately be responsible for maintaining the grant funds received by researchers within the Division.

A one week LAPIS, CIMMYT jointly funded computer training course on MSTAT was conducted in early July, 1990, for ARD research and technical support staff.

Ms. M. Sepamo, ARD Nutrition Research Technical Officer, completed a five-month post-secondary and in-service professional Diploma in food and nutrition in September 1991. The Program was offered by Hahnemann Institute of Natural Medicine in London.

A two week training course on basic statistical theory and field trial data analysis and interpretation was conducted in February, 1992, and was attended by 14 ARD research and technical staff. The course was conducted by the Department of Statistics and Biometry, University of Natal.

5.3 In-service training

The ARD research and technical staff, received informal in-service training throughout the life of the LAPIS Project. Each of the ARC TAs advised his/her ARD counterpart staff in their areas of expertise. This kind of assistance was continued throughout the production season as problems were encountered. As a result of the high degree of cooperation and communication between the TAs and their counterparts, ARD staff gained a great deal of confidence in their ability to plan and conduct applied research trials, and by the end of the Project, many of them were able to carry out their programs with no assistance from the LAPIS TAs.

After the purchase and installation of the computers in 1988, informal training or short-courses were conducted for individual ARD staff members as part of the program to improve their computer capabilities and skills, as new equipment and/or new software packages were purchased. Training included: removal of computer viruses from floppy diskettes, formatting and layout with WordPerfect 5.1, graphic design and tables with LOTUS Freelance, basic applications and data manipulation with SPSS, and operation of the HP Laserjet III printer.

Regular in-service training sessions were initiated in December 1989, for research and technical staff. The purpose of these training sessions was to provide instruction in specific areas of need as perceived by staff members. Initially they were held on a monthly basis, and then they were scheduled whenever a subject area was identified. Subject areas which were covered between 1989 and the end of the Project included: basic and intermediate computer awareness; agricultural economics as an integral part of agricultural research; basic camera operation and photography for agricultural research; soil acidity and liming; field-plot planning, design, data collection and statistical analysis; economic analysis of field trials; use of graphics to report and analyze economic and field trial data; basic field plot design; and improvement of acid soils.

E. LESOTHO AGRICULTURAL COLLEGE (LAC)

1. SETTING

LAC was inaugurated in 1955 offering only a two-year Certificate in Agriculture. In 1962 a similar certificate program in Rural Domestic Economy was introduced. In 1975, when the former University of Botswana, Lesotho, and Swaziland (UBLS) split and the National University of Lesotho (NUL) was formed, the MOA decided LAC should launch its own diploma program in agriculture. The first post-high school two year diploma program in General Agricultural was introduced in September 1977.

In 1986, prior to the LAPIS project, there were three certificate programs (general agriculture, home economics and agriculture mechanization) and two, 2-year diploma programs (general agriculture and forestry). As the level of academic offerings increased, the need for more highly trained LAC teaching staff also increased. Where previously Certificate holders were the norm, in early 1986, Bsc. and Msc. degree became the required norm at the College.

The objectives of the College's programs changed with time. Prior to 1980, the MOA used to hire nearly 100% of the LAC's graduates, ie. students were trained for civil service employment. From 1980 to 1986, the MOA began to phase out these opportunities as civil service rolls became financially unwieldy. LAC, in response to these changes, initiated a review of their objectives in 1982. It was concluded that the College's charter should involve training for private sector or self-employment and for opportunities in the education sector. In early 1986, LAC had as yet been unable to adapt its curriculum to meet these desired changes.

LAC was once allowed to retain income derived from the sale of farm produce, and, given the more simplified nature of the programs at that time, was able to operate sufficiently. In 1980, the Government of Lesotho (GOL) initiated a policy in which LAC was required to submit all proceeds to the central treasury. In theory, LAC could then justify their annual budget based on this revenue. In practice this was not happening. LAC staffing, operations and maintenance expenditures were severely handicapped. Annual budget submissions were not adequately met. Many teaching staff had to be seconded from other MOA divisions. Prior to 1986, seeking to alleviate these constraints, LAC actively sought to increase what had always been a low to moderate level of assistance by foreign donors. At the time of LAPIS Project initiation the only on-going donor assistance was an FAO implemented project affecting the Diploma in Forestry program.

LAC's organizational position within MOA remains unchanged. LAC is a division of the MOA central administration and the Principal reports directly to the Deputy Principal Secretary (DPS). Under the Principal based at the main campus in Maseru are the Directors of Study (Vice-Principals) at the Maseru and Leribe campuses.

2. AEC IMPLEMENTATION STRATEGY

The AEC was mandated to increase agricultural production, income and employment in Lesotho by strengthening the capacity of the MOA to provide improved agricultural education and to disseminate practical and applied agricultural information. Specifically, assistance was to be given towards improving the quality and relevance of academic agricultural education, in-service training for MOA personnel, and farmer training.

To accomplish this mandate the AEC TAs focused upon the following tasks:

1. Strengthening and further developing the LAC curriculum and participating in formal classroom instruction;
2. Introducing the innovative Student Enterprise Program (SEP) to provide students "hands-on" production experience to better prepare graduates for entering entrepreneurial careers;
3. Improving the LAC infrastructure and facilities;
4. Improving LAC's administrative and management capacities; and
5. Conducting a variety of short-term training efforts in support of MOA personnel and farmers.

3. AEC STAFFING

At the onset of LAPIS, the AEC was composed of six TAs, including: Team Leader, Operational and Management Specialist, Extension Education Specialist, Irrigation Agricultural Engineer, Agronomist/Soils Specialist, and an Agricultural Curriculum Development Specialist. In AAI's first amendment to the LAPIS contract, an Animal Scientist Specialist was added to the component. At a later date, two additional positions were added: Computer Specialists and Agricultural Business Advisor.

4. INSTITUTIONAL ASSISTANCE

The vast majority of all TA effort within the AEC was aimed at institutional support. Following is a summary of AEC institutional support efforts.

4.1 Curriculum Development

4.1.1 Diploma Programs

Two main thrusts were conducted in curriculum development: one dealing with the need of Lesotho for secondary school teachers of agriculture and home economic sciences, and one with the need for private sector and self-employed entrepreneurs. During the period of LAPIS support to LAC, four new three-year diploma programs were introduced with the approval of NUL: Diploma in Agricultural Education (DIAE) and Diploma in Home Economic Education (DHEE) which trained students for secondary high school teaching positions, and the Diploma

in Agriculture (DIA) and Diploma in Home Economics (DHE) which prepare students for self-employment and production/marketing managerial positions. All are now taught on the LAC campus, except for the third year of the DIAE program, which is conducted by NUL in Roma. AEC/LAPIS made major contributions toward the development of all four programs, with particular emphasis placed on the DIA program which includes the Student Enterprise Project activity in the last year.

LAPIS also assisted with the initial development of the DHEE and DIAE program as well securing another donor to follow through with these. The Rural Science Teacher Training Project (RSTTP) of the Dutch Government and the Free University of Amsterdam assumed the major responsibility for these diploma programs from 1989 through 1991.

4.1.2 Changes in the Curriculum

Extensive changes in College curricula were initiated in 1986, with Project assistance through the Curriculum Development Committee and the Academic Board, and NUL Faculty Senate. These cross-departmental changes had the effect of increasing the ratio of practicals to theoretical classroom time, giving students a more hands-on, career-oriented education. Notable examples of this are: the Student Enterprise Projects (SEP) practical, which comprises 56 units in the final year for DIA and DHEE students; the Extension Internship practical; and Agriculture Engineering attachment in the private sector. Additional LAC intra-departmental changes have continued throughout the tenure of the Project. An example of intra-departmental curriculum changes took place in 1989 when the Agricultural Engineering (AE) Department held a seminar entitled "Agricultural Engineering Education in Lesotho: Past, Present and Future". Farmers, MOA personnel, potential employers from the private sector, and former students were participants in the seminar which addressed the present academic program and made recommendations for the future needs of the AE Department. As a result of the seminar, the Department's curriculum was revised, with adjustments made to course content, practical orientation, and course sequencing.

New College classes introduced during Project tenure are indicated in the following section. For these and existing classes, new syllabuses were created or revised. Comprehensive lecture notes were published for many of the courses. A complete list of these is found in the annex. These class notes were initially sold to students at subsidized and then at-cost prices through the LAC Tuck Shop, and later placed in multiple copies in the respective LAC Departments and in the LAC Library.

4.1.3 LAC Catalogue

In 1986 the College's first comprehensive catalogue and yearly calendar was published, and has since been revised annually. The catalogue gives course sequencing, description, and objectives. It also gives the background of LAC and lists all academic regulations. The catalogue has been distributed to all academic staff and persons associated with the College.

4.1.4 NUL Faculty of Agriculture

In 1988, preliminary discussions were held between LAC, MOA, and NUL on the issue of creation of a Faculty of Agriculture. The MOA approached the USAID Mission who agreed

to recruit three consultants from American universities to investigate the possibility of a Faculty. The consultants advocated the consolidation of LAC and ARD under the administration of NUL as a Faculty of Agriculture. A Task Force of NUL and MOA personnel used these recommendations in drawing up their 1990 proposal on the Faculty. The proposal called for a 4 1/2 year B.Sc. program at the current LAC site with LAC and ARD combining within NUL to form the National Institute of Agricultural Research and Education (NIARE). The proposal was submitted to the GOL's Council of Ministers for consideration. Although no decision had been made by the Council, NUL recruited Dr. Ebenebe from Nigeria as the first Dean of the Faculty of Agriculture in mid-1990. The initial personnel recruited for the Faculty came from outside of Lesotho. In September 1991, seven students began training in a new pre-fab building on the NUL campus. Students were selected from second year NUL science students and from LAC Diploma holders. To the extent possible, the AEC assisted the NUL and LAC in the discussions pertaining to the B.Sc program and advised on the curriculum.

4.2 Formal Instruction

Since 1986, annually there has been significant increases in the numbers of students seeking admission into LAC. Changes in the quality of education offered at LAC and changes in the curriculum, e.g. the SEP and Education Programs options, have precipitated this. Because this large number of students is more than LAC's limited resources can adequately accommodate, the College's Admissions Committee has been given the assignment of selecting a limited number of students for each program as agreed upon by LAC's Academic Board. Prior to a strict policy on reducing admissions excessively large classes resulted, which strained LAC resources, especially for intensive activities such as SEP. Prior to these reductions, overall LAC enrolments were approximately 300 students on the two campuses, with about two-thirds of these in the five Maseru diploma programs. This total number has now been reduced significantly to the benefit of College formal training objectives.

From September 1986 through May 1991, the AEC team spent considerable time formally teaching diploma courses at the Maseru campus, with several certificate level courses being taught on the Leribe campus during the first two years of the project. Diploma courses in which AEC personnel made input, through direct instruction and/or development of course content and comprehensive lecture notes, are listed below under the present LAC Departments:

* = new classes developed since LAPIS began in 1986

Animal Science

Introduction to Animal Science, Dairy Husbandry, Pig Husbandry, Livestock Practicals, Animal Nutrition, Poultry Husbandry, Anatomy and Physiology; *Introduction to Fish, Rabbits, Bees, Hides, and Skins; Pre-Entry Zoology, Beef Husbandry, Student Research Projects, *SEP

Socio-economics and Quantitative Studies

Rural Sociology, *Computer Science, *Extension Methods, Extension Principals, *Extension Internship, *SEP Accounting and Management, Mathematics, Student Research Projects,

Agronomy

Principals of Horticulture, Horticultural Crops, Fruit Production, *Farming Systems, *Intr. to Plant Protection, * Advanced Plant Protection, Principle of Agronomy, Field Crops Soil Chemistry/Fertility, Soil Classification, Seed Production and Technology, +General Soil Science, Soil Science Laboratory, *Crop Improvement, Pre-Entry Biology, Pre-Entry Chemistry, Ag. Chemistry, Principles of Plant Sciences, *Weeds and Weed Control, Student Vegetable Plots, *Gardening Techniques, *Crops Tutorial, Student Research Projects, *SEP

Agricultural Engineering

Principles of Engineering, Agricultural Processing, Workshop Processes, Power Supplies, Student Research Projects, *Ag. Engineering Exposure, Irrigation Engineering, Water Development Techniques

Home Economics

Food Science, Home Science, Biochemistry, Appropriate Technology, *Entrepreneurship, Educational Psychology, School and Community, *SEP

Forestry, Range, and Conservation

+Range Plant Identification and Inventory

Upon the return of long-term trainees to the College, these classes were taken over by Basotho staff or others assigned to LAC.

4.3 Student Enterprise Program (SEP)

The Student Enterprise Program is a career-oriented, agricultural education curriculum that was initiated at LAC by LAPIS. The purpose for developing SEP was to meet the changing mandate of the College to train students having hands-on agribusiness experience to be self-employed entrepreneurs. The overall objectives of SEP are:

1. To produce agricultural and cottage industries-related entrepreneurs who are trained to engage in or develop privately-based, small-scale agricultural and cottage industries enterprises. This includes crops, livestock, and home economics activities. The goal is to increase self-employment in Lesotho.
2. To produce highly skilled, career-oriented graduates who are trained to fill agricultural education and extension subject matter positions.

3. To produce competent, business-oriented technicians who can meet the demand for operators and managers of various private and governmental production and marketing schemes.

SEP began at LAC in 1986 with five students and five projects, and has recently completed its fifth year of projects with 27 students. Ninety students (approximately 30% female) in all had completed SEP by the EOP, with almost all making profits on their 9-10 month projects. At the EOP, eighteen pre-SEP students were preparing budgets for the 1992-93 year. Project profits were as high as M10,000 in several projects, with these earnings awarded to students at Graduation for the purpose of assisting them begin their own enterprises.

4.3.1 Description of the SEP Trust and Program

After two years at LAC, students may consider the DIA and DHE: the SEP options, or the Education Program options. Those choosing and approved for SEP by the College go through a project selection process, are assigned a supervisor, prepare a project plan and budget, and make application for a loan from the SEP Trust Fund, a legally registered revolving fund established in 1989.

After receiving loans for seasonal inputs, students conduct projects on the LAC campus in such projects as lamb and beef fattening, dairy, piggery, broilers, layers, irrigated vegetables and fruits, seedlings, and cottage industries. Although supervised by College staff, students are responsible for all aspects related to their enterprise: production, marketing, and financial. LAPIS's input into SEP was to provide long and short-term training to LAC staff, infrastructural improvements, and considerable TA support in the early stages of institutionalizing the program.

SEP was a successful and well-documented curriculum that remains unique to the African continent. It is seen as a model for career-oriented, private sector agricultural training that can be replicated in other countries, given modifications to local conditions. For further elaboration on SEP, see the two LAPIS/USAID target reports, "Summary Report of SEP: Experience on Costs of Agribusiness at LAC 1987-91" (1991), and "Student Enterprise Program at LAC Termination Report" (1992), plus other documents describing SEP found in the annex to this report.

4.3.2 SEP Graduate Follow-up Support

Although not originally a mandate of AEC, the need for assisting graduates of SEP to begin their own enterprises was identified early in the term at LAC. Informal assistance was requested and given by AEC TAs and LAC staff to graduates seeking technical and financial help. From June 1991 through May 1992, USAID, through LAPIS, funded a LAPIS TA in the position of Agribusiness Advisor for the purpose of helping to create at LAC a sustainable model for assisting graduates through LAC efforts, as well as aiding selected SEP/LAC graduates during the final year of LAPIS. Entrepreneurial assistance was not previously being met through existing MOA channels.

A Follow-up Team was formed consisting of the LAPIS TA, the LAC Extension Lecturer, and a PCV Business Specialist. During the year, the team helped graduates write business

plans and credit applications. It made visits to entrepreneurs, sought support from DAO staff, and established links with the private sector, agribusinesses and lead farmers. Regular meetings were conducted with graduates for disseminating information and increasing communications. An internship program was formulated through which graduates could work for a modest salary in their chosen field before starting their own businesses. A business class for SEP students was developed to better prepare students for self-employment.

The Follow-up program assisted 29 graduates and contacted many more through graduate meetings. Five graduates began businesses in livestock, crops, and cottage industries, while ten others were in the process of starting. The Follow-up team communicated its activities to the College through their membership on the SEP Committee, and to the MOA through contacts with personnel in the Department of Field Services.

4.4 Improvements in Administrative Capabilities

AEC assisted the LAC administration in improving operating procedures through input from the Team Leader, Operations Management, and Computer Management Specialists. Positions directly assisted were those of the Principal, Director of Studies, Files Clerk, and the Bursar. TAs not only assisted with activities related directly to LAPIS/LAC objectives, but served as mentor colleagues with administrators on a varied range of overall College endeavors. Several documents were developed by AEC which are being used by the administration to enhance their efficiency, explain College procedures to staff, and to inform interested outside organizations about LAC. These documents include the annual "LAC Catalogue and Calendar", "LAC Information Outline", "LAC Staff Handbook", "LAC Graduate Survey Report", a brochure and pamphlet on Student Enterprise, and several procedural guides to administrative computer procedures.

4.4.1 Computerization

Besides establishment of a computer laboratory for administration/staff work and student teaching, many College records and reports were computerized with AEC TA assistance. These included the following areas:

1. **Student Grades:** Spreadsheets were created to determine grade point averages. These are: Continuous Assessment Spreadsheet, Program Semester Grade Report (CT4), cumulative GPA Report spreadsheet (CT5), Final Grade Summary spreadsheet, and the Individual Semester Grade Report for each student.
2. **Student Files:** The Student Files Office was completely reorganized. All previous and present LAC students files were updated for completeness, given a number, and data entered into computer data base files. Individual Student Transcripts were prepared; also, a Listing of Student Data by Enrolment Year and a program producing LAC Student Statistics from 1961 to the present was put in place.
3. **Staff Training:** The AEC Computer Management Specialist taught numerous staff in IBM and Macintosh Microsoft Word, WordPerfect, Lotus Spreadsheet, and dBase III Plus. Also, in 1991-92, LAPIS sponsored six staff for further training through a local computer training center.

4. SEP Computerization: A computerized bookkeeping system was developed to track and reconcile each SEP student's handwritten record weekly, SEP Trust account bank ledgers, and other SEP-related records. A computerized Operating Statement and Balance Sheet was developed to assist the SEP Bookkeeper in reporting the status of the Trust Fund on a monthly basis.

5. Other Administrative Forms: (1) Computer forms for recording Student Tuition and Fees were developed. This computer record provides an easily accessible record for the LAC Bursary Office. (2) Forms were created for College Farm Produce Sales, College Income from Other Sources, and College Farm Expenditures.

6. College Catalogue and Calendar: The catalogue and the yearly calendar were computerized so that revisions can be made when appropriate.

7. Cataloguing of LAC Library Books: All new LAPIS-purchased text books (approximately 1000) and 1500 old library books were catalogued using the Bibliofile computer program with the LAC Librarian and his assistants.

4.4.2 Graduate Survey

The first survey of LAC Graduates was made in 1991 for those graduated from Maseru and Leribe in 1987, 1988, and 1989. The survey was completed through the Maseru Director of Studies' Office. In 1991 a second survey was made of 1990 graduates. In total, 135 of 238 LAC graduates (57%) responded, of whom 27 of 41 (66%) had completed the SEP program.

Some of the findings of the survey were:

97% of the respondents are in an occupation for which they trained at LAC;

48% are seeking other employment, though only 27% of DIA graduates are doing so;

93% indicated that they are interested in further education, with 82% of DIA and DIAE desiring a B.Sc. on a related agricultural field; and

59% of SEP graduates rated their SEP experience as excellent, 37% good, and 4% as fair.

4.4.3 Sister College

A Sister College agreement was signed between LAC and South Dakota State University (SDSU) in 1990 following the visit to LAC by SDSU Dean of College of Agriculture. The agreement called for mutual cooperation between SDSU, LAC, and the University of Botswana. A long-term plan of action/proposal was formulated when the LAC Principal and LAPIS consultant Dr. Firouz Rooyani, visited SDSU in 1991. This proposal was submitted to the new AID University Development Linkage Project for annual funding of various training and exchange activities. Unfortunately, the proposal was not funded in 1991 because of intense competition from other universities. However, USAID/Lesotho has encouraged LAC and SDSU to resubmit a new proposal in mid-1992. This proposal will also include

Kansas State University. With the departure of LAPIS support, the Sister College relationship is very important for LAC.

4.4.4 Administrative Committees

AEC assisted LAC in improving the committee structure at the College. The key bodies/committee functioning within or on the behalf of LAC are:

1. College Governing Council: The DPS and Principal are permanent members, eight other senior MOA staff (appointed MOA Department Heads) are elected for three to five year terms. The council deals with major policy initiatives. LAPIS, by design, had no direct input into these activities. The Council continues to function well in guiding and directing LAC.
2. Academic Board: Chaired by the Principal and made up of the Directors of Study and Department Heads, the body shapes rules, regulations, curriculum and oversees academic reports. It existed prior to the Project, but was made more dynamic by LAPIS TA staff input, selected individuals of which participated in the meetings.
3. Curriculum Development Committee: Essentially the same make-up as the above and in existence prior to LAPIS, it deals with curriculum review, changes, sequencing, course descriptions and SEPs. AEC/LAPIS played a similar role as in the above committee as major curricular changes were put in place.
4. Farm Policy Committee: Made up of members from the farm staff and the representatives of the college departments. The Committee deals with procedural matters concerning farm use and operations. LAPIS input was made through TA involvement on the Committee. Farm production was increased due to various Project inputs, eg. irrigation system, farm equipment, and technical advice.
5. Student Enterprise Committee: Made up of the Director of Studies, SEP Coordinator, SEP supervisors, the graduate follow-up team and one SEP student. This Committee was formed in 1986 at the inception of the SEP program. Project TA staff played a key role in its initial set-up and continuing functions. The committee sets policy dealing with SEPs, approves new equipment purchases, sets LAC facilities use charges, oversees the supervision of the various SEP ventures and serves as a forum for SEP inservice training of staff. The Committee is fully institutionalized and the sustainability of its activities is assured.
6. Board of Trustees for the SEP Trust Fund: Made up of the Director of Field Services, the Principal, SEP Coordinator, and representatives of NUL and LADB, with the probable expansion to include the LAC Director of Studies and two members of the agribusiness community. The Board, through direction provided by the Deed of Trust, oversees management of the Trust monies initially capitalized with US\$65,000 by USAID/LAPIS. The LAPIS AEC Curriculum Development Specialist were unofficial members. The Trust was established in December 1989 and was operational for two years prior to the EOP. It was established with the assistance of a consultancy by the Executive Director of a similar trust at Cal Poly/Pomona (USA). It was

formed to replace the prior unsatisfactory channelling of USAID funds for SEP through LCCUL.

4.5 Development of LAC Infrastructure and Facilities

LAC is divided into two campuses: the main campus in Maseru, and the satellite campus in Leribe. In 1986, LAC encompassed a 300 acre farm (shared with ARD) in Maseru, a small working farm in Leribe, student vegetable and fruit gardens, laboratories, classrooms, workshops, offices, libraries, dormitories, and refectory facilities. At the beginning of LAPIS many aspects of both campuses needed upgrading. Project resources were not infinite and through negotiation, it was decided that the Maseru campus would receive the bulk of available support.

The funds expended on commodities, roughly \$420,000 (excluding "Printing Services"), was considerably higher than those originally budgeted in the Project Paper. The specific expenditure breakdown of the AEC/LAC commodity list at the end of LAPIS support was as follows:

- Hand Tools: \$15,700.	- Irrigation Equip: \$120,100
- Bldg. Modifications: \$76,000	- Fertilizer: \$3400
- Orchard Fencing: \$6900	- Seed/Plants: \$4000
- Bldg. Materials: \$28,200	- Lab Equip: \$6900
- Greenhouse: \$18,800	- Lesotho Village: \$3200
- Livestock: \$9900	- Livstk. Kraals: \$29,000
- Milk Process: \$1200	- Library Books: \$35,500
- Library Furniture: \$3800	- Lib.Theft Control: \$9800
- A/V Equip: \$33,600	- A/V Theatre: \$11,100
- *Printing Services: \$57,800	- Slaughter Room: \$900

(Printing Services includes activities of other LAPIS components)

The major AEC/LAC/LAPIS infrastructural improvements comprised the following:

1. An extensive sprinkler irrigation system for the LAC Farm, SEP Projects, and ARD research activities; an LAC/ARD irrigation store for maintenance and storage of spare parts.
2. A furnished classroom and office complex.
3. A Produce Marketing Centre for SEP and LAC products, including a 14 cubic meter storage cooler and outdoor produce cleaning area.
4. A temperature controlled fibreglass greenhouse and shade house for course practicals and SEP projects.
5. A 110 seat audio-visual theatre equipped with three projection screens, two overhead projectors, two slide projectors, three filmstrip projectors, TV, VCR,

Camcorder and an extensive supply of viewing materials procured locally and internationally.

6. A tuck shop (College cafe/bookstore) used for sale of LAC/SEP produce, lecture notes and general supplies to students and the public.

7. An addition to the refectory (cafeteria) for seating of 80 students.

8. Renovations to the library including an electronic security system and over 1000 volumes of books.

9. A staff lounge for informal gatherings and committee meetings.

10. Office renovations and furniture for the Director of Studies and Student File Office.

11. Computer laboratory for instruction and staff/administration use with, six computers, five printers and extensive software.

12. A fenced parking area for securing LAC vehicles.

13. Renovations to the Student Vegetable Farm including: security fencing four hectares, establishment of a small vineyard with drip irrigation system, a sprinkler irrigation system for students practicals and three SEP students, and layout of more than 100 4m x 16m student plots for first and second year students.

14. Establishment of a 2.1 ha irrigated SEP field on the LAC Farm with inputs/equipment storage building for three SEP students

15. Replanting of the 0.6 ha College Orchard used for practicals and SEP including: security fencing and the installation of both microjet and sprinkler irrigation systems.

16. Renovations at the Lesotho Village, an appropriate technology demonstration area adjacent to ARD and LAC.

17. Construction of an SEP livestock complex including appropriate, small scale intensive production facilities suitable for four dairy, two broiler, two layer, two piggery, four beef, two lamb and two Angora rabbit SEP units. Included in the facility is a biogas generator, two hay barns, various small storage buildings, two loading ramps, and three weight scales.

18. Two bull pens and a livestock slaughter room, plus various livestock for both campuses.

19. Various office equipment, furniture, 150 classroom desks, two copy machines and three portable typewriters.

20. Chemistry/Soils Laboratory equipment.

21. Various agricultural equipment and implements including a medium-size tractor and a considerable quantity of hand tools for the Agronomy and Engineering Departments. Two USAID-purchased "walking tractors" were assigned to LAC, and a number of smaller items for the Maseru an Leribe campuses.

5. STAFF DEVELOPMENT

5.1 Long-Term Training

LAPIS sponsored eleven individuals, eight male and three females, for degree training at US universities: four at MSc. and seven at BSc. levels. All of these individuals has returned to LAC and made significant contributions to the institution. Table 10 summarizes LAC who received long-term degree training, their area of specialization, and period of absence from Lesotho.

Table 10: LAC Staff Supported By The LAPIS Project For Degree Training

Name	Degree/Specialization	Period Out of Country
A. Molumeli	MSc. Irrigation	Jan 1987 - Jan 1991
M. Raditapole	MSc. Agronomy	Jan 1987 - Dec 1988
J. Ramasike	MSc. Home Economics	Aug 1986 - Aug 1988
P. Mokuoane	MSc. Ag Economics	Jan 1986 - Dec 1987
A. Nkholise	BSc. Horticulture	Sept 1989 - June 1991
M. Lenka	BSc. Home Economics	Sept 1987 - March 1991
N. Ramangoela	BSc. Ag Engineering	Sept 1986 - June 1990
K. Leisanyane	BSc. Animal Science	Aug 1986 - June 1989
M. Lekatsa	BSc. Animal Science	Aug 1987 - May 1990
R. Williams	BSc. Extension Education	Aug 1987 - May 1990
L. Monare	BSc. Animal Science	Sept 1987 - June 1990

LAPIS funded degree training significantly contributed to the improvement of the academic qualifications of LAC staff. Table 11 illustrates the academic qualifications of LAC staff in 1986, at the onset of LAPIS, versus 1992, at the close of LAPIS.

Table 11: Academic Qualifications of LAC Before The LAPIS Project Was Initiated and At The Close of LAPIS Support To LAC.

Type of Degree	Number Present in 1986	Number Present in 1992
PhD.	0	1
MSc.	3	8
BSc./BA.	8	14
Dip./Cert.	24	16

5.2 Short-Term Training

During the term of LAPIS assistance to LAC, more than 70 short-term training activities were conducted by AEC staff and administrators. These are listed in the "LAPIS Short-term Training Log" (refer to the annex). They consisted of a range of activities: week-long, in-service trainings conducted at LAC by international consultants for staff on such topics as conducting and evaluating practical agricultural curricula and use of audio visual equipment; tours to regional colleges and research stations; international trips to promote institutional linkages; and specific trainings in particular areas of need, e.g. computer training. All of these were requested and/or approved by the LAC administration for the purpose of developing human resources at LAC.

Below is a summary of short-term training accomplishments conducted coordinated by AEC at LAC:

Major Areas of Training

Teaching Methodology
 Institution Management
 Computer Instruction
 Educational Tours
 Student Scholarships

Audience

3 Extension Agents
 4 Subject Matter Spec.
 195 Headquarters Staff
 65 Students
 111 Others: MOE, Thaba-Khupa
 Visitors, Various Projects

The audience total does not represent specific individuals; the gender ratio was 239 Male / 167 Female.

F. DEPARTMENT OF FIELD SERVICES (DFS)

1. AGRICULTURAL INFORMATION SERVICES (AIS)

1.1 Setting

AIS was established in 1964 to meet the MOA's needs for production and dissemination of technical materials of various types. While it did engage in activities appropriate to its mandate, it functioned primarily as a public-relations tool for the MOA and GOL, documenting and publicizing official functions and augmenting the government's capability to produce printed and audio-visual products of various types, often not related to agriculture. Prior to LAPIS Project intervention in 1986, AIS had never received systematic donor support. Some minor assistance had been provided by the USAID-funded LCRD Project, comprising some technical assistance to the press and radio sections and commodity support to acquire some radio broadcasting equipment. The AIS administration recognized the need for comprehensive assistance and set out to secure it.

The consultant employed by LAPIS in October 1986 concluded that "AIS seems to be operating on only a few cylinders...the constraints of space, equipment and trained personnel in some areas, together with the lack of financial resources, all make production of materials difficult...the existence of much obsolete, inoperable equipment and out-of-date supplies takes up valuable space and obscures the true state of production capabilities."

Prior to 1986, of 41 staff positions on the establishment list, 10 were vacant. Only one staff member had a B.Sc. degree. There were clear needs for approval and funding to fill the vacant posts for more degree-level personnel and short-term training in typing, printing, press maintenance, radio broadcasting and photography for selected staff.

Leadership was adequate in regard to internal administration and management, but the administrators' technical expertise and ability to negotiate effectively outside the service were lacking. AIS's doctrine was poorly defined; while provision of media support to MOA extension activities was perceived as important, the staff spent the majority of its time documenting the activities of various officials. The lack of functional linkages with other MOA organizations and the MOA's farmer clientele resulted in services being planned, produced and disseminated on an ad hoc basis.

In regard to output aside from the cited GOL/MOA public-relations and odd-job printing services provided, the major current services generated were printed extension materials and radio programs. The printing done in 1986 was mimeographing of bulletins sent to extension personnel and farmers via bulk mailing to the district offices. Instructional radio broadcasts were aired regularly: ten programs were produced each week. AIS seemed to meet its schedules, and the programs were considered good. Audio-visual and graphic output was rudimentary, largely because of the lack of required equipment and supplies.

Structurally, AIS is a division of the Department of Field Services (DFS) with a three staff posted to rural districts and other staff centrally based at headquarters. There are eight

sections within the division. These are: Accounts, Stores, Maintenance, Art, Radio, Audio-visual, Press and Campaigns. LAPIS supported AIS from August 1986 to November 1990.

1.2 AIS Implementation Strategy

The objectives of the LAPIS Project assistance to AIS were defined with the help of a short-term consultant in October 1986. Technical assistance time and budgetary allocations dictated the extent of support. In consultation with AIS staff, it was decided that support should concentrate on improvements to AIS's capability at producing extension publications. Other, more minor levels of support would address the Art and Photography sections and improvements to the AIS library. These activities took the form of consultant, local-hire and TA assistance, short-term and long-term training opportunities, and commodities. In addition, activity which sought to ensure sustainability of the various improvements was initiated. This particular activity addressed improved coordination among the various facets of the MOA and farming community concerning demand for and usage of AIS services. Collaborative activity at AIS evolved with FAO and UNDP/UNFPA/Projects in pursuit of joint development objectives.

1.3 Staffing

Technical assistance was required to identify and coordinate commodity purchases, to coordinate the integration and usage of these commodities and to provide training for effective running of the institution. One project TA, the AEC Extension Education Specialist, was assigned to coordinate these activities. Because of various other responsibilities, it was decided that only one-third of his time was to be allocated to these tasks. Hence, project interventions were designed to employ the use of several local hire personnel and short-term consultants. Three consultants were employed by LAPIS at AIS. In 1986 a US consultant identified the type of printing equipment needed and suppliers. He advised on remodelling of the existing building and manpower and management development issues. The same consultant returned in 1987 to advise on the operation of the newly equipped publication section, developed formats for publications, identified staff training needs and began training. He identified management and costing issues, identified building renovation needed, and prioritized commodity needs. In 1988, a local consultant was employed to continue training the computer typeset operators as was earlier initiated. And in 1990, another consultant evaluated the publication function at AIS and advised on required improvements; evaluated the means of information generation/dissemination and advised on required improvements; and advised on the means for establishing an evaluation section for continuous assessment of materials. This consultant returned later in the year to facilitate the ongoing origination of an "infusion:diffusion" mechanism for training and media messages within the MOA, and to assess and make recommendations on the status of an ongoing evaluation exercise for AIS materials.

One local-hire person was employed by LAPIS from August 1988 to July 1990 as a computer typesetter, and provided overall leadership to the publications section. He was replaced by an AIS staff member who had returned from US degree training.

1.4 Institutional Assistance

1.4.1 Press Section Improvements

A primary objective of LAPIS Project support to AIS concentrated on the institution's capability for producing extension publications. The Project sought to supply computer typesetting equipment (and software), plate making and offset press equipment, training in the operation and maintenance of this equipment and technical assistance concerning the production and dissemination of materials.

1.4.2 Other Institutional Improvements

Secondary objectives of project support to AIS targeted the art and photography sections and improvements to the AIS library. Improvements to the Radio Section were not targeted, as its operation was deemed adequate. Supportive assistance by an FAO sponsored communication specialist, involved with a short-term program at AIS in 1988, lent guidance as to what materials were required to improve graphics and photo capabilities. The physical facilities of AIS were severely constrained by lack of space. A strategy set by the project was to construct an addition to the facility so as to accommodate expanded work space and an improved library to facilitate storage, retrieval and dissemination of materials.

1.4.3 Improved MOA Inter-Institutional Coordination

Improved coordination among the various facets of the MOA and farming community, concerning demand for and usage of AIS services, was a project objective. The LAPIS PP proposed a "Task-Force for Training and Extension Packages" comprised of members from AIS, DFS, LAC and ARD as a coordinating body for this purpose. This task force, operational during the early stages of the Project, later expanded its role and changed to meet the evolving needs of the MOA. The overall goal of these activities was to put in place a permanent mechanism which would facilitate the flow of "infusion information" from the farmers via extension staff to headquarters staff and "diffusion information" back from the headquarters specialists via AIS and extension staff to the farmer. The process was designed to ensure that AIS maintained a steady flow of information and that the information was factual and generated in response to actual needs.

1.4.4 LAPIS: FAO and UNDP/UNFPA Coordination

Two short-term assistance programs to AIS were planned by FAO (1987-89) and later a three year UNDP/UNFPA project was launched (1990). The LAPIS Project sought close collaboration with these activities. The goal was to obtain a complementary effect between the donors' pursuit of joint objectives at developing AIS.

1.4.5 LAPIS-Purchased Commodities

LAPIS contributed roughly \$107,000 in commodities to AIS from 1986 to 1990. They included:

Workshop Tools	\$ 1,800
Building Modifications	\$31,500
Electronics	\$ 2,000
Graphics	\$ 2,000
Audio-Visual Equipment	\$ 2,600
Photo Lab	\$ 1,200
Offset Print Press/Access	\$43,000
Computer Typesetting/Access.	\$23,000

TOTAL: \$107,100

1.5 Long-term Training

Three AIS staff were trained at the Bachelor of Science level. These staff members, degrees attained and period absence from Lesotho are illustrated below:

Table 12: AIS Staff Supported by The LAPIS Project For Degree Training

Name	Degree/Specialization	Period Out of Country
W. Thulo	BSc. Communications	Sept 1987 - Dec 1989
A. Tsiu	BSc. Journalism	Sept 1987 - March 1990
M. Mosito	BSc. Communications	Jan 1989 - August 1991

2. FARMER TRAINING CENTERS (FTCs)

2.1 Setting

Ten FTCs are present in Lesotho, with one being located at or near each district headquarters. These facilities have been historically as a venue for training district farmers. However, through the years, most of the FTCs have suffered from lack of maintenance and poor management. As a result, the morale of FTC staff is low and institutional outputs are similarly low.

2.2 FTC Implementation Strategy

The objective of LAPIS Project assistance to selected FTCs, as implemented by the AEC/LAPIS, was to upgrade these facilities in order to better accommodate intended project-related training workshops. This objective was designed to support the FTCs as institutions of the MOA and to increase the self-sufficient nature of activities at these institutions.

The three FTCs targeted for assistance were Leribe, Mohale's Hoek, and to a lesser extent Matela (Maseru District). Leribe FTC was under the management of the Leribe DAO until 1988 when its management was turned over to the LAC Leribe campus administration. The

Mohale's Hoek FTC is managed by the Mohale's Hoek DAO; at the FTC there were four resident managers from 1986 through 1990 when support was terminated. The Matela FTC was managed by the Maseru DAO. LAPIS supported FTCs from August 1986 to July 1990.

2.3 Staffing

No long-term, LAPIS TAs were assigned specifically to the FTCs. However, the AEC Extension Education Specialist, with assistance from the AEC Animal Scientist, expended considerable effort in upgrading the facilities and improving FTC management. In addition, PCVs were stationed at the Leribe and Mohale's Hoek FTCs.

2.4 Institutional Assistance

2.4.1 Equipment and Infrastructure

Project expenditures of approximately \$58,000 were allocated by the following estimated percentages: 50% Leribe FTC, 40% Mohale's Hoek FTC and 10% Matela FTC. In summary, improvements and assistance included:

1. Leribe FTC: Renovations of and equipping the classroom, refectory, staff housing, and dormitory; rebuilding cattle facilities and purchase of equipment; improve irrigation system, security fence orchard, and purchase of equipment. Technical assistance was provided, including securing PCVs assistance on three occasions.
2. Mohale's Hoek: Renovation and equipping the classroom, refectory, and dormitory; extensive rebuilding and equipment procurement; construction of an irrigation system and greenhouse, renovation of livestock handling facilities, and equipment purchases. Technical assistance was provided including securing two PCVs.
3. Matela: Procurement of refectory and dormitory materials; purchase of animal stock; and greenhouse construction. Technical assistance was provided to a limited extent.

2.4.2 LAPIS Use of FTCs

Prior to curtailment of LAPIS-initiated trainings at these FTCs in 1988, with the phasing out of the Project's direct support to crop producers, the Leribe and Mohale's Hoek FTCs were used for 14 Project related workshops involving 51 MOA staff and 365 farmers.

2.5 Staff Development

The managers and assistant managers and the teaching staff at all eight FTCs in the country received various types of training through LAPIS training programs. In addition, on-the-job training was provided to staff through the resident PCVs assigned to the FTCs.

3. NUTRITION DIVISION (ND)

3.1 Setting

Nutrition Division housed within DFS, is managed by the Chief Nutrition Officer who reports to the Director of DFS. ND's mandate is to provide Food Technology development, child nutrition, appropriate technology and handicrafts. The Division also is responsible for District Nutrition Officers (DNO) and the Nutrition Agents (NA) operating in the ten districts of Lesotho.

Over the years, NAs have been involved with home economics and related income generation activities. Since its establishment in 1962, the ND has been somewhat the "odd man out" in the MOA. It originally had an emphasis on applied nutrition, but its program has evolved and broadened over time to focus on a variety of needs of the most marginal segment of Lesotho's population: poor, rural women, and children.

The Division's budget is negotiated annually with the other organizations comprising the DFS, and the amount of GOL funding available for expenses beyond essential salaries and headquarters operating costs has been falling steadily through the decade, severely limiting ND's scope for change. No policy exists to guide the Division's operations, and there is a severe deficit of trained personnel; most staff are generalists in home economics, with NAs typically holding LAC certificates. Decentralization has confused the internal structure of the Division by placing the NA network under DAOs, where the Division's interests are a low priority. Programming is restricted by the shortage of human and financial resources. NAs are rotated in and out of districts on a three-year basis. The rotation serves to share the burden of being placed in the isolated mountain districts among the entire ND field staff. Transfers also occur inside each district at the discretion of the DAOs. This high mobility leaves little continuity or foundation on which the donor program can be built. Collectively, these factors serve to limit the ND's capability to generate services and thus to exert any significant influence. In spite of these problems, the Division is a potentially potent force in Lesotho's rural development, a force tapped and channelled by the LAPIS Project-supported Home Gardens Nutrition Program (HGNP) to the mutual benefit of the Division and the program's clientele.

3.2 Home Gardens Nutrition Program Strategy

HGNP Implementation Strategy for 1989-90 and beyond was developed with the direct involvement and assistance of the Nutrition Division and the U.S. Peace Corps (PCV). The HGNP office was transferred from LAC to the Nutrition Division. The program was to focus on the rural mountain Districts of Thaba Tseka and Qachas Nek, with minor support continuing to Mohale's Hoek District (Ketane). In July/August, 1989, the revised and expanded scope of work for the Home Garden Nutrition Program was approved by the MOA, LAPIS Contractor, USAID and the U.S. Peace Corps. Additional funding for implementation was added to the LAPIS Project Contractor's budget. The new HGNP was implemented jointly by the MOA Nutrition Division, Peace Corps and the LAPIS Project and involved a number of PCVs and Nutrition Agents. The HGNP was created to assist the Nutrition Division to improve the nutritional status of selected rural mountain communities through home gardening and nutrition education. The specific objectives were as follows:

1. Improve vegetable and fruit production from home gardens, in terms of quality and quantity.
2. Train home makers to improve the nutritional status of their families by properly utilizing food and learning more about the importance of improved nutrition.
3. Assist participating community members in organizing themselves to meet their nutritional and gardening needs.
4. Improve the capability of the Nutrition Division (ND) to conduct nutrition and gardening extension programs in the mountain regions.

3.3 HGNP Staffing

As of May 31, 1992 thirteen Peace Corps Volunteers were working at their respective sites. The volunteer placements were as follows:

<u>Thaba Tseka</u>	<u>Mafeteng</u>
Khohlo - Ntso	LISP Project
Lesobeng	
Litsoeste	<u>Maseru</u>
Mohlanapeng	Information Specialist
Linakeng	
<u>Qacha's Nek</u>	<u>Ketane</u>
Ha Sekake	USCC Project
Ha Mohlapiso	
Tebellong	
Ha Noosi	
Sehlabethebe	
Tsolike	

The program was supervised by the LAPIS Home Garden Specialist Supervisor. In order to strengthen the program, two positions were added to the HGNP program for the third year's activities. The Home Garden Specialist position was divided into two local hire positions, one coordinator for each program district (Thaba Tseka and Qacha's Nek). The creation of these two new positions has begun the shift to a decentralized district-based project. District staff communication, participation and involvement increased significantly since the two positions were added to the Management Structure.

A Home Garden Specialist Nutrition Assistant position was incorporated into the district support team and brought invaluable support to the program. The primary responsibility of the Nutrition Assistant was to assist volunteers who were working without a counterpart to organize farmers into community garden groups. The Nutrition Assistant worked with the Thaba Tseka Home Garden Specialist by assisting in all district duties. The HGNP was still

awaiting placement of a Home Garden Specialist Nutrition Assistant in the Qacha's Nek district by the District Agriculture Officer at the time of this report's compilation.

The project programming team consisted of the Chief Nutrition Officer, Associate Peace Corps Director, USAID Agriculture Specialist, District Agriculture Officers from project implementation districts and the Home Garden Specialist Supervisor. Greater emphasis was placed on the participation of the Programming Team to direct the project in policies, procedures and project objectives.

The Program provided gardening and nutrition extension to 120 villages in Qacha's Nek and Thaba Tseka Districts. The program participated in 11 areas within the Thaba Tseka and Qacha's Nek Districts; two additional sites, one each in Mohale's-Hoek and Mafeteng Districts respectively, also received a lesser level of support from the HGNP. The program was implemented by teams consisting of PCVs and NAs. The Nutrition Agents assisted the Peace Corps Volunteers at seven of the 11 sites. By the EOP, the HGNP was restructuring its extension techniques to better equip individual PCV to work effectively without a Nutrition Assistant counterpart. Primary activities of the program were: home gardening extension and nutrition education at the village level, teaching mothers improved weaning methods, breast feeding scheduling, food preparation, and food preservation. Secondary activities were: vegetable marketing extension activities, and a home gardening radio program.

3.4 Institutional Developments

3.4.1 First Phase of Home Gardens Nutrition Program (HGNP)

The HGNP activity of the Production Initiative Component was initiated in September, 1987. The program was integrated with four other ministries during its first two years of implementation. The activity was supported by two former PCVs recruited through the project. In an effort to support the initial HGNP, a three pronged development strategy was employed. This included: education materials, garden packets and small tools. The education materials also included a monthly newsletter, "Litaba Tsa Meroho", which was circulated to all field staff covered by the HGNP. By June, 1989, 653 home garden sites were implemented or improved. Approximately 1030 persons received home garden field training and a significant number of extension circular and newsletters covering various aspects of home garden activities were published and distributed. Also, the two TAs were placed at LAC, the program's focus was the ND and the field NAs. During the first two years of the program a number of extension materials were developed for the HGNP target sites and other production activities. The first phase of the program ended in 1989, when the stage was set to expand the mandate and inputs to HGNP.

3.4.2 HGNP Highlights

Field Teams used demonstration gardens as the basis of their extension work. Within each demonstration garden, areas were set aside to grow five varieties of vegetables (extension crops) for demonstration purposes.

The HGNP introduced two methods for lengthening the gardening season in the mountain areas: plastic to cover vegetable plots (grow tunnels); and the use of seedling trays, taken

indoors during the cold spring nights. A standardized winter cropping plan was developed to allow Field Teams to demonstrate winter gardening.

In August, 1990, the HGNP added the position of a PCV Water Development Specialist to develop water sources and delivery systems. The first year of activity was concerned with developing an implementation approach, purchasing equipment, and surveying potential sites. The HGNP subsidized the construction of water systems in community and school gardens, paying up to 75% of the equipment cost. The estimated cost of most systems was between 300 to 900 Maloti.

Field Teams provided nutrition information to interested community members. Most nutrition education activities were focused on children under five, because this group has been statistically proven to be the most vulnerable. The program provided information to villagers to improve breast feeding and weaning practices. Growth monitoring was the most controversial, and therefore the most difficult component of the program to implement. As a result, all plans for incorporating growth monitoring into program activities were halted.

The program was involved with fruit and vegetable drying, and canning during its first two years. Underground cold storage is another preservation method that has yet to be put into practice at the program field sites. Field Teams should experiment with variations of root cellars to determine which levels of technology are most appropriate.

The Field Team training component of the HGNP grew with each training course. The Support Team (based in Maseru), Field Teams, and MOA staff at all levels in the program became more involved in training. The shared responsibility of conducting program training served to keep the subjects taught to field staff relevant, as well as providing an excellent opportunity to give MOA staff experience in planning and teaching workshops.

Since 1989, Field Teams reported quantitative and qualitative information about the status of gardening and nutrition activities in their areas. As of May 1992, the HGNP had affected 3,775 people, and influenced the creation or improvement of 1,802 home gardens.

The HGNP has addressed the lack of agricultural inputs in the program area by developing a seed order catalog, training farmers in seed saving techniques, and liaising with local shop owners to encourage vegetable seeds sales.

The HGNP design marked a new direction for both the Nutrition Division and Peace Corps/Lesotho, with each organization playing a more active role in the development and implementation of the program. By using skills gained in managing the HGNP, Nutrition Division staff members may eventually form project development committees to design projects that suit the needs and objectives of the division. More specific activities of the program included the followings:

3.4.3 Improved Information Dissemination

The Information Production Team (IPT), consisting of PCV Information Specialists, Nutrition Assistant Presenter, and Nutrition Division Information Officer, successfully broadcasted the first HGNP radio show. The show was to be aired every two weeks and topics covered

included gardening and nutrition topics as they related to the work being extended by the Field Teams. The show was titled "Serapa Saka Mphelise" -- "My Garden, Give Me Life." The radio show format relied heavily on farmer interviews, low input gardening techniques, and the utilization of locally available supplies.

The Information Production Team completed its training in radio magazine format and production. The IPT developed a mock seed order catalogue for distribution to Field Teams to assist in the sale of seeds. The IPT designed and printed the Village Lead Farmer certificates which were presented to all Village Lead Farmers upon the successful completion of their district training. The HGNP Newsletter became a bi-monthly publication after the successful dissemination of the second issue. The "Cabbage Connection," as the HGNP Newsletter was titled, was distributed to all Field Teams, relevant MOA personnel and other interested participants, to increase the awareness of HGNP goals and extension techniques. The IPT improved the HGNP resource library and organized extension materials to update and expand the resources available to all Field Teams, MOA staff and farmers.

3.4.4 Fruit Trees

The program's Mohlanapeng Fruit Tree Research Center planted fifty fruit trees to obtain information on fruit tree varieties that were best suited for the mountainous regions of Lesotho. Demonstrations were given to primary school students and villagers on fruit tree planting and maintenance instructions. The research station was facilitated by the Mohlanapeng Field Team. The Sehlabathebe Field Team began four micro-nurseries in four different villages to educate the farmers on fruit tree propagation.

3.4.5 Marketing

By the EOP, the Kholo-ntso Field Team was exploring the possibility of constructing a local market in the area. An association of progressive farmers was being formed to begin planning the market. A village farmer market was under construction at the Lesobeng site. The market was being constructed by the local villagers, who were to be responsible for its operation. A committee was organized in Lesobeng to plan, initiate, and monitor the market. The Ha Mohlapiso and Tsoelike Field Teams were preparing possible market structures to be built in their areas. The Tsebellong Field Team approached the Tebellong hospital staff with the possibility of interested neighboring villages selling fresh vegetables to the hospital.

3.4.6 Appropriate Technology

Both District Gardening Coordinators investigated working with their district representatives of the Appropriate Technology Section to hold meetings at interested Field Team sites about the products they offer. The Linakeng Field Team worked closely with the Thaba Tseka branch of the Appropriate Technology Section, specifically with solar driers. After interviews with villagers and consultation with the Linakeng Field Team, A.T.S. designed, constructed, and demonstrated a solar drier for the Linakeng area. The Tebellong Field Team facilitated a sale of an ATS food drier to one of their garden groups. Plans were underway to conduct food preservation demonstrations in the near future. The Litsoetse Field Team gave demonstrations on how to construct a solar drier to interested farmers using locally available materials. The Ha Mohlapiso Field Team constructed a micro-nursery to demonstrate the

benefits of low cost, readily available tree seedlings. The Linakeng Field Team facilitated the purchase of 100 acacia trees to a local primary school for controlling soil erosion around the school garden.

3.4.7 Nutrition Activities

The Field Teams stressed the nutritional value of vegetables when conducting gardening demonstrations as it coincided with their objective to extend improved gardening techniques at their sites. All of the Field Teams presented workshops/demonstrations on food preparation and food preservation using the vegetables harvested from the gardens such as baking zucchini bread, drying of leafy vegetables, bottling of beets, preparing a vegetable loaf, cooking spinach soup and weaning food recipes.

3.5 Staff Development

3.5.1 Long-Term Training

The LAPIS Project funded degree training for two Nutrition Division staff. Both received BSc degrees in Home Economics (see Table 13).

Table 13: Nutrition Division Staff Supported by The LAPIS Project for Degree Training

Name	Degree/Specialization	Period out of Country
G. Thato	BSc/Home Economics	Aug 1987 - May 1990
L. Moeketsi	BSc/Home Economics	Jan 1988 - Dec 1990

3.5.2 Short-Term Training

Training was a major focus in the HGNP. The HGNP Management Team and selected MOA were successfully trained by a Peace Corps Intern in Word Perfect, LOTUS and Data Base computer skills. The Thaba Tseka District Coordinator successfully completed the Village Lead Farmer Training, thereby further strengthening the sustainability of the HGNP. Training of the MOA and PCV's was one of the major strengths of the HGNP. Though

In-service training of participating NAs boosted their morale significantly, helping them feel that they had something worthwhile to offer their clientele. Table 14 summarizes the number of HGNP participants trained in the districts.

Table 14: Status of the Number of Persons Who have Participated in Nutrition Training During the Pilot HGNP Activity.

District	Number of Participants	Number of Villages, Schools or Clinics Visited
Thaba-Tseka	435	20
Qacha's-Nek	335	19
TOTAL	770	39

PART II
TRAINING

TRAINING

1. SETTING

The overall objective of the LAPIS Project, as stated in the USAID/American Ag International Contract, was: "...to assist the Government of Lesotho to expand the commercial horticultural and livestock production of small farmers while continuing to strengthen the institutional capacity of the Ministry of Agriculture and Marketing (MOA) to facilitate, coordinate and foster agricultural development in Lesotho. Technical assistance, training and commodity support will be provided to the MOA's Crops, Research, Range Management and Livestock Divisions and the Lesotho Agricultural College so that they more adequately meet the needs of expanding production and long-term employment".

The training program of LAPIS focused on strengthening the institutional structure and thrust of the MOA by providing trained personnel to staff key activities in a manner appropriate to increase small farmer crops and livestock production. Project outputs pertaining to training were identified as follows:

1. The training institutions are capable of training Ministry extension and technical staff, farmers, and public and private sector personnel involved in small holder agriculture, including input supply and marketing operations.
- 2) Basotho are trained to support and maintain the objectives of the LAPIS Project.

Degree level training and short term training in the country and overseas, were the two corner stones of the LAPIS Project's implementation strategy. The project management, from the onset, placed emphasis on training activities. Detailed planning for long term and short term training were drawn and carefully followed. The training program under the LAPIS Project was massive in quantity (the number of participants), in diversity and variations (wide range of training topics), and in the quality with which the training topics, participants, and instructors were selected. The outside final evaluators of the project have described the project management's efforts in planning and execution of the long term training as: "The design for the long term training developed by LAPIS is an exceptional model of planning and execution."

This section will briefly describe the major achievements of the project in staff development through training programs. More detailed information can be found in the report "Long Term Training, Program and Outputs" published by the Project in August 1991, and the short term training log in the annex of this report.

2. LONG TERM (DEGREE) TRAINING

2.1 Level of Effort

The LAPIS Project Paper identified a level of 33 participants or a total of 75 person years for the long term training. During the contract award, 19 additional training positions that were

still in process by two other projects, FSR and LCRD, were added to the LAPIS level of training. Later, during the beginning of the Project implementation, an additional 23 positions were added to AAI's contract, bringing the total level of training positions to 75. The projected total cost of the program was \$2,918,382.

2.2 Training Planning

2.2.1 Identification of status of students already in training

The initial phase of preparing a training plan included the identification of participants already in USAID funded degree programs. This required searching the training records of USAID and two Projects; the FSR, administered by Washington State University, and the Land Conservation and Range Development Project (LCRD), administered by Frederikson and Kamine and Phelps/Stokes. Examination of the pertinent files, including the most recent Academic Enrollment and Term Reports (AETR's) of the 19 participants already in school were reviewed. Then, each student's faculty advisor was contacted to validate projected completion dates. In addition, the AAI home office in Tucson advised the Universities, faculty advisors, and participants of the new support and administrative structure.

2.2.2 Identification of MOA Needs

AAI in collaboration with various MOA departments, developed a plan for the new training candidates including; schedule for training, identification of potential candidates, selection, and monitoring of participant trainees. The MOA's needs were examined in the context of the following factors: Departments/Divisions requiring strengthening, academic disciplines required, level of training desired, numbers needing training, availability of trainees, and ability of Division/Department to support returned trainees.

2.2.3 Development of Financial Plan

A schedule of costs pertinent to each training position was developed by the project management. It was projected that each degree sought would take an average amount of time: Diploma 15 months, Bachelors 36 months, Masters 24 months, and Doctorate 36 months. The cost elements included in preparing a budget were: International travel, travel within the USA monthly subsistence allowances, tuition, tutoring, field trips, books, lab fees, typing, etc., orientation, and health/accident insurance. The training list was sorted by degree level. An average of \$22,000 was estimated per academic year per student, including the summer breaks.

2.3 Participant Selection Process

2.3.1 Selection Criteria

Selection criteria emphasized competitive selection of candidates based upon merit, qualifications, and work history. This process attempted to avoid "political" appointments.

The following criteria were proposed: that a candidate must be less than 45 years of age, be in good health, hold a confirmed GOL appointment with a minimum of 2 years service, have a good employment history, have a demonstrated high potential for advancement, have a

proven academic track record, give reasonable assurance that a selected program could be completed within time limits specified, and indicate willingness to sign a bonding and bursary agreement for 2 years service for each year of training received.

2.3.2 Advertisement Mode

It was decided that the MOA would be best served by soliciting applications from the entire Ministry. This was done by advertising all the training positions within the MOA headquarters and field offices.

2.3.3 Bonding/Bursary Agreements

All candidates were required to sign a training or bonding agreement which required that person to serve in the Ministry for a minimum of 2 years for each year that he/she is in school. The agreement also required that they pay into the scholarship fund at the National University of Lesotho (NUL) an amount equal to one half of the annual tuition at NUL for each year they were in school. This arrangement was agreed to by USAID and the Government of Lesotho to bolster the national scholarship fund.

2.3.4 Selection Implementation

Nearly 125 applications were received for the 27 positions first advertised. The initial screening of the applications was performed jointly by the MOA Training Office and Project Management.

The first task was to examine each application for completeness and adherence to minimum qualifications for the positions applied. A number were deemed unacceptable because the basic minimums were not met. The rest were sorted by discipline and level of degree sought. Once the applications were divided into categories, they were arranged in order of qualification using the following guidelines: Academic track record and transcripts, GOL appointment with 2 years service, age and potential for advancement, and letters of recommendation/employment history.

The aforementioned process was closely followed during the second selection process involving the selection of candidates for the remaining candidates.

2.4 Documentation for Departure and Admission In The U.S.A

2.4.1 Manpower Approval

The MOA submitted the prioritized list of selected candidates to the National Manpower Secretariat for its endorsement and processing of the formal governmental approvals for study travel outside of the Kingdom of Lesotho, thereby enabling the issuance of Lesotho International Passports. Having secured the necessary approvals from the Ministry of Agriculture, the Government of Lesotho, and USAID, each applicant was notified that the selection process was complete. Those selected were called in to Maseru to begin the processing of necessary documentation such as passport applications, medical, etc.

2.4.2 PIO/P preparation Medical, Bonding/Bursary Agreements, Visa, Passports, Travel Tickets

A preliminary training plan was jointly developed and implemented by the selected candidate, Chief Training Officer, and a representative from the pertinent Department/Division. Information in this plan was made a part of the PIO/P. The candidate signed a training or bonding agreement which required that person to serve in the Ministry of Agriculture for a minimum of 2 years for each year they were in school. The agreement also required that they pay into the scholarship fund at the National University, upon completion of training, an amount equal to one half of NUL's annual tuition for each year he/she was in school.

Also, a determination was made whether the participant was proficient in the English language or whether a TOEFL test was required. No candidates were found to require remedial English before admission to a university. In several instances the University, after admission, did require catch-up English. The deficiencies encountered were usually in written expression, which is not uncommon for the U. S. national in a freshmen class.

Each participant was required to take a complete physical examination at their own expense. During the first year of the LAPIS training program this physical examination report was given to the Administrative Manager, and if no significant abnormalities were noted, the report was filed with a copy to the LAPIS office in Tucson. Later USAID/OIT/W (The Office of International Training/Washington) required the USAID Lesotho Mission to cable assurance that the participant was in good health. Without this cable OIT/W would not authorize Health and Accident Coverage (HAC) insurance. No LAPIS participant was disqualified for health reasons.

Upon completion of the medical exam, the participant was furnished a letter by the National Manpower Secretariat requesting Lesotho Immigration to issue an International Passport. The participant was required to pay the cost of the passport. This process generally went smoothly, as by this step all clearances within the GOL had previously been accomplished. Also, by this time the participant had obtained the signed approval of the Minister of Agriculture which signified that the program was in keeping with the goals and objectives of the Ministry and that the participant had no unacceptable qualities. At the same time, the Director of Manpower had reviewed the training proposal and found it in line with the general manpower development policy for development of staff.

The Director of Manpower then sent a letter accompanied by the completed training packet to USAID requesting that funding be made available to send the participant to the identified school. Upon signing of the PIO/P, a form IAP-66A was completed by AAI. The participant took this form to the US Embassy (through USAID) where a one year J-1 visa was issued. All future visas were issued by the Office of International Training in Washington, D.C.

2.4.3 University Placement and Call Forward Date

The University of Arizona (UA) was charged with the placement, monitoring and supervision of participant trainees under the American Ag International subcontract. The UA campus coordinator, in cooperation with AAI's home office in Tucson, provided placement and monitoring services for the life of the project.

Upon receipt of the participant trainee application file from project management/Lesotho, the campus coordinator initiated the placement process. Based on the candidate's field of study, preference for training institutions, as indicated in the PIO/P, and in consultation with UA faculty in related departments, a number of universities capable of providing the most appropriate training were recommended for placement. Admission requests were placed at the three top universities for each candidate. The trainee's complete file including official transcripts, degree certificates, letters of recommendation, the training institution's application form, and a letter of support was forwarded to the admissions office of each selected institution. If positive responses did not forthcome from those universities, applications were then forwarded to other universities previously identified on the priority list. The LAPIS Chief of Party (COP) in Lesotho was kept up to date on the admission process. The COP then informed the Mission. MOA, and the candidates of progress. It is worth noting that admissions were obtained for all but one of the 63 participant trainees nominated by the project.

LAPIS Project Management recommended a placement policy seeking optimized diversity in training institutions. This policy was put into effect from the initial phase of the Project. As a result, spreading participant trainees in a number of U.S. universities provided an excellent opportunity for diverse training. It also enhanced the experience and contact base of trainees who varied substantially in their training needs and preferences. For example, in 1986, the first group of 11 LAPIS trainees were placed in eight different U.S. training institutions including the University of Idaho, California Polytechnic State University - Pomona, New Mexico State University, Utah State University, Iowa State University, the University of Arizona, Texas Tech University, and the Economic Institute at Boulder.

The above placement procedures, which were implemented at the onset of the Project, were continued throughout the life of the Project. Once admission was secured, a Call Forward Date was transmitted to Project Management in Lesotho and the pre-departure orientation was scheduled.

In accordance with USAID policy guidelines and achieving optimal diversity in training, LAPIS made every effort to increase placement of participant trainees at historically black colleges and universities (HBCU's). Seven of the 75 participants were placed at five HBCU's. This represented approximately 10 percent of the total of long-term trainees attending U.S. universities.

2.4.5 Selected Candidates

During the life of the Project a total of 75 students were sponsored by LAPIS. The subject matter breakdown has been generalized into 9 categories: Range Sciences (23%), Animal Sciences (20%), and the Plant Sciences, Agronomy and Horticulture (22%), constituted 65 percent of the participant trainees sponsored under LAPIS.

A major feature of the LAPIS program was the high participation of women in all levels of training. Twenty-nine (over 38 percent) of all the trainees were women. Included in this statistic were 18 women at the BSc level, 10 at the MSc level and one at the Diploma level. A positive step was taken in response to the increased role and contribution of women in Lesotho's agricultural development.

2.5 Orientation

The training plan addressed the importance of orientations. The first orientation was in Lesotho prior to a student's departure. This all-day session included advice on international travel, what to expect upon arrival in America, visas, and the size, population, and diversity of a typical university campus. All participants arrived in Tucson, Arizona, for the second orientation which lasted two days. This session was designed to ease the shock of transition and to cover all aspects of the project, campus life, life in America, academic and monitoring requirements, and financial support from Tucson.

The UA and AAI Project Coordinators personally conducted the orientation sessions. Every effort was made to ease the shock of transition and to cover all aspects of the Project, campus life, life in America, and financial support. The major topics discussed included student housing, health insurance, allowances, visa extensions, campus life, academic requirements, AETR's, field trip forms, tutoring service, typing service, and communication with the LAPIS office in Tucson. The participants were guided through all of the most common forms that would be used. A Lesotho national participant trainee who was already established in his/her program was on hand to help answer questions and talk to the newly arrived students.

Each participant was given a packet at the beginning of the orientation session. The contents of the packet included:

- USAID information on the Acquired Immunodeficiency Syndrome (AIDS) Health and Accident Coverage insurance information (booklet, forms and procedures for filing);

- Information and regulations pertaining to stipends advance maintenance/transit allowances;

- Field trip information and availability;

- Guidelines on per diem, maintenance, information on book and equipment allowances;

- Regulations on thesis preparation and information on typing and tutoring allowances;

- Guidance and information on housing regulations;

- Information on U.S. Federal Income Taxes, information and samples of IAP-66A forms, a sample of Academic Enrollment and Term Report form; and

- A listing of the names, addresses and phone numbers of fellow LAPIS participants, a copy of the LAPIS Participant Training Newsletter, a pocket monthly calendar for the current year, Individual information concerning the participant's travel arrangements to his/her destination.

There were eleven orientation sessions given over a period of three years to a total of 56 participants. The other LAPIS trainees were already established in school and had been transferred into the Project from two other projects. LAPIS orientation sessions took place

in: June 1986, August 1986, September 1986, January 1987, August 1987, September 1987, January 1988, August 1988, September 1988, January 1989, and September 1989.

2.6 Monitoring

2.6.1 Academic Enrollment and Term Report (AETR)

Completion and submission of AETR forms at the end of each academic term was required by USAID. This constituted the prevalent method of monitoring. At the end of each term the student filled in an AETR, recording classes completed during the previous period and grades earned. Then courses for the current term were listed. The student noted any academic problems encountered and could comment on social adjustments. The report was forwarded to his/her academic advisor for written comment and signature. The advisor sent the report to the LAPIS Campus Coordinator for his review, written comment, and inclusion in that student's record. Upon receipt of the AETR, progress in the past semester/quarter and courses for the next period were reviewed. AETRs and other sources of information were compared with the participant's PIO/P to ensure that training activities were proceeding according to the objectives of each participant's program. The AETR was completed with written comment by the Campus Coordinator and along with cumulative records was submitted to the COP/LAPIS and USAID mission in Lesotho.

A student cumulative record was set up to provide detailed information on each participant's total course work, term grades, and cumulative GPA. A total of 413 AETRs/Cumulative records were completed and submitted over the 1986-1991 project life.

2.6.2 Trainee Documentation

The LAPIS Project stateside documentation cycle for each trainee started when the PIO/P was received and the participant was accepted at a U.S. university. A Participant Data Form (PDF) was completed and forwarded to the Statistical Unit at USAID OIT. Any changes that occurred in a trainee's program (extensions of time, change in course of study, other alterations) were then submitted to OIT on PDF change forms. When a trainee finished his/her training program and a confirmed arrival notice had been received from Lesotho, Part IV of the PDF was completed and forwarded to OIT.

Each participant trainee was covered by the Health and Accident Coverage insurance through USAID. The PDF form served to notify USAID to enroll the participant in the insurance program.

The U of A LAPIS training office designed and implemented a cumulative record form to submit to Project Management in Lesotho as a tracking aid. The cumulative record showed all courses taken, grades earned, transferred credits (when applicable), and courses scheduled during the current quarter/semester. Included on the record was the participant's degree objective, field of study, university, start date, and anticipated completion date. Cumulative records were forwarded with the AETRs to Lesotho.

A data base file including each student was maintained. It contained information on admission history, visa renewals, current address and phone number, academic advisor,

estimated date of completion, field of study, degree sought, grades, etc. Various reports were generated from this database file including visa renewal dates, completion dates, etc.

2.6.3 Campus Visitations

A key element in the AAI monitoring system was on-site visits to the training institutions attended by LAPIS trainees. Universities were observed for their strengths in various fields of agricultural training. Each campus was reviewed, including accommodations, on their ability to tailor programs to fit foreign student's needs. Those visits proved to be effective in reviewing each participant's study plan, academic deficiencies, personal adjustment and health problems, tutoring requirements, resolving transfer credit issues, summer work experience, and completion dates within the LAPIS time frame. Contacts with academic advisors and participants on campus provided good opportunities to fill communication gaps in areas of individual interest. At the personal level, campus visitations appeared to boost morale and a student's commitment to his/her training program.

2.6.4 Course/Curriculum Review

Each semester/quarter, progress towards completing a degree program was examined through the use of AETRs and consultations with academic advisors. The PIO/P stipulated the field of study and degree undertaking. The university produced the list of required and elective courses for graduation. When a student had a problem with a particular subject, AAI and the UA training coordinator were aware that corrective action was indicated. A number of students had problems with the basic maths and sciences, in particular, chemistry, biology, and algebra. As previously stated, tutoring was made available to all participants and in most cases successful results were immediate. There was only one instance where a participant could not cope with required courses in math and science and a change in the field of study was approved. Subsequently, the student completed his degree in the alternate discipline. All other participants completed their training in the fields of study as stipulated in their PIO/P.

2.6.5 Mid - Winter Seminars

The first Project Management Workshop for the LAPIS participant trainees was held at Cal Poly State University, Pomona, from December 22, 1986, through January 2, 1987. It was under the organizational efforts of Dr. Richard Vengroff, Director of International Programs at Cal Poly. The workshop program included: Computer use, project planning, management, marketing, evaluation, cost effectiveness analysis and the like.

The second Mid-Winter Management Workshop was held in Tucson, December 21 - 31, 1987. Zimmer and Associates was selected to conduct the workshop. The workshop focused on: Organization development, performance evaluation, communication, and team building.

The third Mid-Winter Management Workshop was held in Tucson, December, 1988. The workshop focused on the management of range and livestock in a sustainable agriculture system. Classroom sessions were held in the city of Tucson and field work conducted nearby at the Arizona Sonora Field School, El Cazador Ranch. The workshop consisted of participatory sessions for the 38 trainees. All of the LAPIS students in the U.S. at the time were in attendance. The students examined issues of public sector management involvement

in range and livestock systems. They identified constraints faced by farmers in making decisions which affect their livelihood, and participated in field techniques application in range management while at the El Cazador Ranch.

2.6.6 Tutoring Services

Inadequate academic preparation in math and basic science courses was noted. Follow-up on trainee's academic performance indicated the need for tutoring. Every participant upon the advice of their advisor was authorized to obtain a tutor. In several universities, the International Students Office kept a list of qualified tutors. Special arrangements were made in consultation with academic advisors and/or International Program Offices for providing prompt tutoring services as identified. A tutoring agreement form was developed and upon the signature of the participant, his/her advisor, and the tutor, arrangements were made for reimbursement. In all cases, tutoring requests received prior approval of the U of A LAPIS Training Coordinator before being presented for reimbursement.

Up to December, 1990, a total of 68 tutoring services were provided. They included 21 in Chemistry; 19 in Math/Statistics; 11 in Economics; 7 in computers; and 10 in other subject areas.

2.6.7 Field Trips

Field trips were required by the university for certain courses. USAID/OIT established a daily rate per diem of \$65 for those trips. Per diem checks were sent to the student when the trip was authorized by the U of A LAPIS Training Coordinator.

2.6.8 Enrichment Activities

During Project life it was LAPIS policy to provide the participant with as many enrichment activities as possible. These activities were designed to broaden the student's learning experience, understanding of U.S. culture and institutions, and to develop professional ties with American colleagues. These activities included:

- Mid-winter Project Management Workshops
- Hands-on Practical Training
- Field Trips
- Professional Meetings and Conferences
- Participant Trainees' Newsletters
- Membership in Professional Societies.

The participants located in Tucson were invited to several get-togethers held when personnel returned from Lesotho, or during the holiday seasons and at semester ends. The UA campus office worked with the Council for International Visitors to arrange visits with local host family volunteers. Some students became friendly with their "hosts", visiting their homes and participating in social events.

Whenever possible, internships or hands-on practical training were arranged. Consultations with academic advisors produced positive results by arranging intensive practical training experiences. Some examples follow:

Rameketse Williams and Esau Majara, both Ag Extension students at New Mexico State University, took part in an 8-week practical training exercise during their last semester in school. Their advisor reported they were leaders of the exercise and were used as examples of good participation;

Puseletso Ranthimo, a New Mexico State University Animal Science student, worked with two commercial pig producers. During her last summer semester she gained important practical on-the-job training;

Seipati Mashapha, while at Oklahoma State University, attended a 3-week work practicum at the Tishomingo National Fish Hatchery. She also attended a special short course, that was available immediately after completion of her Bachelors degree, on fish diseases taught at Mississippi State University;

Monoang Lekatsa, A University of Arizona student, took part in a field trip for Animal Science students to the San Carlos Apache Indian Reservation. The trip provided hands-on field experience for sorting, weighing, and scoring of beef cattle;

Seven of the UA diploma students in Range Management (Phallang Lebesa, Tsepang Mantulle, Pshabane Moeletsi, Mpho Molawa, Tsekelo Moremoholo, Chesetsi Ntsiki, and Sello Rasello) had a specially designed study program. An integral part of their program consisted of frequent, intensive field trips;

The University of Idaho was able to arrange several hands-on training trips for Francis Ntlale, Mamolopi Lebusa, and Phakiso Sefika. These trips included: Volunteer work for the USDA Agriculture Research Service, participation in the Student Plant Identification Team at the Society for Range Management's annual meeting, Boise, volunteer work for the Boise National Forest (learning multiple uses of national forest lands), work at the U.S. Sheep Experiment Station at Dubois;

Mabusane Tsiu, while at Kansas State University, took part in a tour by Cooperative Extension personnel. The tour included a wheat tour at the Southeast Kansas Branch Experiment Station, Parsons, Kansas, visitation of operating farms and interaction with Southeastern Kansas Extension Specialists;

Ntai Ramangoaela, an Agricultural Sciences (B.Sc) graduate of Cal Poly, Pomona, had a series of field trips especially designed to enhance his senior project on the design of drip, sprinkler, flood and furrow irrigation systems. He visited Indio, Blyth, Fresno, and Bakersfield, California and Lake Havasu, in Arizona; and

Mpho Thatho, a Tennessee State University (B.Sc) graduate in Home Economics and Nutrition, interned with Cooperative Extension personnel in the Nashville area on the practical aspects of human nutrition.

All participants were encouraged to attend at least one professional society meeting during their time in the program. It was recommended that under-graduates wait until their last academic year before attending in order to maximize their participation in the society. Consultations were held with academic advisors as to which society and which meetings would be best for the individual. Graduate and post graduate students were encouraged to participate in as many professional society meetings as feasible. During program life, students attended 25 conferences and meetings at a cost of \$14,500.75.

Emmanuel Pomela, a PHd candidate, went to a Western Regional Weed Science meeting in his last Spring quarter (March, 1990). He presented a scientific paper which won first place among the presentations given.

Ms. Hopolang Phororo, a MSc candidate, attended the American Agricultural Economics Association meeting in Vancouver in her last summer semester. She was able to learn of the most recent advances in her field and make valuable contacts with colleagues.

LAPIS participants could be reimbursed for membership in a professional society for up to three years. It was felt that this would not only keep the participants updated on advances in their fields, but would also help them become members of a greater society, a world community, rather than one limited to their own field and country. Thirty-six participants became members of a professional society at a cost of \$4,625.

All participants were encouraged to take part in academic sponsored field trips. A total of 100 field trips were taken at a cost of \$36,367.54. Some students participated in more than one trip during their program. Ntai Ramangoela combined his senior project at Cal Poly, Pomona, with extensive field trips. The experience gained enhanced his report on the design of drip, sprinkler, flood and furrow irrigation systems.

The LAPIS Participant Training Newsletter was established as a means of keeping the students updated on project activities and relevant news from Lesotho. It was published on a quarterly basis and was issued from November 1986, through May 1991. A total of nineteen issues were published.

2.7 Graduation

2.7.1 Preparation for Graduation

Final reviews were made of all courses required for completion of a student's program. The academic advisor and registrar were consulted to insure that there would be no surprises awaiting a student. The UA training coordinator notified LAPIS/Lesotho, and AAI/Tucson that a student was due to graduate on a specific date. AAI contacted the participant and advised him/her on closing out bank accounts, giving notice on rental accommodations, reminding them to have all local bills paid, etc. In addition, flight reservations were made and an allowance check, for book shipment, was forwarded to the student. It was policy of USAID/OIT that a student return to his/her home country as soon after graduation as reasonably possible. Upon final examinations and graduation, the students departed for Lesotho.

2.7.2 MOA Notification

AAI/Tucson telexed graduation and arrival time information to LAPIS management in Lesotho. LAPIS forwarded written notice, including flight number and arrival time, to the Ministry of Agriculture with copies to the relevant Department Head and the Chief Training Officer.

2.7.3 GOL Assignment/Housing

The written notice was to alert the Ministry and Department that a trainee was returning at a particular time to take up his/her post within government. The bonding agreement signed by each participant obligated that individual to work in Ministry for two years for each year spent in training. It was the MOA's responsibility to arrange airport pick-up, notify the trainee's family, assign housing, and make preparations to integrate the trained person into their work environment.

2.7.4 Lesotho Orientation

A one-day workshop was held in Lesotho, twice a year, for trainees that had recently returned. The purpose of this workshop was to permit the participants to report on how they had been reintroduced to the local workplace. They relayed information on work environment, housing, colleague reception, and how they were able to apply their training in their new assignments. The sessions provided a forum for the graduates to compare job placement. Suggestions were made for future training programs in the States. Complaints, successes, and failures in their own experiences were aired. Two of the more common complaints were: (1) the monthly stipends paid in the States were too low, and (2) the training received was not fully appreciated at home and that they were under utilized (and paid) in their new assignments.

2.7.5 Achievements

A number of LAPIS participants maintained excellent academic records. Several students stand out as high achievers. For example, Emmanuel Pomela, not only completed his PhD program ahead of schedule, he did so with a 3.48 cumulative GPA. He was honored by his peers at both the university and in his professional society. Phakiso Sefika completed his BSc with a 3.29 cumulative GPA, and was selected by the range faculty of the University of Idaho as the outstanding range senior in 1988. Moses Phoofolo completed his BSc in computer science, ahead of schedule, with a cumulative GPA of 3.593. He appeared on the Dean's List nearly every semester.

Other participants completed their training ahead of schedule and maintained GPAs of over 3.0. Table 15 provides a breakdown of the GPAs for LAPIS funded trainees.

Table 15: Distribution of LAPIS Participants by Degree and Cumulative GPA

	1.00 - 1.99	2.00 - 2.99	3.00 - 3.49	3.50 - 4.00
DIPLOMA 8 (13%)	2 - (25%)	6 - (75%)		
BACHELOR 44 (71%)	---	26 - (59%)	15 - (34%)	3 - (7%)
GRADUATE 10 (16%)	---	---	7 - (70%)	3 - (30%)
TOTALS 62 (100%) *	2 - (3%)	32 - (52%)	22 - (35%)	6 - (10%)

* Grades were not available for 10 students (who completed their programs) that were transferred into the LAPIS program from WSU/Phelps-Stokes management. Two students dropped prior to completion, and one student was deceased.

There were 75 participants included in the LAPIS program. Seventy-two completed their training. Two students withdrew within the first year of training, and a third participant died while in training.

As the Table 16 indicates, 19 students (approximately 26%) completed their study programs on time, and 30 (approximately 42%) completed early.

Table 16: Duration of Studies For LAPIS Funded Trainees

Degree Objective	PIO/P Alloted Time	No. (%) on-time completions	No. (%) of early completions	No. (%) extensions granted for completion
Diploma	15 months	6 - (75%)	---	2 - (25%)
Bachelors	36 months	7 - (15%)	28 - (60%)	12 - (25%)
Masters	24 months	6 - (38%)	1 - (6%)	9 - (56%)
Doctorate	36 months	---	1 - (100%)	---
Totals: 72 Participants		19 - (26%)	30 - (42%)	23 - (32%)

Forty-nine participants entered the Bachelor level program, representing 65% of those trained under LAPIS. Table 17 shows levels of training and male/female participation. There was good participation of females in the training program. In the Diploma level, 14% were women; in the Bachelors level, 36% were women; and at the Masters and Doctorate level,

55% were women. The numbers trained reflect the recognition of the important role that women play in agriculture in Lesotho.

Table 17: Level of Education Achieved By LAPIS Trainees, By Sex.

SEX	DIPLOMA	B.SC.	M.SC.	PHD	TOTALS
Male	7	31	7	1	46
Female	1	18	10	0	29

A wide cross section of academic disciplines were included in the program. Table 18 includes the names, MOA affiliation, the subject and the type of degree achieved for all the long term trainees.

Table 18: Individual LAPIS Long-Term Trainees, Degrees Attained, Status Before and After Training, and At The End-of-Project.

NAME	DEGREE	DIV/DEPT	BEFORE	AFTER	PLACEMENT
E.Pomela	PHd	Research	Research Officer	Research Officer	MOA
M. Majoro	MSc/PHd	Research	Research Officer	Lecturer	National University
M. Matete	MSc	Research	Research Officer		U.S. Peace Corps
D. Mathaba	MSc	Research	Research Officer	Did not return	Unknown
T. Matobo	MSc	Research	Research Officer	Research Officer	MOA
L. Motjope	MSc	Research	Research Officer	Research Officer	USA for PHd
L. Pomela	MSc	Research	Research Officer	Research Officer	USA for PHd
P. Mokuoane	MSc	Les. Ag College	Lecturer	Lecturer	MOA
M. Mokati	MSc	Planning	Planner	Planning Officer	Matalile Proj.
H. Phororo	MSc	Marketing	Marketing Officer	Marketing Officer	ISAS/NUL
M. Motsamai	MSc	Research	Research Officer	Senior Marketing Officer	MOA
C. Rasekila	MSc	Livestock	Poultry Prod. Officer	Chief Poultry Prod. Officer	MOA
M. Sekoto	MSc	Range Management	Range Mgmt. Officer	Senior Range Mgmt. Officer	MOA
A. Molumeli	MSc	Les. Ag College	Lecturer	Lecturer	MOA
R. Matela	MScREE	Conservation	Conservation Off.	Conservation Off.	Plenty Project

NAME	DEGREE	DIV/DEPT	BEFORE	AFTER	PLACEMENT
M. Raditapole	MSc	Les. Ag College	Lecturer	Lecturer	MOA
J. Ramasike	MSc	Les. Ag College	Lecturer	Lecturer	MOA
P. Nthongoa	MSc	Les. Ag College	Lecturer	Deceased	Deceased
J. Malephane	BSc	Range Management	Range Technical Officer	Range Mgmt. Officer	MOA
M. Makhata	BSc	Research	Research Officer	Research Officer	MOA
S. Boleme	BSc	Range Management	Range Technical Officer	Chief Livestock Officer (Mphaki)	Deceased
B. Lekhela	BSc	Range Management	Range Technical Officer	Range Mgmt. Officer	MOA
M. Matsoso	BSc	Range Management	Range Technical Officer	Range Mgmt. Officer	MOA
F. Ntlale	BSc	Range Management	Range Technical Officer	Range Mgmt. Officer	MOA
P. Sefika	BSc	Range Management	Range Technical Officer	Range Mgmt. Officer	USA for MSc
S. Mashapha	BSc	Livestock	Field Technical Officer	Field Research Officer	MOA
L. Pheko	BSc	Livestock	District Livestock Officer	Senior Livestock Officer	MOA
M.Mokonyana	BSc	Livestock	Dairy Technical Officer	Asst. Production Officer	MOA
C. Mafisa	BSc	Livestock	Farm Manager	Senior Farm Manager	MOA
K.Leisanyane	BSc	Les. Ag College	Lecturer	Lecturer	MOA
N.Ramangoala	BSc	Les. Ag College	Lecturer, Mechanics	Lecturer, Irrigation	MOA
C. Lebusa	BSc	Range Management	Range Technical Officer	Range Mgmt. Officer	MOA
G. Ntsonyana	Incomplete	Conservation	Conserv. Officer	Resigned	Resigned
M. P'hoofolo	BSc	Planning	Data Analyst	Systems Analyst	Lesotho Bank
C. Ramakhula	Incomplete	Research	Research Officer	Research Officer	LISP Project
M. Molapo	BSc	Research	Research Officer	Research Officer	MOA
L. Mothokho	BSc	Crops	Extension Assistant	Senior Horticulturist	MOA
W. Thulo	BSc	Ag Information	Information Officer	Senior Information Off.	MOA
A. Tsiu	BSc	Ag Information	Information Officer	Senior Information Off.	MOA
M. Lenka	BSc	Les. Ag College	Lecturer	Lecturer	MOA

NAME	DEGREE	DIV/DEPT	BEFORE	AFTER	PLACEMENT
M. Lekatsa	BSc	Les. Ag College	Lecturer	Lecturer	MOA
M. Mohloboli	BSc	Research	Research Technical Officer	Research Technical Officer	MOA
G. Putsoane	BSc	Conservation	Cons. Technical Officer	Conservation Officer	MOA
M. Tsiu	BSc	Crops	Regional Crops Officer	Regional Crops Officer	MOA
L. Thulo	BSc	Range Management	Range Mgt Officer	Range Technical Officer	MOA
M. Khoabane	BSc	Crops	Oilseed Officer	Oilseed Officer	MOA
E. Majara	BSc	Extension	Area Extension Officer	Area Extension Officer	MOA
M. Manyatsela	BSc	Extension	Extension Officer	Acting District Ag Officer	MOA
H. Molapo	BSc	Livestock	Poultry Tech. Officer	Still in school	MOA
M. Mabusa	BSc	Research	Research Technical Officer	Research technical officer	MOA
M. Ramasike	BSc	Les. Ag College	Lecturer	Still in school	MOA
P. Ranthimo	BSc	Livestock	Livestock Officer	Still in school	MOA
A. Makenete	BSc	Planning	Data Analyst	Systems Analyst	MOA
M. Mosito	BSc	Ag Information	Ag Information officer	Still in school	MOA
T. Nkholise	BSc	Les. Ag College	Lecturer	Lecturer	MOA
M. Mosiuoa	BSc	Crops	District Crops Officer	Still in school	MOA
V. Hanyane	BSc	Extension	Area Extension Officer	District Ext. Officer	MOA
G. Thatho	BSc	Nutrition	Asst. Nutrition Officer	Senior Nutrition Officer	MOA
G. Makhale	BSc	Crops	Seed Inspector	Seed Inspector	MOA
P. Alotsi	BSc	Research	Research Technical Officer	Research Technical Officer	LHDA
C. Moeketse	BSc	Nutrition	Home Economics Assistant	Home Economics Officer	MOA
V. Matsie	BSc	Livestock	District Livestock Officer	District Livestock Officer	MOA
A.Mohlakoana	BSc	Research	Research Technical Officer	Research Technical Officer	MOA
J. Mokoto	BSc	Research	Research Technical Officer	Research Technical Officer	MOA
M.Ranthamane	BSc	Research	Research Technical Officer	Research Technical Officer	USA for MSc

NAME	DEGREE	DIV/DEPT	BEFORE	AFTER	PLACEMENT
R. Williams	BSc	Les. Ag College	Asst. Lecturer	Lecturer	MOA
L. Monare	BSc	Les. Ag College	Lecturer	Lecturer	MOA
M. Molawa	Diploma	Range Management	Range Assistant	Range Technical Officer	Resigned
M. Mabaleha	Diploma	Range Management	Range Assistant	Range Technical Officer	MOA
S. Rasello	Diploma	Range Management	Range Assistant	Range Technical Officer	MOA
C. Nsiki	Diploma	Range Management	Range Assistant	Range Technical Officer	MOA
P. Lebesa	Diploma	Range Management	Range Assistant	Range Technical Officer	MOA
C. Mantule	Diploma	Range Management	Range Assistant	Range Technical Officer	MOA
T. Moremoholo	Diploma	Range Management	Range Assistant	Range Technical Officer	MOA
P. Moeletsi	Diploma	Range Management	Range Assistant	Range Technical Officer	MOA

2.8 Financial Analysis

Cost records were maintained for each individual candidate (See Annexes). These records were updated with the submission of each reimbursement voucher to USAID. Expenditures were kept by cost category and summarized by Project fiscal year. Values from these actual outlays were plugged in to training budget projections. In this manner costs were tracked and remaining cost projections were periodically updated. All costs exclude the management contractor's overheads and fee.

The original training budget was developed using cost elements. Therefore, costs were tracked by those cost elements in order to provide data useful in future training programs:

Data collected from June, 1986, through June, 1991, on cost elements is shown in Table 19. Students in the program did not all begin their training under LAPIS. As explained earlier, some were "inherited" from other sponsors. Therefore, a comparison of total costs per student would be misleading.

The cost per student month for the Doctoral candidate was \$1,610.18. The Diploma students averaged \$1,993.67. The Masters Candidates averaged \$1,483.89 and the Bachelors candidates, \$1,586.43.

If the 24 month yardstick for a Masters program was valid, then from the above figures it can be projected that the average cost of a Masters Degree was approximately \$35,613.36. The actual costs for this program ranged from a high of \$53,650.52 (including prerequisite courses prior to acceptance in graduate school, and a 29 month time span) to a low of \$23,308.45 (completion in 18 months). It must be recognized that nearly half of the Masters candidates

were already in school and some tuition payments and initial air travel costs were excluded from their records. This decreased the average cost calculation for a Masters.

Table 19: Cost Elements Associated With The LAPIS Project Long-Term Training Program.

COST ELEMENT	CUMULATIVE COSTS	PERCENT
SUBSISTENCE	\$1,326,258.62	46.0
TUITION	\$ 979,277.00	33.9
TUTORING	\$ 12,587.38	0.4
TRAVEL	\$ 302,772.12	10.5
BOOKS, ETC.	\$ 130,472.78	4.5
FIELD TRIPS	\$ 43,406.13	1.5
MEDICAL	\$ 53,563.56	1.9
PROFESSIONAL SUPPORT	\$ 25,759.18	0.9
ORIENTATIONS	\$ 11,529.71	0.4
TOTALS	\$2,885,626.48	100.0

Using the 36 month measure, for a Bachelors degree, the average cost for this program can be estimated at \$57,111.48. The actuals ranged from \$36,425.72 (1 year, 9 months) to \$76,764.50 (3 years, 9 months).

In all levels of training in the program, it must again be noted that students were placed in 20 universities spread over 19 states. Each school and school area has different fee structures and subsistence allowances.

2.9 Successes - Failures

By the EOP, all LAPIS funded candidates who completed their degree programs, with the exception of the one that disappeared, were employed in Lesotho. Statistically, LAPIS achieved a 93% success rate with 70 out of 75 candidates enrolled in the program completing their degrees and returning to work within the Ministry of Agriculture. Table 20 summarizes degrees attempted versus completed for LAPIS long-term trainees by type of degree.

2.10 Influence of Long-Term Training Effort

The experiences gained through attending training in the U.S. were positive. Without exception, all graduates interviewed expressed a desire to return to the United States at some future date. Exposure to the American way of life and approach to problem solving has had

an influence. It is believed that this influence will assist the Ministry of Agriculture to cope with agricultural production issues in Lesotho.

Table 20: LAPIS Trainees Who Completed or Dropped Out of The Long-Term Training Program.

DEGREE	NUMBER OF STUDENTS	COMPLETED	DROPPED
DOCTORATE	1	1	
MASTERS	17	16**	1*
BACHELORS	49	47***	2
DIPLOMA	8	8	
TOTALS	75	72	3

* One candidate died during his training program.

** One candidate completed, however failed to return; one stayed for Doctorate.

*** One candidate completed, stayed on for Masters degree under private funding.

3. INFORMAL AND SHORT TERM TRAINING

3.1 Background

This program embraced a range of Project activities supporting development of the MOA capability to provide the nonformal training appropriate to the small-farmer, commercial production goals of the project to MOA extension staff, farmers and other pertinent individuals including credit union personnel, grazing and farmers' association members, and input suppliers. According to the project paper, LAPIS assistance through the Agricultural Education Component (AEC) was to target Lesotho Agricultural College (LAC) with TA, training, and commodity support to develop a systematic and sustainable mechanism for conducting such training. Training content was to focus on the various types of technology promoted by the project. This training, in turn, was to build the capability of the extension staff affiliated with the District Agricultural Offices (DAOs). The Farmer Training Centers (FTCs) were to be improved to provide appropriate training venues. Improvements to three FTCs began in 1986, therefore adequate facilities were provided to accommodate the farmer training sessions.

LAPIS support to nonformal, short-term training began in August 1986 and was completed in May 1992. The "Short-term Training Program Assessment Report" published by the project in 1991 provides a detail account of the methodology, activities and strategies employed in launching the massive training program under LAPIS.

The Project's support of nonformal training were carried out in different but interrelated and complementary forms:

1. The training of ministry personnel and, in most cases, farmers were conducted under the auspices of each project-supported program. This form of training included TA/counterpart contacts, TA/farmers contacts, project component specific training carried out by the component's TAs and their counterparts such as research field days, and other informal communications between the project staff and the project target groups.
2. The formal workshops were planned and conducted by the project and MOA staff for the Ministry staff at large and the target farmers or other individuals associated with the project activities such as target traders and members of the District Marketing Committees. During the first two years of the project a number of large- scale, discipline-oriented workshops were implemented by the project focusing on training the PIC-supported farmers and a large cadre of MOA field staff.
3. Since 1989, a number of systematic, continuous and sequential short courses were planned and implemented for the project target groups. Examples of this form of training were annual training of grazing association members, herd boys, marketing officers, and quarterly courses for the Irrigation Resource Planners.
4. The support of the AIS to increase production and dissemination of extension materials and the support of ARD and LAC in generating the information packages carried out throughout the life of the project. Large volume of information materials pertinent to various tenets of the project were generated by the project staff and the MOA colleagues, edited, simplified (where necessary), and disseminated by LAC, ARD and AIS. The AIS's input into dissemination of information carried out through direct mailing of the printed materials to the MOA field staff and farmers or through radio broadcasting.
5. A number of key MOA staff attended specially-tailored courses or tours in the United States, in Europe, in Africa, and in the region.

3.2 Phases of LAPIS Informal Training

LAPIS sponsored short-term training assistance was extensive and diverse. There were two phases to this assistance. In the beginning, these activities were primarily designed to support the objectives of the LAPIS Production Component, with PIC and the AEC was charged with coordinating this effort. Extension agent and farmer training were predominant at that time. Other training activities, of a more institutional support nature, were also being implemented by project components for staff of their home institution. The second phase, began in 1988 with the phasing out of PIC activities. The responsibility of short-term training was transferred to an overall coordinator based within the AEC, but directed through the administrative wing of the project. Since then, most short-term training assistance has been directly implemented via specific LAPIS Project components for their home department/division or clientele. The presentations in section II-A of this report briefly described the institution-specific training and staff development programs. The second phase activities can be interpreted as institution building in the respect that each applicable department or division was made stronger by staff with improved training.

The summaries presented below discuss both phases of LAPIS short-term training assistance. The complete log of activities located in the annex of this report depict the details and extent of project support in the realm of short-term training.

3.2.1 Phase One Summary (1986 to 1988)

In January 1987, Dr F. Bobbitt, an extension education consultant from Michigan State University was employed by the project to assist the AEC Team Leader and Extension Specialist in designing the project's four year short-term training implementation plan. After considerable consultation with MOA and project officials, the plan was subsequently approved. Implementation was initiated by the AEC for MOA/LAPIS in January 1987.

The training year was designed to run from January each year. The 1987 plan concerned training for crop production; the 1988 plan concerned livestock production. This alternating focus was designed to be followed in future years. Instructors for the training events were to be made up of MOA and LAPIS counterpart staff. As planned, a large group of extension field staff were to attend a two-week course in January at the Maseru LAC campus. Afterwards, a selection of this group was scheduled to attend a more in-depth follow-up course in June. This follow-up course was designed to prepare the group as instructors for farmer training activities scheduled for August. These farmer training activities were scheduled to take place in two locations, at the recently renovated Farmer Training Centres at Leribe (north) and Mohale's Hoek (south), and were planned for a large number of farmers selected by the District Agriculture Officers.

The objectives of the training year included: 1) training a large number of extension field staff in up-to-date production methods, 2) identifying and further training a strong cadre of selected extension field staff for leadership roles among fellow extension staff and with farmers, 3) training a large number of farmers in up-to-date production methods, and 4) stimulating an environment of cooperation among the MOA headquarters-based instructors concerning extension staff and farmer training. A further objective included using the trained cadre of selected extension staff for counterparts roles with LAPIS project field activities.

Other types of training for MOA staff were scheduled during the year. These training activities were designed to support the institution building aspects of the various LAPIS project components. Planning of these activities was enacted within appropriate institutions collaboratively between MOA and project staff.

During 1987 and 1988 short-term training plans, as described above, were implemented. Results of these activities can be found in the numerous workshop "proceedings" that were published and can be viewed in three of the four video tapes developed by the AEC. A complete list of these materials and supporting training materials is included in the annexes of this report. Statistics of these events can be found in the tables and complete log of activities which accompany this report. Details of training activities implemented by the individual project components in support of their particular institution building efforts which took place during this time frame are also to be found in the accompanying materials.

Nearly all training events during this phase were evaluated and found satisfactory. Results of these evaluations can be found in the above mentioned workshop "proceedings". Individual

components initiated and carried out activities specific to their own institution building efforts. All but one of the objectives of the PIC support activities were met. A problem was encountered concerning the trained cadres of selected extension staff. They were, but in a few cases, not serving counterpart roles with LAPIS project field activities. Despite LAPIS Project lobbying with the MOA in this respect, resistance was difficult to overcome. Reasons for this include the limited human resources and predominance of other donor project needs at district level.

3.2.2 Phase Two (1988 to 1991) Summary

In 1988, the LAPIS Project mid-term program audit and realignment indicated a need to phase out direct support to field based farmer production PIC activities. This precipitated a major change in the project's short-term training assistance strategy. Also indicated by the realignment was a need to put in place a sustainable mechanism by which the MOA could maintain efforts at extension staff/farmer training.

During this second phase of LAPIS short-term training assistance, the responsibility of coordination was transferred to a program leader based within the AEC, but working through the administrative wing of the project. During this phase training plans were designed solely by the individual project components in close consultation with their counterpart staff for institutional support to their relevant MOA department or division. These plans were submitted to the project's Short-Term Training Coordinator who, in review with project administration, matched the submissions with budgets, set priorities, formalized the plans, monitored implementation and maintained records. The training year was now designed to coincide with the project's fiscal year which began in June. As was stated above, project short-term training assistance for the most part was now designed to support the institution building efforts of the individual project components. Support to the MOA's Marketing Division was specially mandated, as was assistance to the Research Division in dissemination and extension staff training for the use of research generated production guidelines.

In addition to this focus, short-term training efforts were expended in 1989 to help the MOA fill the void caused by the phasing out of PIC field activities. This effort was accomplished by the launching of an extensive six month course in "irrigated crop production resource planning" for 13 MOA field staff and 2 headquarters staff. Quarterly follow-up activities to this course continue to the EOP. This effort was considered by the MOA to be successful and has provided them the autonomous ability to service small-scale vegetable producers.

Another focus during this second phase of effort has been to address the need for a sustainable extension staff/farmer training mechanism which was identified in the project's mid-term evaluation. This was achieved by the instigation of the "Training/Communications Coordination Committee" (T/CCC), made up of four members from the DFS, AIS, ARD and LAC, who successfully launched, with project guidance and minor funding, a quarterly in-service training mechanism for extension staff and farmers. This mechanism was tied to a system which coordinated the services of instructors from all MOA divisions and which ultimately fed back to AIS a supply of instructional materials.

Annual training under the second phase plans were successfully implemented each year. Results of many of these activities can be found in the numerous workshop "proceedings" that

were published by the AEC. Most training events during this phase were evaluated. All that were assessed were found satisfactory. Results of these evaluations can be found in the above mentioned workshop "proceedings". Those that were not formally evaluated were subjectively assessed as the events unfolded and for the most part were found satisfactory.

3.3 Summary of Results

Quantitatively, the following figures present the achievement of the project in short term and informal training from June 1986 to February 1992:

3.3.1 LAC

Training Topics:

Teaching Methodology, Institutional Management, Computer, Educational Tours in the region, and Scholarships

People Trained:

EAs (3), SMSs (4), MOA Hq staff (188), LAC Students (65), Farmers (27), Others (111). 236 M/162 F

3.3.2 AIS

Training Topics:

Media Operations, Education Tours, Management, Equipment Maintenance

People Trained:

EAs (3), SMSs (11), MOA Hq staff (53). 43 M/24 F

3.3.3 DCS

Training Topics:

Marketing, Computer Instruction, Management and Irrigation

People Trained:

EAs (21), MOA Hq Staff (32), SMSs (25), Others (5). 37 M/46 F

3.3.4 DLS

Training Topics:

Range Management, Goats/Sheep Production, Management, Educational Tours in the Region, Animal Health

People Trained:

Farmers (121), EAs (32), SMSs (103), Herdboys and GA members (2035),
MOA Hq Staff (129). 2274 M/146 F

3.3.5 DEM

Training Topics:

Computers, Management, Marketing, Tours and Internships

People Trained:

Eas (4), MOA Hq Staff (132), SMSs (79), Farmers (47), Others (43). 178
M/127 F

3.3.6 ARD

Training Topics:

Computers, Educational Tours, Research Methodology, Management

People Trained:

Farmers (92), Eas (2), SMSs (61), MOA Hq Staff (242), Students (22), Others
(26). 256 M/190 F

3.3.7 MOA Various

Training Topics:

Management, Computers, Extension

People trained:

SMSs (32), MOA Hq Staff (155). 116 M/71 F

3.3.8 MOA Field Staff

Training Topics:

Irrigated Crop Production, Livestock Production, Marketing, Management,
Home Garden, Nutrition, Irrigation

People trained:

Farmers (22), EAs (412), SMSs (226), Others (163). 428 M/395 F

3.3.9 Lead Farmers

Training Topics:

Irrigated Crop Production, Livestock Production, Marketing, Management,
Educational tours

People Trained:

Farmers (1114), SMSs (49), Eas (23), Others (20). 944 M/269 F

Note: The courses included in above figures are those with a duration of 2 days to 6 months. One day seminars are not included. MOA staff or farmers may have attended more than one training program.

PART III

PRODUCTION INITIATIVES

A. RANGE AND LIVESTOCK PRODUCTION

1. RANGE MANAGEMENT

1.1 Background

Lesotho is widely known for its extensive natural grasslands. These grasslands have historically provided excellent grazing for livestock, and contributed towards the development of a pastoral-oriented society. Today, these once highly productive grasslands, are suffering from wide-spread overgrazing and mismanagement. On a national level, livestock stocking rates are estimated to exceed rangeland carrying capacity by as much as 20-50%. As a result, soils are rapidly eroding, water quality is deteriorating and forage productivity is on the decline.

Opportunities to improve the national rangelands are constrained by weak management and free access to Lesotho's communally owned range resources. Competition for limited resources is intense, making implementation of management difficult. The situation is further exacerbated by a weak chieftainship and shortages of human and physical resources in the Range Management Division to battle this problem.

In response to the above situation, USAID, through the LCRD and LAPIS Projects, has assisted the MOA Range Management Division to institute the National Range Management Area (RMA) Program.

1.2 Range Management Area Program

An RMA can be defined as a special grazing area declared by a chief for improvement of rangeland and livestock production through application of advanced management practices. The establishment of an RMA is the first step towards allowing livestock producers to gain a sense of management control and ownership of the resources. Individual livestock producers, through formation of a grazing association, then become the direct beneficiaries of improved management.

The RMA Program goals are threefold:

1. to increase the productivity and income of rural livestock producers;
2. to facilitate commercialization of the extensive livestock industry, while at the same time satisfying the subsistence needs of rural households; and
3. to allow management of natural resources in a manner which is sustainable and sociably acceptable to rural Basotho.

The RMA Program was initiated in 1982, through the assistance of the LCRD Project. In October, 1988, the LAPIS Project took over, and further contributed to the growth and institutionalization of this important program.

As of May 1992, four RMAs had been established with operational grazing associations (GAs). Demographic information specific to these RMAs is presented in Table 21 below.

Table 21. RMA Demographic Information

RMA Name	Size (ha)	Date of Declaration	Date of Registration	No. Villages	Estimated Population
Sehlabathebe	33,000	1982	1983	11	3,650
Ha Moshebel/ Ha Ramatseliso	10,000	1986	1987	10	3,309
Pelaneng/Bokong	36,000	1988	1990	17	5,548
Mokhotlong/ Sanqebethu	53,000	1988	1991	44	6,000
Totals	132,000			82	18,507

1.2.1 Sehlabathebe RMA

The Sehlabathebe RMA is the oldest in Lesotho. It was declared in 1982, and the GA was registered with the Lesotho Law Office in 1983. A grazing management and livestock improvement programme commenced during 1983/84 and these activities continue to this day. The LAPIS Project provided direct support to the RMA/GA until 1990, and during the two subsequent years, when the project monitored on-going activities and provided technical advice. During this period, the RMA Advisor and GA sustained operations in the following major areas: livestock improvement through culling, breeding and animal health; livestock marketing; implementation of the grazing management plan; and extension/training. In 1992, the project was directly involved with the planning, construction supervision, and equipping of the national Range Management Education Centre which is located at the RMA headquarters.

A four-year summary of activities is presented in Table 22, and noteworthy achievements or problems are discussed below.

Achievements

The GA's financial and planning year ended each year on 31 December, and in 1991, the year after direct project involvement stopped, there was a successful transition in association management when a new executive committee was elected and when it assumed responsibility for the GA's property, the management of GA-owned livestock, the breeding programme, and financial records.

Furthermore, in 1989, the GA was able to repay its M19,000 loan for the initial purchase of its Drakensberger and Afrikaner sires.

Over the last four years, the RMA has been the focus of numerous fact gathering and study tours and has accommodated visitors from donor agencies, District Agricultural Offices, and other farmer associations. It has also served as a field training station for students of the Lesotho Agricultural College and their instructors. In addition, the results of planned management - upward range trends and improvements in livestock

quality - have been used as the subjects of training courses which RMA advisors have presented to primary school teachers within the RMA.

Members of the GA have an appreciation for the benefits of improved management and have stated that the quality of their animals and the prices they receive from the sale of their livestock, wool, and mohair have improved over the last eight years. These claims have been substantiated by the statistics which follow. From 1985-89 a total of 836 oxen (307 from within the RMA) were sold at the Sehlabathebe sale ring. In 1985, two years after the introduction of the grazing management plan, the

Table 22. Summary of project activity RMA: Sehlabathebe Year: Oct. 1989 - May 1992

ACTIVITY	1989	1990	1991	1992	PROJ SUMMARY
Membership	338	243	279	269	269
Financial Status (M)	13,337.98	9,361.77	2,992.44	2,898.81	2,898.81
Mgmt Comm Mtgs	6	10	10	7	33
Attendees	79	160	119	103	461
Fitzos	9	0	12	17	38
Male Participants	227	0	192	548	967
Female "	25	0	133	272	430
Total "	252	0	325	820	1,397
Training Sessions	2	6	1	5	14
Male Participants	11	147	25	123	306
Female "	6	15	4	21	46
Total "	17	162	29	144	352
Tours	7	11	9	6	33
Male Participants	28	82	192	63	365
Female "	12	21	11	38	82
Total "	40	103	203	101	447
Impoundments					
Cattle	648	227	263	248	1,386
Sheep	842	316	712	397	2,267
Goats	392	172	41	0	605
Horses & Mules	115	150	124	72	461
Donkeys	87	26	105	14	232
Fees Received (M)	8,581.00	3,948.50	3,976.40	3,394.50	19,900.40
Grazing Permits Issued	0	0	0	0	0
Cattle	0	0	0	0	0
Sheep	0	0	0	0	0
Goats	0	0	0	0	0
Horses & Mules	0	0	0	0	0
Donkeys	0	0	0	0	0
Grazing Permits Checked	0	0	0	0	0
Grazing Fees Received (K)	0.00	0.00	0.00	0.00	0.00
Utilization Inspections (ha)	0	0	0	0	0
Trend Transects Read	0	0	17	0	17
Hectares Burned	0	0	0	3,550	3,550

Table 22: Summary of project activity, Sehlabathebe, 1987 - 1992, Cont'd

Culling					
Cattle Inspected	1,807	1,813	2,602	2,523	8,745
- Culled	21	24	12	23	80
Sheep Inspected	0	0	0	0	0
- Culled	0	0	0	0	0
Goats Inspected	0	0	0	0	0
- Culled	0	0	0	0	0
Horses Inspected	0	0	0	0	0
Breeding/Service					
Cows	224	226	169	82	701
Ewes (Sheep)	175	240	140	0	555
Ewes (Goats)	20	0	6	0	26
Fees Collected (M)	1883.00	2649.75	1,303.40	1,640.00	7,476.15
Vaccinations	62	965	110	387	1,524
Livestock Sales					
RMA Origin					
Cattle	155	157	151	57	520
Proceeds (M)	109,204.00	111,320.00	115,795.00	48,410.00	384,529.00
Sheep	212	280	0	0	492
Proceeds (M)	17,604.03	23,746.63	0.00	0.00	41,350.66
Goats	40	102	0	0	142
Proceeds (M)	2,525.31	5,971.43	0.00	0.00	8,496.74
Non-RMA Origin					
Cattle	0	0	0	76	76
Proceeds (M)	0.00	0.00	0.00	57,970.00	57,970.00
Sheep	0	0	0	0	0
Proceeds (M)	0.00	0.00	0.00	0.00	0.00
Goats	0	0	0	0	0
Proceeds (M)	0.00	0.00	0.00	0.00	0.00
Shearing					
RMA Origin					
Sheep	7,268	5,351	0	7,769	20,388
Kg. Wool	16,024	0	0	15,640	31,664
Goats	670	809	0	156	1,935
Kg. Mohair	510	700	0	377	1,587
Non-RMA Origin					
Sheep	0	0	0	4,847	4,847
Kg. Wool	0	0	0	12,737	12,737
Goats	0	0	0	0	0
Kg. Mohair	0	0	0	0	0
Dipping					
Sheep	11,046	32,099	26,869	20,477	90,491
Goats	1,835	959	4,123	5,351	12,268

average price offered per ox of RMA origin was M385.61. In contrast, the average price offered for oxen originating outside the RMA was M376.29. Thus, in 1985, Sehlabathebe oxen were worth 2.4% more than non-RMA oxen. In 1986-87, this price differential jumped to 8.0% per ox, and in 1988, Sehlabathebe oxen were valued at 15.6% greater than oxen from adjacent areas. Analysis of 1989 data indicated a price differential of 10%. In 1991, the average relative price difference jumped to 43% in favor of Sehlabathebe oxen (M840.50 vs M585.75), and at the only sale in 1992, the difference remained in favor of RMA oxen at 15% (M902.50 vs M785.81). Furthermore, the farmers believed that their animals were producing more meat and milk than was the case prior to the initiation of the RMA/GA.

From the period 1988-1992, a total of M492,346.40 was generated from the sale of livestock (cattle, sheep, and goats) through the RMA-organized sales. A total of M434,376.40 went directly to RMA residents, thereby making significant impacts on the local RMA economy.

An improvement in range condition between 1983 and 1991 has been documented from the analysis of data from 17 permanent transects which were established in both the summer and winter grazing areas of the RMA. The original baseline readings of these transects in 1983 showed 2 transects in excellent condition, 5 in good condition, 2 in fair condition, and 8 in poor or very poor condition. By 1991, 5 were found to be in excellent condition, 3 in good, 8 in fair, and only 1 in poor condition. The range condition index improved from an average of 88.4 in 1983 to 139.8 in 1991, at which time all transects were found to exhibit upward or stable range trends.

Considerable changes in herd demographics were noted between 1983 and 1991. The cattle her male/female ratio improved from 42.8% male and 57.2% female in 1983 to 35.1% male and 64.9% female in 1991. At the same time, herd bull percentages dropped from 8.8% to 1.1%. This was a result of culling low quality bulls and assisting the grazing association to establish a livestock improvement program using quality Drakensberger and Afrikaner bulls.

By the EOP, Sehlabathebe RMA farmers were generating increased incomes not only for their individual households, but also for the GA by managing association-owned livestock and selling their products - wool, mohair, calves from the Drakensberger herd, and old breeding stock.

Problems

Many of this GA's difficulties stemmed from two sources. First, the association continued to implement policies which yielded a poor financial position. Second, the executive committee and members at large had trouble weaning themselves physically and psychologically from "development assistance".

An examination of Table 22 "Summary of activity, 89-92" reveals that the GA's financial status dropped between 1989 and 1991. Expenditures of note during this period were: the repayment of a M19,000 loan, purchase of Drakensberger cows to start a pure-bred, GA-owned herd (M4,000); and the purchase of three bulls and six Dohne-Merino rams as replacement sires (M17,446). Unfortunately, revenue from long-standing sources - impoundment and breeding fees - fell off during the same time. This was attributable to the facts that association riders became increasingly reluctant to patrol the grazing areas and impound trespassing stock, and because the management committee decided in June 1990, to limit participation in the breeding programme to association members. In concert with these decisions, the committee was not diligent in its 1991 breeding fee collections, letting almost 50% of the fees owed go uncollected.

The shortcomings of the GA's low membership fee structure has become increasingly apparent with the passage of time and declining savings. Collection of annual membership fees has also proven to be time-consuming and laborious. As a result, GA membership has tended to fluctuate anywhere from 220 to 395 members over the life of the association. This has had a bearing on the stability of annual incomes and the ability of the GA to plan on these funds.

In terms of the GA's viability, 1990 was pivotal. It was then that direct support from the LAPIS Project terminated. Yet no lipitso, the public meetings which are the primary extension mechanisms, were held during that year of transition. Leadership from the RMA Advisor was

weak and the GA was not well prepared for its new responsibility as manager of its own affairs. This situation was further compounded by internal quarreling within the GA's management committee from November 1990 - January 1991. That the GA did not crumble is attributable to the membership having elected a strong chairman and treasurer who understood the benefits which have accrued to the Sehlabathebe area since 1982. From the workshop in association operation and management, held in May 1992, it was apparent that the GA has the leadership to move forward.

1.2.2 Ramatseliso RMA

The Ramatseliso RMA was established in 1986, and the GA's herd improvement programme and grazing management plan were initiated during the 1988 - 1989 work year. Direct support from the LAPIS Project ended in May 1990, and since that time the resident RMA advisors and GA have continued implementing the following project-initiated activities: a livestock improvement program; livestock marketing; the grazing management plan; and extension/training.

Achievements

The first culling exercise significantly altered the sex ratio of the RMA cattle herd. About 8% of the herd was culled. This resulted in a percentage of bulls in the breeding herd of about 1% and a cow : bull ratio of about 95 : 1. With the purchase of three Drakensberger sires in 1990, the ratio decreased to about 54 : 1.

The RMA has no summer cattlepost areas. To provide for year-round grazing and to allow forage to recover during the growing season, three distinct grazing units were established. These were further sub-divided into three paddocks and the farmers implemented a rotational grazing plan within them. Compliance with the plan has been fairly good and as a result, the RMA'S grasslands responded with increased productivity of forage. By the end of each growing season, the farmers had ungrazed pasture(s) to carry their livestock through the winters.

Since the summer of 1989, nine livestock sales have been held at the saleyard at the RMA headquarters. As is the case of Sehlabathebe, the Stockowners Co-op in Natal conducts and organizes these cattle sales. Oxen of RMA origin are beginning to return higher prices to their owners than those from outside the RMA. For example, in the sales of 1991, RMA oxen returned their owners an average price of M810.80 vs. M796.31 to owners of non-RMA oxen. This difference increased to an average of M873.21 vs. M777.36 in 1992.

Table 23 presents a summary of RMA/GA activities during the last four years.

Table 23. Summary of project activity BMA Ramatseliso Year: Oct. 1988 - May 1992

ACTIVITY	1989	1990	1991	1992	PROJ SUMMARY
Membership	385	364	340	308	308
Financial Status (M)	6,253.46	5,021.64	3,469.07	3,195.73	3,195.73
Mgmt Coms Mtgs	10	13	7	9	39
Attendees	127	151	111	113	502
Pitsoos	15	28	30	30	103
Male Participants	351	726	796	1,381	3,254
Female "	93	341	425	985	1,844
Total "	444	1,067	1,221	2,366	5,098
Training Sessions	2	1	0	5	8
Male Participants	8	9	0	147	164
Female "	3	2	0	18	23
Total "	11	11	0	165	187
Tours	4	7	6	5	22
Male Participants	15	31	92	61	199
Female "	7	22	7	37	73
Total "	22	53	99	98	272
Impoundments					
Cattle	359	356	130	105	950
Sheep	45	392	9	557	1,003
Goats	25	13	176	14	232
Horses & Mules	32	62	38	19	151
Donkeys	5	50	14	32	81
Fees Received (M)	2,206.00	3,168.50	1,359.00	2,237.00	8,970.50
Grazing Permits Issued	0	0	0	0	0
Cattle	0	0	0	0	0
Sheep	0	0	0	0	0
Goats	0	0	0	0	0
Horses & Mules	0	0	0	0	0
Donkeys	0	0	0	0	0
Grazing Permits Checked	0	0	0	0	0
Grazing Fees Received (M)	0.00	0.00	0.00	0.00	0.00
Utilization Inspections (ha)	0	0	0	1,205	1,205
Trend Transects Road	0	25	25	0	50
Hectares Burned	0	0	0	1,530	1,530

Table 21: Summary of project activity, Ramatseliso RMA, Cont'd

Culling					
Cattle Inspected	1,604	1,483	1,549	2,694	7,330
* Culled	130	48	12	36	226
Sheep Inspected	0	0	6,718	5,698	12,416
* Culled	187	0	21	7	215
Goats Inspected	0	0	1,710	1,637	3,347
* Culled	92	0	14	3	109
Horses Inspected	0	0	0	328	328
Breeding/Service					
Cows	47	93	97	127	364
Ewes (Sheep)	286	356	409	437	1,488
Ewes (Goats)	0	0	0	0	0
Fees Collected (M)	1,167.50	1,534.75	1,019.25	2,542.25	7,063.75
Vaccinations	282	647	4,594	3,038	8,561
Livestock Sales					
RMA Origin					
Cattle	173	109	139	39	460
Proceeds (M)	122,360.00	80,950.00	105,185.00	33,156.00	341,651.00
Sheep	0	0	0	0	0
Proceeds (M)	0.00	0.00	0.00	0.00	0.00
Goats	0	0	0	0	0
Proceeds (M)	0.00	0.00	0.00	0.00	0.00
Non-RMA Origin					
Cattle	0	0	0	90	90
Proceeds (M)	0.00	0.00	0.00	66,540.00	66,540.00
Sheep	0	0	0	0	0
Proceeds (M)	0.00	0.00	0.00	0.00	0.00
Goats	0	0	0	0	0
Proceeds (M)	0.00	0.00	0.00	0.00	0.00
Shearing					
RMA Origin					
Sheep	8,437	8,031	9,424	3,147	29,039
Kg. Wool	25,040	0	24,079	7,214	56,333
Goats	627	1,301	2,123	238	4,289
Kg. Mohair	627	1,179	2,035	182	4,023
Non-RMA Origin					
Sheep	0	0	0	5,332	5,332
Kg. Wool	0	0	0	10,817	10,817
Goats	0	0	0	165	165
Kg. Mohair	0	0	0	86	86
Dipping					
Sheep	18,320	23,172	53,839	16,432	111,763
Goats	8,709	6,296	9,844	6,948	31,797

The RMA Advisors have maintained an active extension campaign throughout the life of the LAPIS Project and have conducted nearly 2 lipitso per month on the average over the last four years. The farmers are beginning to appreciate the benefits of improved management and this is due, in part, to the extension efforts of the advisors. In May 1992, the first RMA Advisor, Phallang Lebesa, was transferred to the Mphaki project and Makalo Makara replaced him as the RMA's senior advisor.

Problems

Many of the problems identified at Sehlabathebe can be restated for the Ramatseliso RMA. Of the three significant sources of revenue - membership fees, breeding fees, and trespass fees - only the latter, having been set by GOL gazette, are beyond the control of the GA. Where the GA has been able to exercise its prerogative in establishing fees, it has set them at very low levels. For example, the breeding programme appears to be growing in popularity as indicated by the increase in the number of animals participating from 1989 to 1992. Yet, the amount collected in 1992 is barely enough to cover the cost of one replacement bull and would not cover lick, drugs, transport, fence repair, let alone the replacement cost of rams for the Merino flock.

Another problem with the fee structure is that it has not generated enough money to "cushion" the GA from the effects of heavy expenditures. An obvious case in point occurred in 1990 - 1991. At the end of RLPU's second reporting year, 31 May 1990, the GA had about M5,022 in its treasury. Four months later, at the end of the GA's fourth financial year, the treasury stood at M950. This was the result, in part, of its having repaid M4,000 of its loan from LADB for breeding stock. As can be seen from the figures of financial status in Table 23, the balances at the end of each project year were barely enough to cover the smallest expenses of a routine nature - herder wages (M100/month), trip expenses (M50/month), and range rider wages (M15/month).

Another issue of concern, cited frequently in the monthly reports of the Ramatseliso and Sehlabathebe RMA Advisors, is the immigration of farmers, government officials, and their livestock to these RMAs. These people, for the most part, are not merely trespassers from adjacent villages; rather they relocate to the RMAs from distant places, presumably to take advantage of the increased forage biomass. The Principal Chief of Qacha's Nek has the power to prohibit an influx into his jurisdiction, has not taken such action. To rectify this situation, the GAs are attempting to make constitutional amendments which establish high membership fees for immigrants. For example, the Ramatseliso GA has set a membership fee of M300 which will be assessed these new residents. However, the mere passage of amendments will not be enough to prevail against these immigrants. The farmers must be inspired to band together and to take control of their ranges by sending large forces of riders on patrol, compliance, and impoundment actions. Only in this fashion will they be able to protect their interests and safeguard the progress they have made to date.

1.2.3 Pelaneng/Bokong RMA

The establishment of this RMA/GA was initiated in February 1988, under the LCRD project. At that time a cattlepost inventory was undertaken and for the next eight months the RMA Advisor and LCRD TA conducted 33 pitsos which reached 3,734 people in their campaign to organize the GA.

In October 1988, the development effort came under the wing of the LAPIS Project with the merger of LCRD into the LAPIS RLPU. During the next seven months, extension and organization activities slowed considerably due to heavy rains, difficult access to the RMA, and the death of Leo Beno, the Range Management Specialist assigned to this RMA.

Achievements

During the months of April - July 1989, construction was completed at the RMA headquarters, and in May, the new RMA Specialist arrived in country to replace Mr. Beno. During the next two years the RMA/GA developed rapidly. This progress was documented in the 1991 report on the operational status of the Pelaneng/Bokong and Mokhotlong/Sanqebethu RMAs, and the reader is referred to that publication for details. Only the highlights of the work at Pelaneng will be mentioned in the text and in Table 24.

The GA was registered with the Lesotho Law Office in September 1990, and by the end of the association's first financial year, April 1991, membership had increased to 535 households. This amounted to 69.8% of those households managing ruminants/equines in the RMA. The treasury stood at about M35,000. This was due to a relatively high membership fee of M60 (M50 one time registration, M10 annual subscription) which capitalized the organization very quickly.

The GA developed a grazing management plan which consisted of summer deferral of the winter ranges, a seasonal movement through the summer cattleposts, a well-managed grazing permit system, the collection of self-imposed grazing fees which netted about M6,200, and the widespread enforcement of grazing control policies which added M4,638 to the general fund.

In September 1990, the GA attended a Drakensberger sire sale in Natal and purchased four bulls. The GA obtained these animals outright, thus saving itself the encumbrance of a loan. The GA's first breeding season extended from mid-February through April 1991, and 42 cows were turned in with two of the bulls. The calving percentage from this activity was 78.6%. In 1992, 91 cows were turned in and all four bulls were used.

In 1991, cattle auctions were held for the first time in the new marketing facility built by the project. RMA oxen returned an average price of M883 compared to an average of M772 for oxen of non-RMA origin (n = 60 vs. 65). This equaled a 14% price difference in favor of RMA oxen. Averaging over the two sales of 1992, this difference increased to 21% as RMA oxen returned M962 vs. M795 (n = 36 vs. 54) on the average.

In 1992, the farmers voluntarily deferred grazing in the area set aside for the Bokong Nature Reserve in the RMA's summer cattlepost country. Only a few scattered flocks and herds were observed in this area during the summer grazing season of December 1991 - April 1992.

Realizing the increasing need for the association to conduct its business in a timely and convenient fashion, the management committee hired a full-time business manager in April 1992. Two additional items of interest are that the GA loaned Mamohau High School M4,000 at five percent interest, and it purchased fodder in bulk for resale to members during the winter of 1992.

Table 24: Summary of project activity RNA: Pelanang/Dokong Year: Oct. 1988 - May 1992

ACTIVITY	1989	1990	1991	1992	PROJ SUMMARY
Membership	0	500	587	251	251
Financial Status (M)	0.00	30,000.00	25,887.00	27,198.90	27,198.90
Mgmt Comm Mtgs	5	20	14	13	52
Attendees	121	544	312	191	1,168
Pitsos	33	48	15	8	104
Male Participants	3,359	3,805	1,147	335	8,646
Female	375	519	468	95	1,457
Total	3,734	4,324	1,615	430	10,103
Training Sessions	1	3	7	2	13
Male Participants	44	221	262	21	548
Female	8	15	125	7	155
Total	52	236	387	28	703
Tours	1	1	12	1	15
Male Participants	3	12	242	7	264
Female	0	3	31	1	35
Total	3	15	273	8	299
Impoundments					
Cattle	0	49	698	0	747
Sheep	0	392	2,765	0	3,157
Goats	0	13	645	0	658
Horses & Mules	0	62	70	0	132
Donkeys	0	50	62	0	112
Fees Received (M)	0.00	0.00	4,638.00	0.00	4,638.00
Grazing Permits Issued	0	295	396	68	759
Cattle	0	0	3,712	749	4,461
Sheep	0	0	13,465	2,199	15,664
Goats	0	0	7,737	1,391	9,128
Horses & Mules	0	0	440	97	537
Donkeys	0	0	742	141	883
Grazing Permits Checked	0	0	275	0	275
Grazing Fees Received (M)	0.00	0.00	6,198.30	1,062.30	7,260.60
Utilization Inspections (ha)	0	0	8,000	0	8,000
Trend Transects Read	0	0	12	0	12
Hectares Burned	16	0	0	16	32

Table 24: Summary of project activity, Pelanang/Pokong RMA; 1988 - 1992 Cont'd

Culling					
Cattle Inspected	0	0	0	0	0
* Culled	0	0	0	0	0
Sheep Inspected	0	0	0	0	0
* Culled	0	0	0	0	0
Goats Inspected	0	0	0	0	0
* Culled	0	0	0	0	0
Horses Inspected	0	0	0	0	0
Breeding/Service					
Cows	0	0	42	91	133
Ewes (Sheep)	0	0	0	0	0
Ewes (Goats)	0	0	0	0	0
Fees Collected (M)	0.00	0.00	420.00	910.00	1,330.00
Vaccinations	0	0	0	0	0
Livestock Sales					
RMA Origin					
Cattle	0	0	81	38	119
Proceeds (M)	0.00	0.00	67,590.00	34,690.00	102,280.00
Sheep	0	0	0	0	0
Proceeds (M)	0.00	0.00	0.00	0.00	0.00
Goats	0	0	0	0	0
Proceeds (M)	0.00	0.00	0.00	0.00	0.00
Non-RMA Origin					
Cattle	0	0	93	73	166
Proceeds (M)	0.00	0.00	71,492.00	56,610.00	128,102.00
Sheep	0	0	0	0	0
Proceeds (M)	0.00	0.00	0.00	0.00	0.00
Goats	0	0	0	0	0
Proceeds (M)	0.00	0.00	0.00	0.00	0.00
Shearing					
RMA Origin					
Sheep	10,746	9,500	8,162	0	28,408
Kg. Wool	23,124	20,983	17,538	0	61,645
Goats	0	6,613	5,472	0	12,085
Kg. Mohair	0	6,037	5,017	0	11,054
Non-RMA Origin					
Sheep	5,151	5,844	4,572	0	15,567
Kg. Wool	11,118	12,905	10,013	0	34,036
Goats	0	2,548	1,963	0	4,511
Kg. Mohair	0	2,235	1,848	0	4,083
Dipping					
Sheep	0	5,836	0	13,470	19,306
Goats	0	3,714	0	9,310	13,024

Problems

The paramount problem, which plagued this association since the early days of village organization, was the low level of participation and support of the local chiefs. The institution of the Chieftainship was and remains in a state of chaos within the RMA. The Principal Chief of Leribe Ward was replaced by his wife. However, she was reluctant to make major decisions while he still lived. This chieftainship situation was further exacerbated by village Chiefs questioning the legitimacy of their higher Area Chiefs and reporting directly to the Principal

Chief, and most chiefs at all levels neglected their responsibility for calling pitso to maintain avenues of communication. The association's executive committee tentatively exercised its new powers, primarily in the sphere of grazing control, which heretofore had been reserved for the chiefs. Nevertheless, the association was and is a long way from bridging the gap left by the crumbling Chieftaincy and it is within this void that those farmers, opposed to the association, are most active.

A second problem confronted the association - opposition to its range use policies coupled with the perception among some members that the "benefits" of membership were neither tangible enough nor accruing to them fast enough. This problem came to a head in March 1991, when farmers in one of the southern villages stoned the association's riders while they were impounding stock trespassing leboella. The magnitude of this incident is reflected by the drop in membership between 1991 and 1992. About 335 households declined to renew their membership, and this cost the GA about M3,360, in addition to a loss in credibility. Since that time the riders have refused to enter the ranges, and all policing and enforcement of grazing policies has stopped. This led to unsatisfactory progress in implementing the grazing management plan during the summer of 1992. Furthermore, extension activities in this RMA dropped off significantly in 1992, resulting in reduced guidance and instruction to the GA's management committee and members on grazing management.

Third, the jurisdictional boundary between the Principal Chiefs of Leribe and Tsikoane Wards was a source of controversy. A portion of the Bokoaneng summer cattlepost area fell within a disputed zone. The association considered the entire Bokoaneng within its jurisdiction of grazing control. However, W. Bokoaneng was used by an undetermined number of lowlanders and other mountain residents. The effective extension of the association's authority in this area will require the support of the police to prevent armed conflict. So far the police have been unwilling to accompany the GA on range rides into this area.

1.2.4 Mokhotlong/Sanqebethu RMA

This RMA, first proposed in 1987, is located within the Khalahali ward and falls under the jurisdiction of the Principal Chief of Mokhotlong. At the time the RMA was established, in the summer of 1988, the Principal Chief was serving in the GOL as the Minister of Interior, Rural Development, and Chieftainship Affairs and it was his representative who declared the RMA. The acting Principal Chief stated that only those people residing in the 37 villages under the area chiefs of Linots'ing, Mateanong, and Mechalleng were eligible for membership in the GA. Furthermore, he added that those farmers who heretofore had grazing rights within the newly-declared RMA boundary, but who resided outside of it, would lose those rights.

In 1988, a steering committee began the process of drafting the association's constitution according to this declaration and was making good progress in GA organization until August 1989. It was about then that the excluded farmers took their complaints to their real chief and Minister who was hesitant to make a formal stand on the matter. The constitutional process became bogged down and it took four months of repeated meetings and, upon one occasion, a heated confrontation for the Principal Chief to make a ruling on grazing rights. In January 1990, at a pitso in Malefiloane, he stated that those farmers with legal allocations of grazing rights within the RMA, granted prior to 1989, would retain those rights. Furthermore, they would have the opportunity of joining the association. However,

he reserved the rights of association leadership and policy formulation for the residents of the 37 villages.

The Principal Chief's decision had a crippling effect upon the morale of the association's executive committee. It upheld the grazing rights of over 417 cattlepost users from at least 93 villages while simultaneously undermining the committee's confidence that they would be supported if their policies were challenged in the future.

Seven villages (Thaba-khubelu, Ntlholohetsane, Checha, Salang, Thabang, Phutha, and Ha Moseli/Ntsiking), plus the Mokhotlong townsite, are located adjacently west of the original boundary. Within this area, the majority of farmers have the legal grazing right described above. In the process of drafting the constitution for the second time, the association opted to expand the RMA boundary to include these villages. This gave the RMA a total of 44 villages. Unfortunately, this decision vastly complicated the RMA's administration. Instead of three areas totally encircled by the RMA boundary, lands under the jurisdictions of an additional five area chiefs were added to the RMA.

The constitutional revision was completed during the summer of 1991, and in April 1991, the "Linots'ing, Mateanong, and Mechalleng Grazing Association" was enrolled in Lesotho's Societies Register as number 31/91.

Achievements

The GA executive committee successfully established a high enough level of membership and annual subscription fees, respectively M50 and M10, to quickly capitalize the organization. Registration was steadily on the rise from November 1990 through February 1992, peaking at 397.

First on the GA's priority of major expenditures was the procurement of breeding stock and it focused on the acquisition of Merino rams from the Mokhotlong Sheep Stud. In April 1992, 10 rams were purchased at a cost of M6,440. Breeding fees were set at M1, M0.75, and M0.50 per ewe exposed, depending upon the value of the particular ram. The farmers intend to begin breeding in June 1992.

Three breeding pastures were fenced; one in each area chief's jurisdiction.

Sixteen ecological monitoring sites were selected and permanently marked in the winter and summer grazing areas of the Mokhotlong and Sanqebethu catchments.

Problems

For the most part, neither the RMA residents nor those farmers outside the boundary have internalized the concept of the RMA/GA nor do they perceive the benefits of a grazing association. Even the most supportive farmers have joined with some trepidation. The majority of farmers view membership as a gamble with M60. This is especially true as the prospect of the National Grazing Fee looms larger and deters many farmers from joining.

Then too, the behavior of the Principal Chief and DAO does little to advance the cause of the association. They are generally nonsupportive of the organization and have cast the RMA

concept in negative light. At best, they are neutral and show reluctance to publicly support the initiatives of either the RMA Advisor or the association. The farmers are justifiably confused when they see men of their stature and position assuming such noncommitted postures. This situation has been further compounded by a campaign, mounted by several farmers within the RMA, to discourage others from joining and participating in the GA.

The third problem of importance is the sheer size of the RMA - over 53,000 hectares and 44 villages - and of the number of surrounding villages, 49, in which farmers with use-rights reside. For successful implementation, association policies cannot be presented as decrees developed by a small minority. The importance of discussion and the canvassing of opinions cannot be overstressed. Of necessity, such processes are time consuming and it is not surprising that progress occurred slowly.

The written declaration which established the GA did not confer upon the GA the authority to enact the national Range Management and Grazing Control Regulations within the RMA. Most specifically, the GA does not have the authority to administer the grazing permit process nor to establish leboella and seasons of range use within the RMA.

According to the Principal Chief's ruling, all users of RMA rangelands must be members of the GA and must abide by its constitution. A self report of animal holdings indicated there were about 4,400 cattle within the 44 RMA villages. An unknown but probably equally large number of cattle reside in the 49 villages with use rights outside the RMA. The LAPIS Project encouraged the RMA Advisor and GA to register as many of these resident and non-resident cattle as possible. As of February 1992, 1,643 RMA cattle had been registered. No further progress in ear-tagging was made since that date.

Table 25 presents a summary of RMA/GA activity over the life of LAPIS project support.

Table 25: Summary of project activity RMA: Mokhotlong/Sanqebethu Year: Oct. 1988 - May 1992

ACTIVITY	1989	1990	1991	1992	PROJ SUMMARY
Membership	0	0	175	397	397
Financial Status (M)	0.00	0.00	10,500.00	14,340.00	14,340.00
Mgmt Comm Mtgs	7	12	10	8	37
Attendees	168	310	263	205	946
Pitsoos	4	10	78	18	60
Male Participants	496	1,157	1,635	483	3,771
Female "	49	199	703	313	1,264
Total "	545	1,356	2,338	796	5,035
Training Sessions	1	2	2	2	7
Male Participants	13	403	298	306	1,020
Female "	2	5	4	0	11
Total "	15	408	302	306	1,031
Tours	0	0	0	0	0
Male Participants	0	0	0	0	0
Female "	0	0	0	0	0
Total "	0	0	0	0	0
Impoundments					
Cattle	0	0	223	0	223
Sheep	0	0	500	0	500
Goats	0	0	558	0	558
Horses & Mules	0	0	64	0	64
Donkeys	0	0	11	0	11
Fees Received (M)	0.00	0.00	2,806.50	0.00	2,806.50
Grazing Permits Issued	0	0	273	258	531
Cattle	0	0	0	0	0
Sheep	0	0	0	0	0
Goats	0	0	0	0	0
Horses & Mules	0	0	0	0	0
Donkeys	0	0	0	0	0
Grazing Permits Checked	0	0	0	0	0
Grazing Fees Received (M)	0.00	0.00	0.00	0.00	0.00
Utilization Inspections (ha)	0	0	0	43,543	43,543
Trend Transects Read	0	0	0	0	0
Hectares Burned	29	0	0	29	58

Table 25: Summary of project activity, Mokhotlong/Sanqebethu RMA, 1988 - 1992; Cont'd

Culling					
Cattle Inspected	0	0	0	1,643	1,643
* Culled	0	0	0	29	29
Sheep Inspected	0	0	0	0	0
* Culled	0	0	0	0	0
Goats Inspected	0	0	0	0	0
* Culled	0	0	0	0	0
Horses Inspected	0	0	0	0	0
Breeding/Service					
Cows	0	0	0	0	0
Ewes (Sheep)	0	0	0	0	0
Goats (Goats)	0	0	0	0	0
Fees Collected (M)	0.00	0.00	0.00	0.00	0.00
Vaccinations	0	100	1,688	0	1,788
Livestock Sales					
RMA Origin					
Cattle	0	0	0	0	0
Proceeds (M)	0.00	0.00	0.00	0.00	0.00
Sheep	0	0	0	0	0
Proceeds (M)	0.00	0.00	0.00	0.00	0.00
Goats	0	0	0	0	0
Proceeds (M)	0.00	0.00	0.00	0.00	0.00
Non-RMA Origin					
Cattle	0	0	0	0	0
Proceeds (M)	0.00	0.00	0.00	0.00	0.00
Sheep	0	0	0	0	0
Proceeds (M)	0.00	0.00	0.00	0.00	0.00
Goats	0	0	0	0	0
Proceeds (M)	0.00	0.00	0.00	0.00	0.00
Shearing					
RMA Origin					
Sheep	0	0	11,091	12,274	23,365
Kg. Wool	0	0	0	29,768	29,768
Goats	0	3,914	0	4,030	7,944
Kg. Mohair	0	3,962	0	4,241	8,203
Non-RMA Origin					
Sheep	0	0	0	0	0
Kg. Wool	0	0	0	0	0
Goats	0	0	0	107	107
Kg. Mohair	0	0	0	110	110
Dipping					
Sheep	0	40,099	76,075	86,800	202,974
Goats	0	16,752	31,264	38,039	85,955

1.3 Summary of RMA Program Outputs

Following is a summary of the total RMA Program outputs achieved through LAPIS Project support during the period October, 1988 through May, 1992:

1. Total grazing association membership within the four RMAs peaked at 1,707 members (Pelaneng/Bokong - 587, Sanqebethu/Mokhotlong - 397, Sehlabathebe - 338, and Ha Moshebi/Ha Ramatseliso - 385). Active membership at the LAPIS EOP date was 1,217.

2. With the assistance of LAPIS support a total of 295 pitsos were held in the RMAs, reaching a total audience of 20,056;
3. A total of 42 training sessions were provided to GA members, providing increased knowledge to 2,273 RMA farmers and chiefs;
4. A total of 70 tours were conducted within or outside the RMAs, involving 1,018 participants;
5. Enforcement of RMA grazing regulations resulted with the impoundment of 3,306 cattle, 6,297 sheep, 2,053 goats, 808 horses, and 436 donkeys. The resulting trespass and impoundment fees amounted to M36,315.40;
6. Approximately 34,000 head of livestock were inspected, resulting in 659 animals being culled;
7. The GAs' livestock improvement program contributed to the breeding of 1,198 cows, 2,033 sheep, and 26 goats to GA-owned breeding sires. Breeding fees collected amounted to M14,406.40; and
8. Assistance to the livestock marketing program in the RMAs resulted in the sale of 2,084 head of livestock, valued at M 1,146,959.40, being sold (1,450 cattle - M1,097,112; 492 sheep - M41,350.66; and 142 goats - M8,496.74) during the period of LAPIS support.

Table 26 quantifies the outputs of the RMA Program over the four years of LAPIS Project assistance.

Table 26. Program Summary, Four Years x Four PMAs, Oct. 1988 - May 1992

ACTIVITY	PELANENG	MOKHOTLONG	SENLARATHEBE	RAMATSELISO	PROJECT TOTAL
Membership **	251	397	269	300	1,217
Financial Status (M) **	27,198.90	14,340.00	2,898.81	616.00	45,053.71
Mgmt Comm Mtgs	52	37	33	39	161
Attendees	1,168	946	461	502	3,077
Pitsoo	104	60	38	93	295
Male Participants	8,646	3,771	967	2,321	15,705
Female *	1,457	1,264	430	1,200	4,351
Total *	10,103	5,035	1,397	3,521	20,056
Training Sessions	13	7	14	8	42
Male Participants	548	1,020	306	164	2,038
Female *	155	11	46	23	235
Total *	703	1,031	352	187	2,273
Tours	15	0	33	22	70
Male Participants	264	0	365	199	828
Female *	35	0	82	73	190
Total *	299	0	447	272	1,018
Impoundments					
Cattle	747	223	1,386	950	3,306
Sheep	3,157	500	2,267	1,003	6,927
Goats	658	558	605	232	2,053
Horses & Mules	132	64	461	151	808
Donkeys	112	11	232	81	436
Fees Received (M)	4,638.00	2,806.50	19,900.40	8,970.50	36,315.40
Grazing Permits Issued	759	531	0	0	1,290
Cattle	4,461	0	0	0	4,461
Sheep	15,664	0	0	0	15,664
Goats	9,128	0	0	0	9,128
Horses & Mules	537	0	0	0	537
Donkeys	883	0	0	0	883
Grazing Permits Checked	275	0	0	0	275
Grazing Fees Received (M)	7,260.60	0.00	0.00	0.00	7,260.60
Utilization Inspections (ha)	8,000	43,543	0	1,205	52,748
Trend Transects Read	12	0	17	50	79
Hectares Burned	32	58	3,350	1,530	5,170

Table 26: Program Summary, Four Years x Four RMAs, Oct. 1988 - May 1992 ; Cont'd

Culling					
Cattle Inspected	0	1,643	8,745	7,330	17,718
* Culled	0	29	80	226	335
Sheep Inspected	0	0	0	12,416	12,416
* Culled	0	0	0	215	215
Goats Inspected	0	0	0	3,347	3,347
* Culled	0	0	0	109	109
Horses inspected	0	0	0	328	328
Breeding/Service					
Cows	1	0	701	364	1,198
Ewes (Sheep)	0	0	555	1,478	2,033
Ewes (Goats)	0	0	26	0	26
Fees Collected (M)	1,330.00	0.00	7,476.15	5,600.25	14,406.40
Vaccinations	0	1,788	1,524	8,561	11,873
Livestock Sales					
RMA Origin					
Cattle	119	0	539	460	1,118
Proceeds (M)	102,280.00	0.00	400,569.00	341,651.00	844,500.00
Sheep	0	0	492	0	492
Proceeds (M)	0.00	0.00	41,350.66	0.00	41,350.66
Goats	0	0	142	0	142
Proceeds (M)	0.00	0.00	8,496.74	0.00	8,496.74
Non-RMA Origin					
Cattle	166	0	76	90	332
Proceeds (M)	128,102.00	0.00	57,970.00	66,540.00	252,612.00
Sheep	0	0	0	0	0
Proceeds (M)	0.00	0.00	0.00	0.00	0.00
Goats	0	0	0	0	0
Proceeds (M)	0.00	0.00	0.00	0.00	0.00
Shearing					
RMA Origin					
Sheep	28,408	23,365	20,388	29,039	101,200
Kg. Wool	61,645	29,768	31,664	56,333	179,410
Goats	12,085	7,944	1,935	4,289	26,253
Kg. Mohair	11,054	8,203	1,587	4,023	24,867
Non-RMA Origin					
Sheep	15,567	0	4,847	5,332	25,746
Kg. Wool	34,036	0	12,737	10,817	57,590
Goats	4,511	107	0	165	4,783
Kg. Mohair	4,083	110	0	86	4,279
Dipping					
Sheep	19,306	202,974	90,491	111,763	424,534
Goats	13,024	85,955	12,268	31,797	143,044

2. ANIMAL PRODUCTION

2.1 Background

Livestock plays a key role in fulfilling income and subsistence needs of rural Basotho. On a national level, approximately 50% of all households own livestock, and this figure often exceeds 75% in the remote mountain regions of the country. Traditionally, cattle have been raised to provide draft power and milk, horses and donkeys for transport, and sheep and goats to generate cash incomes through the sale of wool and mohair and to provide a source of meat. Livestock enterprises represent an important nationwide source of income, which contributes approximately 12% to the Gross Domestic Product and over 40% to Lesotho's export earnings. Livestock also acts as a depository for retirement savings, and satisfies numerous social and traditional needs of the Basotho people.

Lesotho's rapidly growing population has led to severe land shortages, increased unemployment, and ever greater pressures on her already overstretched grazing resources. In response to this situation, the MOA has been mandated to develop intensive livestock enterprises in the country's heavily populated lowlands. Such enterprises as dairy, piggery, layers, broilers, and beef and lamb feedlot production are now being emphasized. The expansion of these enterprises is intended to improve the outputs from limited land resources, provide greater employment opportunities to rural Basotho, and increase self-sufficiency in food production.

Concurrent with the development of the above enterprises, the MOA has continued to support extensive livestock production enterprises such as the rearing of Merino sheep, Angora goats, and mixed breeds of cattle. These efforts are being focussed on the mountain regions of the country, which are still relatively sparsely settled.

The LAPIS Project, commencing in September, 1987, supported the MOA, DLS effort to improve both intensive and extensive livestock production enterprises.

2.2 Intensive Livestock Production

The LAPIS Livestock Advisor (LA) worked closely with the various sections of the Animal Production Division on such intensive livestock production enterprises as broilers, layers, dairy, piggery, and beef and fat lamb feedlot production. In addition to basic enterprise production concepts, emphasis was placed on determining the economic viability of the individual enterprise at various economies of scale. Production packages were developed and maintained on a computer template, thus allowing periodic updates to reflect changes in input costs and returns.

1. Broilers - This represents one of the potentially most viable intensive livestock enterprises for Lesotho. It is economical as a small-scale enterprise, requiring relatively small amounts of capital to start. The LA closely investigated the availability and efficiency of local feedstuffs, local marketing conditions, various economies of scale of production, and the general constraints limiting the productivity of this enterprise. Seven different publications were released on this enterprise.

2. Layers - This enterprise is also well suited to small-scale production in Lesotho. It is, however, fairly well established, and many farmers participate in the enterprise through the local egg circle cooperatives. The LA evaluated various layer feeds, developed several production packages at different scales of production, and assisted the National Poultry Plant with the updating of its cost recovery charges.

3. Dairy - This is another popular intensive livestock production enterprise. It can be entered with limited amounts of resources and the demand for milk in rural villages is high. The LA spent only limited amounts of effort on this enterprise, as it was heavily supported through Canadian AID (CIDA) during the course of LAPIS. The LA's primary emphasis was on assessing the viability of locally made feedstuffs for this industry and the preparation of several production plans.

4. Piggery - Piggery production has been practiced on a limited basis in Lesotho's lowlands, but appears to be on the upswing. The LA assessed the viability of local feedstuffs for this enterprise, provided recommendations on upgrading the facilities for the National Pig Breeding Herd, and developed production packages.

5. Beef Feedlot Production - Feedlot feeding of cattle in Lesotho has been done only on a limited scale, but has shown potential under the right market conditions. The LA introduced a computer-based model for feedlot finishing of cattle, assessed feedlot economics, and prepared production plans for cattle feedlots.

6. Fat Lamb Feedlot Production - This was an enterprise which was introduced by the LAPIS Project. Historically, Lesotho has allowed only wool-producing breeds of sheep (Merinos) to be raised in the country. All mutton breeds had been barred because of the possibility of interbreeding, and a resultant decline in quality of Lesotho's national wool exports. However, with the expansion of urban areas a demand for quality lamb has been realized in the lowlands.

LAPIS worked with the MOA to: assess the performance of Merino lambs versus mutton-breed lambs, evaluate different feed rations, helped design a 5,000 sheep feedlot complex for the National Feedlot, and prepared several on-farm production plans for this enterprise.

2.3 Extensive Livestock Production

LAPIS TAs worked closely with APD staff on the extensive production of Merino sheep, Angora goats, and mixed breeds of cattle. Assistance was also rendered to the RMD RMA Program.

1. Merino Sheep - Several studies were conducted on wool production, on both a regional and national level. Assistance was rendered to the National Livestock Revolving fund in the procurement of good breeding stock. Inputs were made on a national Merino exchange program in which poor quality animals were traded for higher quality animals. Technical and logistical support was provided to GA members in the identification, selection, purchase and transport of Merino and Dohne Merino breeding stock. Technical advice was provided to GAs on the management, breeding,

and production of Merino sheep. The economics of GA Merino breeding programs were assessed and recommendations made to increase charges to allow full cost recovery.

2. Angora Goats - Several studies were conducted on mohair production, on both a regional and national level. Assistance was rendered to the National Livestock Revolving fund in the procurement of quality Angora breeding stock. Inputs were made on a national Angora exchange program in which poor quality animals were traded for higher quality animals. Technical advice was provided to GAs on the management, breeding and production of Angora sheep.

3. Cattle - Assessments were made of different cattle breeds for Lesotho's geoclimatic conditions. Assistance was rendered to the National Livestock Revolving fund in the procurement of quality breeding stock. Technical and logistical support was provided to GA members in the identification, selection, purchase and transport of Drakensberger and Afrikaner bulls. Technical advice was provided to GAs on the management, breeding and production cattle. The economics of GA cattle breeding programs were assessed and recommendations made to increase breeding charges to allow full cost recovery.

3. LIVESTOCK MARKETING

3.1 Background

As mentioned earlier, the sale of livestock products contributes to approximately 40% of Lesotho's export earnings. The vast majority of these earnings are generated by the sale of wool and mohair. The Livestock Product Marketing Service (LPMS) serves as a handling agent for approximately half of the country's wool and mohair sales, providing a conduit between producers in Lesotho and marketing outlets for mohair and wool, in Port Elizabeth and Durban, RSA, respectively. The remaining half of the wool and mohair products are purchased by private shop operators.

Most live sales of livestock occur in the informal market, whereby farmers in rural areas sale to neighbors or local butchers. Formal sales of livestock are organized by LPMS, who provide auctioneers and transport services for buyers. Formal sales have been predominantly for cattle, with only a limited number of small stock being sold through LPMS organized sales. Formal cattle sales have resulted in very low offtakes, with annual offtakes averaging less than .5% of the national cattle herd.

Intensively produced livestock commodities are marketed both informally, at the farm gate, and formally, through statutory bodies. Milk is sold through the Maluti Maid Dairy and eggs are marketed through the Poultry Cooperative Societies' egg circles.

LAPIS support to the livestock marketing sector was minor, with only 18 person months of effort being expended.

3.2 Livestock Marketing Outputs

Most outputs in support of livestock marketing were in the form of studies and in policy areas, which discussed on Institutional Support to Livestock Marketing.

1. Several studies on marketing of Lesotho's wool and mohair were prepared;
2. A detailed "sphere of influence" marketing survey was conducted in the Ha Nchela area to ascertain market demand and size for milk and broiler meat in support of proposed livestock enterprises;
3. Two consultancies were conducted to evaluate and make recommendations to improve Lesotho's egg and broiler marketing systems;
4. All LPMS livestock sales from 1985-1990 were entered into a computer data base and analyzed on a national and site-specific basis to determine marketing costs and trends;
5. Livestock sales data (numbers sold, liveweights, prices, and village of origin) from all RMA sales were entered into a computer data base and analyzed to compare values of RMA versus non-RMA origin animals;
6. Inputs were made on numerous occasions regarding the development of a national wool and mohair scouring plant for Lesotho;
7. Historical RSA lamb prices were analyzed;
8. Wool and mohair market trends were analyzed and sitereports prepared; and
9. A reconnaissance trip to the Pietermaritzburg/Durban area was made to assess potential outlets for Lesotho mutton products.

4. RESEARCH AND DEMONSTRATIONS IN SUPPORT OF LIVESTOCK PRODUCTION

4.1 Background

Range and livestock research had historically not been closely aligned with production staff from the DLS Range Management and Animal Production Divisions. There was little communication between these institutions, and ARD staff tended to conduct their research with little or no input from DLS staff. As a result, much research was not felt to be particularly relevant to the problems confronting DLS staff, and research staff lacked credibility in the eyes of most DLS staff. This was one of the constraints LAPIS TAs were faced upon initiating work at ARD, and one which was addressed by fully integrating all LAPIS Range and Livestock staff into the program. It was hoped that this approach would also draw in respective counterparts, thereby increasing communication and coordination between the different institutions.

The Agric Research Component, through ARD, took the lead in the design and implementation of range and livestock research. However, this particular activity was integrated extremely well throughout all LAPIS components. Livestock Advisors from the AEC assisted with research in support of intensive livestock enterprises (broilers, layers, piggery, fat lamb, and dairy), while RLPU staff were heavily involved in intensive and extensive livestock production research.

Range and livestock production research was conducted at Research Headquarters, the Lekubane sub-station, and in the Sehlabathebe and Ha Moshebi/Ha Ramatseliso RMAs.

4.2 Range Management

The range management/ecology program was conducted on a limited basis. Comparisons of rested and overgrazed rangeland in terms of cover and species composition were made, and exclosures and long-term trends of range vegetation in terms of biomass production and forage quality were monitored.

Other Studies: In order to more accurately identify problems of sheep and goat producers, a study was conducted to investigate the flock dynamics of small ruminants. This study was being conducted with 12 livestock owners in the Sehlabathebe RMA and 10 cooperating farmers at Lekubane. The study evaluated flock composition, reproductive performance and offspring survival and general input and off-take factors. Another study recorded the seasonal weight fluctuation of range livestock in the Sehlabathebe RMA.

Range and fodder programs had a dual purpose in that they were autonomous while also supplementing/supporting the intensive and extensive livestock production programs. The administration of range and fodder programs in the ARD/ASc Section were successfully turned over to the program leader in 1989.

In 1988-89, a brush control experiment was established in the Sehlabathebe RMA comparing prescribed burning, the chemical 2-4,D and reclaim and rest. The results indicated that prescribed burning was the most cost-effective method of reducing shrub dominance. At the Lekubane Substation, a uniform section of native grassland was intensively sampled to determine total biomass production. Accurate estimates of biomass production are crucial in the determination of carrying capacities and the study at Lekubane compared methodologies of estimation in terms of accuracy and efficiency. A rotational grazing program was implemented in 1988, to monitor the response of vegetation and livestock to a well-managed rotational grazing system at the Ramasilitso's Gate RMA. Baseline vegetation data was collected and followed over the next two to four year period. In conjunction with the Rural Sociology Section, interviews were conducted with a sample of the livestock owners involved in the rotational grazing system in order to gain their perceptions and acceptance of the grazing system.

Fodder Production: Fodder sorghum and oats were the primary annual fodder crops studied. As a result of research conducted over the past few years in collaboration with the Agronomy Section, production guides for fodder sorghum and oats were written. Fodder sorghum emphasized utilization aspects (e.g., confinement feeding of dairy cows with green-chopped fodder sorghum) rather than production. Oat research trials concentrated on: 1) time of

planting; 2) fertilization rates and timing, and 3) variety trials by region. Along with oats, adaptability and production trials with annual ryegrasses were conducted in the foothills and mountains. Billion proved to be a promising variety. Interest in fodder sorghum and oats is high and dissemination of information and demonstrations was established in collaboration with the Department of Livestock Services and the Crops Division.

One of the most promising perennial grasses for the low lands is bana grass. It's ease of establishment and management, high yields of good quality forage and wide range of adaptability make it an excellent fodder. Trials were concentrated on row spacing, time of planting, adaptability and biomass production. Demonstration plots for the other perennial grasses adapted to the lowlands were maintained in Maseru. In the mountains and foothills, the best adapted grass species proved to be perennial ryegrass. Although interest in fodder crop production was generally low in the mountains, demonstrations/trials of perennial ryegrass were established on the Basotho Pony Project (Molimo Nthuse) and three farms in the surrounding area. Demonstration plots of the other grasses adapted to the foothills and mountains are still maintained at Molimo Nthuse and Nyakosoba.

Lucerne research trials were emphasized as an on-station variety trial and were established in 1988. Over 20 on-farm demonstrations in the Maseru District were initiated in collaboration with the Department of Livestock Services. The lucerne variety evaluation was a joint trial co-managed by Animal Science and Agronomy Sections. Analysis of the data for the study on the returns to irrigated lucerne production and market price indicated that returns for lucerne were severely constrained by the cost of the irrigation system. However, gross returns did exceed variable costs by M 450 per hectare. The variable costs averaged M 3.57 per bale with sale prices M 6.00 to M 8.00 per bale in 1989/90. Fixed costs, either as depreciation or a five-year loan eliminated any net gains, amounting to M 700 to M 1200 per hectare respectively even when a simple and minimal cost system was considered.

In 1990, several meetings were held with ARC Agronomist and others regarding the use of Kochia sp. by the Matalile Project. Though Kochia can be used as livestock feed, its noxious weed disadvantages far out weighed its potential advantages, and it was considered unsuitable for Lesotho due to the high level of intense management required to prevent its escape. On the recommendation of ARD, the Matalile Project agreed to discontinue the importation of Kochia. This experience graphically illustrated the need for the implementation and enforcement of regulations regarding the import of plant materials into Lesotho.

4.3 Intensive livestock Production

In recent years, the MOA and DLS underwent policy changes which emphasized the intensification of livestock enterprises. These changes were the direct result of rangeland degradation and increased urbanization, particularly in the lowlands. To assist the MOA and DLS in identifying alternative approaches to the extensive production systems (ie. dependence on rangeland usage for feeding of livestock), the LAPIS/ARC and ARD, in collaboration with RLPD and AEC Livestock Specialists, designed and conducted several trial relating to feeding of livestock under intensive production (ie. feedlot and cut-and-carry fodders).

Winter (Maintenance) Feeding of Mature Oxen involved the feeding of maize stover over winter to cull oxen prior to slaughter; results indicated weights were maintained by a winter

diet of maize stover versus the normal weight loss experienced by livestock wintered on rangelands.

The Grazing vs. Green Chop research studied the effects of dairy cow roughage diet on cow weights and milk yield; results indicated there was no difference in cow weights between the two groups studied, but cows fed green chop fodder sorghum produced significantly more milk than cows grazing native pastures.

The Feedlot Performance of Mature Angora Goats trial was undertaken to compare the carcass characteristics and public acceptability of meat from cull goats after feedlotting for 30 and 50 days; conclusions were that carcass characteristics and profit per head were not significant between the two groups.

A Lamb Feeding Trial was conducted in cooperation with the LAPIS/RLPU Livestock Specialist, to compare lamb performance to diets varying in roughage content; results were consistent with those of previous lamb feeding trials and indicate feedlotting of lambs is a potential profitable enterprise for Lesotho.

A series of trials was begun in 1988 to assess locally developed rations with other sources of feed. A ration formulation for feeder lambs, was conducted in 1988 at the LAC facilities, in collaboration with RLPU and Department of Livestock Services, was conducted to compare a locally developed lamb ration (in pelleted and non-pelleted form) to a commercially available ration. The locally developed, non-pelleted ration proved to be superior in terms of profitability, but needed further refinement of the ration before a technical package was finalized.

Acceptance Test for Makhulo Super Dairy (17%) Meal study was conducted at the request of the DLS and the Lesotho Farm Feed Mill to compare the Makhulo dairy meal to a locally available imported dairy ration; results indicated the Makhulo dairy meal compared favorably with the imported ration for milk yields and was cheaper than the imported ration, making it an acceptable, competitive and viable alternative to imported rations.

A ration formulation study was completed in 1989, in which swine rations, composed of locally available feedstuffs (e.g. carcass meal and hominy chop), were compared to that of commonly used pre-mixed rations from RSA in terms of feed efficiency and economic returns. Performance of the pigs on the locally mixed rations was similar to that of the pigs on the commercially available ration.

The year-round fodder program for dairy cows, was initiated in October 1989. This trial was aimed at intensifying local dairy production through total confinement feeding of dairy cows on commercial ration at milking times and staff-feeding of locally grown forages under a cut and carry system vs. grazing on native pastures.

4.4 Extensive Livestock Production

Although greater emphasis was placed on intensive livestock production research, extensive production research programs still had relevance as rangeland production of livestock has been and remains the backbone of Lesotho's livestock industry. Expansion of intensive

livestock enterprises will require many years for training and development; in the meantime, it is necessary to continue addressing the problems associated with extensive production (i.e. flock health, nutrition, and management).

Two experiments were initiated, in 1987, at the Lekubane sub-station, to determine the efficacy of two animal husbandry practices. In the first study, the effect of an improved kraal (with an overhead shelter) on goat performance was addressed. The second study was designed to determine the reproductive performance of ewes in response to time of weaning and breed of sire. In addition, two farms in the Lekubane area, a complete vaccination program was tested in terms of sheep performance and cost-effectiveness.

Three studies were conducted to compare performance of various breeds of sheep under extensive management conditions. One of these was located at the Lekubane sub-station and two are with farmers' flocks (one at Molumong and the other at the Sehlabathebe Range Management Area). Researchers were comparing the performance of offspring of the following crosses: Merino x Merino; SA Mutton Merino x Merino; Dohne Merino x Merino. A study evaluating the feedlot performance of two dual-purpose breeds was compared to that of the Merino. This study demonstrated the superiority of the dual-purpose breeds in terms of feed efficiency and economic returns. This was a collaborative effort which included DLS (RLPU), LAC (AEC) and ARD (ARC).

A combination of on-farm and on-station supplemental feeding trials were conducted at Lekubane sub-station, to test the performance of Merino sheep and Angora goats, in terms of lambing/kidding percentages, offspring growth rates and offspring survival (as well as fiber production of ewes and does). Although the results of these experiments were mixed, it appeared that supplemental feeding at lambing/kidding was cost-effective using a mixture of hominy chop and lucerne hay as the supplement. Another series of studies was conducted concerning the weight gains and fiber production of Merino lambs in response to supplemental feeding. Preliminary results indicated that the cost of the supplemental feeding was more than compensated for by the increased weight gains and fiber production as well as increased survival rates. Two on-farm trials were conducted in the Lekubane area to determine the weight gains, reproductive performance and fiber production of sheep and goats allowed free access to a mineral-salt mix.

During 1987-1988 six, 5-year studies were initiated at the Lekubane sub-station, and at the EOP, the studies remained active under the direction of the Program Leader and Animal Science Research Officer. The studies, involving sheep and goats, include: Growth Rates and Wool Production of Supplemented Merino Lambs, a trial to determine the effect of mineral/vitamins supplementation on Merino lamb performance; Effect of Flushing on Reproductive Performance of Ewes and Does, a trial recording the effects of flushing on birth and survival rates of lambs and kids; Effect of Feeding at Lambing/Kidding on Small Stock Performance, a trial measuring the effect of supplemental feeding during the lambing/kidding seasons and its subsequent effect on dam and offspring performance (i.e., survival rates); Effect of overhead Shelter on Angora Goat Performance, a trial to determine the effect of improved kraal on mohair quality and quantity; Breed Comparison x Time of Weaning on Reproductive Performance of Merino Ewes, a trial comparing the effects of February vs. May matings on conception, birth and lamb survival rates; Internal Parasite Control, Ovivax Injectable vs Conventional Dosing of Small Stock. This study is targeted at determining the

effect of internal parasite control treatment of effectiveness of parasite control. The Lekubane trials will reach completion in late 1992 or early 1993. Data will be analyzed and reports prepared by the program leader.

Beginning in 1989, the Livestock Specialist evaluated small stock flock dynamics (including numbers of small stock, reproduction, weaning crops, removals and acquisitions) of sample sheep and goat flocks as a means of providing baseline small stock data for the RMAs. The Sehlabathebe study was conducted between 1985 and 1987, under the LCRD Project, and was continued under the LAPIS Project from 1987 until 1989. The Ha Moshebi/ Ramat'selitso study was conducted for one year in 1989/90. The most significant results were the increases in the annual net flock growth rates. The Sehlabathebe sample sheep and goat flocks had a mean annual increase of 10.5% and 14.35%, respectively. Annual flock increases for the Ha Moshebi/Ramat'selitso sample sheep and goat flocks were 4.45% and 9.05%, respectively. The multifarious results of these two studies afford the Division of Range Management (DRM) baseline small stock information by which planning and policy decisions can be made.

Between 1988 and 1991, the Social Science Specialist completed the survey and data analysis for the study of herdsmen's perceptions and management changes resulting from implementation of the grazing system in the Ha Moshebi area of the Ramatseliso's Gate and the Sehlabathebe RMAs. The Sehlabathebe RMA survey paralleled the survey at the Ramatseliso's Gate RMA, allowing comparison of results between the oldest RMA and a relatively new one in the same area. These surveys had two objectives: 1. Since successful implementation of the system depends on the support and cooperation of participating herdsmen, the first objective was to assess their attitudes regarding the system, particularly what the system was, what the rationale for it was, what benefits and problems it would generate, and whether or not it was desirable. 2. It was felt that successful management implementation would require certain mandated and ancillary changes to current livestock management factors in the area, particularly patterns of livestock ownership, grazing-land use and supplemental feeding. Therefore, the second objective was to describe the status of these factors before implementation and identify trends over time. The study was conducted in conjunction with two other research efforts undertaken jointly by ARD and Range Management Division personnel.

Annual Grasses: Fodder sorghum was the primary annual fodder crop studied. Both on-farm and on-station trials were conducted at Tsakholo, Siloe, Maseru, Nyakosoba, Machache, Leribe and Molumong. The purposes of these trials were to determine: 1) the varieties best adapted to the lowland and mountain regions; 2) proper row spacing; 3) approximate time of planting; and 4) appropriate harvest frequencies. In collaboration with ICRISAT, variety trials were also conducted with fodder millets. Oat variety and time of planting trials were established at Maseru and Tsakholo. Oat and ryegrass plantings were made in the autumn of 1988 at Sehlabathebe, Molumong and Molimo Nthuse areas, but generally performed poorly.

Perennial Grasses and Legumes: Columbus grass and bana grass adaptability and spacing trials were established at Maseru. Adaptability and acceptability of bana grass throughout Lesotho was studied in collaboration with Land Use Planning. Adaptability trials/demonstrations involving such pasture grasses as Rhodes grass, smuts fingergrass, *Panicum maximum*, perennial ryegrasses, cocksfoot, tall fescue and timothy were conducted

in the lowland, foothill and mountain zones. Variety trials and demonstrations with lucerne and clovers were also established at several points in the lowlands and foothills. Finally, two species of *Atriplex* spp. were successfully germinated and seedlings transplanted to test plots in southwestern Lesotho. The plantations, however, were generally not successful because of an extremely high level of pest damage. *Atriplex* spp. are not only palatable to livestock but also to a wide range of insects and rodents.

B. CROP PRODUCTION

1. VEGETABLE PRODUCTION

1.1 Background

The PIC initiative production scheme, for the first time in Lesotho, demonstrated the constraints and the potential for intensive production of high value crops in the context of small scale schemes. The three years of actual and direct field experience and the follow up comprehensive studies on importation of vegetables and monitoring of vegetable production has provided the MOA and the donors with valuable information. Some of the results of PIC's initiatives are discussed herein. The project reports containing more detail information are listed in the annexes to this report.

1.2 Implementation of Vegetables Schemes

During the period of direct field support, the PIC team and MOA staff developed 34 individual and two small associations of irrigated vegetable production schemes. The total irrigated areas of the individual farmers was approximately 25 ha., while the associations vegetable area was approximately 6 ha. Total capital costs were approximately M234,620 or M6,096 for each individual farmer. Associations costs, with a peak of 70 members, averaged M652 per member.

1.2.1 Results of the First Year of Production (1986-87)

During the first year of PIC activity, 8 individual schemes were developed. These schemes were successful with their crop production activities. The farmers produced a variety of vegetables on a total area of 3.7 ha. The primary vegetables produced by the PIC-assisted farmers included: cabbage, carrots, beet root, potato, winter peas, curled kale, collards, green maize, mixed greens, onion and tomato.

The estimated gross sales from these initial enterprises was M23,090, and the estimated net return to the farmers for land, labor and management was M12,594 or 54%. The estimated financial summary of the individual enterprises is illustrated in Table 27.

The PIC staff made a concerted effort to evaluate the performance of the original eight farmers during March/April 1987. Of particular interest was the farmers actual production levels versus the potential production levels. Generally, the farmers had crop yield losses ranging from 25-63 percent of potential. These losses were created, primarily, by inadequate marketing efforts. The farmers, generally, relied on the farm gate and village markets and were not able to broaden their efforts as supplies increased beyond these local markets.

The results of evaluation indicated that the approximate gross revenue per hectare ranged between (M)6,108 for beetroot to (M)19,262 for tomato. The details have been summarized in Table 28.

Table 27: Cost and Return Summary, LAPIS-supported Farmers 1986/87 Crop (Costs and Returns in Maluti)

Location	Area	Gross Sales	Capital Costs	1 - Opr. Costs (M)	2 - O.H. Cost (M)	3 - Total Costs (M)	Net Return
Pela Tseou (Leribe)							
1.	.72	4,609	3,533	142	563	1,990	2,619
2.	.29	2,613	2,613	747	273	1,020	1,593
3.	.40	3,928	1,815	742	290	1,032	2,896
4.	.41	3,466	1,752	917	180	1,197	2,269
5.	.11	837	1,702	392	272	664	173
Ha Lesile (Berea)							
6.	.60	2,266	2,382	1,176	381	1,557	709
7.	.33	2,588	3,010	876	482	1,358	1,230
Mekaling (Mohales-Hoek)							
8.	.88	2,783	4,263	996	682	1,678	1,105
TOTAL	3.74	23090	20155	7,273	3,223	10496	12594

NOTE:

(1) Operation costs included: purchased inputs, irrigation, fuel, interest on operating loan, and hand tools. Operating costs did not include a charge for family labor, nor an allowance for equipment maintenance.

(2) Overhead (fixed) costs included: semi-annual capital payment amortized over 5 years plus 1/2 annual interest payment.

(3) Total costs - No. 1 + 2

During 1987-88, an additional 23 individual small farmers were assisted by the PIC. The farmers produced a number of cultivars on 23.36 hectares. The estimated gross sales from these enterprises was M403,894. The estimated net revenues for the same enterprises were M169,856. The annual production input expenses were estimated to be M234,018. The estimated mean cost for a farmer's capital equipment was M6,096. The average area per farmer was 0.75 ha.

The performance of the 34 farmers was widely variable. Yield samples taken at several project sites indicated some farmers exceeded expected crops yields, while others fell short of expectations. There was a positive relationship between management ability levels, effort put forth and successful crop production. For example, cabbage, greens, potato and pumpkin were more natural for the majority of transitional farmers to produce. In contrast to tomato required more inputs and a higher level of management. Carrot and beet root were also more acceptable, provided the farmers thin their crops to allow proper plant development.

Table 28: Actual Marketed Production Compared to Potential Yields (PIC/LAPIS Assisted Farms 1986/87)

Crop	Potential Yield/Ha	Est. % Yield Loss*	Marketed Yield/Ha.	Price Per Unit	Gross Revenues Per Ha.
Beet (Bunches)	47,600	63.3	17,450	.35	6,108
Cabbage (Heads)	40,000	34.3	26,862	.40	11,545
Potatoes (Bags)	3,000	54.3	1,375	6.00	8,250
S.Chard Bunches	55,555	54.3	25,398	.50	12,699
Tomato	7,500	52.4	3,567	5.40	19,262
J.Radish	33,333	25.0	25,000	.30	7,500

* Losses were primarily due to poor marketing. The losses signify that the farmers did not move their produce to the market for a variety of reasons other than unavailability of market.

1.2.2 The Results of the Second Year of Production (1987-88)

During the second year of operation two small farmer associations: Maluti Foods, located in Berea District, and Ha Maphohloane Association, located in Mohale's Hoek District were developed by the project. Their total irrigated vegetable production area was approximately 7 hectares. In addition to the irrigated vegetables, the associations produced 17.6 hectares of traditional rain-fed crops. Their estimated gross annual vegetable revenues were M78,145. The annual expenses for the vegetables were estimated to be M35,119, with an estimated net return to labor and management of M25,414.20. There were 47 association members who received daily wages. The wage rate per member per day was M2.00. From the association records it was determined that the groups consumed 10-15% of their annual vegetable production.

The two associations performed well in relation to the technical issues of crop production. However, both were hindered by internal conflicts that from time to time created difficulties in the field/marketing operations. Both, subsequently, received project supported training in management and record keeping. A summary of their estimated financial performance is presented in Table 29.

The individual farmers produced a variety of vegetable crops on the 26.31 ha. The major crops included tomato, potato, onion, carrot, beetroot, greens and swiss chard. The estimated gross sales from these enterprise were (M) 266,222.43.

Table 29: The PIC Supported Associations Estimated Financial Performance, 1987-88.

Name	Revenue (M)	Expenses (M)	Profit/Loss (M)	Draw (M)	Net Return
Maphohloane	28543	11643	16900	10109	6791
Maluti Foods	19991	7883	9108	2760	6348
TOTAL	45534	19526	26008	12869	13139

1.2.3 Actual Farmer Performance

It is difficult to obtain verifiable financial information from the farmers, and Lesotho is not an exception. Therefore, in order to obtain such information, the project staff conducted a carefully designed yield sampling procedures. The sampling was conducted to obtain actual and verifiable information concerning the profitability of small-scale irrigated vegetable production in Lesotho. Actual selling prices, by commodity, were also collected for comparative purposes. Six individual farmer schemes were selected for this purpose.

The information was collected and analyzed for the six sample farmers. The actual performance of the farmers varied widely. During selection of farmers for this study, an attempt was made to include producers from three production levels: 1) high, 2) medium, and 3) low. The high producers were Makhetha and Moqhoishi. Medium producers are Lemphane and Mapule; and the low producers are Lebona and Pela. The range of farmers' performance based upon net revenues per hectare, varied from -3.3% to 133.4%. Table 30 shows the summary results of the analyses. All information, except gross and net revenues, are expressed as a percentage of projected budget.

1.3 Production Constraints

During the fourth year of project activity more detailed analysis of economy of scale for different size production areas were completed. The samples evaluated from the production areas ranged from 0.1 hectare to 10.0 hectares. The primary subject under consideration is the effect of production areas on return per hectare at different management levels of the capital asset. Generally for the minimal farm areas in each category there would be a net loss. The low capital, small area being the exception.

According to the results of studies conducted by PIC TA and the ARC staff and field observation the technical issues identified with small scale producers can be summarized as follows:

Table 30: Financial Summary for Six Selected PIC Supported Farmers.

Last Name	Pela	Lebona	Mapule	Lempene	Moghoishi	Makhetha
Planted Area	.42	.41	.62	.40	.86	.45
Plant Pop Act/Bud	14%	53%	71%	77%	129%	42%
Yield Act/Bud	73%	21%	81%	84%	120%	99%
Price Act/Bud	117%	50%	142%	99%	112%	129%
Gross Rev. Act/Bud	48%	28%	106%	59%	118%	117%
Net Rev. Act/Bud	-3%	12%	109%	78%	116%	133%
Gross Rev.	3107	4972	6742	5972	15363	8204
Net Rev.	-98	1149	3407	3910	7358	4789

1.3.1 Technical Constraints

1. Untimely sowing of transplant seed beds and failure to meet the planting dates, therefore missing critical marketing windows.
2. Inadequate handling and packaging of the harvests by farmers.
3. Lack of preparation of adequate seed bed for vegetable production.
4. Lack of tillage of the land for mid-season and winter crops. Once the farmers earned income from the sale of their summer crops, they were not motivated to maintain desirable planting schedules. This resulted in declining revenues for the mid-season and winter crops, often leading to a lack of funds to purchase the necessary inputs for the following summers plantings.
5. Farmers were not keen to provide labor as required to meet the peak demands during planting and harvesting periods.
6. Farmers generally failed to maintain the needed irrigation intervals.
7. Farmers did not have the experience and managerial skills that were required to operate a vegetable farm on a profitable basis. This included record keeping.

8. Farmers were unprepared to access the marketing opportunities and, in most cases due to distance to market and cost of transportation, were unable to market fresh vegetables on time.

9. Proper operation and repair of irrigation systems by the farmers required substantial on the job training.

1.3.2 Infrastructure and Institutional Related Constraints

1. Inadequate marketing infrastructure for fresh produce, marketing information and pricing, assembly markets, and affordable transportation all inhibited the profitability of small scale irrigation schemes.

2. Farmers lacked awareness of loan details and repayment responsibilities. In addition, the credit institution was unable to inform the farmers of their loan statuses. During the initial PIC implementation stages, the credit institution was unable to deliver the required inputs in a timely manner, making the farmers late with their plantings.

3. Field extension agents were inadequately trained on a wide range of technical, financial and enterprise management subjects. Hence, small-scale intensive producers did not receive the extension support that was required.

2. FRUIT PRODUCTION INITIATIVES

2.1 Background

The PIC team Pomologist, in collaboration with staff from fruit production unit of DCS supported a variety of activities pertaining to orchard management, fruit production extension, seedling ordering for the farmers and demonstrations related to various issues in fruit tree selection, planting and management. Although climatically favorable, the large scale production of fruit in Lesotho does not exist. The more commercial production sites are managed by a few progressive farmers.

In addition, beginning in 1990, a series of surveys and border monitorings were conducted in order to determine the fruit importation into the Lesotho, the level of existing production in the country, and the requirements to offset the importation.

2.2 Fruit Production

During the life of the LAPIS Project, the project assisted in distributing approximately 70,000 fruit tree to farmers in the majority of the districts in Lesotho. This included 1987 - 10,000; 1988 - 14,500; 1989 - 15,800; 1990 - 20,000 and 1991 - 9038. The major districts included: Berea, Leribe, Maseru, Quthing, Mafeteng. The primary fruit species have included apples, peaches, pears, nectarines and grapes. At 666 tree per hectare, the number of trees distributed would plant about 100 hectares. However, estimated losses of newly planted fruit trees were in the range of 30-50%. Given this loss, approximately 50-60 Ha. of fruit trees may have been planted in Lesotho as a result of project activity.

2.3 Orchard Survey

The first survey of orchards (number and size) in Lesotho was completed during the tenure of the LAPIS Project. The criteria used to identify a commercial orchard was 30 trees or more. Based upon a review of some of the data from the districts, follow up action is required to refine the information.

Nine districts completed the survey, with the results indicating that approximately 174 individual farmers and 45 associations were producing fruit on about 41 and 17 hectares, respectfully. Qacha's Nek was unable to complete the survey due to lack of transport. Table 31 summarizes information about the distribution of fruit producers in Lesotho:

2.4 Estimated Domestic Fruit Consumption

In Lesotho, the current annual per capita consumption of fruit is approximately 3.1 kg per year. The recommended quantity is 9 kg per annum. Most fruit is imported from the RSA. Efforts are being made to increase local fruit production.

Table 31: District Summary of Individual and Association Fruit Producers in Lesotho.

Districts	Individuals	Orchard Size Hectares	Associations	Orchard Size Hectares
Mafeteng	25	3.3	8	4.2
Quthing	18	4.0	4	.50
Maseru	16	2.7	6	1.0
M. Hoek	19	2.0	4	2.0
Butha-Buthe	25	9.3	3	2.0
Leribe	13	7.5	4	2.3
Mokhotlong	17	1.7	10	1.3
Thaba-Teska	22	3.9	3	.3
Berea	19	7.1	3	3.1
TOTAL	174	41.5	45	16.7

2.5 Fruit Drying

From the onset, Project staff attempted to introduce fruit drying at commercial levels in Lesotho. In 1987, a fruit drying program was initiated at the Pulane fruit growers association with the project support. The EOP, the association was solar drying approximately 10 percent of their annual production. This included apples, peaches, prunes and apricots. A supply of approximately 250 kg of dried fruit was being sold locally or in the Maseru Market. This represented approximately one ton of fresh fruit. The approximate average sell price for the dried fruit was M10.00 per kilogram.

2.6 Fruit Import Monitoring

The monitoring of fruits imported into Lesotho was part of the Marketing Division's (MD) on-going import monitoring schedule. During 1990, nine of 10 districts were surveyed at least once, with several of the major border posts receiving multiple surveys. Thaba Tseka was not included in the surveys, but it was assumed that the produce sold in Thaba Tseka district was imported through other border posts since it does not share a common boundary with the RSA. The most active border posts for fruit imports in order of their importance were Maseru, Maputsoe, Mafeteng and Butha-Buthe. These were followed by Qacha's Nek and Quthing. The remaining posts represented very small quantities. The first four border posts imported slightly less than 90 percent of Lesotho's fruit imports during 1990.

During 1990, tropical and sub-tropical fruit imports represented approximately 7,846 tons, or 55% of Lesotho's total estimated fruit imports. Lesotho cannot impact upon these figures because of climatic restrictions. However, the estimated remaining 6,459 metric tons of

imports were deciduous fruit or grapes which can be efficiently commercially produced in Lesotho. Using the estimated import volume of apples as an example, it was estimated that it would require approximately 200 hectares of commercial fruit production to offset the total annual fruit imports.

During 1991 the annual summary of the estimated annual fruit imports into Lesotho were approximately 12,012 mt. It was believed that this represented about 95% of the Lesotho's total fruit imports.

The largest single import border post was Maseru with an estimated import volume of 5918 mt or 49% of the countries total. Maseru was followed by, Mafeteng, Leribe, Butha-Butha, Qaches Nek and Mokhotlong with 2377 mt, 1665 mt, 1348 mt, 525 mt and 109 mt respectively. The remaining border posts, combined, represented a meager 70 metric tones annually.

The quarterly imports of the fruit indicated the highest percentage of imports normally occurred during the third quarter. However, the last three quarters of the year were generally considerably higher than the first. This coincided with the domestic production. The estimated annual fruit imports for 1991 were slightly below the 1990 levels. This was in part attributed to improved sampling methodology that was utilized during 1991. The notably exception was the importation of pears, which was significantly higher in 1991.

Lesotho could effect the import of deciduous fruits by producing more of the types domestically, including: apple, pear, peach and grape. These fruits represent approximately 50% of the total estimated imported fruit volume.

The two year summary for the fruit imports indicated the average annual fruit imports were approximately 13,514 mt. Generally, apples were the largest single imported fruit with an average of 41%. Apples were followed by oranges 31%, bananas 15%, pears 7%, peaches 3% pineapple 2%, grapes and others represent 1%. Lesotho is capable of effecting the deciduous cultivars, which represented about 50% of the total fruit imports.

2.7 Fruit Prices

In 1990, the prices of apple and peaches in Bloemfontein were monitored. Prices for fresh peaches were not available for the months of July to September due to lack of supplies. The annual average per unit package price for apples and peaches in the Bloemfontein market during the stated time period was R12.94 and R7.05 per unit, respectively. Experience during the first quarter of 1991 with fruit marketing in the Pulane area indicated the price of pears in the local market was about M9.00 per box (10 kg).

During the final year of LAPIS Project activity, additional information pertaining to fruit prices was obtained from the Bloemfontein wholesale market. The information presented gives the latest three year weighted prices for the major fruits imported into Lesotho. The highest price per ton received was for grapes, followed by pears, peaches, apples, pineapple, bananas, and oranges. The prices for these products ranged from a high of M392 per ton for pears, to a low of M20.00 for oranges. The price range variability probably related to the ability of some of the fruits to be stored and marketed over a wider market window. Others,

those with the largest range, had limited storing capability. This information is summarized in Table 32.

Table 32: Bloemfontein Weighted Annual Selling Prices for Selected Fruits.

Product	1989	1990	1991	Average	Range
Apples	941	970	1017	976	76
Oranges	559	563	539	554	20
Bananas	782	810	862	818	80
Peaches	1011	1066	894	990	172
Pineapple	620	949	889	819	329
Grapes	1079	1157	1214	1150	135
Pears	833	1091	1225	1050	392

2.8 Fruit Production Demonstrations

During the life of the project the TA pomologist and his counterpart cooperated with two other LAPIS components, LAC and ARD in conducting demonstration efforts. Their activities are describes as follows:

A 2.2 hectares research orchard was planted in September 1987 at the Maseru Station. The new orchard was planned to permit the Research Division to conduct replicated research trials of a wide range of cultivars of peaches, nectarines, apples, and pears. The existing fruit-tree demonstration orchard was expanded and upgraded with the addition of several new cultivars of peaches, apples and pears not already represented on the station. This expansion enabled the Division to demonstrate new and promising cultivars to the farmers of Lesotho. The orchard suffered from many difficulties primarily because of the lack of participation and supervision on the part of ARD staff.

The 0.6 hectares LAC (Maseru) orchard was renovated with 185 new fruit trees and 78 grape vines planted in 1987-88. An irrigation system was installed. Thirty trees were planted in the LAC Leribe orchard. This orchard performed well and was used for demonstration and instructional purposes. The orchard was also utilized as part of LAC's Students Enterprise Project activity.

Three fruit tree demonstrations were conducted in conjunction with ARD research trials on: 1) pruning and tying of young fruit trees; 2) fertilization rates of fruit trees during establishment; and 3) in-row weed control and water conservation. These demonstrations/trials are discussed in detail in Section 5.2.3, ARD Research/ Demonstration Programs in Support of Crop Production.

C. MARKETING ACTIVITIES IN SUPPORT OF VEGETABLE AND FRUIT PRODUCTION

1. BACKGROUND

The LAPIS Project/MOA successfully achieved the objective of setting the stage for the development of a marketing infrastructure for vegetables and fruits in Lesotho by providing coordination, training, and funding assistance to this very important sector. In order to establish the vegetable marketing system, the project and the MD jointly conducted a number of unique and systematic efforts to determine the market pricing trends: crop production projections and monitoring; and monitoring of the importation of vegetables, fruits and fodders at national level. The project published a number of valuable reports presenting the project's outputs from those efforts (refer to the list of publications in the appendices to this report). This report summarizes the key efforts rendered to the subjects referred to herein.

2. ESTIMATES OF ANNUAL FRUIT AND VEGETABLE IMPORTS

Border surveys for fruit and vegetable imports were conducted during 1990 and 1991. These surveys were used to prepare reports on vegetable imports. Information on vegetable imports was necessary to evaluate the demand for fruits and vegetables. The program was also important for assessing the level and seasonality of imports and for planning a strategy for import substitution at the district and national level.

In 1990, weekly surveys were made periodically of fruit and vegetable imports at all border gates. It was found that most imports enter through the Maseru, Maputsoe, Mafeteng and Butha Buthe border gates. In 1991, surveys were made for one week each quarter at these four border gates and at Mokhotlong and Qacha's Nek which represented the mountain districts. The weekly survey results were analyzed and projected to an annual basis for 1990 and 1991. Based on the survey results, 1990 imports were estimated at 30,755 tons and 1991 imports were estimated at 34,600 tons. A summary of this data is located in Table 33.

The LAPIS Project assisted the Marketing Division to plan and implement the border surveys. The project supported two enumerators who conducted the surveys in 1990 and 1991. One of the enumerators analyzed the import data. Average prices in the Bloemfontein market were used to estimate the value of imports. The value of 1990 vegetable imports were estimated at M12.4 million compared to an estimated value of M15.6 million for 1991. A large portion of the vegetable imports could be grown in Lesotho. The import substitution of vegetables would result in increased self sufficiency, employment, and higher farm incomes.

The analysis of the vegetable import data showed the majority of the imports occurred during the third quarter (Winter) and were lowest in the first quarter (Table 34). Imports during the third quarter were 45% of annual imports compared to 14 % during the first quarter.

Table 33: 1990 and 1991 Estimated Vegetable Imports and Estimated Value of Vegetable Imports.

Crop	1990 Import (tons)	1990 Value p/ton Maluti	1991 Total Value M1000	1991 Import (tons)	1991 Value p/ton Maluti	1991 Total Value M1000
Potatoes	6757	470	3176	9271	453	4200
Tomatoes	4180	1080	4514	4159	1047	4354
Cabbage	15726	187	2941	17720	312	5529
Carrots	1228	382	469	843	470	396
Beet Root	861	394	339	467	496	232
Pumpkin	270	340	92	317	354	112
Spinach	109	674	73	137	650	89
Others	375	505	189	90	526	47
TOTAL	30755		12436	34600		15639

Source: Marketing Division Border Surveys and RSA Dept of Agriculture (Import Values per ton: Bloemfontein market).

Table 34: Preliminary Estimates of Lesotho 1991 Annual Vegetable Imports By Quarter.

Crop	First Quarter (tons)	Second Quarter (tons)	Third Quarter (tons)	Fourth Quarter (tons)	Year (tons)
Cabbage	2016	1897	9788	4019	17720
Potatoes	1021	3425	3251	1572	9271
Tomatoes	829	795	1399	1143	4159
Onions	387	355	577	276	1596
Pumpkin	32	14	214	57	317
Carrots	275	120	219	227	843
Beet Root	146	37	122	161	467
Spinach	37	20	37	42	137
Others	17	19	16	37	89
TOTALS	4760	6682	15623	7534	34599

Cabbage, by a large margin, was the most important vegetable import. Approximately 17,700 tons were imported. This represented in excess of 50 per cent of total vegetable imports. Next in importance were potatoes, comprising about 27% of imports. Third in importance

were tomatoes, at 12% of imports. Onions are the least significant import, representing 5% of the annual total.

3. CROP MONITORING PROGRAM

A crop monitoring program was initiated in cooperation with the Department of Crops Services (DCS). Information on the 1991/92 summer season was collected and analyzed. Information for the 1992 winter season was also being collected. Plans were underway to design and install a computer based system for analyzing and reporting the crop monitoring data.

During the 1990/91 summer season it was estimated that about 20 projects and 50 individual farms produced vegetables on a commercial basis in the lowland districts (see Table 35). The number of projects ranged from three to five per district. Individual farmers fluctuated from one to 14 in each district.

Table 35: Estimates of Area in Summer Vegetables 1990/91 and 1991/92 and Number of Project and Individual Vegetable Farms by Lowland District 1991/92.

District	90/91	90/91	90/91	90/91	90/91	91/92
	Project Farms Number	Indiv. Farms Number	Project Summer Area (Ha)	Indiv. Farms Summer Area (Ha)	Total Farms Summer Area (Ha)	Total Farms Summer Area (Ha)
Maseru	4	10	36	67	103	94
Leribe	3	11	47	5	52	114
Butha-Buthe	4	1	15	4	19	32
Berea	4	6	14	15	29	17
Mafeteng	5	6	50	11	61	45
Mohales-Hoek	3	14	16	9	25	13
Quthing	4	3	59	2	61	37
TOTAL	23	51	238	113	350	352

A comparison of estimated hectares in summer production is shown in Table 35. Although total area remained at about 350 hectares for the two years, there were significant changes within the districts between years. In 1990/91 Maseru, with about 100 hectares, had the largest area in vegetable production, almost 30% of total area. In 1991/92 the Maseru areas had decreased slightly, while Leribe more than doubled.

4. MARKET AND COST ANALYSIS

The potential profitability of major vegetables was evaluated by comparing estimated cost of production with prices farmers were likely to receive if selling to wholesalers. The analysis was done for 1989, 1990, 1991. Farmers with high transportation costs had higher costs than those used in the analysis. The cost of production for cabbage was estimated at M2.36 per pocket in 1989, M2.65 in 1990, and M3.00 in 1991. The Bloemfontein cabbage price was taken to be the price farmers could expect to receive. The analysis showed the profit potential was very high in 1990 and 1991. In 1990 the average monthly price was twice the estimated production costs. In 1989 prices were around the break-even price (M2.36 per pocket) for the first 9 months, but increased substantially for the last quarter.

Analysis for potatoes indicated the farmers would have lost money most months during 1989. However, in 1990 the estimated potato prices were substantially above the cost of production each month. Average monthly price in 1990 was M7.33 per pocket compared to estimated production cost of M4.77 per pocket. The analysis also showed potatoes to be profitable throughout 1991, with prices at their highest during the months of January, February, October, November and December.

In general, the analyses showed that 1989 was a poor year for vegetable farmers because of low prices. Farmers probably did not make money and many may have lost money. In contrast, 1990 and 1991 were very profitable. Year-to-year variation in prices and profitability is typical of vegetable production, making it a risky business. Although vegetable production in Lesotho can be very profitable, farmers must be able to survive years of low prices and potential losses.

During the final year of LAPIS activity, additional information for vegetable prices was obtained from the Bloemfontein wholesale market. The information presented gives the latest three-year weighted prices for the major vegetables imported into Lesotho. The highest price per ton were green beans followed by tomato, spinach, onion, beet root, potato, carrot, pumpkin, green mealie and cabbage. Prices for these products ranged from a high of (M)260 per ton for spinach to a low of (M)43.00 for onion. These were typical prices Lesotho farmers could expect to receive from wholesalers and illustrated year-to-year variations. This information is summarized in Table 36.

Table 36: Bloemfontein Average Annual Vegetable Wholesale Selling Prices in Rand Per Ton.

Product	1989 (M/Ton)	1990 (M/Ton)	1991 (M/Ton)	Average (M/Ton)	Range (M/Ton)
Cabbage	156	187	312	218	156
Potato	241	470	453	388	229
Tomato	1081	871	1047	1000	210
Onion	558	515	526	533	43
Carrot	314	382	470	387	156
Beet Root	356	394	496	415	140
Spinach	607	674	867	716	260
Pumpkin	181	340	354	292	173
Gr. Beans	1004	1203	1169	1125	199
Gr. Mealie	209	239	329	259	120

5. MARKET DEMAND

In an effort to project the demand for fruits and vegetables at district and national levels, a market survey was done in late 1989. Supermarkets, cafes and street vendors were surveyed. The survey results for districts that were to have market centers are summarized in Table 37.

The projections indicated that estimated annual sales of major vegetables were approximately 13,700 tons in Maseru District compared to 10,000 tons in Leribe District, and 4,800 tons in Mohale's Hoek District. The estimates were within the range of previous estimates on a per capita basis. Cabbage was the most important vegetable, representing more than 50% of the total vegetable shown in the analysis.

Information for vegetable crops produced in Lesotho was and remains very difficult to obtain. However, the Agriculture Research Division (ARD) in the formulation of the Crop Production Guidelines used the following yield figures as guidelines.

The ARD yield per hectare estimates are as follows:

Cabbage:	35 tons	Carrots:	22 tons
Potatoes:	23 tons	Beet Root:	25 tons
Tomatoes:	30 tons	Pumpkins:	22 tons
Onions:	30 tons	Spinach:	15 tons
Grn Maize:	6.5 tons		

The above yields were used to estimate vegetable production for the 1991/92 planned summer production areas. Estimated total summer production was estimated to be about 7,900 tons or about 22.6 tons per hectare. These yields and total production could be increased significantly with improved technology(ies) and management.

Table 37: The Initial Survey to Determine the Potential Demand for Vegetables in Lesotho.

District	Cabbage (Tons)	Onion (Tons)	Tomato (Tons)	Potato (Tons)	TOTAL
MASERU					
supermarkets	774	455	299	1084	2612
cafes	3853	423	658	1083	6018
street vendors	2441	777	440	1392	5050
District Total	7068	1656	1397	3559	13679
LERIBE					
supermarkets	27	10	6	16	59
Cafes	2816	498	533	3411	7258
Street Vendors	1598	227	269	551	2645
District Total	4441	736	808	3978	9962
MOHALES-HOEK					
Supermarkets	24	13	9	39	86
Cafes	2363	443	403	901	4110
Street Vendors	247	43	54	227	571
District Total	2635	499	467	1167	4767

Winter vegetable production was generally estimated to be 25 to 50 percent of summer production. Thus, winter production was estimated to be in the range of 2,000 and 4,000 metric tons. If the estimated summer production of 7,900 tons was added to winter production estimates, annual domestic commercial vegetable production was felt to be in the range of 9,900 and 11,900 tons per year.

6. ANALYSIS OF TRENDS IN VEGETABLE CONSUMPTION, PRODUCTION AND IMPORTS

Limited information was available on vegetable consumption and production over time. A study conducted by Swallow et al estimated vegetable consumption at about 48,000 tons in 1985. The same study estimated domestic production and imports. Total 1985 production

was estimated at about 20,500 tons and imports were about 28,000 tons. More than one half of domestic production was attributed to home and communal gardens. Commercial production, comprised of private independent commercial production, projects, and state farms, was estimated to be about 8,700 tons in 1985.

Baseline information from the 1985 study, population growth rates, and estimates of imports from border gate surveys were used to project and estimate 1990 and 1991 consumption, production, and import figures. The analysis assumed that consumption, and home gardens increased in proportion to population and households.

The analysis indicated that vegetable consumption increased about 14 percent during the five year period, 1985-1990. In 1990 commercial production was estimated to be about 11,400 tons, an increase of about 30% over 1985. During the same period imports increased to about 34,600 tons, an increase of 11%.

Drought conditions during late 1990 and 1991 adversely affected commercial vegetable production in early 1991. Decreased domestic vegetable production necessitated increased imports. The 1991 vegetable imports were estimated to be about 34,600 tons. A large percentage of the imports (45%) occurred in the third quarter.

The 1991 production was estimated by subtracting annual imports from estimated consumption. This gave a domestic vegetable production estimate of 21,654 tons. This represented a decrease of 2,420 tons from the previous year. Much of this decrease can likely be attributed to the drought, beginning in late 1990 and continuing into early 1991 which adversely affected local production. Cabbage prices increased sharply during the first half of 1991 due to the drought and reduced domestic supplies.

It was assumed that the drought conditions affected gardens and commercial production in a similar manner. On that basis, 1991 home garden production was estimated to be about 10,900 tons and commercial production was estimated at 10,200 tons. Table 38 summarizes the above information.

Table 38: Estimated Vegetable Consumption, Production, and Imports for Selected Years 1985-91.

Year	Consumption (Tons)	Communal Gardens (Tons)	Home Gardens (Tons)	Commercial Prod. (Tons)	Total Domestic Prod. (Tons)	Import (Tons)
1985	48225	1158	10662	8683	20503	27722
1986	49479		10939			
1987	50765		11224			
1988	52085		11515			
1989	53439		11815			
1990	54829	579	12122	11373	24074	30755
1991	56254	521	10903	10230	21654	34600

D. HOME GARDEN PRODUCTION ACTIVITIES

1. BACKGROUND

Prior to implementation of expanded phase of HGNP a baseline survey was conducted by the project in planned project sites: four areas in the Thaba Tseka district and two in the Qacha's Nek. Generally, the residents had very limited income generating sources. Sources of income generation for the households were field crops, remittances from migrant labor, home brewing, vegetable selling and crafts. Although vegetable selling was among the income sources, only a few survey respondents sold vegetables. The limited income sources of respondents highly influenced monthly food consumption and expenditure. Basically, food items high in carbohydrates were consumed and few respondents consumed food items of other nutritive value. Maize meal, sugar, cooking oil, wheat meal and coffee were bought by a majority of respondents. About half of the respondents bought vegetables instead of producing them for their own use. Limited resources may have been a factor contributing to the lack of garden tools which respondents mentioned as a problem. When available, vegetables were eaten at least once daily and seven times a week. Most vegetables consumed were wild. Cabbage also tended to be eaten by a majority of respondents, although purchased from shops. Local stores tended to be the major seed source for vegetables planted. This was followed by projects as a source of seed. Coop-Lesotho and local suppliers were the primary sources of fertilizer.

The HGNP, since the beginning of the second phase of operation, June 1989, has been directly impacting upon the production of vegetables through introduction of adaptive varieties, facilitating the provision of inputs, extension and educational activities, water development, and introducing appropriate techniques of production and marketing. The home garden owners who received this massive infusion of adaptive production techniques increasingly produced more and improved the nutritional level of their households. This section briefly describes the HGNP's contribution to increased production in remote mountainous areas of Lesotho.

2. EXTENSION

The HGNP Field Teams, being comprised of PCVs and NAs, actively extended improved gardening techniques to villages, schools and clinics. A major focus of the extension activities was preparation of seedbeds, seed saving and organic pesticides. These specific demonstrations were stressed because of their appropriateness related to the farmers. The following demonstration topics were also extended by all Field Teams: Implementing water conservation, composting, maintaining a garden calendar, using manure as a fertilizer, double digging, mulching, spacing of vegetables, direct seeding, transplanting, companion planting, using manure tea, thinning and introducing of new extension vegetables.

Each Field Team maintained one model garden at his/her site, which he/she used to demonstrate improved gardening techniques and the possibilities for all villagers to incorporate a productive and high yielding garden into their lives. Each Field Team had at a minimum, three demonstration gardens in neighboring villages, schools, or clinics which they used as demonstration areas to extend improved gardening techniques directly into the

village setting. Table 39 summarizes the total home garden activity during the life of the LAPIS Project.

Table 39: Summary of the HGNP Activities during the Tenure of the LAPIS Project September, 1987, through May 31, 1992.

District	Number of Participants	Number of Villages, Schools or Clinics Visited
Thaba Tseka	2,024	52
Qacha's Nek	2,658	68
TOTAL	4,682	120

The project made a significant impact on producing a larger quantity and wider variety of vegetables on the same amount of land previously gardened by the farmers.

3. PRODUCTION TECHNIQUES AND INPUTS

The HGNP stressed the introduction of appropriate new vegetable species to farmers. The varieties introduced were selected according to ability to mature quickly, withstand light frost and high nutritional content. The introduced varieties included: curled kale, mustard, collard, summer squash and cherry tomatoes. Seeds were available locally from Coop-Lesotho or the Garden Center.

3.1 Procurement of Inputs

In order to facilitate home garden owner's access to production inputs the HGNP developed an input order supply mechanism to enable the owner to mail order their inputs. A vegetable input order supply system was implemented and utilized in several remote regions of Lesotho, mainly in Thaba Tseka and Qacha's Nek districts. Seeds could be ordered by mail, and to date, numerous home gardeners utilized the input order system. Placement of both wholesale and retail orders was possible. The total annual value of retail and wholesale orders was approximately M800.

An updated mail order seed catalog was disseminated to all Field Teams. The mail order seed form's expiration date was extended to cover a six month time frame, subsequently allowing the Field Teams a longer time to disseminate the forms to villagers. New varieties of flowers, herbs and gardening tools were included into the Seed Order Form to make the form better aligned with all HGNP gardening techniques. To ensure sustainability, the project asked the Garden Center, an input retailer in Maseru, to assume greater responsibilities in the implementation of the Seed Order Form.

3.2 Water Development

The Water Development Component (WDC) of the HGNP was involved in developing simple low-cost, low maintenance irrigation and water storage systems for village community gardens and schools in the programs targeted locations. Application forms for water development were developed. Also, a simple contract which outlined the responsibilities of the recipient group was developed. These forms were intended to ensure the recipients were aware of their responsibilities and duties in terms of the project development. Water development activities were carried out on a cost participation basis. Site evaluations for water development began in August 1990, and by January 1991, site investigations were completed in 10 different villages or schools in Lesobeng. Four alternative designs for water development were also developed. The horizontal well drilling team re-visited Lesobeng to evaluate the development potential of two sites. Pitsos were arranged to discuss the designs and to determine interest of the villagers in initiating water development projects.

Three types of irrigation systems appropriate to home garden sites were designed: surface irrigation, gravity flow irrigation and water storage. Cost estimates for these systems ranged from zero to nine hundred Maloti, with an average cost per system of about one hundred and fifty Maloti. An adaptive irrigation system "gravity flow low pressure sprinkler", was designed and installed at Lesobeng Primary School, Thaba Tseka District. This was the largest and the most comprehensive project undertaken and accomplished by the water development team of the HGNP team. This project required the construction of a four cubic meter water storage tank to irrigate the 0.12 hectare garden. The tank was constructed of hand-shaped stones and mortar by a Village Water Supply (VWS) mason and a mason trainee. The construction of the distribution system required three days to complete. In excess of forty working days were required to complete the project with an average of twenty-seven villagers per hour participating in the construction process. The three installed water development systems served around 800 people, at a total cost of US \$1050.00.

3.3 Community Development Efforts

The HGNP established a community development fund to subsidize certain community projects related to gardening, nutrition, income generating agricultural and nutritional activities and community development schemes. The concentrated efforts of the Field Teams in gardening activities fostered greater community development within the demonstration groups to organize to meet their gardening and nutritional needs. The Field Team at Ketane submitted, received funding and initiated a fencing project at a school garden utilizing the HGNP community development fund. The Ha Noosi, Tebellong, Lesobeng and Ha Sekakes Field Teams submitted and received funding to fence five community gardens at their respective sites, utilizing outside donor funding. The Mohlanapeng Field Team initiated a poultry project with a community group.

E. RESEARCH/DEMONSTRATION PROGRAMS IN SUPPORT OF CROP PRODUCTION

1. BACKGROUND

The ARC team arrived between July and the end of September 1986. Immediately upon arrival, they carried out an assessment of the on-going research, and on-farm demonstration programs at the ARD, sub-stations, and the outlying areas. This assessment included a survey of the literature related to research which had been done in the past, and extensive discussions with ARD researchers, MOA staff, and farmers. The ARC Specialists, also took numerous field trips to assess, first hand, the general farming conditions and crop production situation in Lesotho. Once the research assessment was completed, the ARC Specialists, along with their counterparts designed and implemented the upcoming seasons research and demonstration program. Because of the limited planning time for the first seasons work, the 1986-87 research program was developed along disciplinary lines. The lack of any on-station research program had resulted in little useful technical information being generated in the form of production recommendations or packages for use by PIC initiated schemes.

During the second year of the Project, research programs became more focused, better defined and more problem oriented. Research trials at the Maseru Station were continued. At the same time more experiments/demonstrations were initiated at the branch stations and on farmers fields. For the period ending in May 1988, approximately 160 experiments had been completed since the beginning of the LAPIS project. Approximately 70% of these were conducted at the Maseru Station, 12% at the branch stations and 18% were on-farm demonstrations. The number of regional on-station and/or on-farm demonstrations was scheduled to increase until the Division had a balanced research and demonstration program where the on-farm program was technically supported by solidly-based on-station research and demonstration programs, as was originally envisaged by the FSR approach outlined in the Project Paper.

The development of a balanced research and demonstration program continued during the third year of the Project. By then, the on-station research trials were generating the necessary information and technical data which directly supported the on-farm demonstrations. The arrival of the Farm Management Specialist and transfer of the Rural Sociologist, strengthened these disciplines to the point where they could begin to participate in the research and demonstration programs.

During the fourth year of the Project, significant efforts were made to integrate Farm Management and Rural Sociology into several experimental projects and activities. The level of cooperation increased to the point where both disciplines were participating in research and demonstration programs that were genuine joint efforts.

The Rural Sociology staff worked with Horticulture and Agricultural Economics staff to assess the household constraints and impact of commercial vegetable production. They also cooperated with the range and livestock production section on studies of herdsmen's perceptions of controlled grazing. These joint activities reinforced the habit of diverse groups working together, a significant institutional development.

2. RESEARCH PROGRAMS

The research programs summarized below, consisted of trials and or studies which were reviewed and evaluated by the Research Advisory Committee. Although the programs were not yet fully multi-disciplinary during the 1990-91 season, the Division Staff made significant progress in that direction. Program activity reached a peak in terms of activity and multi-disciplinary cooperation during 1990 - 1991, following the return of several ARD staff with advanced degrees.

2.1 Cereals

During the life of the Project, the Division looked at new varieties of maize, sorghum, wheat and oats from RSA, ICRISAT and other sources as to their adaptability to Lesotho conditions. Varietal adaptation trials were rated for flowering, disease incidence, plant height and maturity for maize and sorghum. Wheat date of planting trials, as well as the oat demonstrations, were initiated by the ARD staff during the 1990/91 season. In 1989, the Division was asked to participate with the Pioneer Hybrid International Seed Company, USA, in the evaluation of their varieties of maize and sorghum. A number of herbicides were evaluated on several crops to determine which of these herbicides were best suited for Lesotho's weed spectrum and the tolerance of local weed species to the various herbicides. Because of the late planting of maize which occurs in many years, insect pressure from the stalk borer is extremely heavy on both maize and sorghum. As a result several demonstrations on stalk borer control were added to the program on both of these crops.

Maize Production: As part of the continuing maize varietal adaptability program, promising hybrids were evaluated over the past six years. Along with PNR 473, a widely grown white-grained hybrid, there were five hybrid varieties which consistently yielded better than three tons/ha, and are now recommended by the ARD. SNK 2232, SNK 2244, and SNK 2776 performed very well, while SNK 2232 and SNK 2244 had the additional advantage in that they were well adapted to the acid soils which are common to Lesotho. Their only drawback being their yellow-grained color, which makes them less popular with growers than the white-grained varieties. This is becoming less important, now that yellow maize is being blended with white maize when they are made into mealies. Two other white-grained varieties performed very well over the years and are now recommended by the ARD, they are, SNK 2039 and PNR 6549.

Date of planting trials showed that maize can be planted from as early as September until the end of November, before significant reductions in yields are observed. Early plantings required that fields be winter plowed. As a result of a series of trials conducted early in the project, the fertilizer recommendations were modified. A four-year trial comparing different sources of fertilizer, showed that manure at rates of between four and eight tons per hectare will significantly increase yields. The same trial also demonstrated that 3:2:1 is superior to 2:3:2 for increasing yields in maize. It was found that the commercial blend 3:2:1 (32) balanced fertilizer was much better suited for maize, producing higher yields than the 2:3:2 (22) which was recommended previously. Trials where nitrogen was applied post planting (side-dressed), also demonstrated increase maize yields when compared to treatments where no side-dressing was used. Trials also showed that maize populations at a rate of 20-30 thousand plants per hectare produced excellent yields, while the lower plant populations

resulted in significantly lower yields and plant populations higher than 20-30 thousand plants per hectare, did not significantly increase yields.

Sorghum Production: Sorghum is a highly valued crop in Lesotho, and is second to maize in the number of hectares planted each year. It has the advantage over maize of being able to produce higher and more consistent yields in dry years and in the drier regions of the country. The variety evaluation program for sorghum showed that the hybrid varieties consistently out-yield the local open-pollinated varieties, and yields of 3 to 6 tons/ha were not uncommon in research trials. The open-pollinated varieties yielded 100 - 300 % less than the hybrids. Three of the higher yielding varieties, which are now recommended by the ARD, are DC 75, SNK 3640, and SNK 3860. These varieties have red colored seed and are resistant to bird damage and are very well adapted to Lesotho's growing conditions. Planting dates and fertilizer recommendations are similar to maize.

Researchers observed the same decline in yields for sorghum which was observed for maize, when it was planted in December. The same was true as higher yields were also observed when 3:2:1 (32) fertilizer was compared to 2:3:2 (22). Agronomy and nutrition researchers also looked into the problems caused by the bitter taste in some types of sorghum (especially in the red, brown and tan sorghum seed color types). This bitter taste carries over into the papa and is not palatable. As a result, a sorghum dehulling machine was brought into the country. Dehulling will remove the bitter taste found in the red sorghum. A series of test panels were conducted, where the dehulled sorghum was prepared as papa, and was found to be very acceptable.

A significant effort went into evaluating a number of sorghum varieties from ICRISAT, to try to find a white open pollinated variety which having higher yields than the standard variety 'Tenant White'. However, no new entries were found which out yield Tenant White, but the hybrid variety G766W, which is white grained was found to be excellent for human consumption because it has a low tannin content. This variety is now recommended by the ARD.

Wheat Production: Scheepers 69, an old variety of wheat has been grown in Lesotho for many years, was considered to be the standard. The Agronomy researchers worked extensively on evaluating and introducing several new wheat varieties from South Africa. The SARWEIN cooperative winter wheat variety evaluation trials were conducted each year and included both SARWEIN entries and local wheat varieties. From these trials Tugela, Karee, SST 107, and Gamtoos, emerged as significantly out yielding the standard varieties grown in the country by 20-50%. These varieties have great potential for Lesotho and are now being recommended by ARD:

Tugela - out yields Scheepers 69 by 20-40% and does not shatter when left in the field for long periods. It has short straw (average height 90 cm) and does not lodge (whereas Scheepers 69 lodges badly), it is resistant to most Southern African rust strains (Scheepers 69 has no disease resistance), and it has heavy awns and therefore some bird tolerance. Because it does not profusely tiller it is not a good variety for pasturing and must be planted at a rate of 60kg/ha, or more, to obtain good yields. Tugela is a class "A" baking wheat with good bread making qualities.

Karee - another promising wheat, has excellent milling and baking qualities but does not yield quite as well as Tugela. It is one of the earliest wheat varieties now planted in Lesotho, but because of this, birds are attracted to the variety. However, it has some drought tolerance so should be considered as a possible wheat variety for Lesotho.

SST107 - is grown for pasture and does well in dry periods. In research trials, SST 107 was the highest yielding variety during drought. Because it has a low bushel weight, this variety is not liked by the millers. It should not be grown if the farmer intends to sell his wheat for milling.

Garntoos - does well in the mountains, and is a spring wheat. It is quite tall, and therefore the straw is suitable for thatch. It is recommended for use by the farmers in the mountains. It is a Class "A" wheat with good bushel weight.

Tugela Aphid Resistant Wheat - is a new variety from South Africa, with all of the good characteristics of the older Tugela wheat variety, plus it has Russian Aphid Resistance. In certain years, (droughty springs), Russian Aphid Infestations become very heavy and will actually kill wheat. Because this variety has excellent resistance to the Russian aphid, it can produce much higher yields in those years with heavy aphid infestation. In normal years it does as well as Tugela. As the ARD has cooperated with South Africa researchers in evaluating this variety, they gave this variety to Lesotho as a demonstration of cooperation between the research groups of Lesotho and South Africa.

Wheat can be planted from April until the end of June (Lowlands) and responds well to both 2:3:2 and 3:2:1, with a rate of approximately 6 pockets/ha providing the highest yields. Earlier plantings of wheat have shown a tendency to have Russian Aphid injury. April planting seems best as soil moisture is available for good germination.

Oat Production: Oats could be a very important fodder crop for the fledgling dairy industry. Oats have the greatest potential for producing animal feed during the early winter or spring months and yields of 10-15 tons (dry weight) of feed are not uncommon with some varieties. Oats are planted at similar time as wheat. Research trials conducted over the past several years identified three oat varieties that are well adapted to Lesotho:

Overberg - a short stature (80 cm) variety usually grown only for seed.

Langberg - is of intermediate height (120 cm) and is a dual purpose variety which can be grown for seed or used for animal fodder.

Witteberg - is a tall (160 cm), later maturing variety and should be grown mainly as a fodder and hay variety. For higher yields, Witteberg should receive six or more pockets of a balanced fertilizer per hectare.

2.2 Food Legumes

Bean Production: During the past six years, a great deal of time and effort was spent on the very successful bean program. More than 2000 entries were evaluated. From these materials four new varieties emerged as being well adapted to Lesotho growing conditions, and accepted as a substitute for the traditional beans. Three were Pinto types: NW590, Olathe and Nodak, and one was a Pink type: Harold. These four varieties consistently yielded on the average 300% more than the Small White Haricot and 200% more than the Speckled Sugar Bean (Bonus), the standard bean varieties, which have been grown in Lesotho for many years. All are now recommended by the ARD:

NW 590 - High yielding, good tasting, widely accepted, yields 4 - 8 times more than the local standards such as small white Haricott. This bean has been grown in Lesotho for 8 or more years and although susceptible to Common Bacterial Blight (CBB) and Halo Blight (HB) the yields have not been reduced. This indicates the disease (through seed transmission) will not reduce yields, in this variety, for future years.

Olathe - High yielding, good tasting, widely accepted, does better in the late season, has about the same disease tolerance as NW 590.

Nodac - A new Pinto. Earlier variety (85 vs. 90 days), has partial rust tolerance and has been out-yielding other Pintos. Does well in late season and is also well accepted and of high quality.

Harold Pink - Has yields as good as the Pintos and in some years (1989/90) out-yielded Pintos, high quality, well accepted. A forerunner of this bean has been in Lesotho since 1960's but was lost by the Coop Lesotho seed multiplication program.

At EOP the ARD continued to participate in the VEF (CIAT), Common Bacterial Blight and Halo Blight bean nursery evaluation. The original trial consisted of 750 entries which were planted in 1989/90. From this approximately 120 entries were selected and were planted in November 1990. Approximately 100 entries were then carried forward into 1991-92. Several of the entries evaluated to date exhibited new and desirable characteristics, such as short season growth, disease resistance or higher yields.

Data developed from date-of-planting trials, showed that the Pinto bean should be planted from the first of October until the first of January in normal years, but in cool seasons good yields will not be obtained beyond November plantings. It is a short seasons crop (90+/- days) and therefore could possibly be doubled cropped with wheat. In the fertilizer trials, rates of two to four pockets/ha were found to produce good yields and when 2:3:2 (22) was compared with 3:2:1 (32), Pinto bean was found to respond better to the higher phosphate levels found in the 2:3:2 (22). Trials on Leribe soils also showed the Pinto bean responds well to the application of lime. Economic reviews of the fertilizer trials which were conducted between 1983 and 1988, indicated that fertilizer applications above 2.5 pockets/ha were not economical. If beans are to be sold through commercial channels even this level of fertilizer may be too high to be profitable. Other agronomic studies on bean production,

emphasized the areas of plant populations, date of planting, fertilizer rates, weed control and intercropping.

In July 1990, a consultancy was carried out to conduct a marketing feasibility analysis and develop a marketing plan to encourage the growing, processing, canning and marketing of Pinto Beans. It was found that the refried bean product was more acceptable than the beans in tomato sauce currently available in the market, and recommended that the Lesotho Cannery should proceed with the development of the product.

Pea Production: Peas are of minor importance in Lesotho, and to date ARD research has concentrated on varietal evaluation. Thus far, Black-eyed Susan continues to provide the highest dry weights and the highest dry seed yields.

2.3 Irrigated Vegetable and Fruit Production

Mulching is practised throughout the world. A research and demonstration program was begun in 1988, to examine the potential of using mulches in Lesotho. The trials included both modern plastic material such as plastic, as well as traditional materials such as grass, plant litter or flat rocks with tomatoes and several other crops. Winter mulching with decomposed kraal manure to improve soil quality and earliness was also demonstrated with tomatoes. The use of grass mulch or a plastic mulch was tried as a method of in-row weed control and water conservation in fruit orchards was demonstrated in 1989-90. Grass was either collected elsewhere and laid in the rows (a width of one meter on either side of the tree) or grown in the aisles, then cut and raked into the rows. *Eragrostis teff*, an annual, was grown in the orchard, cut at the time of seeding and used as a mulch. This produced a lot of mulch, was easy to manage and was effective in suppressing weeds in the orchard as did the grass collected and then used as a mulch. The use of one meter square tree collars as well as continuous plastic strips were tried. Both methods did a good job controlling weeds and conserving moisture near the trees. The collars cost approximately M0.45 per tree and can last up to three years if tenacious weeds such as nut grass are controlled. The plastic strip, which was a thinner material, will last no more than two seasons but controls weeds in the entire in-row area. Double one meter strips cost approximately M0.30 per tree for trees planted every three meters.

Trials were undertaken involving the intercropping of maize, grown for green mealie, with pumpkin, muskmelon, and water melon to improve land use efficiency and increase cash value produced on a given piece of land. These trials included three plant populations for the maize, and three plant populations for the inter-crop. These trials were only run for two seasons and the results were not conclusive. However, it was observed that as the plant population increased in the mono-crop plots, the yields increased for all crops tested. As the plant population increased in the inter-cropped plots the maize yields increased and the yields of the other crop decreased. Higher yields of the inter-crop occurred with the lower plant populations of the maize. Of the three inter-crops, the greatest reductions occurred within the watermelon and the smallest reductions occurred in the pumpkin.

Although, the tomato requires good management, if a high quality produce and a positive return on investment is expected, there is a great deal of interest in the fresh market production of this crop. Many farmers realize that they should stake their tomatoes, if they

wish to reduce fruit loss due to soil borne diseases, but there is a serious shortage of wood or other material for staking material. A series of trials were begun in 1987 to look at low-technology methods of staking the tomato. This compared the traditional method of staking by making a wooden frame and tying the plant to the frame, to the 'basket method' where a single line of stakes, wooden or metal, were placed in line with the plants, and the plant surrounded by a single strand of locally available twine running between the stakes. This was compared to a control, which involved no staking. The 'basket method' resulted in significantly higher yields than either the traditional method or no staking, while there was no significant difference between the traditional method and the treatment which was not staked. The low yields in the traditional method, probably resulted in the damage caused to the plant when constructing the trellis frame, and tying the plant to the stakes.

A trial to observe the effects of four fertilizer treatments on the growth of newly established fruit trees was initiated in 1989. The treatments ranged from an application of manure only to monthly applications of commercial fertilizer. Preliminary observations showed significantly more growth in the high rate of fertilizer treatment where 150 grams per tree of fertilizer were added at planting followed by a monthly application of 100 grams of LAN per tree during the growing season. Another trial was established to examine the effects of several simple tree training techniques where young trees were pruned using either the central leader or open-vase shape. Several species of trees were trained, using the espalier technique. Steel posts were inserted into the tree row every ten meters with 2mm wire strung 75cm and 125cm high. Lateral branches were subsequently trained on these wires. This method has proved to be an effective technique for species whose side branches tend to grow vertically, e.g. apple and pear. For the vigorous growing plums and prunes, greater and earlier flower and fruit set have been observed on these lateral branches when compared to those trees with no training. The same species were also trained by pulling four lateral branches down with twine anchored to wooden stakes. This method requires a relatively large amount of labor but has the advantage of lower material costs and a very good tree shape.

Commercial beetroot production was thought to be constrained by erratic germination and poor stands. Using new and viable beetroot seed of Detroit Dark Red and Crimson Globe cultivars, seeds were soaked in water and three chemicals found to improve germination with other types of seeds. None of the treatments had higher germination levels than the water control. As a result of these trials, the ARD does not recommend the soaking of beetroot seed, as a method to increase seed germination or improve the uniformity of plant stands.

In an effort to improve plant stands, the ARD conducted a series of trials comparing the use of onion sets, to direct seeding. Although direct seeded onions have the potential for excellent stands, and are earlier than transplanted onions, the care and precision required to achieve these results, was not practical at the farmer level. Therefore, the ARD now recommends the use of onion sets over seeds to improvement onion stands, to overcome bolting and reduce the shortage of onion during the winter months.

Irish potatoes are normally produced from small tubers called seed pieces. Each seed piece must contain one or more bud or 'eye' if the tuber is expected to product a potato plant. This is a very expensive and bulky method of propagating potatoes, as it requires 2,500 kilograms of seed pieces per hectare. In the early 80's, the International Potato Center, (CIP), in Lima, Peru, developed a propagation method which uses the actual seed from the potato fruit. The

fruit is similar to the tomato fruit, only much smaller, as are the true potato seeds. After contacting CIP, the ARD embarked on a cooperative program to determine if this technique could be used in Lesotho, where good potato 'seed' is hard to get and expensive to transport. The trials revealed a rather wide range of differences in adaptability to Lesotho greenhouse conditions, in the genetic material supplied by the International Potato Center (CIP). The first harvest of mini B tubers was made that fall and the performance of the seven lines was recorded before storing the tubers for their rest period, prior to field planting in the late spring, October 1990. The results from these trials indicated a fairly high success rate. It is now evident, that a great many second generation seed tubers can be produced from each true potato seed. It is hoped that this successful introduction to a virus-free seed potato program will be coordinated with seed increase programs in Lesotho and the Republic of South Africa.

Varietal Adaptation to Ecological Zones of Lesotho: Varietal evaluation trials for a number of vegetable crops were conducted throughout the life to the Project. The current recommended varieties are listed in the most recent production guides. Planting date and variety evaluation trials of cabbage and other leafy green crops have resulted in a significant increase in the length of time, during the season, that various greens are available by enabling the Division to recommend specific varieties or crops to extend the growing season.

Between six and ten cabbage varieties were evaluated each year, as to their local adaptability regarding the problems of multiple-heading resulting from exposure to cold weather, insect damage, leaf tip-burn, due to hot drying winds, yield stability and general ability to withstand Lesotho's severe climatic conditions. These trials resulted in varieties being recommended, by ARD, for specific planting dates, suitability to specific agro-ecological zones, winter or summer crops, and commercial or home-garden production.

Each year, six to seven varieties of snap bean were compared in a four-year trial carried out in Maseru from 1988 through 1992. The beans were evaluated for yield and fresh market quality and samples were sent to Lesotho cannery for processing suitability. Flo and Labrador had higher yields than the standard, Harvester. Strike also did quite well, as did Contender, which had higher yields than Benton, Thor, and Seminole. Contender and Labrador both had the advantage in that they were the most uniform in size and quality.

Variety by date of planting trials were conducted in Maseru for fall (February-April) bulb onions. In most years, Pyramid, Texas Grano and Silver King significantly out yielded Hojem, Vega, Texas Grano 502 and Brownsville. Bulb onion variety tests at Thaba Tseka had good yields, although there were only slight differences between the lines evaluated. Variety by date of planting trials were also carried out with green, or spring onion. The highest yielding green onion varieties were White Welsh, Tokyo, Long White, Kyoto Market and He-shi-Ko.

Carrot variety evaluation and date of planting trials were conducted at stations in Maseru, Nyakosoba and Thaba Tseka. Chanteney-Karoo followed by Scarlet Nantes were the leading varieties at both Thaba Tseka and Nyakosoba. In Maseru, Regal and Fancy were the highest yielders. Yields of the various varieties in these trials were not consistently high and were significantly affected by time of planting, with the lowest yields occurring in March and increasing with the later plantings. Location, however, did have an effect on the yields, the

warmer locations of Nyakosoba and Maseru experienced lower yields and poor quality, than did the trials in Thaba Tseka.

Beetroot variety trials were conducted at Maseru, Nyakosoba, and Thaba Tseka. Detroit Dark Red was the top yielder in Maseru and Nyakosoba and performed well in Thaba Tseka. It also did well in the late summer plantings at Maseru and Thaba Tseka. Early Wonder and Long Canner did not yield significantly less than Dark Red and have potential for Lesotho. Formanova, Asgrow Wonder and Ruby Queen all had significantly lower yields than the top three varieties.

Variety evaluation trials were also carried out for green mealies, maize which is harvested at the soft dough stage and then roasted or boiled. Green maize variety x date of planting trials included both white and yellow varieties. In the early trials, the highest yielding variety was TX 14 (a yellow variety) with Kalahari Early Pearl (a white variety) receiving the highest price. The early planting in September resulted in the greatest yields. The results of a taste test indicated that Natal 8 row (yellow) and Hickory King (white), two of the older varieties, were preferred over the higher yielding varieties for taste, color and tenderness. Because several of the older varieties were no longer available, in the later trials, several new varieties were added. The varieties selected for these trials, were TX 14, Goudveld, Hickory King and Kudu 9051. In these trials Hickory King, a white seeded variety, tested highest in taste tests, and was the earliest to reach harvest stage, but it also had the lowest total marketable yield. TX 14, a yellow, had very large ears but its flavor was not highly desirable. The most promising hybrid was Kudu 9051, which has been temporarily discontinued for distribution by the company. Kudu 9051, was the highest yielding, had an excellent flavor, and had a very attractive ear. Unfortunately, this has happened several times in the past, in that maize varieties which are excellent for green mealies, are discontinued by the seed companies because new varieties out-perform them when grown as field maize. As green mealies is a very profitable crop, consideration is being given to the possibility of having the seed multiplication unit increase seed of the most desirable varieties for green mealies.

In an effort to find varieties of greens which can be grown during the off season, variety trials of new leafy greens were conducted throughout the life of the Project. These trials included varieties of collards, mustard, kale, Japanese radish, and turnip greens. In 1991, two Asian introductions, the spoon cabbage of Taiwan, and Mainland China (Ching-Chiang), were compared with the greens already being evaluated. In taste panel testing, the spoon cabbage was unanimously selected as most preferred. The mild flavor, rapid cooking characteristic and wide culinary adaptability could be a promising candidate for Lesotho. The Korean radish offers great hardiness as well as productivity and the closely allied flavor to the well known Japanese radish should be useful.

In trials conducted during the first two years of the Project, there were no significant differences among treatments of dimethoate, carbaryl, malathion and a synthetic pyrethroid on the control of *Bagrada* bug on mustard in a Maseru test. In an observation of tolerance to *Bagrada* bug on four different mustard cultivars, it was found that Shogoin was the most affected, and Florida Broadleaf least damaged by *Bagrada* bugs. Other tests using chemicals for control showed that none of the chemicals tested were totally satisfactory in controlling *Bagrada* bug. Trials demonstrating the effect of several seed treatments on stand

establishment when maize was planted in cold soils showed better and more vigorous stands with the use of treated seeds.

Demonstrations of control methods for stored grain pests for grain stored in brick silos tested two insecticides vs. an untreated control. The fumigant Phostoxin provided the best insect control with no weevils reported at the end of the test. In an evaluation of control materials for spotted maize beetle, applications of malathion, dimethoate, pyrethrins and carbaryl were applied but there were no significant differences in control due to these applications.

Post-Harvest: A trial including two pumpkin varieties was initiated in 1990, to evaluate the post-harvest breakdown of the stem-ends of pumpkin. This is a serious problem as it reduces the length of time pumpkins can be stored. The study consisted of five treatment combinations and was initiated in the rat-safe room of the horticultural storage building. Treatments selected utilized retardants which were available locally, based on sodium hypochlorite (JIK) and an available fungicide (Dithamane M45). The hypochlorite alone, the fungicide alone, a treatment of both, a flush-cut flower stalk (or neck or peduncle) non-treated, and a treatment in which the peduncle and a portion of the viny stem were intact. The pumpkin varieties used for this test were Flat White Bore and Crown Prince. Preliminary results looked promising, and it is hoped that these trials will demonstrate that pumpkin storage life can be extended to five or six months, instead of the two months of storage that is now possible. This treatment, if successful, could be very useful to the rural people, especially in the mountain districts where there is a severe shortage of vegetables during the winter months.

2.4 Natural Resource Management

The study on the effect of the application of lime on the yields of several agronomic (maize, sorghum and pinto beans) and fodder crops (lucerne and clover) were carried out on the red acid soils at Nyakosoba and Machache Station under dryland conditions. The yield of the crops at the Machache site, generally, were not good due to late planting and early frost. Pinto Bean dry seed weights of limed and fertilized plots showed 3-fold yield (197%) increase when compared to unlimed and unfertilized plots. Comparison of lime only vs. unlimed plots and no fertilizer shows 2.5-fold yield (151%) increase in the limed plots. Two rates of lime were used in these experiments, the recommended rate of 28 tons/ha and one-half the recommended rate. It appears that unless the crop is very sensitive to low pH or the soil pH is very low, the lower rate of lime will be sufficient.

Greenhouse studies on soil improvement and correlation of soil laboratory recommendations with crop response, were initiated in early May, 1990. Swiss chard, beetroot, green beans, green onion and wheat were planted on the 5th and 6th May. Soil pH analysis of three of the Benchmark Soils of Lesotho in the greenhouse soil improvement (liming) studies showed that all three soils (Machache, Qalaheng and Leribe) responded positively to the application of lime and their pH were raised to the desired level. To study the effect of organic matter on soil pH and its interaction with liming the experiment was expanded to include the addition of manure. Organic matter level in all three soils was increased to 1%. The pH analysis showed that all three soils responded positively to kraal manure and their pH was raised. The results of these trials were incorporated into the fertilizer and lime recommendations, making the recommendations much more realistic.

The cooperative soils/range study, "Soil pH Improvement Experiment Lucerne Response to Liming" at Nyakosoba Station began in 1987 and continued through 1990. The first and second harvest of the soil improvement experiments at the Nyakosoba Station with lucerne showed a 10-fold increase in yield when the full rate of recommended lime was applied and an 8-fold increase when half the rate was applied. Clover showed a 7-fold increase in yield.

2.5 Crop Diversification

Sunflowers are highly adapted to Lesotho, as they are relatively short seasoned, drought and frost tolerant. The on-going variety evaluation program has provided several short season varieties (90-120 days) which will fit well into Lesotho's environment. The Division is now recommending a number of hybrid sunflower varieties including A504, SNK22, SNK32, SO323, SO222, PNR7204, CAR1012 and CAR1006. PHI, also has many new sunflower hybrids which are also being evaluated as possible introduction for the country. Dates of Planting showed the crop can be planted earlier and later than any other summer agronomic crop. The crop proved to be the most drought tolerant of all the summer crops.

The Agronomy Specialist, ARD staff, and CARE cooperated in introducing the Bielenberg hand-operated oil press into the country. This press makes growing sunflowers in a village situation, a very viable enterprise, because the crop can be grown, harvested for seed and then pressed directly into cooking oil for use in the village, or sale in the local markets. CARE brought in twenty five of the oil presses into the country and taught farmers, not only how to operate the oil press, but how to use ARD recommendations to successfully grow the crop. This is an excellent example of the success which can happen with a cooperative program, and should be supported.

Peanut (groundnut), was a new crop which has been brought into the country for evaluation as to its potential for production in Lesotho. Peanuts can help supply badly needed protein for the children of Lesotho, and can serve as an excellent source of cooking oil. Due to the length of the growing season, only short-seasoned peanut varieties were planted for evaluation. From these trials, the ARD is now recommending six varieties. Four of these varieties are ICRISAT lines, and two of the varieties were from South Africa. Yields ranged from 1.5 to 3 tons per hectare at the experiment station, so it is expected that the farmers have the potential to produce yields of between one and two tons per hectare. The price received for peanuts, by farmers in the Republic was, M 1,400 per ton, during the 1991 season. This is potentially a new crop for the Basotho farmer, on a limited scale in the lowlands of Lesotho.

Beginning in 1987, a series of trials, evaluating green pepper varieties was started. To date these trials have demonstrated green peppers adaptability to production in Lesotho. Excellent quality peppers were produced with few insect and/or disease problems. As there was also interest in the chili pepper, several varieties of this type of pepper were added to the trials. Although further testing is needed, two South African varieties of green pepper look promising. These varieties, Pip and Maor, have produced significantly higher yields and larger fruit size, than the U.S. standard, California wonder.

In 1988-89, trials to evaluate vegetable soybeans involving nine premium breeding lines from AVRDC plus six lines of mungbean were begun at the Maseru Station. Taste tests showed

the Basotho found the vegetable soybean very acceptable. Other crops which were or are being tested include green pea, broccoli, cauliflower, and several new leafy greens.

3. ON-FARM DEMONSTRATIONS

On-farm demonstrations were an important vehicle to demonstrate to the farmers the latest in technology, which was developed and tested by the ARD. On-farm demonstrations were begun in 1987 and continued throughout the life of the project. The development of the ARD coordinated on-farm demonstration program progressed over the past several years. All demonstrations are now supposed to be tied to on-going research programs, to insure that they are relevant and applicable to the needs of the farming community. Increasing the number of these trials will require an expanded role and increased participation of the Extension Service, if they are to be successful.

The on-farm demonstrations of effects of rates of fertilizer and weed control methods were very successful, and demonstrated the advantages of using the recommended rates of fertilizer and the necessity of controlling weeds in beans, sunflower and wheat. Bean variety trials were heavily infested with Halo Blight enabling the pathologist to rate the varieties tested as to their susceptibility to this disease. Three varieties (short, mid and long season) varieties were planted for work with the sunflower oil seed press.

On-farm demonstrations of vegetable varieties and production technology, were held throughout the project and were intended to show the farmers new crops and/or new varieties, better suited to their local conditions, methods of production, e.g. staking methods for tomatoes, mulching, seed-bed preparation, etc., techniques for preparing fields for sowing, soil fertility management, water harvesting techniques, and irrigated vegetable production. Crops included, peas, green beans, carrots, beetroot, broccoli, cauliflower, new leafy greens, and green mealie varieties. Although most of the on-farm demonstrations were held in the lowlands or foothills, an effort was made to include the mountain districts, and demonstrations were held in Mokhotlong and Thaba Tseka districts. Unfortunately, these often failed because of poor management and the difficulty researchers had in getting to the sites.

The main emphasis of the on-farm demonstrations in the area of fodder production, was to familiarize the farmers with fodder production and illustrate the importance of fodder production in intensive livestock production. Demonstrations were carried out in the lowland and foothill districts, crops included were lucerne, fodder sorghum, fodder oats, annual ryegrass and perennial grasses.

Three different methods for incorporating lime were demonstrated in on-farm demonstrations by the Soils Section staff. Lime was uniformly applied to the field and then incorporated by means of a hand fork, a walking tractor or an ox-drawn harrow. Soil samples were taken to a depth of 30 cm in 5 cm increments. Analysis showed that incorporating lime by hand using a fork or with a walking tractor (rotovator attachment) gave the best results, correcting the soil pH to the depth of 20 cm. Using an ox-drawn harrow the lime was incorporated to a depth of only 7 - 10 cm. Below that depth the soil pH was unaffected by the application of lime. Similar results were observed from the on-farm liming demonstrations at Machachi, showing use of a disk as a means to incorporate the lime into the soil did a very uniform job,

correcting soil pH to a depth of more than 20 cm. Results from the Machachi and Leribe Pinto bean demonstrations showed a positive response to lime and fertilizer.

In 1988, a Research/Extension Soil Improvement, on-farm demonstration program was initiated in a cooperative effort with the Research Division and the Extension Division. The study involved on-farm demonstrations to look at the effects of liming on soil pH and crop production. Staff from the Soil Section supervised putting out the demonstration, while extension staff, who received special training, were responsible for monitoring the trial and arranged for farmer field-days which were held when the fields were limed and planted, mid-season, and at harvest time. Trials during the first year were at Machache, Khololikane, TY and Leribe. Additional trials were held in Butha Buthe, Barea, Quthing and Maseru, the first three involving individual farmers, while the latter was with a Young Farmers Club and included fifty-six young farmers.

In December, 1989, the Team Leader, Agronomy and Horticulture Specialists were asked to take over the responsibility for monitoring the Thuate Soft Fruit Production Project from Mr. Franck (Special Projects Coordinator) to ARC/ARD. Because of the intense management required for the production of tomatoes on this scale and the lack of trained staff and equipment on site, ARC and/or ARD staff found it necessary to make almost daily visits to the Lancers Gap site. Because no experienced on-site manager was employed, the Horticultural Specialist was required to spend a minimum of 3 half-days a week in the field in December and January to insure the success of this venture. In February the time allotment was reduced to approximately 20% of work week for this effort. The tomato field was used by the Specialist to show ARD Research Officers field monitoring techniques and production critique methods. The diseases which began as a result of severe hail damage were checked and the crop recovered sufficiently to continue production. Recommendations for pre-harvest operations and harvesting schedules were prepared and arrangements made for the crop to be picked up by Lesotho Cannery for processing after harvesting.

An on-farm demonstration program funded by the Multi-National Programming Operational Center for South African States (MULPOC) was begun in 1986 and continued through 1992. This program demonstrated improved production practices for maize in farmers' fields throughout the lowland districts. This program is an excellent example of the type of activity which can be conducted with relatively few inputs, and yet have a significant impact on the farmers. During the 1989-90 season, all of the production aspects of the program were turned over to the ARD and District extension staff. The main objective of the program was to demonstrate improved maize production technologies at the farmer level, through on-farm demonstrations. Demonstrations consisted of: A comparison of hybrid seed, open pollinated seed and farmer saved seed. Research demonstrated that hybrids significantly out yielded either open pollinated varieties or farmer saved seed. Two rates of fertilizer were also demonstrated: one treatment used the rates now used by farmers, usually one to two pockets of fertilizer; and the second, the fertilizer rate recommended by the ARD, six pockets of fertilizer. The importance of good weed control was also demonstrated by comparing the use of a herbicide, compared to the traditional hand hoeing methods.

During the six years of this on-farm demonstration program, it was clearly demonstrated that if the farmer used hybrid seed, in this case PNR 473, he could have averaged 670 kg/ha per season more maize than if he had used either the open-pollinated variety, Silver King, or by

using his own saved seed. Application of the findings may eventually result in a tremendous increase in the total maize produced in Lesotho, as ARD surveys have found that 54% of the farmers still plant saved seed.

It was also consistently demonstrated that by using the recommended rate of fertilizer, six pockets, or 300 kg/ha, versus the one to two pockets, commonly used by farmers, yields increased on the average of 551 kg/ha, on an annual basis, for all maize varieties. The value of controlling weeds was clearly demonstrated when comparing the herbicide treated plots to the plots where weeds were controlled by hand hoeing only. The herbicide plots averaged an annual increase in yield of 455 kg/ha. By the end of the six years of demonstrations and field-days, more than 1,800 farmers had participated in or seen these demonstrations.

A financial analysis of the 1988/89 and 1989/90 seasons' maize on-farm demonstration treatments produced the following conclusions: Do not use the six pocket (300 kg/ha) rate of fertilizer with saved seed or the open pollinated maize variety Silver King; Do not use a herbicide with saved seed or the open pollinated maize variety Silver King; The use of the herbicide was better when in combination with a hybrid variety and the greater amount of fertilizer (300 kg/ha); Always use a hybrid variety of maize. Marginal rates of return often were 200% or more at informal maize prices, but frequently less than 100% at formal market price. The results of the survey supported the idea that many of the practices demonstrated are financially viable and suitable for adoption by the farmer.

F. STUDENT ENTERPRISE PROGRAM IN SUPPORT OF LESOTHO AGRICULTURAL COLLEGE

1. BACKGROUND

LAC was formerly established in 1955 to be the single post-high school agricultural science training institution in Lesotho. During the first thirty years of the college the primary focus of LAC was to train manpower for the Ministry of Agriculture. Certificate-level graduates served as extension agents, technicians, and subject matter specialists for the MOA. In the 1980's, budgetary constraints reduced the hiring of government employees. At the same time, the MOA's private and parastatal agricultural production initiatives created the need for well-trained agricultural entrepreneurs. The MOA directed LAC to change its training focus from producing students who would be employed by the MOA, to that of preparing students for self-employment.

2. STUDENT ENTERPRISE PROGRAM

In 1986 the Diploma in Agriculture (DIA) Program at LAC was expanded from two to three years, to allow the inclusion of the Student Enterprise Program (SEP). The following year the Diploma in Home Economics (DHE) was lengthened to also include two semesters of SEP activities. This was in direct response to LAC's new mandate as described above.

The SEP is a career-oriented, agricultural education curriculum that was initiated at LAC by the LAPIS Project contractor, American Ag International, in cooperation with the Lesotho Ministry of Agriculture (MOA). The objectives of SEP are:

1. To produce agricultural and cottage industries-related entrepreneurs who are trained to engage in or develop privately-based small scale agricultural and cottage industries enterprises. This includes crops, livestock, and home economics activities. The goal is to increase self-employment in Lesotho.
2. To produce highly skilled, career-oriented graduates who are trained to fill agricultural education and extension subject matter positions.
3. To produce competent, business-oriented technicians who can meet the demand for operators and managers of various private and governmental production and marketing schemes.

Since introduction of the new LAC curriculum and SEP in 1986, students at LAC have taken general agricultural or home economics courses for two years. Options for the third and final year included: to continue with the General Agriculture (DIA) or Home Economics (DHE) Programs and contract for SEP projects; select the Diploma in Agriculture Education (DIAE) Program; or move into the Diploma in Home Economics Education (DHEE).

3. DESCRIPTION OF SEP TRUST AND PROGRAM

3.1 SEP Trust

The SEP Trust Fund provides loan money to SEP student projects as described in the SEP Deed of Trust. The Trust was initially capitalized by USAID with US\$65,000 in 1989. Prior to this, 1987-89, USAID had deposited money into the Lesotho Cooperative Credit Union League (LCCUL), affiliated with the World Council of Credit Unions, which loaned this money to SEP students through the LAC Student Cooperative Credit Union. Because of various problems with LCCUL in this arrangement and the fact that interest income on loans and investments was benefiting LCCUL and not the SEP program, it was determined that a Trust should be established. Subsequently, LAPIS and USAID put considerable effort into formulating the present Deed of Trust, with the assistance of a consultant from California Poly Tech. University (USA) which has a similar student Trust. The Trust ultimately was registered on 19 December, 1989 (under No. 21780 in the Deeds Registry in Maseru; this Deed is included in the Annex, although several pending changes in the Deed that are not included).

The Trust is administered by a Board of Trustees which oversees the funds. The Board approves student project loan requests that have been previously approved by individual SEP supervisors and the SEP Committee; it determines the annual interest rate on SEP student loans; it decides where unloaned monies in the Trust should be invested; and makes recommendations on the long-term sustainability and development of the SEP program. The Board, as set down in the Deed, is comprised of the MOA Director of Field Services, the LAC Principal, the SEP Coordinator, a loan officer from the Agricultural Development Bank, and an economist from the National University of Lesotho. The Board meets at least twice per year.

The Secretary of the Board is the LAC staff person who also serves as the SEP Coordinator. He/she is responsible for calling Board meetings and taking minutes; producing, with the SEP Bookkeeper, quarterly financial reports and coordinating the yearly audit of the Trust (the Audit Report is included in the Annex).

3.2 SEP Program

As the procedures for implementation of the program are well documented elsewhere, this EOP report does not duplicate this information. Instead, a brief summary of individual SEP enterprises will be provided.

3.2.1 Livestock Enterprises

A summary of SEP projects shows that in general (with the 1991-1992 drought year being an exception) livestock projects have had the highest net worth (net profit plus retained inventory) at the end of each year. Six livestock enterprises were supported by SEP, including broilers, layers, dairy, beef production, fat lamb, and piggy production.

1. Broilers - Broiler production is a highly recommended agribusiness in Lesotho. It has relatively low start-up costs, high quality chicks and equipment are available, and

the demand for broilers will be high for many years. A high level of technical skill and good marketing strategy is required to realise top profits for this enterprise. Emphasis was placed management and close observation of birds, to facilitate maximum growth rates.

Each broiler house was managed by one student who raised 3 groups of 300 broilers during the project i.e. 1-8 weeks rearing and 2 weeks rest between groups. Detailed management records were kept on a daily basis. Day old chicks were purchased in Maseru. Projects normally started in June and ran through March. Local commercial broiler starter and finisher rations were used.

The majority of birds were sold live at 7-8 weeks of age and weighing around 2 kgs. Customers either came direct to the project site or had birds delivered to them by the student. A fixed price was used for the sale of the birds. Students located customers on a continuous basis, through advertisements over the radio, by personal contact with individuals, restaurants, hotels, etc. Projects were run so that birds reached maturity at intervals, thus students did not have to compete against each other for the available market.

Income from broiler enterprises ranged from a low of M1,387 to a high of M5,061 over the five year history of the SEP program.

2. Layers - Egg production is a good enterprise for Lesotho. High quality point-of-lay pullets are available, though demand often exceeds supply. Excellent cages and other equipment can be obtained, and building costs are moderate. However, caution must be exercised in the future, since the MOA believes that production has almost reached demand level. In addition, a regular egg glut occurs during summer months.

For SEP, two methods of egg production were practised: in battery cages or on deep litter. One student managed each of these systems. Electricity was not provided, so that conditions were similar to a village situation. Birds were purchased at point-of-lay (16-18 weeks) from the MOA poultry plant. They were housed early each June to maximize production before the following March, when projects ended. The deep litter system accommodated 350 birds, while the battery cages housed 250 birds. Locally available commercial feed rations were fed. Egg collections were made 3-4 times daily. Spent fowls were sold live just before the end of project in March.

Eggs were sold per dozen or per tray and price varied with egg size and customer demand. Attempts were made not to compete with egg sales from the LAC farm. Students spent much time locating market outlets and delivering eggs around Maseru.

Income from layer enterprises ranged from a low of M894 to a high of M4,515.

3. Dairy - Small scale dairy production is highly suited to Lesotho's socio-economic setting. Good quality foundation stock and equipment are available, and artificial insemination services are gradually becoming more widespread. However, start-up costs are relatively high. Demand for milk is high since Lesotho only produces a small percentage of its fresh milk requirements. Marketing centers are being introduced

throughout the country. In rural areas farm-gate sales are the most common form of marketing.

SEP strove to give students experience in managing a small dairy unit. Four students could be accommodated, with each keeping two cows. A hand milking system was utilized, as this is the method used by most Basotho farmers. Dairy projects began in June/July, with the purchase of in-calf dairy cows. Cows calved within four weeks of purchase, and the project ran until the following March. Students mixed their own rations by hand to supplement pasture grazing. Calves were normally sold at six months of age. At the end of the project, cows were either sold or purchased by the students to continue the enterprise after graduation.

Milk was sold in three ways: direct to the public at the LAC tuck shop; on contract to schools/colleges in Maseru; and to Maluti Maid Dairy near Maseru. Students were responsible for developing their own markets.

Income from dairy enterprises ranged from a low of M1,017 to a high of M6,436.

4. Beef - Profitability from this enterprise varies greatly from year-to-year in Lesotho, largely because of the unpredictable nature of RSA beef prices. Hence, this enterprise has an element of risk, which is increased by the high cost of purchasing feeder cattle. Over the long term, the enterprise is likely to be profitable, but the producer must have the ability to sustain losses in off years. This enterprise requires that the entrepreneur have a good capacity to judge animal quality when purchasing feed animals.

SEP provided students with skills on selecting feeder animals, making contacts with RSA producers of these animals, developing feed rations, managing a small feedlot, and marketing the animals. Up to four students could take a beef project per year. Students began in June, with the purchase of young feeder cattle. Live weight of these animals was normally in the vicinity of 150 kgs. Upon delivery, animals were weighed, dewormed, treated for external parasites, and castrated. Thereafter, weighing was carried out weekly and growth rates were closely monitored. During the project, each student could fatten three groups of cattle.

Live cattle were transported to the National Abattoir for hygienic slaughter. Normally, cattle were sold to local butchers, and marketing of this high-quality product did not present a problem. The financial success or failure of the beef projects depended greatly on the price changes between purchase and sale of the animals.

Profitability of this volatile enterprise ranged from a low of M614 to a high of M9,574.

5. Fat Lamb - During the first three years of LAPIS, field trials were conducted on this enterprise to assess its economical viability. Three successful trials indicate this enterprise has much potential. Demand for quality lamb is high, and marketing is not a constraint. However, start-up costs are high, requiring substantial capital to develop suitable feedlot facilities. In addition, at this point in time, mutton breed lambs are currently only available from RSA producers. Access to these animals requires contact with RSA farmers and a good source of credit.

Fat lamb enterprises were carried out during the last two years of LAPIS. Up to two students per year were allowed to take the enterprise. Lambs were purchased from RSA farms, providing students with valuable contacts with suppliers. Lambs weighed 25-30 kgs at purchase and were fattened to approximately 45 kgs. On arrival the lambs were weighed, ear tagged, dewormed, vaccinated against pulpy kidney disease, injected with vitamin A and sorted into groups. Initially they were placed on a high-roughage diet. The fattening ration was gradually introduced. Lambs were weighed weekly. Up to 5 groups of lambs could be fattened during the life of the project.

Until LAPIS began raising lambs for research purposes, nearly all lamb sold in Lesotho was imported. Hence, demand for the product was high and students found steady markets. Lambs were sold to local butchers in lots or sold individually at the project site. Lambs going to the butchers were processed at the National Abattoir.

Paper profits for this enterprise were in the neighborhood of M2,000. However, actual profits were substantially higher, but difficult to document because SEP participants in this enterprise pocketed profits with accounting for them with the trust fund.

6. Piggery - Pig production is a specialized operation with a limited market. A farrow-to-finish operation requires a high level of technical skill and labor costs are high. Housing and equipment is expensive. For the more simple enterprise of raising fatteners only, the shortage of suitable weaners can be a severe problem. The enterprise requires a dedicated entrepreneur whose enterprise is in a good location and whose sources and market are guaranteed. In such circumstances, the enterprise can be highly profitable, though the changeable nature of pork prices is an inherent risk.

SEP aimed to provide students with experience of raising pigs under commercial, housed, conditions. This was in line with the MOA's stated goal of increasing production of non-ruminants which impose little demand on scarce grazing resources. Two students could take pig projects per year, and they normally combined to form one joint project. Students had three production options: keep sows and litter and sell the weaners at 5-6 weeks of age; same as above, but raise litter to pork weight; and purchase weaners and raise to pork weight. In options 1 and 2, 6 sows were purchased close to farrowing. For the last option, two groups of 50 weaners were raised during the project.

Commercial butchers were the major market outlet. Pigs were taken to the Maseru abattoir for hygienic slaughter and cutting. Carcasses were later collected and delivered to the clients. Offal was sold separately. Students also sold and slaughtered animals for individual customers.

Income from this enterprise ranged from a low of M1,024 to a high of M7,297.

3.2.2 Crop Enterprises

The LAPIS Project provided assistance to LAC in the development of an irrigation system for croplands and the renovation of an old orchard. Six irrigated fields were made available for vegetable production.

1. Vegetable Production - Most vegetables sold through Lesotho's retail outlets are imported from the RSA. Irrigated production technology has only recently been introduced, and management capabilities of most Basotho farmers is weak. Marketing channels poorly established because of the highly efficient and established market outlets in the RSA.

SEP sought to prepare students for becoming small-scale vegetable farmers or to fit in as employees for the larger irrigated schemes found throughout the lowlands. Six .65 hectare sites have been set aside for SEP students. Vegetable production has been a popular enterprise, with demand often being greater than the number of fields available. Vegetable projects began in June or August, depending on whether the student plants a winter crop such as peas. Students normally plant twice: once in the winter and once in the spring. Projects end in February or March.

Marketing of vegetables was facilitated by the heavy demand from nearby Maseru. The majority of crops were sold at farm gate. Women traders or wholesalers in trucks came the fields to pick and pay. Some vegetables were loaded into the college truck and transported 3+ km into town.

Profitability ranged from a low of M894 to a high of M5,043.

2. Orchard Production - Fruit production is, for the most part, a poorly developed enterprise in Lesotho. The vast majority of fruit consumed in the country is imported from the RSA. This enterprise requires long-term investments (six-ten years to recoup initial investments), a strong technical foundation, good management skills, a reliable source of water. In addition, fruit production in Lesotho is risky because of strong spring winds, unseasonal frosts, and frequent hail storms.

SEP provides students experience in producing and marketing deciduous fruit while managing a small irrigated orchard with both bearing and non-bearing trees. Though the project to date has proved to be one of the least profitable SEP projects, it is important for the reason that commercial fruit production is expected to have an important future in Lesotho. Up to two students per year were accommodated in this enterprise. This SEP project has been different than others: more than half of the income realized by students came from managing the non-bearing portion of the orchard. The remainder came from fruit sales. Because of low fruit production, intercropping with vegetables was initiated in 1991. The project began in June-July when winter pruning and new tree planting was carried out. Harvesting began with stone fruit after Christmas and ended with apples in March.

Most of the fruit was marketed on campus through the campus tuck shop by individual piece, and by bag to individual students and staff.

Profitability ranged from a low of M186 to a high of M2,383.

3. Seedling Production - Quality vegetable seedlings are routinely in short supply during peak planting periods. As a result, demand is high. Success in this enterprise requires a penchant for detailed planning, high management skills, a controlled growing

environment, and a good means of advertising the product. In addition, transport is required to pick up inputs from the RSA, which are not readily available in Lesotho.

SEP gave students experience in producing and marketing seedlings, and to a lesser extent potted plants; it also provided experience in managing a commercial greenhouse. The first project began in 1988-1989, with six students in total having participated in this enterprise. A maximum of two students per year could be accommodated. Students generally began growing cabbage and other cool season seedlings in July, followed by tomato and other warm season plants a month later. Without the heated greenhouse, this production would have been set back by about six weeks for tomatoes. Students often started seedlings in small-celled trays using a sterilized commercial medium, then transplanted them larger-celled trays containing a less expensive home-made medium.

The better students generally negotiated one or more moderately large written or verbal contracts before starting planting. These were with Basotho Cannery, area-based vegetable production projects, Garden Centre, the OK Bazaar, and large farmers. Seedlings were also sold seasonally out of the greenhouse to walk-in customers.

This was the most profitable crops enterprise with income ranging from a low of M1,240 to almost M9,500 during the drought year of 1991-92.

3.2.3 Cottage Industries

Baking and sewing enterprises are potentially more profitable than they have been at LAC. These SEP projects did not receive LAPIS support in staff training, technical advice, nor infrastructure development. Overall, Cottage Industries was the least profitable of all SEP projects, with sewing being slightly more profitable than the bakery projects. As LAPIS did not specifically support these enterprises, this report will not expand upon them.

3.3 SEP Enterprise Index and Rankings

An index for ranking LAC enterprises is presented in Table 40. This index was intended to serve as a starting point when evaluating potential enterprises, and to be used as a checklist of criteria to be considered when starting an operation.

The index includes ten major valiative headings, with each broken into several criteria, the weightings they are given, and the actual values assigned - which are subjective and based upon the experiences of the LAPIS TAs and SEP enterprises at LAC. The index does not assume equal size investments nor are all the criteria directly economic in nature, eg. resource conservation, commodity acceptance, etc. A low scoring of certain criteria such as "government acceptance" or "approval by lenders" can in themselves curtail the possibilities of particular projects getting started.

It should be noted that when certain criteria do not apply, then they are not scored, and thus the final value calculated at the bottom of the table is a percentage of the maximum possible points. Below this is a ranking of these percentages. The scoring to obtain the comparative

rankings of these diverse projects was done by several people. Therefore, it is more valid to look at separate criteria scores, rather than the final percentage or rank.

Table 40: Profitability and Ease of Establishment Index For SEP Projects, Based Upon Four Years (1987 - 1991) of Implementation Experience.

Criteria	Layers	Brod- ers	Bed	Dairy	Pigs	Lamb	Bake- ry	Sew- ing	Veg.	Orch- ard	Seed- lings	
Potential Profitability - in short run (20) - over long run (40)	8/20 30/40	16/20 34/40	8/20 30/40	16/20 36/40	12/20 28/40	11/20 30/40	12/20 28/40	8/20 30/40	16/20 28/40	4/20 34/40	12/20 20/40	
Financial - approval by lenders (15) - max. financial outlay (15)	12/15 8/15	12/15 12/15	10/15 4/15	12/15 8/15	10/15 7/15	9/15 8/15	8/15 8/15	11/15 10/15	11/15 12/15	9/15 9/15	11/15 13/15	
Enterprise Acceptance - by entrepreneurs (10) - by community (5)	9/10 5/5	9/10 5/5	5/10 3/5	8/10 4/5	5/10 3/5	4/10 2/5	3/10 3/5	7/10 4/5	8/10 5/5	3/10 4/5	3/10 4/5	
Infrastructure Requirements - buildings (15) - irrigation equipment (15) - fences, kraals (5) - cottage industry equip. (15)	8/15 5/5	11/15 5/5	7/15 1/5	8/15 2/5	7/15 4/5	6/15 2/5	9/15 8/15	11/15 10/15	13/15 8/15	13/15 5/15	5/15 12/15 11/15	
Natural Resources - land (10) - water (10) - resource conservation (5)	9/10 7/10 4/5	9/10 9/10 4/5	7/10 5/10 3/5	6/10 5/10 3/5	8/10 5/10 4/5	8/10 5/10 4/5			2/10 2/10 2/5	2/10 4/10 4/5	7/10 6/10 5/5	
Variable Inputs - feeder animals (10) - fertilizer, seeds (5) - containers, packaging (5) - labor (5) - tillage (5) - transport (5) - utilities, fuel (10) - fabric, bakery goods, etc. (10)	6/10 3/5 3/5 6/10 8/10	7/10 5/5 4/5 6/10 5/10	2/10 5/5 4/5 7/10 9/10	5/10 4/5 2/5 6/10 5/10	3/10 4/5 4/5 6/10 6/10	3/10 4/5 4/5 6/10 8/10	3/10 4/5 3/5 4/10 4/10 7/10		4/5 3/5 1/5 6/10 7/10 4/10	1/5 3/5 2/5 1/5 2/5 1/5	2/5 3/5 2/5 4/5 3/5 3/5	4/5 2/5 2/5 4/5 3/5 4/5
Demands on Government - extension services (10) - vet. services (10) - acceptance by government (10)	7/10 7/10 10/10	5/10 5/10 10/10	8/10 8/10 8/10	8/10 5/10 5/10	6/10 6/10 8/10	8/10 9/10 5/10	7/10	7/10	5/15 10/10	8/15 8/10	12/15 8/10	
Product Marketability - processing, storage (10) - competition, seasonality (10) - export potential (5) - by-products (5) - market location (10)	6/10 3/10 2/5 2/5 6/10	5/10 4/10 2/5 2/5 6/10	5/10 7/10 3/5 2/5 7/10	4/10 7/10 2/5 2/5 6/10	5/10 5/10 4/5 2/5 5/10	5/10 9/10 3/5 2/5 5/10	4/10 7/10 3/5 4/10	6/10 6/10 6/10	4/10 3/10 2/5 5/10	6/10 4/10 3/5 7/10	2/10 3/10 3/10	
Technology Level - entrepreneurial skills (10) - availability of O&M assist. (10) - availability of parts (5)	6/10 7/10 4/5	4/10 6/10 3/5	6/10 9/10 4/5	4/10 6/10 4/5	4/10 6/10 3/5	7/10 9/10 4/5	4/10 4/10 2/5	4/10 6/10 4/5	4/10 4/10 4/10	2/10 6/10 6/10	6/10 8/10 8/10	
Risk Factor - climate (10) - theft (10) - pests, disease (10)	9/10 5/10 7/10	5/10 5/10 4/10	8/10 7/10 8/10	4/10 7/10 4/10	7/10 7/10 5/10	9/10 5/10 7/10		5/10	4/10 4/10 5/10	2/10 3/10 4/10	4/10 5/10 6/10	
Percentage of Possible Points	67.3	69.5	63.3	64.5	60.0	63.8	56.3	63.7	52.7	53.6	63.0	
Index Ranking:	2	1	6	3	8	4	9	5	11	10	7	

3.4 SEP/LAC Follow-Up Program

3.4.1 Background

Between 1987 and 1992 five groups of students completed SEP at LAC. A total of 90 students completed the activity, and all but two ran financially successful projects. During that same time only eight SEP students were able to start their own agricultural or cottage industry enterprises after graduation. The reasons for this situation included:

- Problems in obtaining loans for start-up purposes. Lending organizations in Lesotho were not fully aware of the experience being gained in SEP nor were convinced that such an experience justified a loan.
- Difficulties in obtaining appropriate sites with adequate soil, water, markets etc.
- Inadequate guidance in the field for would-be entrepreneurs. District Agricultural Officers and their staff were not fully aware of SEP and did not always feel a commitment to assist such graduates.

Students participating in SEP did not face these problems. The loan fund administered by SEP Trust ensured that, after approval of the enterprise budget and contract, the required funding was be available at commercial rates of interest. Sites, with appropriate infrastructure, were available on a rental basis. An experienced supervisor was allocated to each student and provided guidance and advice.

A primary objective of SEP was to enable aspiring entrepreneurs to establish themselves in their own business and assist the country towards self-sufficiency. Since few students have started their own enterprises for the reasons mentioned above, the MOA, LAC and USAID determined that assistance from LAPIS Project was required to assist students completing SEP. The concept of a Follow-Up Program was developed and three persons were assigned to the program. These were: the LAPIS Project Agricultural Business Advisor, the LAC Extension Educator, and a PCV who is part of Peace Corps' Small Business Development Program.

In determining the direction that support should take for SEP/LAC graduates, information was used from informal efforts to assist graduates prior to the Follow-Up program. Also, the Follow-Up Team, in 1991 and 1992, asked for input from SEP students and recent graduates through the "SEP Student Career Questionnaire".

3.4.2 Follow-Up Program Description

The two major emphasis of the Follow-Up Program were: To provide assistance to graduates in the field and to develop a model graduate support program that can be sustained after Project termination. More specifically, these goals were pursued in the following areas:

1. Financial Institutions and Donors - Contacts were made with financial institutions and donor agencies to facilitate approval of loans to help SEP graduates begin entrepreneurial activities. Institutions contacted included:

Lesotho Agricultural Development Bank (LADB).

Continuous negotiations were conducted with LADB. In January 1991 the Managing Director of LADB was invited to address the staff and students on the support which graduates of SEP might expect from the Bank. In a positive speech the pledge was made that LADB would willingly provide loans to those graduates who were recommended by LAC. No collateral would be required and there would be few constraints even for relatively large loans.

On that basis several students wrote proposals for loans of between M50,000 and M100,000. Protracted discussions ensued with LADB officials in which the Follow-Up Team attempted to assist the graduate to secure the loan. In the initial stages graduates were instructed by LADB to go alone when meeting Bank staff. Later the Follow-Up Team was permitted to accompany the graduate if so desired.

Soon after the Follow-Up Team was in place, LADB reorganised their senior management staff. During this two-month period all loan requests were suspended. A new Director of Loans was appointed and several meetings were held with him and the Managing Director. In these meetings the team was informed that LADB had changed the conditions under which SEP graduates might receive loans, in particular:

- Loans would be a maximum of M10,000 per person. This was later changed, after discussions, to M20,000 per person. A project with two partners could request a maximum of M40,000.
- Collateral of 5% of loan requested would be required. Other tangible items of collateral would be favourably considered when loan applications were made.

These changes in lending policy had the effect of negating much of the work done by graduates, over several months, to write proposals in excess of the new loan limits. Several other smaller loan requests were submitted but all were rejected for various reasons, despite strong recommendations from LAC staff supervisors. Five of the graduates who wished to begin their own business were later offered, and accepted, employment by LADB. To date only one small loan (M6500) has been obtained from LADB by a 1990 SEP graduate.

Lesotho Bank

Discussions were held with Lesotho Bank on loans for graduates. The Bank administered loans through the Small Scale Industries Project (SSIP) which was funded by United Nations Development Program. Meetings were held with the SSIP Chief Technical Advisor. It was agreed that SSIP would fund cottage industry enterprises such as catering businesses and textiles i.e. those which were 'processing' raw materials. Loan applications were to be made through one of several Agents appointed by SSIP. Several students applied for loans through this channel and were still awaiting results at the EOP.

Two major restrictions existed with SSIP: It would not consider loans to those who were not already in business, and it would not lend to basic agricultural enterprises. The Follow-Up Team managed to have regulations amended so that those wishing to start cottage industries could be considered. The Team also argued that those wishing to begin agricultural enterprises should also be permitted to apply for loans. This view was supported by the Manager of Lesotho Bank. It was hoped that a further amendment would allow this larger group to be considered for loans in future.

Development Bank of Southern Africa (DBSA)

Several meetings were held with DBSA to determine whether they would be prepared to support SEP graduates in the field. Included in the meetings were the Chairperson of SEP Committee, SEP Coordinator and other LAC staff as well as the Follow-Up Team. One of the objects of discussions was to explore whether DBSA might be willing to provide a donation to establish a fund from which graduates could borrow to begin their businesses. After negotiations DBSA decided that they were not able to provide such funding. However they remain open to requests for technical assistance.

Lesotho Building Finance Corporation (LBFC)

Discussions were held with the Marketing Manager of LBFC. It was established that LBFC would be willing to provide loans for the erection of business properties, which included buildings for agricultural purposes and restaurants. The upper loan limit was M200,000. Students wishing to apply for loans required:

- A lease agreement
- 20% deposit
- A building plan with three quotations
- An operating account with LBFC

Interest rates at LBFC are lower than those charged by banks, and in future some graduates may consider borrowing from LBFC.

2. Liaison With DAOs - It was essential that the Follow-Up Team work with the District Agricultural Offices in order to assist new entrepreneurs in the field. The District staff with their local knowledge would often be in a position to assist on a regular basis.

A series of meetings were held with District Agricultural Officers (DAOs) and District Extension Officers (DEOs) in each District in which graduates were operating. The Districts visited were Berea, Leribe, Mafeteng, Maseru and Quthing.

At the meetings a brief history of SEP was given and some documentation handed over. This was followed by a description of the Follow-Up Program. It was emphasised that the Team desired to work closely with District Staff and would often seek advice from them on local conditions. The Districts were encouraged to help graduates as they would other farmers and not to consider them as a separate group. All meetings were harmonious and DAOs agreed to work with the graduates and Follow-Up Team.

During the year no problems occurred with District Offices and a great deal of support and advice was given to graduates. As business plans developed, Subject Matter Specialists in the Districts were contacted and enlisted to assist a specific project.

3. Site Visits and Loan Assistance - During the year many graduates were visited at their sites. The emphasis was on enhancement of their technical abilities, agricultural and business management skills and improvement of record keeping. Detailed documentation was developed on each graduate and their enterprise. In addition, many graduates visited the Follow-Up team at LAC to seek advice and assistance on preparing loan applications. A total of 14 SEP graduates received assistance through site visits.

3.4.3 Linkages Developed

Linkages were established with the parastatals, private sector, agribusinesses and lead farmers. These included:

1. Internship Program Contacts - The Follow-Up program developed plans for an Internship Program which was intended for graduates who wished to gain more experience in their chosen field or were waiting to acquire more capital, or a site, before starting their own enterprise.

The concept was premised upon attaching SEP graduates to a sponsor for a period of up to 12 months. Sponsors could be experienced farmers, agricultural organizations, parastatals, etc. It was expected that the graduate would be placed in a position which emphasized hands-on experience, with the sponsor benefiting from the inputs of a person with some practical skills, experience of intensive production, and who had modern ideas after three years at LAC. The sponsored graduate would benefit from further experience and new contacts in his/her area of interest.

The sponsor was expected to pay a reasonable salary. In return the intern, through a contractual arrangement, was to become a temporary "employee" of the sponsor. The person taking an Internship would be monitored by selected staff from LAC through regular visits. This was intended to ensure the Internship was of benefit to both the employer and employee.

During 1991-92 two graduates expressed interest in taking an Internship, and were assisted. The first intended to gain more experience in broiler production and on her behalf the manager of a commercial broiler farm was contacted. The manager was willing to take the person but was not willing or able to pay any salary. Because of this the graduate did not feel able to accept the Internship.

A similar situation arose with the second graduate who had taken a beef fattening project in SEP. He wished to be attached to the National Abattoir and Feedlot Complex (NAFC) to gain more experience of beef production. The manager of NAFC was contacted and was willing to accept an intern. This was also approved by NAFC Board of Directors, however, under their regulations, it proved impossible to pay any salary, particularly as other workers at NAFC were being laid off. The graduate was unwilling to work without a salary.

2. *Small Scale Irrigated Vegetable Project (SSIVP)* - This project was funded by European Economic Community and the Irish Government, and administered by the DAO of Leribe and Butha Buthe Districts. One of the project sites was at Ha Ranku near Leribe which had a fully equipped overhead irrigation scheme and level, fertile soil. Farmers owning the 0.2 acre plots were willing to rent to graduates for M100 per six-month season plus a small charge for pumping water. An initial meeting was held with the DAO and DEO of Leribe District who gave approval for the idea, and the DEO later spoke to the farmers at Ha Ranku. The Follow-Up Team made three visits to the site and met the Manager and the local committee. The first graduate who intended to rent four sites did not follow through with the opportunity. Several 1991-1992 SEP graduates intend to rent plots at Ha Ranku.

3. *Lesotho Highlands Development Authority (LHDA)* - The Follow-Up Team was approached by Mrs M.A. Morojele, *Liaison Officer for LHDA*, to see whether graduates could be encouraged to begin enterprises at Katse Dam site. There is a growing workforce at Katse which will be there for several years. The Agricultural Business Advisor was invited to become a member of the Forward Planning Committee for Thaba Tseka District and several meetings were attended. The TA visited several possible production sites for livestock and crops. The Livestock Improvement Centre which is 10 km from the workcamps, was offered as a site for livestock production. The sites for crop production would require irrigation systems. LADB was asked to support loan applications for Katse area but expressed strong reservations. The harsh climate would pose managerial problems and vegetables would need to be produced under protection, such as in greenhouses. No graduates have yet been willing to work at Katse.

4. *Local Initiatives Support Project (LISP)* - Contacts were made with LISP since they had openings which may have been of interest to graduates. The Team was asked to circulate a job description for two posts of Irrigation Technician. These were sent by post with other announcements sent to graduates.

5. *German Agro-Action (GAA)* - This organization contacted the Team from time to time in an attempt to locate graduates to fill positions, mainly in the area of Extension. Information on these possible jobs was also forwarded to graduates.

3.4.4 Graduate Meetings and Networking

During the year bi-monthly meetings of graduates were held, generally on weekends. The meetings provided opportunities for feedback from those in their own businesses and those working for others but wishing to begin entrepreneurship. Networking at the meetings was seen as a useful tool for mutual improvement and exchange of ideas.

3.4.5 Curriculum Development at LAC

Follow-up activities during the year indicated that graduates had insufficient knowledge of business planning and proposal writing for loan application purposes. It also became clear that the process of obtaining loans from financial institutions is a lengthy one and can take several months to complete.

In an effort to overcome these and other problems a business course for all SEP students, while still at LAC, was developed. With the approval of LAC Director of Studies the course was taught as part of the sixth (final) semester at LAC. It introduced SEP students to various business management concepts, and guest speakers from the business world were invited to address the group.

In the course information and guidance was provided on how to write a loan application, and the background information which should be supplied. This led into enterprise planning and proposal writing. By the end of the course, those wishing to start their own businesses had written their proposals and were ready to approach lending organisations. This should greatly accelerate the loan application process for the SEP group graduating in 1992.

3.5 Problems Facing SEP

The following are the most important, general problems facing the long-term sustainability of the SEP program. Some of these are within the control of LAC, others are a result of the political, socio, and economic environment in which LAC and SEP must operate in the foreseeable future.

3.5.1 LAC Budget and Staffing Limitations

The monetary restructuring that the GOL is undergoing has been very hard on LAC. There is insufficient monies to adequately maintain equipment or infrastructure, conduct in-service trainings, nor to purchase necessary supplies on a timely basis. Transportation needs and maintenance of the LAC/ARD irrigation system can put a financial strain on LAC after LAPIS support terminates.

Requests for new, replacement or upgraded staff positions have been rejected in recent years. They include teaching staff, secretarial staff, and drivers. The college is dependent upon seconded MOA staff and Peace Corps Volunteers to assist with many activities, including SEP supervision. Staff moral is fair, but possibly the majority of the young, recently trained staff are looking for better paying jobs elsewhere.

3.5.2 Staff Supervision

As a result of the above problems, sufficient SEP supervision is lacking, especially in the Animal Science Department. Home Economics has a staffing problem also, but this problem has been temporarily relieved by two PVCs. Animal Science, which conducts approximately half of the SEP projects each year, currently has one staff person in the department. Some supervisors are less than enthusiastic about the increased responsibilities that SEP supervision requires, and financial monitoring of projects, among other things, has suffered.

3.5.3 Student Performance

Up until the present year, SEP was been fortunate in having only one project terminated early (in 1987) and one losing money (1991). At least one project is expected to lose money in 1992. During the past two years, problems have arisen that the college administration and staff are vigorously trying to resolve. Students in 1991 went on strike for three weeks over

non-SEP issues, but projects suffered during this period as did their rapport with college staff. A few of these students were also thought to have used some funds (loans or sales revenues) for non-SEP purchases. In 1991-92 these problems have reoccurred.

3.5.4 NUL Faculty of Agriculture

In 1991 it was anticipated that LAC would merge with the Faculty of Agriculture (FOA). This has not happened although a small FOA B.Sc. program is being conducted at the NUL campus in Roma. There remains uncertainty as to what will be resolved by the GOL concerning the FOA. The LAC diploma programs would be affected if the degree program were located on the LAC campus as has been envisaged. It is anticipated that the B.Sc. program would include an SEP-type practical in the final year.

PART THREE:

**THE LAPIS PROJECT IMPACTS
AND RECOMMENDATIONS**

A. THE LAPIS OVERALL IMPACT

1. END-OF-PROJECT STATUS

Development of the institutional capability of the MOA was the primary objective of the project. The MOA was to implement programs integrating the production initiatives, research and training necessary to advance the targeted types of production. LAPIS input, comprising technical assistance, training and commodity support, was to build the institutional capability of counterpart MOA organizations to implement the programs planned under LAPIS in a sustainable manner.

The past six years have been a dynamic time in the institutional development of the MOA, characterized by case-specific and systemic advances as well as persistent problems. Government financial support of the MOA was low and financial planning and budgeting capabilities were not strong. Improvements in these capabilities were emerging, while donor financial input has increased to permit greater budgetary flexibility.

Propensity for change in most MOA departments was high. The functions of the ministry and its component organizations became more clearly defined, and responses to opportunities to better serve the changing needs of the agricultural sector were reflected in new, more appropriate ministry programs.

While donor efforts still play too large a role in defining general directions for change and identifying and addressing specific opportunities for pursuing it, initiatives to make such efforts more consistent with the ministry's designs started to emerge.

The ministry's inventory of physical capital grew, but its maintenance was problematic because of budgetary and programming limitations. Likewise, human capital in the form of trained, professional staff increased, but remains inadequate. Mobility in many administrative positions and inadequate accountability flowing upward through the ranks and support flowing downward, and excessive demand for administrators' involvement in activities outside their essential duties were constraints. The ministry's recent efforts to improve its internal structure through decentralization, creation of departments and other structural changes have not yet manifested effective, integrated working relationships.

Some of the ministry's more dynamic programs have developed from doctrine formulation to programming. Good examples are the national strategy for vegetable marketing, the range management area program, the entrepreneurship curriculum at LAC, and the emerging home garden and nutrition program of Nutrition Division.

Linkages to facilitate essential interchange among MOA organizations, between the ministry and other elements of the agricultural sector, particularly farmers, and between the ministry and pertinent organizations outside Lesotho have improved through the past six years. However those linkages were established only recently and thus need to be fully institutionalized.

Efforts to acquire substantive and managerial technology flourished during the implementation of the LAPIS. However, managerial capability remains a constraint. Improvements in

intermediate products resulted in increased institutional outputs from the MOA. Generation of current services, increased quantitatively and qualitatively. The influence exerted by the ministry to increase demand for its services and expand its base of support increased more or less proportionally.

2. PROJECT IMPACT

The blend of TA, training and commodity support provided through the project varied among programs, but these elements were integrated in each to foster the institution-building process. The TA team served largely as a technology transfer mechanism, conveying substantive technology through counterpart relationships, consultancies, in-service training activities and written materials of various types. TA was also a key factor in transferring managerial technology to counterpart administrators. Project's contributions to leadership and program development, planning and programming, and establishment and maintenance of linkages were important across the board. Cumulatively, these TA efforts were a major factor in improved generation of current services and MOA's overall influence. Project-supported degree training had a significant impact on human capital. Degree-level and in-service training furthered acquisition of substantive technology and had additional, spin-off effects on leadership and managerial technology. The formidable amount of farmer training supported by the project was a central aspect of the current services generated through the term and a factor in increased institutional influence.

Project commodity support contributed most in the realm of inputs, temporarily alleviating budgetary constraints and demonstrating the potential of supported programs. Commodity support was also an important factor in counterpart organizations' increased acquisition of technology.

By systematically applying these three types of inputs; TAs, training and commodity, the LAPIS Project has been successful in fostering the institutional development of the MOA organizations implementing supported programs. Given the scope and magnitude of project efforts and the functional relationships linking them, these achievements have had positive impacts on the institutional capability of the MOA as a whole and have accounted for many of the ministry-wide advances.

3. SUSTAINABILITY

The LAPIS Project was unique in its scope, structure and magnitude. Attainment of its purpose of macro-level improvements in production and employment may not be evident at this juncture, but progress has been made in its major thrust, the institutional development of the MOA. Institutional development is a process; key elements of the process, in terms of ministry functions such as research and extension, and internal structure, doctrine and program, linkages and management were less well developed than the project's planners apparently thought. As a result, more project inputs were directed toward development of these individual elements than in systematically integrating them in the overall institutional development of the ministry. Significant advances have been made, and an important, complementary project contribution has been diagnosing current constraints to the ministry's development as an institution and identifying solutions.

A number of the most severe constraints could not have been rectified by the project, at least not during its limited tenure. Actual budgetary constraints, could not logically have been alleviated by the project. Similarly, problems with public service procedures, attrition of professional staff, and mobility in leadership positions have largely been outside the LAPIS mandate.

Several important constraints which could have been addressed by the project were not, because of shortcomings in the project design or decisions made by donor, ministry or contractor administrators. The generally low emphasis placed on policy development and strategic planning activities during the initial years of the project; the shift in MOA doctrine to target large-scale schemes rather than the small-farmer enterprises upon which the LAPIS-supported vegetable production program was predicated; and the lack of efforts to address the ministry's extension function from an institution-building perspective fall in this category. Some constraints pertaining to management and programming, and inadequate infrastructure were addressed by the project. Some persisted because they were not evident during the project design and thus were addressed late or because they proved too difficult to overcome given the resources available.

Institutional development takes time. The Kingdom of Lesotho, its current government, the MOA and several ministry organizations are all relatively young. Most project-supported programs are new. Much new technology and trained personnel are only recently in place, and the term of the LAPIS Project, while long by some donor standards, has been brief relative to its mandate.

Similar conclusions regarding sustainability carry through from individual to collective programs: The institutional capability of the implementing organizations has improved through the term; systemic and specific constraints persist; and the actions which must be taken to sustain the programs have generally been clarified. When LAPIS support ends, several programs will likely sustain and build upon current momentum. Others will probably be reorganized, then continue to evolve, and some may decline.

B. DEPARTMENT OF LIVESTOCK SERVICES

1. RANGE MANAGEMENT SUPPORT PROGRAM

1.1 Program Summary

The program was expanded over the relatively brief term of support by LAPIS. Operations were maintained and refined at the two RMAs (Sehlabathebe and Ha Ramatseliso/Ha Moshebi), and solid groundwork was laid and built upon in establishing RMAs at Pelaneng/Bokong and Senqabethu/Mokhotlong and sites for two new RMAs were selected. In addition, progress was made in implementing a significant body of policy and associated strategies developed to set the legal and institutional stage for the program.

Support of the RMA Program since its inception in 1981, was provided by the same prime contractor and many of the same TA personnel. Conclusions drawn herein should be interpreted in the broader context of the overall USAID effort.

The RMA Program is worthy of the acclaim it has received for making solid headway toward improving management of communal grazing lands. The RMA concept and the experience gained can be characterized as poised between a promising pilot effort and a full-fledged, viable approach to reversing the declining trend in Lesotho's range condition and productivity. The existence of a cohesive and comprehensive body of supporting policies and regulations was a formidable advantage. The assistance comprising TA, training and commodity support-provided under the LAPIS Project since the LCRD Project ended, was instrumental in consolidating a solid foundation for the program and in charting the course for future development.

While RMD's endeavors must continue unabated, the effort should be shouldered by a broader range of players. The rather unique advantage is that the lines for continued action are relatively clear. The ramifications are great: Lesotho's most menacing ecological threat will be overcome; the program will serve as a model for approaching other aspects of the nation's developing agricultural economy; and the experience will provide a landmark example of how this intractable problem can be dealt with for those in similar situations elsewhere. The ten year Community Natural Resource Management Project (CNRM) funded by USAID and started in May 1992, will build on LAPIS and LCRD's efforts and attempt to increase program sustainability.

Leadership at DLC and RMD have been strengthened through training and good counterpart relationships. The doctrine of developing community participation in management of shared communal rangelands was reflected in development of step-by-step guidelines for mobilizing participant input and involvement in management and in allocation of more time at the start-up phase of RMA establishment to accommodate this process. The division's administrators made progress in the areas of planning and programming to avoid barriers to the program's implementation before they are encountered. Vital linkages were established or strengthened with entities such as the Principal Chiefs, the Ministry of the Interior and Chieftainship Affairs, the Ministry of Justice and the District Agricultural Offices whose participation and

support of the program are essential to its expansion and sustainability. The acquisition of useful technology, especially in the realm of computer hardware, software and training, has been substantial.

In terms of output, four RMAs are operational and two new sites were identified as noted above. The division has had complete responsibility for management of the Sehlabathebe and Ha Ramatseliso/Ha Moshebi RMAs, as well as for all maintenance and operational costs, since June 1990. Project budgetary support and technical assistance to headquarters staff and RMA managers continued through the project for the Pelaneng/Bokong and Senqabethu/Mokhotlong RMAs. The goal of enlisting a sense of community ownership and managerial responsibility for these RMAs is becoming a reality. The recently designated two new sites are adjacent to the Ha Ramatseliso/Ha Moshebi and Pelaneng/Bokong RMAs, where both local interest and existing facilities will facilitate the development process.

The influence exerted by the RMD as a result of the program is substantial. Its perceived success has generated the interest of communities in other areas of Lesotho and of other organizations attempting to resolve similar problems elsewhere. The essential local support base expanded, as reflected in the number of requests by government officials for tours of the RMAs, by GOL's increased budgetary allocation to the division, and by other local and regional development project's expressed desire to emulate the concept and approach.

1.2 Program Constraints and Impact

USAID support of RMD and the RMA Program in particular beginning in 1981 was the major factor in the success achieved to date. As noted, the form and function of this support were well established before LAPIS took it over. The general conclusion is that project assistance was instrumental in maintaining the momentum of the RMA Program through the reference period: required resources were provided as needed; the schedule for RMA establishment and support met; and vital linkages were built upon to place the program in an appropriate institutional milieu.

Good working relationships among TA specialists and counterparts effectively melded outside expertise with local knowledge to improve program implementation. Progress in soliciting herd-owner support, consensus and participation in the initial phases of RMA establishment is noteworthy. Advisory assistance to the DLS/RMD leadership facilitated significant progress in several key administrative areas, e.g. refinement of range and livestock policy and regulations, assessing future needs and presenting them to the MOA, GOL and the donor community, planning and programming to maintain the program, and improving the integration of the division into the DLS.

Project-funded training, both degree-level and short-term, built the technical and managerial expertise of division staff and grazing association membership. Further, the TA presence helped integrate returning trainees into the division's operations. Project financial and commodity support permitted the division to maintain a high level of activity in implementing the program. Provision and maintenance of vehicles and computer systems and hiring local personnel to fill temporary staffing voids were particularly important.

The systematic and gradual phasing down of project support to the first two RMAs helped the division take over responsibility in a planned and orderly way, an unusual occurrence in activities of this type. In the final analysis, project support helped generate a program with the demonstrated capability to reverse declining range condition, to decrease livestock numbers while maintaining or increasing net productivity, and to increase the general welfare of participating livestock owners.

Criticisms and concerns were levelled at the support effort from several different angles. Some were inevitable spinoffs of the "project" approach in general and of the fact that LAPIS support focused on the RMA Program rather than on division-wide institution building as under the previous project. Others were more valid in terms of identifying aspects of implementation which could have been improved. Still others reflected perceived problems with the existing RMAs and thus with the program's approach. The income currently accruing to the grazing associations at the original two RMAs will not cover their administration and management costs without outside subsidies. The managerial capabilities of grazing associations and their executive committees will not permit significant reduction in the level of outside support in this realm, even at the original RMA.

1.3 Recommendations

In spite of the concerns cited, the RMA Program remains a vital effort and continued action on the part of all entities involved was essential to realization of its potential. Recommended steps to be taken by the ministry and government include: development of more comprehensive plans for Lesotho's agricultural development with an integrated role for the RMA Program; specific prioritization and action to set the political and legal stage for the program's expansion, particularly regarding national rangeland adjudication, the end to lowland transhumance, the grazing fee, the role of the chieftaincy in land allocation and management matters, and enforcement of existing range management and grazing regulations. While many appropriate, supporting policies and strategies are in place, many have yet to be translated into real action; timely response to RMD's requests for increased government funding, position upgrades and new positions; and improving coordination of MOA resources outside the division in support of the program, with emphasis on DLS and DAO participation and development of options to extensive production for lowland livestock owners.

At the level of the division, recommendations included: Expanding efforts to acquire and effectively integrate GOL and donor financial support of the program; more effective leadership to coordinate the division's resources and programs into an integrated effort in which the RMA Program is a priority; improving monitoring and documentation of the RMA Program's impacts, while data on various aspects of the program has been collected, little of it has been analyzed and interpreted; moving ahead with programs which set the scene for expansion of the program, e.g. rangeland adjudication and range inventory; and finally identifying and acting upon options to make grazing associations financially and managerially self-sufficient as soon as possible to reduce the burden on the division. The last recommendation will be addressed through CNRM Project. Also, the project is expected to respond to other needs of RMD in the areas of training and commodity support.

2. LIVESTOCK PRODUCTION

2.1 Program summary

The LAPIS Project support to livestock production, outside RMA program, has been in providing a Livestock Advisor, a livestock Economist specialist, commodity and training support. The Livestock Advisor was posted to the Animal Production Division (APD) of the Department of Livestock Services where he served as counterpart to the Chief Animal Production Officer (CAPO). The APD has a long history of providing a range of basic services to Lesotho's livestock holders. While the division is well established, widely recognized and appreciated, and relatively well supported by government and the donor community, its effectiveness has been reduced over time. Leadership's ability to move ahead is impeded by systemic constraints. The LAPIS Project's support program was unique among other project programs. Basically, only training and TA specialists were provided, and no major shifts in the division's functioning were promoted. The goal was incremental, quantitative development. The degree-level training provided produced the anticipated benefits of boosting technical and leadership capabilities of key staff members. In-service and farmer training exposed field staff and producers to new commodities and modes of production.

The Livestock Advisor was effective on a number of fronts. His wide range of experience, hands-on approach and ability to integrate himself completely in the division largely explain his effectiveness, but the fact that he had few resources at his disposal and no agenda for wholesale change may also have been beneficial. He had constant, wide impact on most aspects of the division's operations, from policy development, through administration and management, to technical specifics, and not threatened to overturn the boat. The Livestock Economist provided the documentation and quantification needed to accurately assess and act on several key issues. He introduced or developed a vital economist's perspective in the DLS, RMD and MD, thus helping make decision making more informed and rational.

The need for an effective ministry program supporting commercial livestock production is clear: Self-reliance in agriculture is a government priority; livestock owners who are actually or potentially losing access to the highland grazing areas used for extensive livestock production need options; the population is demanding help in making agriculture pay, and small livestock enterprises provide a logical vehicle. Through the term of project support, the division made limited measurable headway toward addressing these needs, but conceptual understanding of the goal that lies ahead and of what must be done to attain it improved markedly. That was the vital first step in real institutional development in this complex realm. The program also embraced the efforts of the Livestock Economist carried over from the LCRD Project, whose investigations of a broad range of livestock production economics and marketing issues continued under LAPIS. Through most of the term, he was assigned to the Range Management Division (RMD), where his research served to quantify long-term and current trends in livestock production and marketing. In early 1990, he was transferred to the Marketing Division (MD) to work as the counterpart to the project-trained livestock economist recruited to the MD to improve integration of livestock marketing into the MD's portfolio.

In light of the activities comprised, the program can be characterized as an institution-building effort targeting the APD with broadly applied inputs and the RMD and MD with TA support. Its objective was to help develop the capability of these MOA institutions to support increased small-holder production of high-value animals and animal products. This analysis focused primarily on the core effort supporting the APD; the adjacent efforts are cited as appropriate.

2.2 Program Constraints and Impact

While LAPIS input to the program through the term was quite limited in scope and magnitude, the effort was generally effective and worthwhile. The major positive impacts included:

Project-funded degree-level training significantly exceeded the numbers previewed in the project paper and permitted the division to fill some key posts at the section-head level with young, progressive, and informed individuals. While much more of this type of training is still needed, technical capability has improved. Project-assisted local and regional training activities and tours helped expose APD technical staff and farmers to modern production and processing operations for a wide range of activities. While this exposure generally was limited in depth, it served to open the eyes of those involved to the potential and the practical aspects of modern modes of commercial livestock production and to establish linkages with producers and support services in the RSA.

TA support was extremely well integrated into the host institutions and broadly experienced in the types of production being promoted and thus able to make a significant contribution in development of training activities, of appropriate policy and of overall technical and leadership capabilities. Perhaps most noteworthy was the TAs' success in promoting appreciation of the business aspects which must be incorporated when formulating support policies and technical packages. TA specialists conducted or assisted in a number of valuable studies aiding in assessment and prioritization of various production options and contributing to formulation of effective policy. They also produced important extension materials.

2.3 Recommendations

In spite of its relatively limited magnitude, this program helped illuminate needs for activity at various levels to further develop the ministry's capability to support increased, commercial, livestock production by small farmers. For the ministry and government, the needs included:

Development of comprehensive, integrated policies and strategies to define the role of the division in the context of agricultural development nationwide. Also, rationalization of the personnel situation with emphasis on stabilizing leadership to foster continuity, basing promotion on performance, and adjusting the establishment list to realistically reflect current needs should be carried out. The role of the division relative to District Agricultural Offices (DAOs) in conducting field operations should be worked out and coordination among the divisions and sections of the DLS to pursue various programs more efficiently improved. APD participation in the RMA Program being a case in point.

APD's should be allowed to retain at least enough of their proceeds from income-generating programs to cover the recurrent costs of operating. The possibility of privatizing facilities and programs, with the potential to function more effectively outside the government sphere, should be actively followed.

The financial planning and budgeting procedures to acquire and use local and outside funds as effectively as possible in support of the division's priority programs should be improved. Maintenance of existing programs and facilities should be prioritized.

The division's portfolio should be broadened beyond the services traditionally offered to embrace new types of production from a more commercial, businesslike perspective. Aside from the obvious demand for broader production expertise, this effort will require additional support from disciplines such as agricultural economics, enterprise development, marketing and perhaps rural sociology. If such expertise cannot be secured and maintained in-house, linkages must be improved to access it from outside the division.

Procedures should be developed to quantify national production and imports and to document the impact of production initiatives. This will require increased data collection and computerization to store and analyze data. The type of effort the MD carried out in case of fruit and vegetable importation.

Strengthening relationships with production-support institutions outside Lesotho, especially in the RSA.

Efforts should be provided to assist the division with developing technology-specific initiatives, particularly in regard to new commodities or modes of production such as broilers, dairies, feedlots, and fodder and feed production, and computerization.

Technical assistance should be provided in the disciplines which fall outside the expertise traditionally and currently comprised by the division, e.g. agricultural economics, enterprise development, marketing and rural sociology. Advisory assistance to the division's leadership is needed to promote more effective administration and management.

C. AGRICULTURAL PRODUCTION AND MARKETING

1. IRRIGATED VEGETABLE PRODUCTION SUPPORT PROGRAM

1.1 Program Summary

This program was the centerpiece of the LAPIS Project during its initial years. The Lesotho Credit Union Project (LCUP) was well integrated initially, but its failure in loan monitoring was instrumental in the restructuring of the vegetable program and was discontinued. The planned linkages with the CARE Integrated Conservation, Forestry and Agricultural Resource Management Project (ICFARM) never materialized. Project support of ICFARM was also discontinued.

Commercial irrigated vegetable production is a relatively new type of agriculture in this country. Initiatives to develop it have occurred largely through inadequately coordinated donor efforts based on a widely held perception that Lesotho holds a comparative advantage over the RSA in production of this type. To date, these efforts have not succeeded to either establish significant domestic production or build an adequate capability in the MOA to develop it. The LAPIS-supported program, has made notable improvements in this effort. The first 18 month of the program did not achieve its stated institutional-development goals, largely because of the shift in ministry doctrine away from the program's small-farmer emphasis and the confusion regarding the roles of MOA organizations following decentralization. It did, however, serve as a pilot effort which effectively demonstrated and documented two alternative modes of production, small individual enterprises and small farmers' production associations. When added to the other production models applied in the past, LAPIS experience provided much of the information regarding the relative merits of alternative models and the constraints to their broad application. The realigned phase of the program set the stage for developing the institutional structure required for developing a sustainable irrigated vegetable program. The training of Irrigation Resource Planners provided the manpower needed immediately to maintain the momentum attained in the field and to re-establish a vital link between the DCS and MD, and between them and the districts/farmers. Establishment of PCU has demonstrated both the need for effective coordination of MOA resources to support this type of production and a means of achieving it. Close working relationships between TA specialists and local counterparts furthered this process of integration and coordination.

1.2 Program Constraints and Impact

The PCU, which was to have been the key mechanism for implementing this and other PIC-supported programs and integrating them into the ministry framework, did not materialize to its planned form and function. The fact that the program initially went directly into the field implementation stage was cited as the primary reason for the PCU's initial failure. Local participants felt little ownership or control over the program, and thus no need to participate. This problem was compounded by major changes in MOA structure, staffing and functioning occurring at the time, and by resistance to real cooperation among MOA organizations.

The initial program was not appropriately lodged in the MOA. While the PIC team leader was affiliated with the DFS, the required linkage and working relationship was fully developed with DCS staff. The remainder of the TA team worked as counterparts to DCS staff. Since effective working relationships among the various MOA organizations involved had not been established under the decentralization initiative, this situation provided further incentive for the TA team to implement the program in relative isolation from both the DFS and the DCS.

The ministry's priority shifted away from development of small-farmer production to maximizing production under area-based schemes during the time between project design and implementation. This reduced ministry interest and support, thus furthering the separation of the program from the MOA mainstream. While the ministry requested LAPIS support in managing the larger enterprises, this was deemed inconsistent with the project's purpose.

These factors served to alienate the program from the ministry in its first phase, limit its institution-building impact and severely reduce its prospects for sustainability and expansion beyond the life of the project. Other problems related more to technical aspects of the program's implementation than to its institutional relationship with the ministry included:

The LCUP failed to provide a viable source of production credit for enterprises of this type, much less to provide production extension support and assistance in input supply and marketing as envisioned in the project paper.

Difficulties were encountered in moving local produce through existing market channels dominated by imports. This threatened the economic viability of the enterprises established.

The irrigation systems and cropping programs developed under the program were felt by some observers to be too capital and management intensive to be broadly and sustainably adopted by local farmers, especially in light of the low level of technical expertise embraced by the ministry's extension staff.

The initial program was not without its highlights. Following is a summary of program impacts:

Helping to establish small, individual enterprises and small farmer associations provided valuable insights into these models of production as alternatives to area-based schemes. The experience illustrated the potential of these approaches to further the goals of increased production as well as income and employment generation.

The experience of helping, managerially and technically, the Ha Maphohloane Association to overcome its initial problems and become a viable group business enterprise served as an invaluable model for this type of organization.

The differing levels of success attained by individual participating farmers provided important insight into the attributes associated with success in such ventures: Farmer commitment is the key, and when it is strong enough, most other obstacles can be

overcome. Some background in commerce and access to at least minimal financial resources were also important correlates with success.

The broad training of headquarters personnel, district staff, technical specialists from various nongovernmental organizations and farmers conducted through the program provided background not only in the technical aspects of vegetable production but also in such vital areas as crop programming, post-harvest handling, marketing, and record keeping. This training was based on a comprehensive assessment of training needs conducted by the PIC staff and counterparts.

A range of extension materials on various aspects of commercial vegetable production were produced and were widely used within the program and elsewhere.

The documented, practical experience gained through program support of small-farmer enterprises has been incorporated in subsequent projects with similar objectives (e.g. EEC projects in Butha-Buthe and Leribe Districts).

The realigned second phase of the program was framed by the strengths and weaknesses of its predecessor:

The program was effective in fostering the breakdown of barriers separating the key MOA organizations which must work in harmony to effectively promote increased, vegetable production. Assistance in establishing the PCU was the most tangible step in this regard. The close working relationships among the TA specialists, the DCS, the MD and the trained staff at the district level was strengthened following realignment. This helped develop and realize the concept of integrating efforts in a coordinated fashion.

The project-conducted Irrigation Resource Planning Course provided comprehensive, hands-on training for 15 MOA staff, most assigned to DAOs, significantly building the ministry's capability to support this type of production on farmers' fields. Since these specialists are backstopped by the DCS, they helped to re-establish functional linkages between headquarters and the districts.

Assistance was provided into the development of a National Crops Strategy Statement. This document was intended to assist the MOA with identification of available human and physical resources, program needs and constraints, and prioritization and coordination of crop production activities. Implementation of the Statement will enhance production efficiency on a national scale and facilitate donor participation by prioritizing key activities for support.

1.3 Recommendations

For the GOL/MOA, the needs center on provision of the general, high-level support and direction needed to move from the piecemeal, donor-driven, vegetable production effort to a coordinated, long-term program. Specific actions recommended:

Guidance in developing cohesive policy and strategies to integrate this program into the overall agricultural development effort of MOA. Assign appropriate responsibilities to the organizations involved. The DCS has been mandated to undertake such efforts, but higher-level support is required.

Provision of the human and financial resource needs will be identified once strategic planning has been completed. Professional staff with unique skills should be assigned appropriately given defined needs and priorities.

Assistance in implementing existing guidelines defining the roles of the DCS, DFS, MD and DAOs under decentralization.

Exercising the authority to assure the active participation in the PCU by all individuals and organizations whose involvement is necessary. Representatives of donor-funded projects with irrigation components should be encouraged to participate.

Rationalizing the roles of various models of production (e.g. area-based schemes, smaller farmer production or input supply and marketing associations, and individual enterprises of all sizes) in the overall effort.

Assessing the resource needs of such a program, particularly in terms of staffing, training, physical capital and operating costs, then programming government and donor support to meet them.

Support of training activities, especially degree-level education in vital areas such as irrigation engineering, to build the required human capital.

Immediate provision of TA specialists to assist in managing existing area-based schemes.

2. FRUIT PRODUCTION

2.1 Program Summary

The ministry's contribution to this development has been basic and limited. Prior to introduction of the LAPIS-supported program (1987), the MOA effort in fruit production was carried out by the DCS and the DAOs. This effort was confined largely to distribute fruit trees to farmers, lodging requests and paying for fruit trees through their district offices, and managing the small demonstration orchard in Maseru. GOL funding was small, and donor financial support negligible, targeting fruit production only in the isolated context of diverse and rural development projects.

Since 1987, progress has occurred on several fronts. A field oriented extension program was launched and a number of more advanced orchards in the country began to receive frequent visits and extension support. Increased donor funding, largely through LAPIS, permitted a higher level of overall activity and allowed the program to broaden in response to changing needs. Staffing changes resulted in more informed and supportive leadership in a few key

positions. In-service training conducted through the term focused on technical aspects of production, but also boosted leadership capabilities as a spinoff effect. Programming has broadened to target not just seedling distribution, but also research and development of new technology and documentation of the current status of fruit production in Lesotho. This was a vital first step toward planning new efforts in promotion of fruit production in the country. Linkages were established with Lesotho Agricultural College (LAC) to train potential producers and MOA or private sector support personnel. Collaborative demonstration program initiated with Agricultural Research Division to integrate research efforts. The improved facilities at AIS were tapped for information dissemination on fruit production adaptive technology.

2.2 Program Constraints and Impact

The TA support built both the technical and managerial expertise of counterpart staff, especially during the tenure of the second pomologist. The general broadening of the scope of the DCS effort in accessing and reaching the farmers and promoting fruit production was evidence of this.

The program supported introduction of new types and varieties of tree crops (e.g. a broader range of stone fruits and pomes as well as grapes, nuts and exotic fruits), of new cultural practices (e.g. improved fertilization, irrigation, trellising, pruning, budding and grafting, and insect and disease control) and of new processing methods, particularly fruit drying, substantially increased the staff and farmers' technical knowledge. The project succeeded in installing adaptive irrigation systems in selected MOA and privately owned orchard.

Project assistance helped improve the operation of the national nursery in Maseru. The project provided support in technical (e.g. proper weed and pest control, propagation methods, irrigation, etc.) and managerial terms (e.g. improved record keeping, accounting and reporting).

The higher levels of program activity generated increased contact with most donor-supported projects with actual or potential fruit-production elements.

For the first time in Lesotho, a detailed national survey of the orchards was conducted jointly by DCS/MD and the project staff. Similarly, the project launched the first monitoring program of fruit importation. The results of the survey and import monitoring assisted assist the MOA and the donors in planning future programs for increased fruit production in Lesotho.

2.3 Recommendations

Development of this emerging program will require a concerted effort on the part of MOA, donors and private sector. The following priority activities are recommended:

Development of a cohesive, comprehensive policy and strategy to guide, support, and promote fruit production and to integrate it into the overall MOA effort.

Programming the required human and financial resources necessary to carry out the program in the near, medium and long term.

DCS should identify and prioritize the resource requirements of the national-level program for fruit production. The program should be integrated into the overall horticultural program, e.g. into the Production Coordination Unit's function. Improved linkages with the agroforestry program currently being established with donor-supported SWaCAP should be established.

The production guides developed by the project and the MOA staff should be utilized during the extension efforts and development of new orchards by the private sector.

Developing and implementing plans to increase local seedling production. A network of nurseries in the districts, staffed by trained nurserymen, would serve this function as well as provide a demonstration of improved orchard management techniques.

Making efforts to coordinate the donors efforts in fruit-production initiatives among themselves and with the MOA program.

D. MARKETING SUPPORT PROGRAM

1. PROGRAM SUMMARY

LAPIS Project planners logically viewed marketing as a key aspect of the overall Production Initiatives Component activity. LAPIS Project support was instrumental in this advance, and several reasons for the success of this program exist. Probably, foremost among them, the need for market development and MOA commitment to it were evident at the beginning of the project. The institution identified to take the lead role was young, dynamic and relatively well equipped. The TA, training and commodity support provided by the project since realignment were flexible and framed by a conceptual approach which matched that of the MD. Implementation of the program followed a logical progression: analysis of the existing situation, development of a responsive policy to guide the effort, problem prioritization and identification of reachable goals, and planning and programming to acquire and utilize the required resources. The basic linkages required to institutionalize the effort were established. The resulting vegetable marketing system seems rational, well planned and supported, and served as a good model for other sectors.

The marketing program is a promising innovation. Its sustained growth and development hinge on parallel development of the ministry's overall capability. While the stage is set, any relaxation of effort on all fronts would threaten the success achieved to date as well as the prospects for future development.

2. PROGRAM CONSTRAINTS AND IMPACT

Since project realignment, the TA Marketing Specialist has been integrated in the division and thus able to contribute on a wide front. His assistance in analyzing the existing system, conducting key analyses and subsequently drafting the national marketing plan were viewed as vital. Other mechanisms employed by the project to provide long and short term TA, developing market centers, strengthening market information systems, improving marketing extension and developing livestock marketing support systems, were perceived as extremely valuable. Liaison with other PIC TA specialists was also helpful.

Project-supported training was a key factor. Degree-level training helped fill essential, new positions in the division with well qualified individuals. Formal in-service training and on-the-job training of headquarters staff, field marketing officers and irrigation resource planners greatly expanded the technical and managerial capability of the division and the DAOs. The courses contracted through MANANGA of Swaziland and project-funded computer training could be cited in particular. Training provided for potential market center managers and members of the district and national vegetable marketing organizations was an important contribution. Incorporation of marketing considerations into farmer-training programs helped develop the business orientation of producers.

Project TA and commodity support were instrumental in the design and upcoming construction of the two district marketing centers. Project commodity support, particularly

provision and maintenance of vehicles and computer hardware, facilitated the program's development.

The project's initiative in getting the PCU underway was vital in establishing the basic linkages required in vegetable marketing, though the function of the unit has not yet fully matured. The project's funding of local-hire positions for a market information officer, two field marketing officers and a secretary paved the way for the ministry's takeover of these positions.

The success attained by the program, with project assistance, was instrumental in attracting increased GOL, MOA and donor support.

3. RECOMMENDATIONS

While the Marketing Division is performing effectively and its plans for future action are charted, maintenance of the current program and its expansion to include other commodities will require continued action on the parts of all the institutions involved. Although an improved marketing system is a key component in efforts to generate increased domestic vegetable production, it is only part of an equation which demands planned and coordinated development on other fronts. Effective MOA leadership is required to marshal resources needed to draft a comprehensive agricultural development plan. The MD can identify needs for action by other organizations but cannot assure that it happens in absence of a comprehensive plan for the MOA.

Promotion and support, as appropriate, to the establishment of marketing centers, district vegetable marketing committees and the national vegetable marketing board should be continued. As well as improving liaison with local and regional marketing facilities and organizations.

DCS, DFS and MD should jointly identify activities that are, inappropriately, being undertaken by the MD and assist the appropriate MOA organization to take them over. In particular, crop monitoring and production-support activities should be done by the Department of Crop Services. Meanwhile careful programming and scheduling of efforts should be carried out to involve more commodities in the marketing program. Expansion could be costly if done quickly or haphazardly as to dilute the effectiveness demonstrated to date.

Quality standards and grading procedures should be established for commodities moved through formal market channels. This is the missing link in the current vegetable marketing system and will be increasingly more important as the program's scope widens to include other commodities. MD should work with production departments and divisions to develop enterprise packages in which marketing considerations are included.

Continued training of field marketing officers to perform vital field functions is extremely important, to bridge production enterprises, DAOs and MD headquarters. These officers should be capable of collecting a range of data on various enterprises, conducting basic economic analyses and appraising enterprises on site, and advising prospective producers as

well as DAOs, other MOA organizations and donor staff on the viability of different types of production. This capability would put the needed expertise where it would do the most good, thus relieving the pressure on both the DAOs and headquarters and reducing logistical costs.

MD will need technical assistance, preferably, on a consultancy basis, to addressing specific issues such as appropriate grading standards and procedures for various commodities, market development for new commodities, and training in new analytical procedures. The Division also requires financial/commodity to support new programs underway.

E. HOME GARDENS SUPPORT PROGRAM

1. PROGRAM SUMMARY

This program had more of a grass-roots orientation than the other PIC programs. It was designed to support increased garden production for home consumption and local sales, particularly in mountain and foothill areas, where diets are deficient and access to markets is limited. The progress made toward meeting the stipulated number of gardens was significant. The program was redesigned in mid-1989 with the ND as the primary implementing agency, the Peace Corps providing field support by assigning PCVs to work with NAs and other ND staff, and LAPIS assisting in management, administrative and technical backstopping. The focus was shifted to remote, mountainous areas as originally intended. In terms of output, the Home Gardens Program constituted a higher profile service than ND has offered in the past. The program impacted positively on thousands of home gardener and numerous villages who were directly involved in implementation of the program. This performance served to increase the demand for the program. Requests from communities and districts to be included in the program far outstrip the Nutrition Division's current capability. The ND's base of support is also growing. In addition, the current Peace Corps and LAPIS support effort is being extended for a second five year.

2. PROGRAM CONSTRAINTS AND IMPACT

The program provided the ND with a concrete mandate, doctrine and mechanism to address its production and nutrition objectives and thereby improve the welfare of the population of Lesotho's remote areas. The TA provided through the project was instrumental in developing and disseminating the technical packages promoted through the program. The packages were viewed as sound, emphasizing reduced input costs and using local inputs, extending the growing season, increasing the types and varieties of vegetables grown, using appropriate storage and preparation techniques, and considering nutritional and marketing aspects.

Project TA and financial support helped make the pre- and in-service training associated with the program effective and sustainable. Key aspects of this effort included its emphases on internalizing in-service training in the division, training trainers within the division. Pairing PCVs and NAs at the beginning of training, helped to establish and maintain an interactive format and effective relationship. This subsequently created a favorable and effective environment for technology transfer between the two.

The program's success and the TA specialist's assistance in making contact with donor organizations and in drafting proposals helped the division secure more outside support. Efforts to secure Kellogg Foundation funding for degree-level training of ND staff are a case in point.

The mail-order seed and input program set up with TA assistance through a local, private firm helped offset the unavailability of garden inputs in remote areas.

3. RECOMMENDATIONS

The Nutrition Division should work to, incrementally, take over management of the Home Gardens Program. They should assign their best candidates as counterparts in the management structure, and provide them with management training. Outside technical support and funding of the program may be required through the medium term, but such a take over of program management is perceived as a desirable and attainable goal. Also, management training of ND administrators is vital. Their technical training does not, adequately, equip them to perform the required tasks of resource mobilization, program prioritization, planning and programming.

A viable on-the-ground approach for dissemination of gardening technology should be identified and implemented by all field teams. This may require training in extension methodology and testing of various approaches in the field.

Efforts should be made to increase the ND administration's effectiveness in securing outside funding to systematically support its priority activities. Establishing and maintaining contacts with donor organizations and proposal writing are key skills. Donors should recognize the success of the approach taken in implementing this program and use it as appropriate in setting up home gardens programs elsewhere and in supporting other ND programs.

Donors should provide the required training opportunities for division staff, particularly for advanced studies in technical disciplines and some form of management training.

F. AGRICULTURAL RESEARCH SUPPORT

1. PROGRAM SUMMARY

The institutional capability of ARD was strengthened significantly over the term of the project. Major advances were made in establishing in-house operating procedures, in planning and conducting meaningful research, in linking the division to Lesotho's agricultural sector to assure that research addresses real needs, in developing the division's human and physical infrastructure, and in setting up relationships with the agricultural research community outside the country. The flow of technical recommendations in several forms emanating from ARD increased significantly. LAPIS Project assistance in the realms of TA, training and commodity support through the Agricultural Research Component was instrumental in the progress made. Further efforts in a few key areas by the government, the ministry, the division itself and the donor community would go a long way toward consolidating progress made to date, maintaining current momentum, and ultimately realizing the division's vital contribution to agricultural development in Lesotho. Progress to date has been significant, and the lines to be followed are drawn much more clearly than they were in 1986.

2. PROGRAM CONSTRAINTS AND IMPACT

LAPIS's broad support was instrumental in achieving most of the advances made at ARD. Advisory support to ARD leadership led to fundamental improvements in the areas of documenting and promoting the division's function. Administrators are now able to articulate the importance of agricultural research, the rationale for recent changes in the division's structure and research planning and programming procedures, and plans and resource requirements for future development. Such support was the major force in altering and refining ARD's doctrine. The cornerstones of which are adaptive research, multidisciplinary programs and effective linkage with the elements of the agricultural sector. ARC support was pivotal in establishing new procedures for research planning and programming, i.e. proposal development, internal review, then review and approval by the RAC which comprises representation of all major users of the division's recommendations. These procedures make the new doctrine operative.

The preceding advances, among others, were formalized in the National Agricultural Research Strategy drafted with significant ARC input. This strategic plan provides the basis for essential policy and resource support for the division's development.

The division's internal structure was improved by the introduction of commodity-oriented research programs to replace discipline-oriented sections. This project initiative facilitated the multidisciplinary approach to research.

ARD's linkages with research organizations outside Lesotho were improved substantially through the term with ARC direct support.

Project-funded training, particularly at the degree level, helped build the cadre of research officers closer to the critical mass required to permit the division to function effectively. Both technical research skills and managerial ability were bolstered. Project financial support of the institution permitted carry out of a level of research activity not possible under current GOL funding. This support also permitted improvement of the division's physical infrastructure (e.g. development of irrigation systems, a research greenhouse complex, better equipped laboratories and a computer facility), helped maintain an adequate work force and facilitated acquisition of needed managerial and substantive technology.

The ARC TA team, through good counterpart relationships, significantly improved staff capability in designing and conducting research activities, collecting and analyzing data and presenting findings. The team also filled critical staffing gaps resulting from absences for training and overall personnel shortages. The net result was a qualitative and quantitative increase in the flow of technical recommendations emanating from the division.

The program was not without shortcomings. Steps to address some of the major, systemic problems constraining the institution's development were held up by delays in obtaining MOA's support to ARD development plans. The need for a clear statement of the division's mission, a formalized, conceptual approach to research planning and programming, and a comprehensive assessment of the resources needed to implement this approach was recognized early on. However, concrete actions in response were not evident until the third year of the project. As a result, important project contributions in these areas, particularly those outlined in the strategic plan, were institutionalized midway through the term.

The process of institutionalizing multidisciplinary and adaptive approaches to research has room to advance further. However, progress as possible has been made in promoting understanding and acceptance of the concepts and in incorporating them into various research efforts. High mobility of key trained researchers who were not satisfied with the MOA's compensation package was and is a major obstacle for further development at ARD.

The term of support provided under the project was too brief. The broad changes introduced by the project required the approval of higher management positions within MOA. Approval and actions needed to fully realize the impact of those changes at clientele level simply could not be accomplished in five years.

3. RECOMMENDATIONS

Continued effort on the part of all parties involved is essential to maintaining the momentum established to date. As stated earlier in this report there is a need for development of a comprehensive national agricultural development strategy with plans for each component of the agricultural sector and all major agricultural commodities. This is a necessary precondition to set the stage upon which ARD and all other departments must act.

A resolution has to be made regarding the issue of the division's administrative location. Until the staff knows where they will ultimately be located, when any shift will occur and what it will entail, attention to downstream priorities will be limited, and key developments will remain on hold.

The strategic plan developed by ARD needs follow up and concrete actions by the MOA. Aside from the proposal that ARD be made a department, this plan comprises a number of elements vital to the division's development. GOL support of the proposed staffing changes and career development plan is essential, as is active MOA support of the RAC and the proposed Lesotho Agricultural Research Council.

Efforts should be continued to strengthen the effectiveness of the division's leadership structure. The importance of managerial training, adherence to the terms of reference for administrative and managerial staff spelled out during recent internal restructuring, increased accountability and evaluation of performance, and retention and integration of returning degree holders are areas to be addressed. Adherence to the research proposal development, drafting and approval procedures currently in place, and continued efforts to use them to bring the diverse disciplines into a truly integrated mode of operation should be maintained.

Activities should be stepped-up to attract more outside support, particularly funding. These should be channelled to meet the planned needs of the division rather than the interests of the donor as a first priority. This will involve increased contact, communication and negotiation with the donor community and/or international research organizations.

G. AGRICULTURAL EDUCATION AND TRAINING

1. LESOTHO AGRICULTURAL COLLEGE

1.1 Program Summary

The institutional capability of LAC was strengthened significantly over the term of the project. Major curriculum changes facilitated the successful implementation of a new, more appropriate doctrine to guide the college's program. The services of the college expanded. LAC's physical infrastructure significantly expanded, and much-needed degree and short-term staff training was acquired. Internal leadership and external linkages improved. The college is better managed and in a stronger position to respond effectively to the needs of the agricultural community.

LAPIS Project assistance in the realm of TA, training and commodity support through the AEC was instrumental in the progress made. However, this progress has not yet advanced to the stage that focused support can be halted without threatening to some degree the sustainability of a few activities. These activities, most notably the SEP program and SEP Follow-up, are still not firmly established, and adequate operating funds, teaching/supervisory staff and management might be needed to carry them on. The uncertainty surrounding the role LAC in the context of the new NUL/Faculty of Agriculture and the faculty's impact on existing programs must be alleviated.

LAPIS Project support to LAC was committed at a reduced level for the last two years of the project. Optimism is warranted in that the progress was significant, and the college has historically demonstrated that it is capable of withstanding pressures and sustaining progress.

1.2 Program Constraints and Impact

LAPIS Project support played a central role in most of the advances at LAC. The well integrated long-term TA and consultancy support provided broad improvements in the areas of leadership, management, technical expertise and teaching skills necessary to realize the college's expanded doctrine. Consultancies in educational management and long-term TA assistance in modernizing and computerizing record-keeping systems helped build the college's administrative and managerial capabilities. Close counterpart relationships in teaching, in-service training and consultancies to develop teaching methods improved lecturers' teaching skills.

The long-term and in-service training provided, coupled with the efforts of the TA team and consultants, were instrumental in implementing the curriculum changes required by the expanded program. Nineteen sets of lecture notes were published to firmly establish the new curriculum.

Project assistance was pivotal in establishing all aspects of the innovative SEP program: the conceptual and operational foundation upon which it is based, the managerial and technical

support needed to maintain it, the trust fund established to provide credit, the necessary physical facilities, and the multi-organizational board set up to supervise it.

LAPIS-funded improvements to the physical infrastructure included: renovation of existing facilities such as the library, refectory, offices, marketing facility, and vegetable, fruit and pasture areas; construction of additional offices and classrooms as well as an audio/visual theater, appropriate technology demonstration area, tuck shop, greenhouse, SEP facilities, staff room, irrigation system, computer laboratory, and livestock slaughter and handling facilities.

Agricultural Education Component's effort was instrumental in setting up linkages with other MOA organizations, private and parastatal agricultural organizations and pertinent international bodies. Among them: the student internship program, Training and Communications Coordinating Committee and sister college relationship with South Dakota State University could be cited.

The program, however, faces shortcomings. The term of support was too short. Phasing out of the AEC began gradually four years after LAPIS started. Additional time would more firmly have institutionalized the significant achievements made by the project. The short period of overlap between the TA team and returned degree trainees was a particular problem in preserving the integrity of programs developed.

The project could have done more to head off the financial and staffing constraints which threaten the sustainability of achievements made through the term of project support. Problems are expected concerning transport and facilities maintenance, equipment depreciation, additional staffing needs and continued staff training.

While the SEP program was an overall success, the project design and subsequent implementation did not provide a mechanism to assist SEP program graduates in securing the land, credit, and continued technical assistance needed to initiate their own enterprises. This support was provided only during the sixth year, the last year of the project, with only partially successful results.

1.3 Recommendations

Continued efforts at all levels are required to build on the progress made through the project support. Resolution of the role of the college, its staff, physical facilities and programs, in light of the established Faculty of Agriculture has the highest priority. If current activities are to be sustained, planning of the new faculty program must proceed accordingly. LAC's resources are already somewhat overextended; additional responsibilities would severely threaten the advances made through the term.

If current programs are to be maintained, the GOL and MOA must address the college's budgetary and staffing constraints. In the latter regard, dependence on seconded teaching staff must be reduced to secure the college's human capital needs.

Planning, programming and budgeting to make the best use of limited financial and human resources and to acquire more must be the college administration's priority if current activities

are to be sustained. The incentives package for professional staff should also be reviewed and revised to assure that it equitably reflects their current levels of responsibility.

Adequate supervisory support for the SEP program must be arranged if this important program is to be sustained. In addition, follow-up mechanisms to monitor program graduates and assist them in securing land, credit and technical support should be continued.

2. INFORMAL AGRICULTURAL EDUCATION SUPPORT PROGRAM

2.1 Program Summary

This program embraced a range of project activities supporting development of the MOA's capability to provide the nonformal training appropriate to the small-farmer to the MOA extension staff, farmers and other pertinent individuals including credit union personnel, grazing and farmers' association members, and input suppliers.

LAPIS support of nonformal training took place in various forms. Significant TA and financial support were allocated to meet the nonformal training demands of project-supported programs. In addition, prior to project realignment, TA and commodity support were used to begin developing the type of collaborative LAC/DFS training capability envisioned in the project paper, but this effort was abandoned when the training needs of the production programs decreased radically following realignment. Since then and through the term of the project, TA, training and commodity support were used to help establish the Training and Communication Coordination Committee (TCCC) and its associated activities. None of these aspects of project support could be viewed as systematically supporting the development of any institution, but the spin-off effects positively impacted all MOA institutions.

Informal agricultural education was a dynamic area through the term of the project. A high level of in-service staff training was maintained by several MOA organizations, contributing to their institutional development by the infusion of technology. Farmer training was also a priority for several ministry organizations. Most importantly, however, initiative and subsequent action were generated to establish the ministry's capability to systematically and effectively respond to the nonformal training needs of its component organizations. This charge placed new demands on the institutional functioning of several MOA organizations. The DFS, LAC and, to a lesser extent, AIS and ARD met at least the initial demands by establishing the TCCC, the training and information officer network, and the quarterly extension training program. Collectively, these three activities seem to constitute a viable mechanism to address the ministry's nonformal training needs.

The DFS is a young institution, particularly in light of the burden imposed on it by MOA decentralization. LAC is a relatively robust institution, but its primary responsibility is the formal agricultural education program, which expanded considerably through the term and seems poised to grow more in the near future. The added mandate regarding nonformal training might not be tenable.

Still, if all the ministry organizations involved can pool resources to build on the progress made through the project, this collaborative effort could be sustained.

2.2 Program Constraints and Impact

The LAPIS Project support, directly or indirectly, had a beneficial impact on the more important developments of DFS, DAO and other MOA institutions. The TA provided was instrumental in the short-term training of MOA staff and farmers conducted under DFS auspices, in the improvements to the Leribe, Maseru and Mohale's Hoek FTCs and the establishment of the TCCC, training and information officer network and quarterly extension training program. The last contribution was perceived as the most important because of its ministry wide impact and its effect of improving DFS linkages with the rest of the ministry. In addition, the degree-level and in-service training provided for DFS/DAO field staff significantly improved technical skills and had a positive impact on managerial capabilities.

In addition to the in-service training provided to DFS/DAO field staff, the project conducted structured training activities affecting more than 2000 lead farmers (77%M/23%F) and more than 1000 herdboys. While many of these activities did not directly involve DFS/DAO personnel, they had a positive impact on the overall extension effort. The financial support provided for infrastructural improvements at the three FTCs was a noted contribution.

The program had its own constraints to overcome. In not supporting the DFS from a systematic, integrated, institution-building perspective, the project diminished the potential impact of training activities targeting extension staff and farmers. The disarray of the DFS and DAOs at the onset of the project made such support impractical, also, such support was not stipulated in the project design and thus would have been beyond the project's capability. Also, FTC development activities and the programs supported by informal training activities were believed warranted a more extended effort.

2.3 Program-specific Short-term Training Support

As noted, a significant amount of in-service training was conducted under the auspices of individual, project-supported programs through their host MOA organizations. This training covered a range of content areas and various training formats. Ramifications of these activities are outlined in the other sections of this chapter. These activities can be interpreted as institution building in that each applicable department or division was made stronger by the technology transferred.

2.4 Recommendations

Needs for action on the part of the GOL/MOA to sustain and build on the progress achieved through the LAPIS, included mounting a concerted effort to implement the decentralization process. This should involve mandating the roles of the DFS and DAOs relative to other MOA organizations, formalizing the doctrines of these organizations, developing the planning necessary to guide the process of mobilizing the requisite resources. Beyond benefitting the ministry's in-service and farmer training capability, these activities vastly improve the institutional development of the ministry as a whole. The extension function would be the primary beneficiary, and this function is obviously vital to increased ministry impact.

The TCCC should be revitalized and become fully institutionalized. The network of training and information officers and the quarterly extension training program should be continued.

These mechanisms were formally endorsed by the DFS, but formal recognition and active support by LAC, ARD and all other MOA organizations is essential to sustaining them. Construction of the continuing education center at LAC would help solidify these mechanisms. High-level authority must be brought to bear on these issues.

Provision should be made to increase operations, maintenance and staffing budgets for all DAOs and FTCs. Also, provision should be made for further management training for all headquarters administrators and district agricultural officers.

The mobility of DFS/DAO administrators and staff should be minimized to increase consistence and maintain local expertise.

A well defined extension doctrine which effectively addresses the needs of the farmer clientele should be developed.

Suggestions regarding donor activities focuses on the need to better coordinate current and future efforts in line with the needs of the DFS, DAOs and the ministry as a whole. Since the DFS/DAOs are the logical focus of so many donor-funded agricultural projects, a collective effort to systematically consolidate these projects to improve their impact on the institutional development of the ministry seems rational. The ministry should take the lead role in this effort, but the donor community could initiate or at least actively support it. An inter-organizational working group might be the best mechanism to pursue this issue.

3. AGRICULTURAL INFORMATION SUPPORT PROGRAM

3.1 Program Summary

This program comprised LAPIS support to reinforce the Agriculture Information Service's (AIS) capability to produce and disseminate practical and applied agricultural information to the MOA field staff and farmers. The institutional capability of AIS developed, significantly over the term of the LAPIS Project. Its resource endowment expanded, particularly in terms of human and physical capital. Its mandate rationalized with the needs of the agricultural sector, and a high level of activity was achieved to realize that mandate. AIS's linkages with its clientele improved markedly, making the services provided more pertinent. AIS acquired the appropriate and managerial technology. Services expanded, and product quality improved. Better performance was paralleled by increased influence, increased demand for services and in securing increased donor support. The institution is now more able to respond to the needs of the community.

LAPIS Project assistance in the form of TA, training and commodity support through the AEC, though relatively minor in comparison to other project-supported programs, was pivotal in the notable progress achieved. However availability of operating funds and shortages of qualified staff are perennial problems, and uncertainty regarding the extent of future MOA support puts added stress on the organization.

3.2 Program Constraints and Impact

LAPIS support directly or indirectly impacted the positive developments at AIS. In most cases, project support was instrumental in effecting these changes. The long- and short-term TA provided were valuable assets to AIS administrators. In regard to management, the advisors contributed in such areas as commodity procurement, staff training, assessment of resource needs, and integration with the MOA. In the last regard, project efforts in establishing the TCCC and the training and information officer network were particularly important. In the technical realm, TA and consultant inputs were instrumental in the improvements in publication, material production and dissemination. The fact that the AEC TAs were well integrated in the institution, but on a part time basis, increased the overall impact. That is advisory support was available as needed without overwhelming AIS's administration.

The computer type setting local-hire position was funded by LAPIS and was a vital contribution to the AIS professional staff and the achievements through the project.

The provision of B.Sc. training for three individuals and in-service training in various aspects of management, equipment maintenance and technical applications boosted technical skills significantly. Also, the provision of financial support for infrastructural development and equipment procurement made possible such advances as the construction and stocking of a new library, the development of new offices and the purchase of two offset presses, computer typesetting equipment, the necessary computer hardware and software to accommodate a professional printing capability, various graphic and photo/darkroom supplies and office furnishings. Project-supported improvements to AIS's overall institutional capability and TA efforts were largely responsible for the expanded donor support of on-going activities. This support was potentially vital to the sustainability of LAPIS programs at AIS in that, it directly supports and builds on them.

The expanded operations and services made possible by project support generated corresponding needs for increased funding, staffing and training. The issue of a revolving account, which would allow AIS to charge for clients for its printing services and thus recoup costs directly, was never resolved due to MOA resistance. The training provided through the project was essential, but additional efforts in computer operation, equipment maintenance and photo/video usage is needed.

3.3 Recommendations

Further actions are required to sustain and build upon LAPIS inputs at AIS and the progress made. Annual GOL budgetary allocations should systematically increase to reflect calculated annual salary increases and the effects of inflation on operating costs. This would facilitate planning and programming significantly.

AIS operations remained severely constrained by a lack of space. Adjacent buildings now controlled by the Department of Conservation, Forestry and Land Use should be allocated to AIS.

The size of the press run and distribution of all publications should be carefully planned to make sure that the printing function's capacity is not exceeded. Graphics should be

incorporated to a greater degree in publications. Equipment for making half-tones to allow the inclusion of black-and-white photos should be purchased.

The printing function needs better management and more personnel. The section head's position should be upgraded to accurately reflect the level of responsibility. The previously requested positions of one printing/computer assistant and two typesetters should be established and filled. AIS officers should be posted to the seven districts which currently do not have them, i.e., all but Butha-Buthe, Thaba-Tseka and Mohale's Hoek Districts. This would do much to improve the decentralized activities of AIS. Incentives for increased job performance should be made available to all section heads. Section heads should receive personnel management training.

A viable means of meeting the operating costs of the printing function must be established. A revolving fund should be set up to accept revenue from other organizations and/or the AIS budget should be increased to accommodate all ministry printing requirements. More than M3,000 per month is required.

Video and photo media can play an important role in providing instructional information to extension staff and farmers. These functions should be more adequately developed. Publications should incorporate more graphics to improve readability and appearance, especially for less literate audiences. Toward this end, a skilled artist should be employed full time, graphics technology should be improved, half-tone equipment should be acquired, and the computer scanner should be used more professionally.

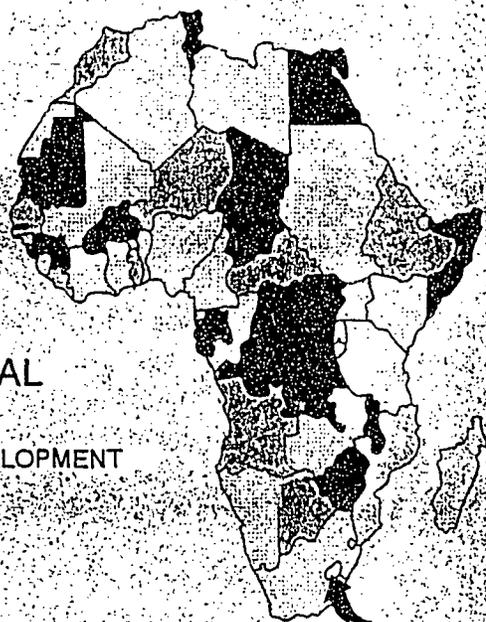
Increasing financial support, through donor funding, will be required to maintain the momentum achieved through the project. Part time or short term TA provided on a flexible, as-needed basis would help overcome the remaining managerial and technical constraints. Appropriate long- and short-term training opportunities should be made available to increase skill levels and to provide incentives for improved job performance. Equipment maintenance and personnel management are two key areas of training need.

LESOTHO AGRICULTURAL PRODUCTION AND
INSTITUTIONAL SUPPORT PROJECT

ANNEXES 1-7: LAPIS
END-OF-PROJECT REPORT

AMERICAN AG INTERNATIONAL

CONSORTIUM FOR INTERNATIONAL DEVELOPMENT
FREDERIKSEN, KAMINE & ASSOCIATES
LINDSAY/DEKALB INTERNATIONAL



JUNE 1, 1986 TO
MAY 31, 1992



USAID PROJECT NO. 632-0221

ANNEX NO. 1

**LIST OF PUBLICATIONS DEVELOPED AND FUNDED
BY THE LAPIS PROJECT**

ANNEX NO. 1

LIST OF PUBLICATIONS DEVELOPED AND FUNDED BY THE LAPIS PROJECT

NOTE: Not included in this list are the LAPIS Project target, progress, quarterly and annual reports.

1. LECTURE NOTES AND TEACHING GUIDES

- Allen, R. 1990. Ecology Lecture Notes.
- Drew, C. 1989. Course Outling: Planning, Budgeting and Recordkeeping for Livestock Enterprises.
- Forrest, P. 1989. Student Enterprise Project Manual.
- Freeman, P. 1988. Feasibility of Building Plastic Greenhouses in the Foothills of Lesotho.
- Goertz, S. 1990. Vegetable Production Notes for Lesotho.
- Goertz, S. and M. Nishek. 1992. SEP Supervisor's Guide.
- Goertz, S. 1988. Basic Plant Biology.
- Goertz, S. 1992. SEP Coordinator's Guide.
- Gray, P. 1990. Range Management Area Training Guides.
- Home Economics Dept. (LAC). 1986. Basic Nutrition.
- Home Economics Dept.(LAC). 1986. Malnutrition.
- Johnson, G. and W. Nishek. 1988. Irrigation & Water Resources
- Kahimbara, C. 1989. Biochemistry for Home Economics Students.
- King, A. 1992. Guide for SEP Graduate Follow-up Program.
- King, A. 1988. Poultry Husbandry in Lesotho (Egg & Broiler).
- Logan, C. 1991. Gravity Fed Sprinkler Irrigation Systems for Lesotho.

- Martin, S. 1988. Animal Nutrition.
- Nishek, M. 1992. SEP Bookkeeping Guide for Students.
- Nishek, M. 1989, Revised 1991. Student Grades and Information Recordkeeping.
- Nishek, M. 1990. Using Microsoft Works.
- Nishek, M. 1990. Student Enterprise Project Computer Forms Explanation.
- Phokojoe, M. 1988. Rural Sociology & Development.
- Rooyani, F. 1986. Conservation Measures to Control Surface Wash on Farmland.
- Rusk, J. 1988. Computer Appreciation.
- Sarig, P. (S.Goertz Editor). 1989, revised 1992. Fruit Production Guide for Lesotho.
- Tyson, B. 1988. Extension Education.
- Walusimbi, J. 1990. Animal Health in Lesotho.

2. TECHNICAL REPORTS

- Artz, N. E. 1992. RMA Baseline Socio-Economic Survey - Part 1: Introduction and Methodological Guide.
- Artz, N. E. 1992. RMA Baseline Socio-Economic Survey - Part 2: Proposed RMA 5 - Tsatsa-Le-Meno, Qacha's Nek District.
- Artz, N. E. 1992. RMA Baseline Socio-Economic Survey - Part 3: Proposed RMA 6 - Malibamatsoso, Leribe District.
- Artz, N. E. 1992. Changes in Community Perceptions and Management Practices Regarding the Ha Moshebi (RMA 2) Grazing System. RD-R-118.
- Artz, N. E. 1991. The Evolution of Community Participation and Support in Range Management Areas 1 and 2. RD-R-115.
- Artz, N. 1990. Baseline Herdsmens' Perceptions and Livestock Management Practices Relating to Implementation of the Ha Moshebi (Ramatseliso's Gate RMA) Grazing System. RD-R-87.
- Artz, N. 1990. Livestock Ownership Statistics for Ramatseliso's Gate RMA.
- Artz, N. 1990. Results of the Survey of Irrigated Vegetable Program Participants: Impact on Household Economics - 1986 to 1989. RD-R-99.

- Artz, N. 1990. Results of the Survey of Irrigated Vegetable Program Participants. RD-R-100.
- Artz, N. 1990. Results of the MOA/LAPIS Home Gardens Program Participant Survey: 1987 through 1989. RD-R-96.
- Artz, N. 1989. Preliminary Results of the Household Survey of Irrigated Vegetable Production: Perceptions of the Technical Package and Training Needs. RD-R-92.
- Artz, N. 1989. Information Pertaining to the SADCC Regional Resource Management and Faculty Development Project.
- Badamchian, B. 1986. Activities and Facilities of Agric Research Soils Laboratory.
- Badamchian, B. 1989. Phosphorus Status of Certain Agricultural Soils of Lesotho, Southern Africa.
- Bainbridge W.R., B. Motsamai, and L.C. Weaver. 1989. Draft Policy Statement for a Managed Resource Area For The Maluti Mountains of Lesotho.
- Bainbridge W.R., B. Motsamai, and L.C. Weaver. 1991. Report of The Drakensberg/Maluti Conservation Programme. ISBN: 0-949939-67-6.
- Buzzard, R. and L.C. Weaver. 1991. Lessons Learned from The Formation of Grazing Associations in Lesotho.
- Buzzard, R. 1991. The Operational Status of the Pelaneng/Bokong and The Mokhotlong/Sanqabethu Range Management Areas.
- Buzzard, R. 1990. Holistic Resource Management -- An Introduction.
- Campbell, J., and T. Jobo. 1991. MULPOC Maize Demonstration Program: Assessment of Adoption of New Maize Production Technology. RD-R-113.
- Campbell, J., and C. Drew. 1991. Fat Lamb Production: A Simulation Study of the Sensitivity of Profits to Price Changes and Strategies for Minimizing Risk. RD-R-111.
- Campbell, J. 1991. Vegetable Economics in Lesotho: An Assessment of Intermediate Level Production of High Value Vegetable Crops - Results of Experience by LAPIS Supported Farmers. RD-R-107.
- Campbell, J., and T. Jobo. 1990. Economical Benefits of Fertilizer for Bean Production in Lesotho: A Review of Results from 1983 to 1989. RD-R-93.
- Campbell, J., G. Marlowe, S. Mofobetswana, and T. Jobo. 1990. Potato Storage Trial, Biological, Economic and Structural Design Implications. RD-R-94

- Campbell, J., B. Badamchian, and T. Jobo. 1990. Initial Analysis fo the Return on Investment in Lime for Pinto Bean Production on Red Foothill Soils in Lesotho. RD-R-95.
- Campbell, J., T. Jobo, and L. Phakisi. 1990. Village Market Study. Part one - A Household Survey of Milk Consumption and Market Assessment in the Vicinity of Ha Nchela. RD-R-88.
- Campbell, J., T. Jobo, and L. Phakisi. 1990. Village Market Study. Part two - A Household Survey of Poultry Consumption and Market Assessment in the Vicinity of Ha Nchela. RD-R-89.
- Campbell, J., T. Jobo, and L. Phakisi. 1990. Village Market Study. Part three - The Cafe Survey Marketing of Milk and Poultry in the Vicinity of Ha Nchela. RD-R-90.
- Drew, C. and T. Mafisa. 1992. Improving Ruminant Fibre Production in the SADCC Region.
- Drew, C. 1992. Business Plan: 20-Sow Farrow-to-Finish Enterprise.
- Drew, C. 1991. Factors Affecting the Demand for Wool and Mohair. LAPIS Project/MOA.
- Drew, C. 1991. On-Farm Plan Proposed 250-Head Confined Lamb Fattening Facility.
- Drew, C. and S. Martin. 1991. Feedlot Performance of Mature Angora Goats in Lesotho. RD-R-110.
- Drew, C. and P. Gray. 1991. Development Plan: Proposed Angora Goat Stud Setibeng, Maseru District.
- Drew, C. 1991. Business Plan, Poultry 1,120 Layers in Cage.
- Drew, C. 1991. Establishment of An Intensive Fat Lamb Production Enterprise, Mafeteng District.
- Drew, C. 1990. Ministry of Agriculture, National Poultry Plant: Pricing of Point-of-Lay (POL) Pullets.
- Drew, C., K. Mohlakoana, M. Molapo and S. Martin. 1990. Comparative Effects of Degradable and Undegradable Digestible Protein Sources on Feedlot Performance of Lambs in Lesotho - Technical and Economic Analysis
- Drew, C. 1990. Improving Small Ruminant Fibre Production in The SADCC Region.
- Drew, C. 1990. Record Keeping and Budgeting For Broiler Enterprises.
- Drew, C. 1990. Development Plan Proposed Angora Goat Stud Setibeng, Maseru District.
- Drew, C. 1990. Final Report on Broiler Feeding Trail.

- Drew, C. 1987. Intensive Livestock Production in Lesotho - The Role of LAPIS.
- Drew, C., L. Lehloba, W. Schacht, M. Molapo, A. King, and C. Matete. 1989. Comparative Feedlot Performance of Sheep Breeds in Lesotho: Technical and Economic Analysis. RD-R-114.
- Drew, C., L. Lehloba, A. King, and C. Matete. 1988. Comparative Feedlot Performance of Sheep Breeds in Lesotho.
- Goertz, S. and A. King. 1992. Student Enterprise Program at LAC, June 1989 to April 1992: Termination Report.
- Goertz, S., A. King, and M. Nishek. 1991. Summary Report of SEP: Experience on Costs of Agribusiness at LAC from 1987-91.
- Goertz, S. Final Report of Agricultural Education Component: June 1986 to May 1992.
- Goertz, S. 1989. Report on Fruit Research Consultancy of Dr. O. Bergh and Mr. R. Gardner (RSA).
- Hunter, J.P., and L.C. Weaver. 1991. The Development of Grazing Associations in Lesotho: The Search For Sustainability.
- Hunter, J.P. 1990. Wool and Mohair Production: Part of The Basotho Way of Life for Over 100 Years.
- Hunter, J.P. and J. Black. 1990. Characteristics of Lesotho's Wool and Mohair Statistics and Analytical Commentary.
- Hunter, J. P., and N. L. Mokitimi. 1990. The Development of Lesotho's Wool and Mohair Marketing System: Options for Continued Institutional Change and Policy Reform.
- Hunter, J. P., and N. L. Mokitimi. 1990. The Development of Lesotho's Wool and Mohair.
- Hunter, J.P. 1990. Regional Differences in The Production of Mohair in Lesotho. South African Angora and Mohair Journal.
- Hunter, J.P. 1990. Preliminary Livestock Marketing Data: 1985-1989.
- Hunter, J. P. 1988. Some Factors to Consider when Allocating Development Funds to the Improvement of Small Ruminant Productivity.
- Hunter, J. P. 1987. The Economics of World and Mohair Production in Lesotho Research Division Report, Maseru.
- King, A. and C. Drew. 1990. Broiler Production in Lesotho.

- Knight, Dames, and Moore. 1986. Results of the initial investigation and proposal for the installation of irrigation water wells at the Agriculture College, Maseru, Lesotho.
- Makenete, Mosola, Tysen, and Langseth. 1987. District Survey of The Ministry of Agriculture, Cooperative, and Marketing.
- MacMakin, R. 1986 and 1987. AIS Assessment - Consultancy Report.
- Martin, S. 1991. Ha Moshebi/Ramatsa Small Stock Flock Dynamics Study. RD-R-108.
- Martin, S., and W. Schacht. 1991. Sehlabathebe Small Stock Flock Dynamics. RD-R-109.
- Martin, S., W. Schacht, P. Safika, and J. Campbell. 1990. Preliminary Report: Dairy Cattle Performance in Response to Two Feeding Regimes: Grazing vs. Green Chop. RD-R-104.
- Martin, S., W. Schacht, and M. Mahanetsa. 1990. Acceptance Test for Makhulo Super Dairy (17%) Meal. RD-R-105.
- Martin, S., W. Schacht, M. Mahanetsa, and J. Campbell. 1990. Maintenance (Winter) Feeding of Mature Oxen. RD-R-106.
- Massey, G., S. Nklobolo, and M. Pomela. 1992. Bean Variety Trials (1986 - 1991). RD-R-119.
- Massey, G., M. Pomela, N. Ntlou, and L. Moremoholo. 1992. Manure and Fertilizer Applications to Three Crops in Lesotho (1987 - 1991). RD-R-121.
- Massey, G., M. Pomela, T. Malatalina, and P. Alotsi. 1992. Five Years of Practical Maize Demonstration Work in Lesotho, Lowlands and Foothills, MULPOC Supported. RD-R-122.
- Massey, G., and M. Pomela. 1991. Bean Dates of Planting - Five Year Research Report. RD-R-120.
- Massey, G., E. Pomela, M. Ranthamane, S. Moima, P. Alotsi, S. Nkobile, N. Ntlou, and L. Moremoholo. 1990. Agronomy Research Report 1987/88. RD-R-98.
- Massey, G., E. Pomela, S. Moima, S. Nkobile, L. Moremoholo, and N. Ntlou. 1991. Agronomic Research Report, 1988/89. RD-R-112.
- Massey, G., M. Pomela, and L. Moremoholo. 1991. Final Report Maize Variety Trials (1986 - 1990). RD-R-117.
- Mathaha, I. and F. Rooyani. 1988. A Blueprint - Establishment of Faculty of Agriculture in Lesotho submitted to MOA & NUL.

- Motsamai, B. 1990. Institutional Arrangement and Policy on Range Conservation and Livestock Development in Lesotho.
- Mowbray, P. 1988. Transmittal of The Annual Report For Maphohloane Association Year End, 30 April, 1988.
- Nishek, M. 1991. Student Enterprise Project.
- Nishek, M. and M. Mathaha. 1991. LAC Survey for Graduates of 1987, 1988. and 1989.
- Pomela, E., G. Massey, M. Ranthamane, S. Moima, P. Alotsi, and T. Maboce. 1990. On-Farm Agronomy Research Results, 1986 - 1987. RD-R-91.
- Pomela, E., G. Massey, M. Ranthamane, S. Moima, P. Alotsi, and T. Mabolae. 1989. Agronomy Research Report 1986/87. RD-R-97.
- Portillo, M., L.C. Weaver, and B. Motsamai. 1991. Planning for Management of Communal Natural Resources Affected by Livestock; Proceeding From A LAPIS/SADCC/USAID Funded Workshop Held In Mophale's Hoek, Lesotho, May 27 - June 1, 1990.
- Schacht, W., C. Drew, M. Molapo, and A. King. 1989. Effects of Ration Pelleting on Feedlot Performance of Lambs in Lesotho, Technical and Economic Analysis. RD-R-116.
- Schacht, W., C. Drew, M. Molapo, and A. King. 1989. Effects of Ration Pelleting on Feedlot Performance of Lambs in Lesotho.
- Tyson, B. 1991. AI S L A P I S Project Program Assessment & Termination Report.
- Tyson, B. 1991. Assessment of AIS Services and Favored Sources of Information by Farmers and Extension Agents.
- Tyson, B. 1991. Programs Assessment and Termination Report of the Agricultural Education Component of L A P I S.
- Tyson, B. 1990. Perceptions of Farmer Crop Production Problems by Farmers, Extension & Headquarter Staff.
- Weaver, L.C. and M. Sekoto. 1991. Community-Based Natural Resource Management in Lesotho.
- Weaver, L.C. 1991. Sehlabathebe Range Management Area (RMA) Vegetation Analysis for Transect Numbers 1-17, 1983 vs. 1990-91.
- Weaver, L.C. 1991. Ha Moshebi/Ha Ramatseliso Range Management Area (RMA) Vegetation Analysis for Transects 1-10 and 1-23, 1987 vs. 1991.
- Weaver, L.C. 1990. Management of Communal Natural Resources Through Community-Based Grazing Associations.

Weaver, L.C., Editor. 1990. National Livestock Policy Implementation Plan. National Livestock Task Force.

Weaver, L.C. 1990. Sehlabathebe Range Management Area (RMA) Vegetation Analysis for Transect Numbers 1,6,7,8,9,&10: June 1983 vs. July 1990.

Weaver, L.C. 1989. Range Management Area Program In The Mountain Kingdom of Lesotho.

Weaver, L.C. 1988. Lesotho National Rangeland Inventory: Methodology, Results, and History from 1981-1988.

White, B. 1990. Status and Lessons Learned From Lesotho Home Garden Nutrition Program.

3. TRAINING WORKSHOP PROCEEDINGS

Agriculture Teaching Methodology Workshop. January 1988.

Agriculture Marketing & Production Economics Course. February 1990.

ARD Conference. December 1989.

Extension Training/Communication Coordination Workshop. January 1991.

Fruit Production and Extension. January 1989.

Home Garden Workshop. November 1988.

Home Garden Workshop. January 1988.

Incorporating Practical Entrepreneurial Skills into College Curricula. November 1989.

Irrigated Vegetable Crop Production. May 1988.

Irrigated Cropping and Marketing: Extension staff and Farmers. June 1987.

Irrigation Cropping and Marketing: Extension Staff. January 1987.

Irrigation Resource Planning Training. October 1989.

LAPIS Project Sustainability Workshop. September, 1991.

Livestock Production and Marketing Workshop for Extension Staff and Farmers. August 1988.

Livestock Production and Marketing: Extension Staff. January 1988.

MAMC Management Workshops (x3). January 1990.

Nutrition Agent Workshop. August 1987.

Nutrition Agent Workshop. July 1988.

Post Harvest and Storage/Irrigated Vegetable Production. April 1989.

Post-Harvest Handling and Marketing. October 1988.

Preparing, Teaching, and Evaluating Practical Instruction. January 1990.

Student/Participant Education Workshop. January 1989.

Teaching Methodology Workshop. January 1991.

4. TRAINING WORKSHOP MANUALS

Bukana E Holim'a Thupelo ea Ts'oaro, le Poloko ea Lijalo ka Mor'a Kotulo. 1989.

Bukana E Holim'a Thupelo ea Poloko ea Lijalo. 1988.

Farmer Training Course Sponsored by LAPIS Project. 1987.

LAPIS Marketing Training (Thupelo ea Li 'Maraka). 1988.

Proceedings of Livestock Production and Marketing Workshop. 1988.

Resource Planner Workshop Materials. 1989: Sprinkler, Irrigation, Furrow Irrigation, Irrigation Principles & Practices, Irrigation Pumping Plants, Engineering Field Manual, Handbook for Vegetable Growers.

Thupelo ea Lihoai ka Lithuso Tse Tsoang LAPIS Project. 1987.

Vegetable Growing for Home Consumption & Cash. 1987.

5. VIDEO

Tyson, B. 1987. Irrigated Vegetable Crop production, Extension Agent Training.

Tyson, B. 1987. Irrigated Vegetable Crop Production Farmer Training.

Tyson, B. 1988. Livestock Production Ext. Agent & Farmer Training.

Tyson, B. 1989. LAPIS Project Support to LAC.

6. CIRCULARS

Badamchian, B., P. Namane, L. Makhoali, M. Tsiu, and M. Matsoso. 1991. Acid Soils and Liming Techniques. RD-C-54.

Campbell, J., and T. Jobo. 1991. Farm Record Keeping, The Daily General Record Book. RD-C-50.

Campbell, J., T. Jobo. 1991. Poloko ea Litlaleho (Rekote) tsa Masimong. RD-C-51.

Campbell, J., T. Jobo. 1991. Farm Record Keeping, The Enterprise Record. RD-C-52.

Campbell, J., T. Jobo. 1991. Poloko ea Litlaleho Karolo ea Bobeli. RD-C-53.

Eckard, J. and G. Johnson. Choice and Use of Centrifugal Pumps.

Forrest, P. How to Mix and Measure Pesticides.

Goertz, S. and S. Sekoli. Disease & Insect Management for Apples & Peaches.

Goertz, S. and S. Sekoli. Selection of Deciduous Fruit Tree Species.

Goertz, S. and S. Sekoli. Thinning Tree Fruit.

Goertz, S. Student Enterprise Program. pamphlet.

Goertz, S. Grow Holes.

Goertz, S. and M. Woods. Vegetable Nursery Beds and Transplanting.

Goertz, S. and M. Khalane. Harvesting and Storing Vegetables.

Homan, H., and T. Lepheane. 1990. Pesticides for Lesotho Vegetable Production. C-12 Plant Protection.

Homan, H., and T. Lepheana. 1989. Meriana ea Serapeng. C-8 Plant Protection.

King, A. and B. King. Student Enterprise Projects at Lesotho Agricultural College. color brochure.

King, A. and C. Drew. Broiler Production in Lesotho

Loomis, E., and Mots'oane. 1989. Fertilizers and their Application. C-5 Fertilizer.

- Massey, G., E. Pomela, and S. Nkobole. 1989. Lesotho Production Guide for Dry Beans. C-1 Agronomy.
- Massey, G. 1991. Maize Pollination. RD-C-56.
- Massey, G., E. Pomela, and L. Moremoholo. 1990. Wheat Production Guide. C-8 Agronomy.
- Massey, G., E. Pomela, and N. Ntlou. 1990. Grain Sorghum Production Guide. C-9 Agronomy.
- Massey, G., E. Pomela, S. Nkobole, and S. Moima. 1990. Pinto Beans: A new Crop for Lesotho. C-10 Agronomy.
- Massey, G., E. Pomela, W. Schacht, V. Ramakhula, and L. Moremoholo. 1989. Pasture Grass Recommendations for Lesotho: Oats. C-12 Range.
- Massey, G., E. Pomela, W. Schacht, V. Ramakhula, and L. Moremoholo. 1990. Oat Fodder and Seed Production Guideline. C-16 Range.
- Matete, P. 1987. Low Bulk, High Energy Cereal Weaning Food. C-5 Nutrition.
- Mots'oane, M., E. Loomis, L. Pomela, and H. Homan. 1990. Vegetable Production Guide: Cabbage Production. C-10 Horticulture.
- Nishek, W. Off Season Care and Storage of Irrigation Equipment.
- Nishek, W. and G. Johnson. Instruction Book for Hatz Diesel Engine Maintenance (Bukana ea Tataiso Thlokomelong ea Liengine).
- Sunta, J. How to Measure Spring Flow Rates.
- Ramakhula, V. 1989. Forage plants Morphology, Physiology, and Uses. C-7 Range.
- Schacht, W., and V. Ramakhula. 1989. Pasture Grass Recommendations for Lesotho: Perennial Ryegrass. C-8 Range.
- Schacht, W., and V. Ramakhula. 1989. Pasture Grass Recommendations for Lesotho: Fodder Sorghum. C-9 Range.
- Schacht, W., V. Ramakhula, and G. Massey. 1989. Utilization of Five Perennial Grasses Used for Pasture and Fodder Production. C-13 Range.
- Schacht, W., and V. Ramakhula. 1989. Pasture Grass Recommendations for Lesotho: Annual Rhygrass. C-15 Range.
- Schacht, W., V. Ramakhula, and L. Motjope. 1989. Performance of Merino Lambs in Lesotho, Part I: Weight Gains of Supplemented and Non-supplemented Merino Lambs Under Extensive Conditions. C-16 Livestock.

Schacht, W., and M. Molapo. 1989. Effects of Supplemental Grazing on Weight Gains of Incoming Mountain Cattle at the National Feedlot. C-18 Livestock.

Schacht, W., and M. Molapo. 1989. Feed Efficiency and Carcass Characteristics of Mountain Oxen Fed Diets of Varying Roughage Content. C-19 Livestock.

Schacht, W., M. Molapo, L. Motjope, and V. Ramakhula. 1989. Performance of Merino Lambs in Lesotho, Part II: Weight Gains and Feed Efficiency of Feedlot Finished Lambs. C-22 Livestock.

Schacht, W., and M. Molapo. 1989. Feed Efficiency and Carcass Characteristics of Woolled Merino Wethers Fed Diets of Varying Roughage Content. C-26 Livestock.

Schacht, W., C. Drew, and M. Molapo. 1989. Development of Lamb-Fattening Rations from Locally Available Feedstuffs. C-37 Livestock.

Schacht, W., L. Motjope, M. Machofo, and S. Martin. 1989. Formulation of Swine Rations from Locally Available Feedstuffs. C-41 Livestock.

Sekoli, S., and S. Goertz. 1990. Thinning Tree Fruit. C-2 Horticulture.

Sekoli, S., P. Phakisi, and S. Goertz. 1990. Disease and Insect Management for Apples and Peaches. C-12 Horticulture.

Sekoli, S., and S. Goertz. 1991. Selection of Deciduous Tree Fruit Species and Varieties for Lesotho. RD-C-55.

Sekoli, S., M. Mothokho, S. Goertz, J. Brio, and J. Campbell. 1990. Apples. RD-PG-18 (Production Guide)

Sunta, J. An Operational Guide for Pump - Driven Irrigation Systems.

Sunta, J. Crop Water Requirements.

7. CIRCULARS FROM SHORT-TERM TRAINING (1987-91)

Gugushe, T. Vitamins.

LAC. Mekhoa ea ho Kopanya le ho Metha Meriana ea Likokoanyana tse Senyang Lijalo.

Lekhotsa, E.K., K. Mokobori, T.P. Mosola, K. Matamane. Theko le Thekiso ea Liphoofole Lesotho.

Lerotholi (DVM). Common Diseases of Sheep in Lesotho.

Mafisa, T. Management and Husbandry of Small Stock.

Matete, M. Nutrition and Feeding of Beef Cattle.

Matete, M. Stall and Supplemental Feeding of Cattle and Sheep.

Matete, P. Low Bulk High Energy Cereal Weaning Foods.

Messiah (DVM). Disease of Cattle.

Mofeefee, M. Protein - Energy Malnutrition and Other Associated Nutritional Deficiency Diseases.

Mopeli, N., J. Teletsi, M. Machongo, S. Nonyana. Tlhokomelo le Paballo ea Likhuts'oane.

Mosola, T., K. Matamane, K. Lekgotsa. Theko le Thekiso ea tse Behoang ke Liphoofofo.

Mothibe, N. The ABC's of Vitamins and Minerals.

Mpeta, M. Preserving Food for Future Use.

Nutrition Division (MOA). Nutrients and Their Sources.

Nutrition Division (MOA). Phepo ea Ngoana.

Shumari, M. Food Safety and Hygiene.

Ts'iame. A. Vegetable Preparations.

Xingwana, M., G. Lethetsa, P. Adoro, T. Mohapi.
Phepo ea Liphoofofo le Ts'ilo ea Lijo ka Maleng.

8. PRODUCTION GUIDELINES

Badamchian, B. 1991. Management of Acid Soils Through Liming. RD-PG-15.

Loomis, E., and M. Mofoka. 1992. Snap Bean. RD-PG-25.

Makhata, H., E. Loomis, M. Mots'oane, and J. Campbell. 1991. Beetroot. RD-PG-20.

Makhata, H., G. Marlowe, J. Campbell, and T. Jobo. 1990. Potato. RD-PG-5.

Makhata, H., G. Marlowe, T. Jobo, and J. Campbell. 1990. Carrots. RD-PG-10.

Makhata, H., G. Marlowe, and J. Campbell. 1990. Onions. RD-PG-13.

Massey, G., E. Pomela, N. Ntlou, J. Campbell, and T. Jobo. 1991. Grain Sorghum. RD-PG-16.

- Massey, G., E. Pomela, W. Schacht, V. Ramakhula, L. Moremoholo, and J. Campbell. 1990. Oats (Fodder and Seed Production). RD-PG-4.
- Massey, G., E. Pomela, L. Moremoholo, J. Campbell, and T. Jobo. 1990. Wheat. RD-PG-12.
- Massey, G., E. Pomela, S. Nkobole, J. Campbell, and T. Jobo. 1990. Dry Beans. RD-PG-6.
- Massey, G., E. Pomela, L. Moremoholo, J. Campbell, and T. Jobo. 1990. Maize. RD-PG-2.
- Moima, S., and G. Massey. 1992. Groundnuts. RD-PG-23.
- Moima, S., and G. Massey. 1990. Sunflower. RD-PG-17.
- Mots'oane, M., and E. Loomis. 1992. Cucurbits, Pumpkins and Squash. RD-PG-24.
- Mots'oane, M., M. Mohloboli, E. Loomis, and J. Campbell. 1991. Leafy Greens (Mustard, Collard, Kale, Swiss Chard (Spinach), and Other Greens). RD-PG-21.
- Mots'oane, M., G. Marlowe, and J. Campbell. 1990. Tomatoes. RD-PG-3.
- Mots'oane, M., E. Loomis, J. Campbell, L. Pomela, and H. Homan. 1990. Cabbage. RD-PG-8.
- Schacht, W., V. Ramakhula, G. Massey, and J. Campbell. 1991. Fodder Sorghum. RD-PG-14.
- Schacht, W., and V. Ramakhula. 1990. Annual Ryegrass. RD-PG-11.
- Schacht, W., and V. Ramakhula. 1990. Perennial Ryegrass. RD-PG-7.
- Sefika, P., G. Massey, G. Seutloali, and J. Campbell. 1990. Lucerne. RD-PG-1.
- Sefika, P., G. Massey, and G. Seutloali. 1990. Bana Grass. RD-PG-9.
- Sekoli, S., and S. Goertz. 1991. Strawberry. RD-PG-22.
- Sekoli, S., M. Mothokho, S. Goertz, J. Brio, and J. Campbell. 1990. Apples. RD-PG-18.
- Sekoli, S., M. Mothokho, S. Goertz, J. Brio, and J. Campbell. 1990. Peaches. RD-PG-19.

9. BULLETINS

- Mots'oane, M., M. Mohloboli, T. Rankhasa, G. Marlowe, and A. Ansari. 1990. Production of Vegetable Transplants. RD-B-55.

Mots'oane, I. M., M. Mohloboli, T. Rankhasa, and G. A. Marlowe. 1991. Vegetable Seedling Plant Production. RD-B-56.

10. RESEARCH HANDBOOKS/MANUALS

Badamchian, B., M. Tsiu, L. Makhoali, and M. Makakole. 1991. Laboratory Manual - Soil and Plant Analytical Procedures for Lesotho. RD-M-4.

Loomis, E. ed. 1988. Fertilizer and Seed Recommendations for Lesotho. English and Sesotho. RD-H-5

Makhata, H., G. Marlowe. 1990. Diagnosis of Vegetable Field Problems. RD-H-10.

Marlowe, G., J. Campbell, and M. Mohloboli. 1991. Lesotho Vegetable Crop Data File. RD-H-12.

Mots'oane, M., H. Makhata, and G. Marlowe. 1990. Mulching and Related Practices which can be used to Improve Vegetable Production In Lesotho. RD-H-11.

11. CONSULTANTS REPORTS

Ag. Education Component/LAPIS. 1991. FTC LAPIS Project Program Termination Report.

Allen, R. 1989. Report on Carrying & Grazing at LAC, Leribe Campus.

Badamchian, B. 1992. Sustainability of the ARD Soil Testing Laboratory.

Berquist, C. 1986. The feasibility of merging the LAC Library and ARD Library of the MOA.

Bobbit, F. 1991. Developing An LAC Graduate Young Farmer Development Program in Lesotho.

Bobbitt, F. 1989. Incorporating Practical Agriculture and Entrepreneurial Skills Into College and University Curricula - A Southern African Symposium Proceedings.

Bobbit, F. 1987. In-Country Training Plan for The LAPIS Project 1987-90.

Bolton, C.G. 1991. Follow-up Strategies For Irrigation Resource Planners in Lesotho.

Box, T., D. Dwyer, and J. Jacobs. 1988. Consultant's report on formation of Faculty of Agriculture.

- Buffington, R.O. 1991. Arizona Range/Livestock Tour For Lefu Lehloba, Director Livestock Services, MOA.
- Cantor, J. 1988. Analysis of Social Management Issues in Irrigation Schemes in Lesotho.
- Christensen, A. 1989. A review and evaluation of the SEP Program at LAC.
- Cordazo, E. 1991. Organization and Operation of The Two District Marketing Centers.
- Danziger, Y. 1990. A Preliminary Marketing Feasibility Study of Refried Beans in Lesotho.
- Dixie, G.B.R. 1991. Report On Marketing Training Workshop.
- Freeland, N. 1990. Recommendations For The Strengthening of Market Information Systems.
- Gorton, M. 1989. Non-traditional Income Generating Activities for Women.
- Grierson, W. 1989. Post Harvest Consultant's Report.
- Harmon, T. 1991. Consultancy by Computer Support Consultants (Pty).
- Heffernan, C. 1990. Livestock Healthcare Among Basotho Herders of Sehlabathebe.
- Kanyangwa, J. 1989. Sorghum Production and Its Uses.
- Khabele, J. 1988. Cooperation in Commercial Cropping Enterprises: A Study of Irrigation Schemes in Lesotho, Vols I & II.
- Malloch, K.R. and J.B. Blake. 1987. A Study and Recommendations for Further Development and Improvement of Poultry Production and Marketing in The Kingdom of Lesotho.
- Malloch, K.R. and J.B. Blake. 1987. An Evaluation of The Broiler Industry in Lesotho.
- Malloch K. R. and J.B. Blake. 1987. Recommendations for the Introduction of a Pullet Supply Control Program in Lesotho.
- Meissner H. H. 1989. Report on Unit Equivalents for Lesotho and their Influence on National Carrying Capacity Estimates.
- Meissner H. H. 1989. Animal Unit Equivalents for Lesotho and Their Influence on National Carrying Capacity Estimates.
- Mittendorf H. J. 1990. Planning Farmers' Vegetable Wholesale Markets in Maseru, Leribe and Mohale's Hoek.

Riley, P. 1989. Effect of Newly Introduced Technology on Women Agriculturalists in Lesotho.

Saenz de Tejada, S. 1989. Food Consumption and Its Relation to Production.

Sabella, J. 1992. Report of Activities and Recommendations.

Saenz de Tejada, S. 1989. Food Consumption and its Relation to Production A Survey in Lesotho.

Tibbits, C. 1992. Machobane Agricultural Development Foundation Initial Board of Trustees.

Wilson, G.R. 1990. Completion of Service Report Farmer to Farmer Program.

Wilson, G.R. 1989. Irrigation Specialist (LAPIS Project) Lesotho Agricultural College, Maseru.

12. MISCELLANEOUS PUBLICATIONS

Campbell, J.R., T. Jobo, and L. Phakisi. 1990. Purchasing Patterns Of Milk And Poultry In Rural Lesotho. Agrekon Vol. 29:1 pp 335-340 (Journal of the Agricultural Economics Association of Southern Africa).

Drew, C., V. Ramakhula, W. Schacht, and A. King. 1988. Forage Crop Development.

Drew, C. 1991. Legal Notice - Commercial Feeds and Stock Remedies Regulations.

Loomis, E., P. Mowbray, and G. Feaster. 1992. Assessment of Intermediate-Level Production of High-Value Crops. LAPIS Target 12.

Computer Training Notes Compiled by the ARC LAPIS Project Staff, 1990:

Part 1. DOS - Disk Operating System.

Part 2. WordPerfect - Word Processing.

Part 3. LOTUS 1-2-3 - Spreadsheet and Graphing.

LAC Catalogue and Calendar. 1987-88, 1988-89, 1989-90, 1990-91, 1991-92

LAC Information Outline. 1987-88, 1988-1989

LAC Staff Handbook. 1987

SEF Deed of Trust. 1989, amended 1992.

13. PRESENTED PAPERS AT INTERNATIONAL WORKSHOPS

The LAPIS Project (Lesotho) Irrigated Vegetable Program: Impact on Household Economies. Presented by Dr. N. Artz at the International Association of Agricultural Economists Inter-conference Symposium, The Restructuring of Agriculture in Southern Africa, Swakopmund, Namibia, July 1990.

Purchasing Patterns of Milk and Poultry in Rural Lowlands of Lesotho, and Returns and Adoption of New Maize Technology by Basotho Farmers. Presented by J. Campbell T. Jobo at the Agricultural Economic Association of Southern Africa held in Durban in September 1990.

Lesotho's Range Management Area (RMA) Programs: Changes in Herdsmen's Perceptions and Relevant Management Practices, and Developing Effective Community Participation in Communal Range Resource Management. Presented by Dr. N. Artz at the first international conference hosted by the Grassland Society for Southern Africa (GSSA), in May 1990, in Pretoria on "Meeting Rangeland Challenges in Southern Africa in the 1990's".

Community-Based Natural Resource Management in Lesotho and Institutional Arrangements and Policy on Range Conservation and Livestock Development In Lesotho. Presented by L.C. Weaver and B. Motsamai, respectively, at the first International Conference hosted by the Grassland Society for Southern Africa (GSSA), in May 1990, in Pretoria on "Meeting Rangeland Challenges in Southern Africa in the 1990's".

The Development of Grazing Associations in Lesotho: The Search for Sustainability. Presented by Dr. J.P. Hunter at The International Symposium on Management Systems for Sustainable Agriculture in Sub-Saharan Africa, Royal Tropical Institute, Amsterdam, The Netherlands. 28 October - 1 November, 1991.

ANNEX NO. 2

LIST OF LAPIS CONSULTANTS

ANNEX NO. 2

LIST OF LAPIS CONSULTANTS

MacMakin, R. 8/86, 11/87

Advised the AIS on infrastructure improvement and equipment procurement, and on use of publishing equipment.

Berquist, C. 9/86

Conducted a study to assess the feasibility of merging the LAC and ARD libraries.

Carvalho , J. 11/86

Prepared a social accounting matrix and input/output model for Lesotho.

Dames, K. and Moore 1/87

Performed assessment on application of a sand point system for the LAC/ARD irrigation system.

Khablele, J. 2/87

Studied the cooperation in commercial cropping enterprises in the context of irrigation schemes in Lesotho.

Mowbray, P. 2/87

Conducted agronomic and horticulture survey of PIC and made recommendations to small irrigated vegetable producers.

Malloch, K. 2/87

Thirty six days. Conducted preliminary assessment of poultry industry.

Malloch, K. and Blake, M. 5/87 and 8/87

Studied the Poultry industry and marketing. Phase one of the study.

Price, R.E. 10-11/87

Provided training to meat graders at NAFC.

Robinson, B. 7/87

Assisted with the Home Economic curriculum design.

Cantor, J. 8/87

Performed analysis of social management issues in irrigation schemes in Lesotho.

Tibbits, C. 11/87

Assisted with farm management plans for LAC and curriculum design.

Mallock, K. 12/87 and 2/88

Completed the final phase of the study on poultry industry and marketing in Lesotho.

Sandra, Tejoda. 5/88

Studied and surveyed malnutrition in Lesotho's children.

Kanganzur, Joyce. 5/88

Studied the utilization of grain sorghum as a food source in Lesotho.

Box, T. 9/88

Studied the proposal for the formation of the Faculty of Agriculture at LAC.

Dwyer, D. 9/88

Studied the proposal for the formation of the Faculty of Agriculture at LAC.

Jacobs, J 9/88

Studied the proposal for the formation of the Faculty of Agriculture at LAC.

Riley, Pamela. 2/89

Studied the effect of newly introduced technologies on Women In Agriculture in Lesotho.

Gorton, M. 2/89

Studied the rural enterprises opportunities for women in Lesotho.

Sarig, P. 2/89

Finalized input into the fruit production manual for Lesotho.

Smith, E. 2/89

Horizontal well drilling instructor.

Grierson, Williams. 3/89.

Provided training to farmers and MOA staff in vegetable storage.

Kanyangwa, J. 5/89

Studied the rural population diet and the use of sorghum.

Meissner, H.J. 7/89

Assessed Animal Unit Equivalent appropriate to Lesotho.

Ives, D. 8/89

Appraised the operations for the SEP Trust Fund.

Grierson, Williams. 9/89

Provided training to small farmers in post harvest handling of selected vegetables.

Wilson, G. 10/89

Assisted in the training program of irrigation resource planners.

Christensen, A. 11/89

Assessed the SEP program and the keynote speaker for the regional SEP symposium.

Buffington, R.O. 1-2/90

Drafted National Grazing Fee Regulations.

Hilleman, D. 1/90

Evaluated publications process and initiated infusion / diffusion information mechanism.

Moore, H. 1-3/90

Assisted in the training of irrigation resource planners.

Freeland, Nicholas. 2/90

provided the MOA/MD assistance in developing a computer-based Lesotho Market information system.

Mittendorf, H.J. 2/90

Assisted the MD in planning farmer vegetables wholesale markets in Maseru, Mohale's Hoek and Leribe.

Danziger, Y. 4/90

Studied the market feasibility for refried beans in Lesotho and in South Africa.

Hilleman, D.N. 6/90

Follow-up to communication/Training Workshop

Mittendorf, H.J. 7/90

Assisted in planning of marketing extension program of the MOA Marketing Division.

Harmon, Tracy. 11/90, 6/91, 6/92

Assisted the Marketing Division to develop computer based market information systems for livestock, inputs, and the pilot market centers.

Bobbitt, F. 8/87, 8/88, 1/91

Performed extension management training, assisted in development of AEC short-term training plan, training evaluation, instructional methodology and team building.

Bolton, C. 1/91

Assisted the project to evaluate the training requirements for the Irrigation Resource Planners for the remaining life of the project.

Rooyani, F. 6/91

Assisted in establishment of sister college relationship between LAC and South Dakota State University.

Buffington, R.O. 6/91

Assisted with the organization and conduct of a tour of USA rangeland areas and intensive livestock industries for the Director of Livestock Services.

LeViness, E.A. 6/91

Assisted with the organization and conduct of a tour of USA rangeland areas and intensive livestock industries for the Director of Livestock Services.

Tibbits, C. 1-2/92

Voca Volunteer who assisted with establishment of Machabane Trust Foundation.

Dixie, G. 10/91

Conducted a workshop for the MOA/MD Marketing Extension Field Officers.

Cordoso, H. 12/91

Developed plans and made recommendations for the operation of the pilot market centers.

Ostrenga, R. 12-91/1-92

Voca Volunteer who assisted with establishment of Machabane Trust Foundation

Badamchian, B. 2/92

Assessed status of ARD soils laboratory.

Douglas, E.A. 9-91/3-92

Provided intermittent training in support of HGNP radio program.

Smith, E. 10/91

Taught basic horizontal well drilling techniques.

Bloem, J. 2-3/92

Conducted field survey of pinto bean producers.

Russell, C. 2-3/92

Procurement agent to purchase of supplies and goods for Sehlabathebe Training Center.

Rooyani, F. 6/92

Assisted in preparation of the LAPIS Project close out report

ANNEX NO. 3

SHORT-TERM TRAINING LOG FOR ALL LAPIS

SHORT-TERM TRAINING EVENTS

JUNE, 1986 - MAY, 1992

26-May-92

LAPIS SHORT-TERM TRAINING LOG (May, 1992)

CATEGORY	TITLE	DATES	LOCAT	INSTRUCTOR	PARTICIPANTS						COMMENTS	
					EA	SMS HQ Staff	Fa	Student	Other	M		FM
	Association Management	Nov. 1988 (5 Days)	Local (Shlabat.)	LDTC			9			8	1	
	Association Management	Dec. 1988 (5 Days)	Local (Shlabat.)	LDTC			15			13	2	
	Tour Angora Goat	Oct. 1988 (5 Days)	RSA	LAPIS/RSA Staff			20			18	2	
	Tour Angora Goat	March 1989 (5 Days)	RSA	LAPIS/RSA			32			29	3	Goat Procurement
	Tour Sehlabat. and Rama G. RMA	May 1989 (5 Days)	Local (Sehlabat.)	MOA/LAPIS	3		12			13	2	
	Animal Health	August 1989 (3 Days)	Local (Sehl)	MOA LAPIS			28			25	3	
	Association Management	August 1989 (5 Days)	Local (Peta)	LDTC MOA			14			12	2	Comittee Members

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LAPIS SHORT-TERM TRAINING LOG (May, 1992)

CATEGORY	TITLE	DATES	LOCAT	INSTRUCTOR	PARTICIPANTS						COMMENTS	
					EA	SMS HQ Staff	Fa	Student	Other	M		FM
	Range Issue Coordination	August 1989 (4 Days)	Local	MOA LAPIS MOI			37			30	7	Annual Seminar
	Association Management	September 1989 (5 Days)	Local (Rama)	LDTC MOA	1	1	11			10	3	Exec. Committee
	Sheep and Goat Tour	October 1989 (4 Days)	RSA	MOA LAPIS		2	29			24	7	
	Veterinary Procedures	October 1989 (5 Days)	Local (Sehl)	MOA LAPIS			21			18	3	
	Goat Study Tour	Feb. 1990 (5 days)	RSA	MOA/LAPIS		5	2	25		27	5	
	Association Management	Sept. 1989 (5 days)	Local (Sehlab.)	LDTC/MOA			15			13	2	
	Livestock Marketing	Dec. 1989 (5 Days)	Local (Sehlab.)	MOA/LAPIS			30			27	3	

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LAPIS SHORT-TERM TRAINING LOG (May, 1992)

CATEGORY	TITLE	DATES	LOCAT	INSTRUCTOR	PARTICIPANTS						COMMENTS		
					EA	SMS HQ	Staff	Fa	Student	Other		M	FM
	Dairy Farmer Tour	April 1990 (4 days)	RSA	MOA/LAPIS	14		3	27			39	5	
	Fodder Production	Feb. 1990 (2 days)	Local (Sehlabathebe)	MOA/LAPIS				54			40	14	
	Association Management	Feb. 1990 (5 days)	Local (Pelaneng)	LDTC/MOA				7			7		
	Herd Health Course	Feb. 1990 (3 days)	Local (Pelaneng)	MOA/LAPIS				28			18	10	
	Pig Farmers Conference	July 24-27, 1990	Local	MOA/LAPIS	11			85			58	38	
	NAFC Tour	June 17-19, 1990	Local	MOA/LAPIS	2			37			28	11	
	Association Management	Sept. 1990 (10 days)	Local (Pela)	LDTC/MOA				32			24	8	
	Association Management	Sept. 1990 (5 days)	Local (Mokhotlong)	LDTC/MOA				14			9	5	

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25-Jun-92

LAPIS SHORT-TERM TRAINING LOG (May, 1992)

CATEGORY	TITLE	DATES	LOCAT	INSTRUCTOR	PARTICIPANTS						COMMENTS		
					EA	SMS HQ Staff	Fa	Student	Other	M		FH	
	Broiler Production Course	October 1990 (2 days) each	Local (MH,M,L)	MOA/LAPIS			18			15	3		
	Stud Animal Procurement Tour	September 1990 (3 days)	RSA	MOA/LAPIS	3	2	6			11			
	Operation & Management of Grazing Associations	May 1992 (4 days)	Local Seh. TC	MOA/LAPIS	4	8	32			35	9		
	Record Keeping & Budgeting	May 1992 (1 day)	Local	MOA/LAPIS LADB	44	8			3	22	33		
Total Lead Farmers					23	97	23	1146	0	23	1001	311	
TOTAL NUMBERS =					510	663	995	1498	98	2407	4639	1534	

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25-May-92

LAPIS SHORT-TERM TRAINING LOG

CATEGORY	TITLE	DATES	LOCATION	INSTRUCTOR	PARTICIPANTS							COMMENTS		
					EA	SMS	HQ	Staff	Farmer	Student	Other		M	FM
A. LAC	Teaching Methods	Jan 11-15 1988	Local (LAC)	LAPIS				15			7	11	11	5 MOE, 2 T.K.
	Institution Management	Sep-Feb 1988/89	USA	Univ.Az.				1					1	
	Training Methods and Management	June 13-30 1988	Greece	A.F.S.				4				3	1	
	Communication	Sep. 1988 2 days	Local	SADCON				2						2
	Staff Computer Training	On-going 1986-1990	Local	LAPIS				12				2	10	
	Accounting	August 89- May 1990	Local	C.A.S.				1				1		
	Scholarship	1988/89 (1 year)	Local	L.A.C.							3	3		Honor Students
	Scholarship	1989/90 (2 years)	Local	L.A.C.							5	5		
	Video Operation	Oct. 1988 (2 weeks)	Local	FAO				3				3		

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25-May-92

LAPIS SHORT-TERM TRAINING LOG (May, 1992)

CATEGORY	TITLE	DATES	LOCATION	INSTRUCTOR	PARTICIPANTS							COMMENTS	
					EA	SMS	HQ	Staff	Farmer	Student	Other		M
A. LAC (Cont.)	Supervised Occupational Experience	May, 1989 (2 weeks)	Local	MOA/LAPIS						4			4 Home Economics Related
	Confectionary	Aug 1989 (2 months)	RSA	P.E.B.						2			2 Pre-SEP Training
	Textiles (Knitting)	Aug 1989 (2 months)	Local	PASAP					1				1
	Education Evaluation	January 16-18, 1989	Local (LAC)	LAPIS				25			6	16	15 4 MOE, 2 T.K.
	Training Methods and Management	June 12-30 1989	Greece	A.F.S.				2				2	
	Swazi Agric	March 19-24 1989	Swaziland	Swazi Agric College				4				3	1 Supervised Student Tour
	Supervised Occupational Experience	June to Aug 1989 (2 months)	Local (LAC)	MOA/LAPIS						20		17	3
	Tour	March 1987	Botswana					4				2	2
	Computer Training	June 1987	Local	SADCON				2					2

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LAPIS SHORT-TERM TRAINING LOG (May, 1992)

CATEGORY	TITLE	DATES	LOCATION	INSTRUCTOR	PARTICIPANTS						COMMENTS		
					EA	SMS	HQ Staff	Farmer	Student	Other		M	FM
A. LAC (Cont.)	Office Management	Feb 88 (1 week)	Local	SADCON				1				1	
	Computer Training	Oct 87 (3 days)	Local	SADCON				2					2
	Public Relations	Feb 88 (3 days)	Local	SADCON				1					1
	Confectionary	March 88 (2 months)	RSA	P.E.B.						1			1
	Textiles (Sewing)	June 88 (2 months)	RSA	P.E.B.						1			1
	Textiles (Knitting)	June 88 (2 months)	Local	PASAP						1			1
	Tour RSA Research Centers	May 22-24 1989	RSA	LAPIS/RSA Staff				2		1		3	
	Tour Botswana Ag Coll RSA Research Centers	March 88 (5 days)	Botswana RSA	LAPIS/Botswana Staff				10				8	2
	Tour Capetown Pomology Center	March 87 (4 days)	RSA	LAPIS/RSA Staff				2				2	
	Dbase and Lotus 123	August 89 (8 weeks)	Local	Quadrant				1					1
	SEP Symposium	Nov 89 (2 days)	Local	MOA/LAPIS				17			21	25	13 11 Vistors from SADCC countries, 10 others
	Student Evaluation	Nov 28-30, 1989	Local	LAPIS							25	9	16 MOE Staff (25)

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25-May-92

LAPIS SHORT-TERM TRAINING LOG (May, 1992)

CATEGORY	TITLE	DATES	LOCATION	INSTRUCTOR	PARTICIPANTS							COMMENTS	
					EA	SMS	HQ Staff	Farmer	Student	Other	M		FM
A. LAC (Cont.)	Fruit Prod. Conf/Tour	Dec/Jan 89/90 (2days)	Local RSA	MOA/LAPIS			12	6	1	17	20	16	Various project reps
	Instruct. Method	January 90 (4 days)	Local	LAPIS/MOA			17			1	12	6	
	Leadership Training	January 90 (5 days)	Local	MAMC			4				3	1	
	Supervised Occupational Experience	May 1990 (2 weeks)	Local	MOA/LAPIS					2				2 Home Economics related
	Fruit Production Conference and tour	March/April 1990 (2 days)	Local RSA	MOA/LAPIS	3	4	6	15		8	22	14	8 Various project staff
	Student Occupational Experience	May 1990 (2 months)	Local	MOA/LAPIS					5		3	2	
	Confectionary	June 1990 (2 months)	RSA	V.R.S.						3		3	
	Irrigation Tour	June 4-6, 1990	RSA	Silverton			2				2		
	Ag Educ. Symposium	June 24-28, 1990	RSA	Mwabatho			4				3	1	
	Computer Training	June 1990 (2 months)	Local	Quadrant			1					1	
	Scholarships	1990-1991	Local	LAC						2		2	

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LAPIS SHORT-TERM TRAINING LOG (May, 1992)

CATEGORY	TITLE	DATES	LOCATION	INSTRUCTOR	PARTICIPANTS					COMMENTS				
					EA	SMS	HQ Staff	Farmer	Student		Other	M	FM	
A. LAC (Cont.)	Teaching Methodology Workshop	January 91 (1 week) 1991	Local	LAPIS Consultant			17			10	7			
	Ft.Hare Univ. Tour	April 22-24, 1991	RSA	FTU Staff			2			2				
	Supervised Occupational Experience	Dec 90 (1 month)	Local	MOA/LAPIS				14		11	3			
	Sister College Visit	July 1-15, 1991	USA	SDSU					1	1		LAC Principal		
	SASAP Symposium	October 15-18, 1991	RSA	SASAP					2	2				
	SEP Supervisors W/S	12 Sept. 1991	LAC	LAC/LAPIS					10	8	2	LAC Staff		
	Fort Hare Univ Tour	28-30 Jan 92	RSA	Ft.Hare			3		2	5		LAC (3) LAPIS (2)		
	SASHS Congress	6-10 Jan 92	Pretoria	Technikon			2		2	4		LAC (2) LAPIS (2)		
	SEP Graduate follow-up	2 Nov 91	LAC	LAC staff			6		9	11	4	LAC graduates (9)		
	Computer Training	Dec/Jan/Feb 92	Quadrant	Quadrant			6			2	4			
	Livestock Training	27 Apr-2 May, 1992	Clarens RSA	Farmers			2			2		LAC Staff		
	Computer Training	March 92	Maseru	Quadrant			5			1	4	LAC Staff		
TOTAL LAC							3	4	195	27	65	111	239	166

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LAPIS SHORT-TERM TRAINING LOG (May, 1992)

CATEGORY	TITLE	DATES	LOCAT	INSTRUCTOR	PARTICIPANTS						COMMENTS		
					EA	SMS	HQ	Staff	Fa	Student		Other	M
B. AIS	Equipment Operation and Maintenance	January 15, 16 1987	Local (LAC)	MOA/LAPIS				6				4	2
	Film + Audio Production	June 1987 (2 Weeks)	Local (LAC)	FAO	3	3		7				7	6
	Printing Training	Oct. 15 To Dec. 15 1987	Local (IMRC)	IMRC				4				2	2
	Photography Training	Nov., Dec. 1987 (3 Months)	Local (IMRC)	IMRC				1				1	
	Typeset Training	Nov. to Feb. 1988 (3 Months)	Local (AIS)	LAPIS				1				1	
	Typeset Training	May 1988 Ongoing	Local (AIS)	LAPIS				5				3	2
	Electronics Repair	Oct. 31 To Nov. 25 1988	RSA	SABC				1				1	

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LAPIS SHORT-TERM TRAINING LOG (May, 1992)

CATEGORY	TITLE	DATES	LOCAT	INSTRUCTOR	PARTICIPANTS						COMMENTS	
					EA	SMS HQ Staff	Fa	Student	Other	M		FM
	Farm Management and Planning	September 1989 (On-going)	RSA	HSCSA (Correspondence)		1				1		
	Business Studies	September 1989 (One year)	Local (IEMS)	IEMS		1					1	
	Press Operations	May and October 1988 (Two days) (Each)	Local (AIS)	AM International (RSA)		4				2	2	
	Communications and Media	June 12 to July 21 1989	USA	Univ. IOWA		1				1		
	Tour Agriculture Information	Sept. 28 to Oct. 1 1986	RSA	Directorate Agric. Info. RSA		5				5		
	Information Officer Training	November 1989 (3 days)	Local	AIS		7				3	4	Participants from 7 Dept./Divs.

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LAPIS SHORT-TERM TRAINING LOG (May, 1992)

CATEGORY	TITLE	DATES	LOCAT	INSTRUCTOR	PARTICIPANTS						COMMENTS	
					EA	SHS	HQ	Staff	Fa	Student		Other
	Training	(5 Days)										
	Equipment Maintenance	September 1990 (On-going)	RSA	ETI				1				1
	Information Officer Training	April 1991 (2 days)	Loca	KOA/LAPIS	8		4				8	4
TOTAL AIS					3	11	49	0	0	0	40	23

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26-May-92

LAPIS SHORT-TERM TRAINING LOG (May, 1992)

CATEGORY	TITLE	DATES	LOCAT	INSTRUCTOR	PARTICIPANTS						COMMENTS		
					EA	SMS	HC	Staff	Fa	Student		Other	M
C. CROPS	Op., Maint, Manag. of Irrig. Syst.	Oct. 1 to Nov. 11 1989	USA	Univ. Utah							1		
	Computer Training	July 1989 (4 Weeks)	Local	Quadrant							4		
	Business Management	Sept. 1988 (One Year)	Local	Exec. Educ.							1		
	Scholarship	Sept. 1988-89 (One year)	Local	NUL (IEMS)							1		Business Studies
	Shorthand Training	April 1989 (4 Months)	Local	M.C.S.							1		
	Computer Training	April 1989 (4 Weeks)	Local	Quadrant							1		
	Tour RSA Research Centers	May 22-24 1989	RSA	LAPIS/RSA Staff							2		

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LAPIS SHORT-TERM TRAINING LOG (May, 1992)

CATEGORY	TITLE	DATES	LOCAT	INSTRUCTOR	PARTICIPANTS							COMMENTS
					EA	SMS HQ Staff	Fa	Student	Other	M	FM	
	Tour Capetown Pomology Center	March 1987 (4 Days)	RSA	LAPIS/RSA Staff		2				2		
	Business Management	September 1989 (Weekends, 7 Mon.)	Local	Exec. Ed. RSA		1					1	TU staff
	Computer Training	October 1989 (4 Weeks)	Local	Quadrant		2					2	
	Leadership Training	January 1990	Local	MAHC		5				4	1	
	Market in Develop Country	May 1990 (2 months)	USA	ASFS and Col. St. Univ.		1				1		
	Irr. Resource Planners Quarterly Training	5-8 August 1991	CDC	MOA/LAPIS	8	3				9	2	
	Irr. Resource Planners Quarterly Training	28 Oct-1 Nov 1991	IEMS	MOA/LAPIS	8	3			2	6	7	
	National Crop Production Strategy Statement	11-13/Feb/92	Leribe	DCS/DFS		16	10		3	3	26	

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26-May-92

LAPIS SHORT-TERM TRAINING LOG (May, 1992)

CATEGORY	TITLE	DATES	LOCAT	INSTRUCTOR	PARTICIPANTS							COMMENTS
					EA	SMS HQ Staff	Fa	Student	Other	M	FM	
	Irr. Resource Planners Quarterly Training	24-28 Feb 92	CDC-Maseru	Sunta/Lapis	5	3					8	
	Computer Training	March/April 92	Quadrant	Quadrant			1					1
	Computer Training	March/April 92	Quadrant	Quadrant			1				1	
TOTAL CROPS					21	25	34	0	0	5	38	47

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LAPIS SHORT-TERM TRAINING LOG (May, 1992)

CATEGORY	TITLE	DATES	LOCAT	INSTRUCTOR	PARTICIPANTS					COMMENTS
					EA	SMS HQ Staff	Fa Student	Other	M	
D. ECON/MARKETING										
	Lotus 1,23	September 1989 (4 Weeks)	Local	Quadrant		7				7
	Project Analysis	September 1989 (4 Weeks)	Swazi	MAMC		2			1	1
	Leadership Training	January 1990 (5 days)	Local	MAMC		5			2	3
	Marketing Production Economics	Jan/Feb 1990 (3 Weeks)	Local	MAMC	6	14			11	9
	Computer Info. Systems	February 1990 (4 days)	Local	MAMC		8			1	7
	Market in Develop Country Course and Az. Tour	May 1990 (2 months)	USA	ASFS and Col. St. Univ.		1			1	

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26-May-92

LAPIS SHORT-TERM TRAINING LOG (May, 1992)

CATEGORY	TITLE	DATES	LOCAT	INSTRUCTOR	PARTICIPANTS							COMMENTS		
					EA	SMS HQ	Staff	Fa	Student	Other	M		FM	
	Marketing Extension	April, 1990 (2 days)	Local	MOA/LAPIS	12		13					13	12	
	Livestock Market Tour	April, 1990 (3 days)	RSA	MOA/LAPIS			2					2		
	Agriculture Marketing Course	April, 1990 (1 month)	Swazi	M.A.M.C.			1					1		Free bursary arrange with MAMC
	Computer Training	August 1990 (1 month)	Local	B.T.V.			3					3		Planning Funds
	Computer Training	July 1990 (1 month)	Local	Quadrant			5					1	4	Planing Funds
	Computer Training	August 1990 (1 month)	Local	Quadrant			5					2	3	Planning Funds
	Marketing Extension	August 13-16, 1990	Local	MOA/LAPIS	10		15					16	9	
	Bloemfontein Market Tour	August 14 1990	RSA	MOA/LAPIS	9		15					15	9	Planning Funds
	Pretoria Market Tour	August 20-23 1990	RSA	MOA/LAPIS			4					3	1	Planning Funds

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LAPIS SHORT-TERM TRAINING LOG (May, 1992)

CATEGORY	TITLE	DATES	LOCAT	INSTRUCTOR	PARTICIPANTS							COMMENTS	
					EA	SMS HQ	Staff	Fa	Student	Other	M		FM
	Food and Agriculture Policy	July 1990 (one month)	USA	Harvard Institute			1				1		
	Project Evaluation	September 1990 (2 weeks)	Swazi	MAMC			2				1	1	
	Marketing Production Economics	November 1990 (1 Week)	Local	MAMC		5	7				6	6	
	Marketing Center and Management	November 1990 (1 Week)	Local	MAMC		6	1		11	10	20	8	Others 3 Market Managers 7 Private Teachers
	Marketing Committee Training	January 1991 (three days)	Local	LDTC		7		12		10	22	7	Other= Market managers and teachers
	Quarterly Extension Training	March 1991 (two days)	Local	MOA/LAPIS		12	8				13	7	
	Market Stand Demo	11 June 1991	Mafeteng	MOA/LAPIS		4	2	2	21		12	18	23
	Small and Micro Enterprise Development	9-12 Feb 92	Swaziland	USAID				1				1	

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LAPIS SHORT-TERM TRAINING LOG (May, 1992)

CATEGORY	TITLE	DATES	LOCAT	INSTRUCTOR	PARTICIPANTS						COMMENTS			
					EA	SMS HQ	Staff	Fa	Student	Other		M	FM	
FMO Training		17 Jan 92	Maseru HQ	Mokotjo	CMD	6		8			12	2		
Production Marketing Campaign		23-24 Jan 92	M. Hoek	MOA/LAPIS/FAO		4	2	14			15	5		
Quarterly Marketing Trng		3-4 March 1992	Maseru	G. Feaster		9		13			12	10		
Marketing		23 April 1992	T.Y.	M. Khlane		3		20			14	9		
Marketing Committee		20 February 1992	Mafeteng	M. Khalane				9		3	9	3	3 "Other" are Traders	
Marketing Committee		31 January 1992	Quthing	M. Khalane				3		4	4	3	3 traders/1 Dist Secry	
Quarterly Marketing Ext		March 3-4, 1992	Maseru	CMD, SMO, GF		10		4			11	3		
Marketing Committee		March 25, 1992	Quthing	DMO/DCO		2		11		3	7	9	3 traders	
TOTAL ECON/MARKETING						4	103	149	90	11	42	235	164	

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LAPIS SHORT-TERM TRAINING LOG (May, 1992)

CATEGORY	TITLE	DATES	LOCAT	INSTRUCTOR	PARTICIPANTS						COMMENTS		
					EA	SMS HQ Staff	Fa	Student	Other	M		FM	
E. LIVESTOCK AND RANGE													
	Holistic Resource Management	September 1989 (One week)	Zimbab	Savory School		2				2			
	Holistic Resource Management	Dec. 1988 (One week)	USA	SAVORY School		1				1			
	Geographic Information Systems	July 3-6, 1989	RSA	SAGIS		5				4	1		
	Conservation Engineering	October 1988 (10 Days)	Local (LAC)	MOA/LAPIS	18	8				22	4		
	Angora Goat Production	April 1989 (5 Days)	Local (QU.S.S.)	MOA/LA	32					30	2	Funded: STABEX	
	Tour Sehlabathebe Rama G. RMA	Nov. 1988 (2 Days)	Local (Sehlabathebe)	MOA/LAPIS						16	14	2	12 - Kwazulu Visitor 4 - Botswana Visito

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LAPIS SHORT-TERM TRAINING LOG (May, 1992)

CATEGORY	TITLE	DATES	LOCAT	INSTRUCTOR	PARTICIPANTS						COMMENTS		
					EA	SMS HQ	Staff	Fa	Student	Other		M	FM
	Computer Training	Ongoing 1989 - 1990 1 Week each	Local	LAPIS	4		26				16	14	Range, Conservation, Livestock Staff
	Tour Range Management	Dec. 1988 (10 Days)	USA	LAPIS			2				2		
	Tour Agriculture Information	Sept. 28 to Oct. 1 1986	RSA	Directorate Agric. Info. RSA			2					2	Range and Conservati Staff
	Range Issue Coordination	August 1989 (4 days)	Local	MOA LAPIS MOI	17		5				18	4	Annual Seminar.
	Range Div. Coordination	August 1989 (3 Days)	Local	MOA LAPIS	17		6				18	5	Plans and Policy
	Veld & Pasture Management	July 1989 (3 Days)	RSA	SARCCUS			1					1	
	Veld & Pasture Management	September 1989 (4 Days)	Malaw	SARCCUS			1					1	

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26-May-92

LAPIS SHORT-TERM TRAINING LOG (May, 1992)

CATEGORY	TITLE	DATES	LOCAT	INSTRUCTOR	PARTICIPANTS						COMMENTS	
					EA	SMS HQ Staff	Fa Student	Other	M	FM		
	Laboratory Procedures	September 1989 (2 Months)	RSA	Onderst. Vet Clinic.	1						1	
	Land Utilization	Nov. 1989 (8 days)	Local	SADCC		1					1	
	Animal Production	Dec. 1989 (1 Week)	Malaw	SARRCUS		1					1	
	GIS Workshop	Dec. 1989 (4 days)	Local	Instit.Nat. Res., RSA		4					1	3
	Herdboy Training	1987 (Ongoing)	Sehlabathe	MOA/LAPIS					398	398		Herdboy Participants
	World Merino Congress	May, 1990 (3 days)	RSA	Congre delegates		2					2	
	Coopers Int'l Expo	April, 1990 (1 day)	RSA	MOA/LAPIS		1					1	
	Herdboy Training	1990 Ongoing	Local (Pelaneng)	MOA/LAPIS					194	194		Herdboy participants

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LAPIS SHORT-TERM TRAINING LOG (May, 1992)

CATEGORY	TITLE	DATES	LOCAT	INSTRUCTOR	PARTICIPANTS							COMMENTS	
					EA	SMS HQ	Staff	Fa	Student	Other	M		FM
	Radio Systems	June 5,6 1990	Local	LAPIS	6		5	1			11	1	
	Broiler Management Course and Tour	June 17-23. 1990	Local RSA	MOA/LAPIS	12		3				7	8	
	Pig Production Course and Tour	June 25-29, 1990	Local RSA	MOA/LAPIS	14		2				9	7	
	Communal Resources Livestock Conference	May 28 to June 1, 1990	Local	MOA/LAPIS	5		15			23	40	3	Other=18 SADAC Country reps. and 5 Lesotho project re
	AEASA Conference	Sept.1990 (3 days)	RSA	AEASA	2						2		
	Herdboy Training	August 1990 Ongoing	Local	MOA/LAPIS						400	400		Herdboy Participants

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LAPIS SHORT-TERM TRAINING LOG (May, 1992)

CATEGORY	TITLE	DATES	LOCAT	INSTRUCTOR	PARTICIPANTS						COMMENTS	
					EA	SMS HQ Staff	Fa	Student	Other	M		FM
	Holistic Resource Management	October 1990 (4 Weeks)	Local	LAPIS		18				15	3	
	GIS Computer Course	October 1990 (5 days)	Local	INR (RSA)		3				1	2	
	Herdboy Training	Feb/March 1991 (two & three days)	Local (Bennea)	MOA/LAPIS					700	700		Herdboy Participants
	International Rangelands Conference	May 1991 (five days)	RSA	Conference		3				3		
	GIS Training	3-7 June 1991	RSA	INR		1				1		
	Study Tour	22 July-8 August 1991	USA	LAPIS		1				1		
	Computer Training	8-31 July 1991 6-29 August 1991 5-28 August 1991	LOCAL	Quadrant		1				1		
	LAC Scholarship	1991/1992	LAC	LAC					1	1		
	Herder Training	20-23 August 1991	Senqubuthu Mokhotlong	RMA Advisor					302	302		

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LAPIS SHORT-TERM TRAINING LOG (May, 1992)

CATEGORY	TITLE	DATES	LOCAT	INSTRUCTOR	PARTICIPANTS						COMMENTS		
					EA	SMS HQ	Staff	Fa	Student	Other		M	FM
Farmers Piggery Conf.		22-26 July 1991	LAC	C.Drew, APD Staff	5	5	100				37	73	
GIS Training		15-26 July 1991	Pietermaritzburg	INR Staff			2				1	1	
SASAP Symposium		15-18 October 1991	RSA	SASAP			1			1	2		
Computer Training-Lotus		October 1991	Local	Quadrant			1				1		
Association Mgmt.Trng		20-25 October 1991	Mokhotlong	LTDC			20				10	10	
GIS Training		1-14 Dec 91	RSA	INR			2				2		
Procurement of Angora Rams - Ram Sale		25-26 Feb 1992	RSA	Drew			2				2		
TOTAL LIVESTOCK RANGE					32	103	131	121	0	2035	2276	146	

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LAPIS SHORT-TERM TRAINING LOG (May, 1992)

CATEGORY	TITLE	DATES	LOCAT	INSTRUCTOR	PARTICIPANTS					COMMENTS	
					EA	SMS	HQ Staff	Farmer	Student		Other
F. ARD											
	Library Sci. Conference	August 3-8, 1986	Botsw	-			1				1
	Soybean Production	Jan. 1987 (3 Weeks)	Niger	IITA			1				1
	Business Management	Sept. 1988 (One Year)	Local	Exec. Educ.			1				1
	MSDOS (Operation)	April 1989 (4 Weeks)	Local	Quadrant			4				4
	Computer Appreciation	April 1989 (4 Weeks)	Local	Quadrant			2				2
	Lotus 1,2,3	April, 1989 (4 weeks)	Local	Quadrant			2				2
	Word Perfect	May 1989 (4 Weeks)	Local	Quadrant			4				4
	Tour RSA Research Centers	May 22-24 1989	RSA	LAPIS/RSA Staff			6			3	3

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LAPIS SHORT-TERM TRAINING LOG (May, 1992)

CATEGORY	TITLE	DATES	LOCAT	INSTRUCTOR	PARTICIPANTS					COMMENTS	
					EA	SMS	HQ Staff	FarmerStudent	Other		M
	Communication and Media	June 12 to July 21 1989	USA	Univ. IOWA			1				1
	Sorghum and Millet Disease	March 5-12, 1988	Zimba	ICRISAT			2				2
	Steering Committee	Nov. 5-6, 1988	Zambi	CIAT			2				2
	Drought Workshop	May 9-13, 1988	Zimba	CIAT			2				2
	Horticultural Research	Aug. to Dec. 1989 (5 Months)	Taiwa	AVRDC			2				1 1
	Tour Capetown Pomology Center	March 1987 (4 Days)	RSA	LAPIS/RSA Staff			1				1
	Tour Agriculture Information	Sept. 28 to Oct. 1 1986	RSA	Directorate Agric. Info. RSA			1				1

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LAPIS SHORT-TERM TRAINING LOG (May, 1992)

CATEGORY	TITLE	DATES	LOCAT	INSTRUCTOR	PARTICIPANTS					COMMENTS		
					EA	SMS	HQ Staff	FarmerStudent	Other		M	FM
	Pomology Conference	November, 1989 (5 Days)	RSA	Nelspruit			2			1	1	
	Occupational Experience	Dec. 1989 (4 Weeks)	Local	MOA/LAPIS				6		5	1	
	Inservice Training (Computers)	Jan. 1990 (1 Week)	Local	LAPIS			10			5	5	
	Leadership Training	Jan. 1990 (5 Days)	Local	MAMC			5			3	2	
	Instructional Methods	Jan. 1990 (4 days)	Local	LAPIS/MOA			9			6	3	
	Inservice Training (various subjects)	Bi-monthly (begin Feb. 1990)	Local	MOA/LAPIS			14			7	7	Economics, Liming
	Supervised Occupational Experience	January 1990 (2 weeks)	Local	MOA/LAPIS				6		4	2	

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LAPIS SHORT-TERM TRAINING LOG (May, 1992)

CATEGORY	TITLE	DATES	LOCAT	INSTRUCTOR	PARTICIPANTS					COMMENTS		
					EA	SMS	HQ Staff	Farmer	Student		Other	H
	Ag. Econ. Conference	July 24-27 1990	Namib	SAE of Namibia			2			1	1	
	Student Occupational Experience	May 1990 (2 months)	Local	MOA/LAPIS				7		4	3	
	Computer Training	June/July, 1990 (15 days)	Local	LAPIS/CIMMYT/K.C.H.S. Ltd.			52			30	22	
	AEASA Conference	Sept. 1990 (3 days)	R.S.A	AEASA			2			2		
	Computer Training	November 1990 (10 days)	Local	KCHS			32			11	21	
	Computer Training	October 1990 (1 Month)	Local	Quadrant			6			4	2	
	Production Guidelines (horticulture)	October 1990 (3 days)	Local	MOA/LAPIS	20		7			15	12	
	Production Guidelines (Field Crops)	February 1991 (three days)	Local	MOA/LAPIS	11		9			14	6	

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LAPIS SHORT-TERM TRAINING LOG (May, 1992)

CATEGORY	TITLE	DATES	LOCAT	INSTRUCTOR	PARTICIPANTS					COMMENTS		
					EA	SMS	HQ Staff	Farmer	Student		Other	M
	Computer Training	February 1991 (8 weeks)	Local	Quadrant			1				1	
	Production Guidelines (fruit and veg.)	March 1991 (3 days)	Local	MOA/LA	1	20	3		3		17	10
	Production Guides (Fodder)	April 1991 (3 days)	Local	MOA/LA	1		5			8	12	2
	Reg. Facilities Tour	17-30 July 1991		Swazi, Zimbabwe Botswana, Malawi - Various			3			1	4	
	ARD Hort. Field Day	19 Feb 92	ARD	ARD Staff		10	12	92		15	80	50
	Basic Statistical Theory	3-7 Feb 92	ARD	U of Natal			14				7	7
	Field Trial data analysis/interpretation	10-14 Feb 92	ARD	U of Natal			14				7	7
	Computer Training	Dec-Feb 92	Quadrant	Quadrant			8				4	4
	Familiarization Tour Johannesburg/Pretoria	20-21 Feb 92	RSA	Suppliers						2	2	RTO's Soils Lab
TOTAL ARD					2	61	242	92	22	26	256	190

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LAPIS SHORT-TERM TRAINING LOG (May, 1992)

DATES	LOCATION	INSTRUCTOR	LOCATION	INSTRUCTOR	PARTICIPANTS						COMMENTS	
					EA	SMS HQ Staff	Fa	Student	Other	M		FM
G. MOA VARIOUS												
	Office Practices	June 1989 (One Month)	Local	M.C.S.		2					2	DFS Staff
	Economic's Correspondence Study	April 1989 (Ongoing)	RSA	UNISA		1					1	Planning Staff
	Materials Handling	February 1988 (4 Days)	Local	SADCON		1					1	Admin. Staff
	Stock Control	February 1988 (4 Days)	Local	SADCON		1					1	Admin. Staff
	Office Management	February 1988 (3 Days)	Local	SADCON		2					2	Admin. Staff (1) TOU Staff (1)
	Word Processing	May 1988 (One Week)	Botsw	IDM		2					2	Admin. Staff
	Secretary Training	Feb. 1988 (1 Week)	Local	SADCON		2					2	DFS Staff (1) Forestry Staff (1)

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LAPIS SHORT-TERM TRAINING LOG (May, 1992)

DATES	LOCATION	INSTRUCTOR	LOCATION	INSTRUCTOR	PARTICIPANTS						COMMENTS		
					EA	SMS HQ	Staff	Fa	Student	Other		M	FM
	Computer Programming	July 1988 (6 Months)	Local	Square One			1					1	Admin. Staff
	Scholarship	June 1988-89 (One Year)	Local	NUL (IEMS)			2					2	Dip. Adult Educ. Admin. Staff
	Office Practices	Aug. 1988/89 (9 Months)	Local	M.C.S.			3					3	Admin. Staff
	Extension Management	Sept. 1988 (6 Weeks)	USA	Univ. Illinois			1					1	DFS Staff
	Business Studies	November, 1989 (Corr., 12 Mo.)	RSA	Intec			1					1	
	Returned Graduate Seminar	October, 1989 (2 Days)	Local	USAID			25					17	8
	Computer Training	Nov. 1988 (4 Weeks)	Local	Quadrant			1					1	Admin. Staff
	Arid Lands	Dec. 1986	Paris	-			1					1	Conservation Staff

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LAPIS SHORT-TERM TRAINING LOG (May, 1992)

CATEGORY	TITLE	DATES	LOCAT	INSTRUCTOR	PARTICIPANTS						COMMENTS		
					EA	SMS	HQ	Staff	Fa	Student		Other	M
	Financial Restructuring	January 1989 (8 Weeks)	USA	A.D. Little				1				1	Admin. Staff
	Public Budgeting	June 1988 (8 weeks)	USA	Harvard Int'l.				1				1	Admin. Staff
	Office Practices	April to June 1989 (3 Months)	Local	M.C.S.				3				3	DFS Staff
	Computer Appreciation	July 1989 (4 Weeks)	Local	Quadrant				1				1	Nutrition Staff
	Word Perfect	July 1989 (4 Weeks)	Local	Quadrant				1				1	Nutrition Staff
	Extension Management	June 15 to August 15 1987	USA	Univ. Wisc.				1				1	Ext. Staff
	Communication and Media	June 12 to July 21 1989	USA	Univ. Iowa				1				1	DFS Staff
	Cooperatives Management	Aug. 21 to Nov. 17 1989	USA	Univ. Wisc.				1				1	COOP Lesotho Staff

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LAPIS SHORT-TERM TRAINING LOG (May, 1992)

CATEGORY	TITLE	DATES	LOCAT	INSTRUCTOR	PARTICIPANTS						COMMENTS	
					EA	SMS HQ Staff	Fa	Student	Other	M		FM
	Business Studies	November, 1989 (Corr., 12 Months)	RSA	Intec		1					1	
	Returned Graduate Seminar	October, 1989 (2 Days)	Local	USAD LAPIS		25					17	8
	Returned Graduate Seminar	Feb. 1990 (1/2 day)	Local	MOA/LAPIS		4					2	2
	Computer Training	August 1990 (5 months)	Local	Sents'o		1					1	DFS Staff Member
	Computer Training	Sept. 1990 (2 months)	Local	Quadrant		9					9	Participants represent eight MOA divisions
	Information Officer Meeting	June 1990 (3 days)	Local	MOA/LAPIS	10	14					18	6
	Information Officer Meeting	October 1990 (3 days)	Local	MOA	10	14					18	6
	Information Officer Team Building	January 1991 (one week)	Local	Consul	12	14					18	8

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LAPIS SHORT-TERM TRAINING LOG (May, 1992)

CATEGORY	TITLE	DATES	LOCAT	INSTRUCTOR	PARTICIPANTS							COMMENTS	
					EA	SMS HQ Staff	fa	Student	Other	M	FM		
	Returned Graduate Seminar	April 1991 (one day)	Local	MOA/LAPIS		16					11	5	
	Training of Training Officers	24-28 Feb 92	Zambia	Pan African Institute		1						1	
TOTAL MOA VARIOUS					32	155	0	0	0	116	71		
H. MOA													
FIELD STAFF													
	Communications	Sept. 7-11 1986	Local (LCC)	AIS Staff		10					10		
	Irrigated Crop Production and Marketing	Jan. 11-17 1987	Local (LAC)	MOA/LA	37	40			6	68	15		3 DPO, 2 PCV, 1 LCCU
	Irrigated Crop Production and Marketing	June 1-20 1987	Local (LAC)	MOA/LA	9	6				9	6		Selected Participant

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LAPIS SHORT-TERM TRAINING LOG (May, 1992)

CATEGORY	TITLE	DATES	LOCAT	INSTRUCTOR	PARTICIPANTS							COMMENTS		
					EA	SMS	HQ	Staff	Fa	Student	Other		M	FM
	Nutrition Staff Inservice Training	August 10-14 1987	Local (LAC)	MOA/MO	48	12						60	Food production and Nutrition	
	Extension Management	June 15 to Aug. 15 1987	USA	Univ. Wisc.		2						2		
	Livestock Production and Marketing	Jan. 11-15 1988	Local (LAC)	MOA/LA	31	26	2			6	62	3	6 Bas. Pony Proj. 2 ARD	
	Home Garden Develop. and Maintenance	Jan. 3-8 1899	Local (LAC)	MOA/LA	5	5				19	7	22	12 MOE, 4 MOH, 3 PCV	
	Nutrition Staff Inservice Training	July 25-29 1988	Local (LAC)	MOA/MO	31	6						37	Nutrition, Child Car	
	Livestock Production and Marketing	Aug. 1-12 1988	Local	MOA/LA	13	12						23	2	Selected Participant

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LAPIS SHORT-TERM TRAINING LOG (May, 1992)

CATEGORY	TITLE	DATES	LOCAT	INSTRUCTOR	PARTICIPANTS						COMMENTS		
					EA	SMS HQ	Staff	Fa	Student	Other		M	FM
	Home Garden Training	June 8, 9 1988	Local (M.H.)	MOA/MO	8					19	5	22	19 MOE.
	Project Analysis	September 1989 (4 Weeks)	Swazi	MAMC		1						1	
	Inservice Training (Crops)	Monthly Sept. - Feb. 1990 (2 days)	Local	MOA LAPIS	20		8					22	6
	Home Garden	September 1989 (2 Weeks)	Local	LAPIS HGP USPC	4	4				8	6	10	8 PCV
	Home Garden	November 1989 (4 Days)	Local	LAPIS HGP USPC	7	4				8	4	15	8 PCV
	Home Garden Training	Nov. 29, 30 1988	Local (Q.N.)	MOA/MO LAPIS	6					18	3	21	15 MOH, 3 PCV

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LAPIS SHORT-TERM TRAINING LOG (May, 1992)

CATEGORY	TITLE	DATES	LOCAT	INSTRUCTOR	PARTICIPANTS						COMMENTS		
					EA	SMS	HQ Staff	Fa	Student	Other		M	FM
	Fruit Production and Extension	Jan. 2-20 1989	Local (LAC)	MOA/LA Israel	20	10				8	20	18	5 CARE, 3 DPO
	Livestock Production and Marketing	One Week Oct. 1988	Local (MH.)	MOA MH	22	3					20	5	Follow-up to LAPIS Training
	Irrigation Technician Training Follow-up	June-Oct. 1989 (4.5 Month) Nov-June, 1990	Local	MOA/LA	12	3					12	3	
	Leadership/ Management	January 1990 (5 days)	Local	MAMC		20	3				22	1	
	Home Garden Training	May 1990 (3 days)	Local	MOA/LA	5	2				8	3	12	8 PCVs
	Financial and Personnel Management	July 1990 (one week)	Local	MOA		20	2				21	1	20 DAO/DEOs
	Quarterly Extension Training	August 1990 (3 days)	Local	MOA	29	1					15	15	All 10 districts represented

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LAPIS SHORT-TERM TRAINING LOG (May, 1992)

CATEGORY	TITLE	DATES	LOCAT	INSTRUCTOR	PARTICIPANTS						COMMENTS			
					EA	SMS	HQ	Staff	Fa	Student		Other	M	FM
	Quarterly Extension Training	November 1990 (3 days)	Local	MOA	27	1					13	15		
	Resource Planner Quarterly Meeting	October 1990 (3 days)	Local	MOA/LA	9	3					9	3		
	Resource Planner Quarterly Meeting	March 1991 (3 days)	Local	MOA/LA	11	3					11	3		
	Resource Planner Quarterly Meeting	April 1991 (3 days)	Local	MOA/LA	6	6					10	2		
	Quarterly Extension Training	May 1991 (3 days)	Local	MOA/LA	27	1					13	15		
	Home Garden Training	May 1991 (5 days)	Local	MOA/LA PC.	12	2					14	8	20	14 PCVs
	Training of Trainers Home Garden Training	6 days June 1991	LOCAL								8	1	7	

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LAPIS SHORT-TERM TRAINING LOG (May, 1992)

CATEGORY	TITLE	DATES	LOCAT	INSTRUCTOR	PARTICIPANTS						COMMENTS	
					EA	SMS HQ Staff	Fa	Student	Other	M		FM
	Pre-Service Training	21 July-1 August 1991	Outward Bound	HGNP Staff	10	6			8	6	18 8 PCV's	
	Village Lead Farmer Course	3-5 December 91	TT FTC	DHO/NA/DC	1	5	22		1	13	16	
	Home Gardens IST	8-12 Dec 91	Malealea	HGNP staff	12	3			16	9	22	
	Home Gardens IST	Apr 26-May 3, 1992	Swaziland	HGNP Mgt	10	1	1		18	10	21	
TOTAL MOA FIELD STAFF					422	227	17	22	0	165	438	416
1. LEAD FARMERS												
	Irrigated Crop Production and Marketing	June 17-21 1987	Local	MOA/LAPIS (L & MH FTC)			95			81	14	
	Vegetable Production	April 25 to May 12 1988	Local	MOA/LA (L, MH + Mok FTC)	11	2	57			59	11 One Week Each Locati	

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LAPIS SHORT-TERM TRAINING LOG (May, 1992)

CATEGORY	TITLE	DATES	LOCAT	INSTRUCTOR	PARTICIPANTS						COMMENTS			
					EA	SMS	HQ	Staff	Fa	Student		Other	M	FM
	Livestock Production and Marketing	Aug. 15-19 1988	Local (L. FTC + (Q.SS))	MOA/LAPIS					91		85	6		
	Post Harvest Handling and Marketing	Oct. 11-27 1988	Local (L, Qu, Mok)	MOA/LA	11	2			36		4	38	15	1 DPO, 3 PCV. 3 Days Each Location
	Post Harvest Handling and Storage	March 28 to April 6 1989	Local (L + MH FTC)	MOA/LAPIS					66		8	50	24	5 DPO/FHO, 3 PCV. 3 Days Each Location
	Vegetable Production	April 18-27 1989	Local (L + MH FTC)	MOA/LAPIS					67		8	45	30	5DPO/FHO, 3 PCV. 3 Days each Location
	Association Management	October 1988 (5 Days)	Local (L.FTC)	LDTG					52			47	5	
	Association Management	May 29 to June 9, 1989 (One Week)	Local (MH IEHS)	LDTG					32			9	23	Maphoitwane Assoc.
	Association Management	July 10 to 14 1989	Local	LDTG		4			12			14	2	Ila-Nchela

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LAPIS SHORT-TERM TRAINING LOG (May, 1992)

CATEGORY	TITLE	DATES	LOCAT	INSTRUCTOR	PARTICIPANTS					COMMENTS		
					EA	SMS HQ Staff	Fa	Student	Other		M	FM
	Association Management	Nov. 1988 (5 Days)	Local (Shlabat.)	LDTC			9			8	1	
	Association Management	Dec. 1988 (5 Days)	Local (Shlabat.)	LDTC			15			13	2	
	Tour Angora Goat	Oct. 1988 (5 Days)	RSA	LAPIS/RSA Staff			20			18	2	
	Tour Angora Goat	March 1989 (5 Days)	RSA	LAPIS/RSA			32			29	3	Goat Procurement
	Tour Sehlabat. and Rama G. RMA	May 1989 (5 Days)	Local (Sehlabat.)	MOA/LAPIS	3		12			13	2	
	Animal Health	August 1989 (3 Days)	Local (Sehl)	MOA LAPIS			28			25	3	
	Association Management	August 1989 (5 Days)	Local (Peta)	LDTC MOA			14			12	2	Committee Members

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LAPIS SHORT-TERM TRAINING LOG (May, 1992)

CATEGORY	TITLE	DATES	LOCAT	INSTRUCTOR	PARTICIPANTS						COMMENTS			
					EA	SMS	HQ	Staff	Fa	Student		Other	M	FM
	Range Issue Coordination	August 1989 (4 Days)	Local	MOA LAPIS MOI					37			30	7	Annual Seminar
	Association Management	September 1989 (5 Days)	Local (Rama)	LDTG MOA	1	1		11				10	3	Exec. Committee
	Sheep and Goat Tour	October 1989 (4 Days)	RSA	MOA LAPIS		2		29				24	7	
	Veterinary Procedures	October 1989 (5 Days)	Local (Sehl)	MOA LAPIS				21				18	3	
	Goat Study Tour	Feb. 1990 (5 days)	RSA	MOA/LAPIS		5	2	25				27	5	
	Association Management	Sept. 1989 (5 days)	Local (Sehlab.)	LDTG/MOA				15				13	2	
	Livestock Marketing	Dec. 1989 (5 Days)	Local (Sehlab.)	MOA/LAPIS				30				27	3	

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LAPIS SHORT-TERM TRAINING LOG (May, 1992)

CATEGORY	TITLE	DATES	LOCAT	INSTRUCTOR	PARTICIPANTS						COMMENTS	
					EA	SMS HQ Staff	Fa	Student	Other	M		FH
	Dairy Farmer Tour	April 1990 (4 days)	RSA	MOA/LAPIS	14	3	27			39	5	
	Fodder Production	Feb. 1990 (2 days)	Local (Sehlabathebe)	MOA/LAPIS			54			40	14	
	Association Management	Feb. 1990 (5 days)	Local (Pelaneng)	LDTC/MOA			7			7		
	Herd Health Course	Feb. 1990 (3 days)	Local (Pelaneng)	MOA/LAPIS			28			18	10	
	Pig Farmers Conference	July 24-27, 1990	Local	MOA/LAPIS	11		85			58	38	
	NAFC Tour	June 17-19, 1990	Local	MOA/LAPIS	2		37			28	11	
	Association Management	Sept. 1990 (10 days)	Local (Pela)	LDTC/MOA			32			24	8	
	Association Management	Sept. 1990 (5 days)	Local (Mokhotlong)	LDTC/MOA			14			9	5	

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ANNEX NO. 4

LAPIS LOCAL HIRE RECRUITMENT LIST

ANNEX 4

LAPIS LOCAL HIRE RECRUITMENT LIST

1. SUMMARY

The numbers of local hire personnel fluctuated throughout the life of the Project. The following table lists those positions at the height of activity and height of local hire numbers. Table 1 lists the 72 local hires including 15 construction laborers at Sanqebetu RMA.

Table 1. LAPIS Project Local Hires.

Component	Name	Position
ADM	Jean Fisher	Admin. Assistant
ADM	Jacki Mulvaney	Temo Times Editor
ADM	Mapokane Kosene	Project Secretary
ADM	Thakane Haase	Project Secretary
ADM	George Molapo	Copy Clerk
ADM	Savita Kuckan	Asst. to Adm. Manager
ADM	Bridget King	Editor, Temo Times
ADM	Brian Mulvaney	Project Accountant
ADM	Vicki Cole	Accounts Clerk
AEC	Theresa Rasethuntsa	Secretary - LAC
AEC	Susan Martin	Lecturer - LAC
AEC	K.A. Lepholisa	Credit Union - LAC
AEC	Isabella Mosala	Laborer - LAC
AEC	Dikokole Motsamai	computer clerk - LAC
AEC	Molelle Selate	Graphics illustrator
AEC	Hafeleni Matete	Lecturer - LAC
AEC	Mdekazi Moeketsi	Workshop Technician
AEC	Juliet Walusimbi	Lecturer - LAC
AEC	R. Washington-Allen	Lecturer - LAC
AEC	Leeu Leeu	Laborer

AEC	Tello Ratalane	Laborer
AEC	Tlelima Phakisi	Laborer
AEC	Mats'eliso Ntene	Typist
AEC	Seeng Malataliana	Video editing
AEC	Thato Foko	Computer Typesetter AIS
ARC	Makoa Makhetha	Irrigation Technician
ARC	Nterejane Raseabi	Herdboy
ARC	Andrew Ralebitso	Driver
ARC	Mahase Mosala	Driver
ARC	John Moremoholo	Driver
ARC	S. Mangobe	Mechanic
ARC	Seth Nkobole	Beans
ARC	Gerald Makoae	Enumerator
PIC	Mpewie Semoli	Computer Clerk
PIC	Grace Nt'sasa	Mktg I/A Officer
PIC	N. L. Malewa	PMU Secretary
PIC	Fred Gunzburger	District Production Off.
PIC	T. Lehpoi	Field Marketing Off.
PIC	M. Khalane	Field Marketing Off.
PIC	Richard Selahla	Field Marketing Off.
PIC	Paul Van der Veur	District Production Off.
PIC	Shirley Van der Veur	District Production Off.
PIC	Kotela Malebelle	District Production Off.
PIC	Elias Ts'osane	District Production Off.
PIC	Matsau Ramoholi	District Production Off.
PIC	Greg Johnson	Irrigation Engineer
PIC	Delton Allen	District Production Off.
RLPU	Scott Haase	Computer Technician
RLPU	Intumeleng Molise	Supervisor wool/mohair
RLPU	Lazarus Tlali	Enumerator

RLPU	Lehloanela Pakisi	RMA operator
RLPU	Silas Mamooe	Driver
RLPU	Teboho Mohoele	Enumerator
RLPU	Mafako Maama	Secretary/computer oper.
RLPU	Manoti Semoli	Computer Operator
RLPU	M. Mofubetsoana	Enumerator
RLPU	Sanqebetu RMA (15)	Construction Laborers
RLPU	Matseliso Mokete	Secretary

ANNEX 5

LAPIS CONSTRUCTION ACTIVITIES

ANNEX 5

LAPIS CONSTRUCTION ACTIVITIES

1. SUMMARY

LAPIS was primarily an institutional support project, however a total of \$443,515.59 was also spent in support of construction activities. Following is a summary of the specific facilities constructed and their associated costs:

- a. LAPIS provided \$18,324.71 in funds to Ministry of Works to construct the addition to the Agricultural Information Service building.
- b. The Irrigation system at ARD/LAC tendered on a competitive bid basis. SWEC was the successful bidder. Construction was supervised by Homer Moore. LAPIS made progress payments and paid for the well point system and other appurtenances totalling \$189,570.37.
- c. Marketing centers at Leribe and Mοhales Hoek. Ministry of Works tendered the contract and supervised the construction. Upon certification of progress and joint certification by T.J. Ramatsoari or Joe Mokotjo, LAPIS makes progress payments directly to the contractor. The two centers are budgeted at \$109,867.00.
- d. LAPIS absorbed construction activities from the LCRD Project and funded completion of a contract (\$29,004.54) for the building the RMA headquarters facilities at Pelaneng.
- e. LAPIS constructed a small office at the Ha Ramatseliso RMA headquarters. Total cost was \$2,746.00.
- f. LAPIS constructed a greenhouse at ARD. Total cost (including fans and a wet wall system) was \$75,739.41.
- g. LAPIS constructed a greenhouse at LAC. Total cost was \$18,263.56.

ANNEX 6

LAPIS PROJECT TARGETS

ANNEX 6

LAPIS PROJECT TARGETS

Table 1. LAPIS Project Targets.

Target Description	Date Due	Date Submitted
1. The Contractor will submit a semi-annual report for the period Dec. 1, 1989 - May 31, 1990.	June 30, 1990	June 20, 1990
2. The Contractor will coordinate the official transfer of responsibility for total management of 2 RMAs (Sehlabathebe & Ramatseliso's Gate) to the MOA.	June 30, 1990	June 7, 1990
3. The Contractor will put in place a legal Trust that will serve as the financial intermediary for credit support to the Student Enterprise Program (SEP) at LAC.	June 30, 1990	June 7, 1990
4. The Contractor will have identified and scheduled MOA/LAPIS short-term consultancy needs for Year 5.	June 30, 1990	June 7, 1990
5. The Contractor will have identified and scheduled all MOA/LAPIS short-term training programs (in-country, third country and U.S.) for groups and individuals for Year 5.	June 30, 1990	June 7, 1990
6. The Contractor will assist LAC in establishing a dialogue linkage with an appropriate American university to explore the possibility of serving as a support institution (sister university) to further develop the SEP at LAC.	Sept. 30, 1990	Sept. 19, 1990
7. To fulfill the Project Output ---"A coordinating structure is operating within the MOA to facilitate support to small-holder production projects"---, the Contractor will ensure that the Project Coordinating Committee (PCC) will be functional and institutionalized within the DCS.	Sept. 30, 1990	Sept. 28, 1990
8. The Contractor will submit a semi-annual report for the period June 1, 1990 - November 30, 1990.	Dec. 31, 1990	Dec. 28, 1990

Target Description	Due Date	Date Submitted
9. The Contractor will identify to additional RMAs for consideration of the MOA development.	Dec. 31, 1990	Dec. 28, 1990
10. The Contractor has handed over all AEC/LAPIS education and training activities, except advisory services to the SEP Program, to appropriate LAC or MOA staff.	April 30, 1991	April 10, 1991
11. The Contractor will provide a Horticultural expert and the local support for Phase One (two years) of the US Peace Corps Home Garden Nutrition Program in collaboration with the MOA/Nutrition Division.	May 31, 1991	April 10, 1991
12. By the end of Year 5, the Contractor will have placed tow additional RMAs (Sanqebethu/Mokhotlong and Pelaneng/Bokong) in operation.	May 31, 1991	*June 6, 1991
13. The Contractor will submit a semi-annual report for the period December 1, 1990 - May 31, 1991.	June 30, 1991	June 21, 1991
14. The Contractor will submit a summary report on two years of experience of Home Gardens.	July 31, 1991	July 11, 1991
15. The Contractor will submit a comprehensive report on LAPIS Project activities and outputs in relation to long-term training.	Aug. 30, 1991	Aug. 12, 1991
16. The Contractor will submit a report on lessons learned on forming grazing associations.	Sept. 30, 1991	Sept. 30, 1991
17. The Contractor will submit a report quantifying change in the range quality in two RMAs (Sehlabathebe and Ramatseliso's Gate).	Sept. 30, 1991	Sept. 30, 1991
18. The Contractor will present a marketing workshop for marketing extension officers on estimating local demand, assessing transport cost and pricing.	Nov. 30, 1991	Nov. 1, 1991
19. The Contractor will submit a summary report of SEP experience on costs of agribusiness.	Nov. 30, 1991	Nov. 27, 1991
20. The Contractor will submit a semi-annual report for the period June 1, 1991 - November 30, 1991.	Dec. 31, 1991	Dec. 23, 1991

Target Description	Date Due	Date Submitted
21. The Contractor will submit a comprehensive technical report assessing intermediate-level production of high value crops.	Feb., 1992	Feb. 27, 1992
22. The Contractor will document total handing over of LAC activities related to the SEP Trust Fund, LAC Administration and SEP Program.	April 30, 1992	April 27, 1992
23. The Contractor will complete base-line socioeconomic surveys of two new RMAs identified for development.	April 30, 1992	April 27, 1992
24. The Contractor's Final Report is submitted by June, 1992 and accepted by USAID/Lesotho ADO.	July 31, 1992	June 30, 1992
25. The Contractor shall furnish Sehlabathebe Training Center with commodities as requested in writing by the Project Manager.	July 31, 1992	
26. The Contractor shall report on the current marketing situation and activities in Lesotho.	Sept. 30, 1992	
27. The Contractor will document transfer of LAPIS Project-assisted marketing activities to the MOA Marketing Division.	Oct. 31, 1992	

* One target was turned in six days late. This was a result of severe unrest and rioting that struck Maseru during the last two weeks of May, 1991.

ANNEX 7

**COMMODITY AND VEHICLE HANDOVERS AND
ANNUAL REPORT OF GOVERNMENT PROPERTY AS
OF 31 MAY, 1992**

COMMODITIES PURCHASED BY LAPIS

EA = COMPUTER EQUIPMENT

LAPIS PROJECT

EB = OFFICE FURNITURE

EC = OFFICE EQUIPMENT RESEARCH COMPONENT

ASSET NUMBER	VOUCHER No.	DESCRIPTION	ASSIGNED TO / QTY/LOCATION	SERIAL NUMBER COMMENTS
EG001/01	V-47	ARC GREENHOUSE DEPOSIT	1 E. LOOMIS	
EG001/01-01	V-50	ARC GREENHOUSE PART PAYMENT	1 E. LOOMIS	
EG001/01-02	V-50	ARC GREENHOUSE FINAL PAY LESS 10%	1 E. LOOMIS	
EG002/01	V-53	ARC GREENHOUSE SERVICE CONNECTION	1 E. LOOMIS	
EG003/01	V-53	ARC CAGES	2 GEORGE MARLOWE	
EG004/01	V-54	ARC FOOTINGS FOR GREENHOUSE	1 JIM CAMPBELL	
EG005/01	V-55	ARC GREENHOUSE BENCHES	10 GEORGE MARLOWE	
EG005/02	V-55	ARC GREENHOUSE BENCHES	10 GEORGE MARLOWE	
EG007/01	V-57	ARC FINAL PAYMENT PLUMBING	1 ARD GREENHOUSE	
EG007/02	V-57	ARC INSTALLATION OF WATER SYSTEM	1 ARD GREENHOUSE	
EG009/01	V-58	ARC WIRING OF GREENHOUSE	1 ARD GREENHOUSE	
EG0010/01	V-58	ARC WATER CONNECTION	1 ARD GREENHOUSE	
EG0011/01	V-61	ARC GEMCON CONTRACT CREDIT	1 ARD GREENHOUSE	

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LAPIS PROJECT

ASSET NUMBER	VOUCHER No.	COM/DESCRIPTION	ASSIGNED TO / QTY	LOCATION	SERIAL NUMBER	COMMENTS
ED041/01-02	V-47	ARC;SHELVING UNITS/FRAMES	2	ARC		
ED042/01	V-10	ARC;GARDEN HOSE 3/4" x 90m.	1	B.ARNOLD		
ED043/01	V-07	ARC;FIBRE MEASURING TAPE 100m	1	ARC - G.MASSEY		
ED044/01	V-07	ARC;FIBRE MEASURING TAPE 50m	1	ARC - G.MASSEY		
ED045/01	V-07	ARC;FIBRE MEASURING TAPE 50m	1	E.LOOMIS		
ED045/01	V-15	ARC;DRAG LINE AT ARC IRRIGATION	1	NYABSEBA		
ED048/01-02	V-19	ARC;QUEEN STOVE AND PIPES	2	ARC - G.MASSEY		
ED049/01	V-27	ARC;SAPELEBOARD 2750x1830	1	ARC		
ED051/01	V-38	ARC;WILEY MILL AND ACCESS. -SORGHUM	1	ARC W.SHACHT	ANIMAL SCIENCE / RANGE	
ED052/01	V-29	ARC;STANHAY PLANTER	1	ARC W.SHACHT	ANIMAL SCIENCE / RANGE	
ED052/02	V-29	ARC;CARRIAGE ON S/WEBB EQUIPMENT	1	ARC W.SHACHT	ANIMAL SCIENCE / RANGE	
ED053/01	V-42	ARC;GANDY SPREADER	1	ARC W.SHACHT	ANIMAL SCIENCE / RANGE	
ED053/02	V-42	ARC;CARRIAGE ON GANDY SPREADER	1	ARC W.SHACHT	ANIMAL SCIENCE / RANGE	
ED054/01	V-33	ARC;TANDEM AXLE EASY LOAD TRAILER	1	ARC- PARKING LOT		
ED054/02	V-36	ARC;FREIGHT ON TRILER	1	ARC- PARKING LOT		
ED054/03	V-37	ARC;FREIGHT ON TRILER	1	ARC- PARKING LOT		
ED055/01-02	V-45	ARC;BACKPACK PESTICIDES	2	ARC - G.MASSEY		
ED056/01	V-47	ARC;LM THRESHING MACHINE	1	ARC - G.MASSEY		
ED056/02	V-49	ARC;THRESHING MACHINERY PARTS	1	ARC	ARC	
ED057/02	V-45	ARC;RAIN GAUGE 'HELLMAN'	1	ARC	ARC	
ED058/02	V-45	ARC;FANS WET WALL SYSTEM	1	ARC	ARC	
ED060/01	V-48	ARC;VISPRO FULL FACE	1	ARC	ARC	
ED061/01	V-50	ARC;VISPRO FULL FACE	1	ARC	ARC	
ED062/01	V-50	ARC;RAIN RECORDING GAUGE	1	ARC	ARC	
ED065/01	V-58	ARC;BATTERY CHARGER	1	ARC	ARC	
ED066/01	V-52	ARC;FIBRE MEASURING TAPE 100m	1	E.LOOMIS		
ED067/01	V-70	ARC;AUTOMOBILE WATER COMPUTER	1			
ED068/01	V-70	ARC;3m X 50m. SHADE NETTING	1			
CD042/01	V-48	ARC;ELECTRODE COMB	1	ARC		
CJ038/01	V-58	ARC;CAMERA & LENS	1	ARC		
CJ038/02	V-62	ARC;PROJECTOR/LENS/CAMERA/FHT	1	ARC		
CT024/01	V-48	ARC;ELECTRODE COMB	1	ARC SOIL LAB.		
EA038/01	V-38	ARC;IKVA CVT	1	ARC		
ED073/01	V-14	PIC;HYDRAULIC OIL SEED PRESS	1	DEPOSIT PAID		
ED073/02	V-23	PIC;HYDRAULIC OIL SEED PRESS	1	DEPOSIT PAID		
ED073/03	V-54	PIC;HYDRAULIC OIL SEED PRESS	1	CASH RETURNED		
ED069/01-06	V-74	ARC;INSECT R.CAGES	6	ENTOMOLOGY LAB		
	V-78	ARC;GREENHOUSE BENCHES	1	GREENHOUSE		
	V-86	ARC;SLASHER	1	AGRONOMY		
	V-86	ARC;PUMP	1	IRRIGATION		
EE001/01	V-16	ARC;FEEDLOT PEN CONSTRUCTION	1	ARC W.SHACHT	NATIONAL FEEDLOT	
EE001/02	V-17	ARC;SAND/STONE-FEEDLOT	1	ARC W.SHACHT	NATIONAL FEEDLOT	
EE001/03	V-17	ARC;1400 6" CONCRETE BLOCKS	1	W.SHACHT-FEEDLOT	LEKUBANE	
EE002/03	V-50	ARC;30m ROLL OF DIAMOND MESH	1	JIM CAMPBELL		
EE007/01	V-51	ARC;15m3 CRUSHED STONE	1	GREENHOUSE		
EE008/01	V-51	ARC;1000 BRICKS	1	GREENHOUSE		
EE009/01	V-52	ARC;6m STONE	1	GREENHOUSE		
EE0011/01	V-53	ARC;SIGN BOARDS	2	TEBOBO LEBABO		
EE0012/01	V-57	ARC;STONE	1	GREENHOUSE		
EE0014/01	V-60	ARC;FENCING - PERENNIAL GRASS PLOT	1	PHAFISO SEFIKA		

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ASSET NUMBER	VOUCHER No.	COM	DESCRIPTION	ASSIGNED TO / QTY	LOCATION	SERIAL NUMBER	COMMENTS
EC001/01	V-05	ARC	STARTYPE OLYMPIA WP	1	COMPUTER ROOM	SERIAL NO. 3401655	
EC002/01	V-09	ARC	OLYMPIA DG 601	1	PROJECTOR CABINET		
EC002/02	V-09	ARC	OLYMPIA DG 505	1	PROJECTOR CABINET		
EC002/03	V-09	ARC	OLYMPIA DG 601/EARPHONE SET	1	PROJECTOR CABINET		
EC002/04	V-09	ARC	OLYMPIA DG 505/FOOT CONTROL	1	PROJECTOR CABINET		
EC003/01	V-12	ARC	SHARP PHOTOCOPIER	1	B.ARNOLD	S/N 65614155-TRADE-IN M.4	
EC005/01-02	V-23	ARC	KODAK SLIDE PROJECTOR B-2 AR	2	PROJECTOR CABINET		
EC006/01-02	V-23	ARC	ZOOM LENS 100-150 F3.5	2	PROJECTOR CABINET		
EC007/01	V-35	ARC	FLIPCHART	1	CONFERENCE ROOM		
EC008/01-02	V-43	ARC	SCIENTIFIC CALCULATORS	2	RANGE SECTION		
EC009/01	V-39	ARC	MICROPHONE FOR TAPE RECORDER	1	PROJECTOR CABINET		
EC010/01	V-51	ARC	RPN SCIENTIFIC CALCULATOR	1	JIM CAMPBELL	ARC	
ED001/01	V-26	ARC	MODEL 16000DXO,IG PRECISA	1	RANGE SECTION		
ED001/01	V-08	ARC	PORTABLE ph METER	1	SOILS LAB		
ED002/01-02	V-14	ARC	CULTIVATORS	2	HORT.STORE ROOM		
ED003/01-03	V-14	ARC	SENIOR PLANTERS	3	HORT.STORE ROOM		
ED004/01-02	V-15	ARC	HAND CULTIVATORS	2	HORT.STORE ROOM		
ED005/01	V-19	ARC	PLANTER	1	HORT.STORE ROOM		
ED005/02	V-19	ARC	MC5 CULTIVATOR	1	HORT.STORE ROOM		
ED006/01	V-19	ARC	V58 PLOUGH	1	HORT.STORE ROOM		
ED007/01	V-19	ARC	TRIANGULAR HARROW	1	HORT.STORE ROOM		
ED008/01	V-19	ARC	V58 PLOUGH	1	HORT.STORE ROOM		
ED009/01	V-19	ARC	MC5 CULTIVATOR	1	HORT.STORE ROOM		
ED010/01-02	V-19	ARC	100m. MEASURING TAPE	2	ARC - G.MASSEY	HORT. & AGRONOMY	
ED011/01-02	V-19	ARC	KNAPSACK SBAYERS PTP20	2	ARC - E.LOOMIS	HORTICULTURE STORE ROOM	
ED012/01-03	V-18	ARC	50m. MEASURING TAPE FIBRE	3	ARC - G.MASSEY	HORT.ANIMAL SCIENCE & AGE	
ED014/01	V-21	ARC	BACKPACK SPAYER	1	ARC - G.MASSEY	HORTICULTURE STORE ROOM	
ED015/01-02	V-22	ARC	COMP.SET RESPIRATOR FACE PIECE	2	ARC - G.MASSEY	AGRONOMY OFFICE	
ED016/01	V-22	ARC	PLANTER	1	ARC - G.MASSEY	AGRONOMY SHED	
ED017/01	V-21	ARC	HR10/155 HOWARD ROTAVATOR	1	IMPLEMENTS SHED		
ED018/01	V-21	ARC	MAGIC PARAFFIN HEATER	1	ARC - J.MARE	ANIMAL SCIENCE DEPT.	
ED019/01-02	V-21	ARC	AGRIA BOON SPRAYERS	2	AGRONOMY SHED	SERIAL NO. 18971	
ED020/01	V-21	ARC	TANDEM DISC HAMMER	1	IMPLEMENTS SHED		
ED022/01	V-24	ARC	ELECTRODE COMB EPOXY/GEL DIH10	1	ARC BEJI	SOILS LAB	
ED023/01	V-27	ARC	PH METER M/V & TEMP. COMPLETED	1	ARC BEJI	SOILS LAB	
ED024/01	V-26	ARC	OVEN MODEL MEMERT 80UL/1	1	ARC-W .SCHACHT	SERIAL NO. 870-419	
ED026/01	V-	ARC	MODEL 16000DXO,IG PRECISA	1	B.BADAMCHIAN		
ED025/01	V-26	ARC	OVEN MODEL MEMERT 80UL/1	1	ARC BEJI	SERIAL NO. 870-650	
ED028/01	V-27	ARC	AVERY PLATFORM SCALE MODEL3358	1	ARC - G.MASSEY	AGRONOMY OFFICE	
ED029/01	V-27	ARC	SARTORIUS 1006 BALANCE	1	ARC-W .SCHACHT	ANIMAL SCIENCE / RANGE	
ED030/01	V-29	ARC	4-BOW MONOSEM PLANTER	1	IMPLEMENTS SHED	SERIAL NO. 685939	
ED031/01	V-29	ARC	FREEZEPOINT XL295 CHESTFREEZER	1	ARC - W.SCHACHT	ANIMAL SCIENCE / RANGE	
ED032/01	V-29	ARC	50KG SCALE	1	ARC - W.SHACHT	ANIMAL SCIENCE / RANGE	
ED027/01	V-30	ARC	SOLO SPRAYER	1	ARC W.SHACHT	ANIMAL SCIENCE / RANGE	
ED033/01	V-33	ARC	SLASHEER MOWER FALCON 1.8m.	1	ARC - G.MASSEY	ARC FIELD EQUIPMENT SHED	
ED034/01	V-33	ARC	TARPAULINS	1	ARC - G.MASSEY		
ED035/01	V-36	ARC	2-BAR RADIANT ELECTRIC HEATER	1	ARC - SOILS LAB		
ED036/01	V-38	ARC	QUICK HEAT STOVE	1	ARC - W.SCHACHT	ANIMAL SCIENCE - LIKABANE	
ED039/01-04	V-32	ARC	CULTIVATORS	2	ARC - S.GOERTZ	AGRIC. COLLEGE	
ED040/01	V-25	ARC	BEIGGS AND STRATON MOTOR	1	ARC		

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ASSET NUMBER	VOUCHER No.	COM DESCRIPTION	ASSIGNED TO / QTY LOCATION	SERIAL NUMBER COMMENTS
EB001/01	V-04	ARC MADISON DP DESK	1 ARC T. NAMANE	
EB002/01-03	V-06	ARC SENIOR EXECUTIVE CHAIRS	3 W. SCHACHT, H. HOMAN, G. MASSEY	
EB003/01	V-24	ARC 4 DRAWER FILING CABINET	1 H. ARTZ	
EB004/01-02	V-04	ARC SENIOR EX. CHAIR	2 E. LOOMIS, B. BADAMCHIAN	
EB005/01	V-05	ARC MADISON DP DESK	1 E. LOOMIS	
EB006/01	V-05	ARC SENIOR EXEC. CHAIR	1 T. NAMANE	
EB007/01	V-05	ARC SENIOR EXEC. CHAIR	1 ARC T. NAMANE	
EB008/01	V-05	ARC BOOKSHELVES	1 E. LOOMIS	
EB009/01	V-05	ARC BOOKSHELVES	1 B. BADAMCHIAN	
EB010-01	V-14	ARC STATIONERY CABINET	1 PROJECTOR CABINET	
EB012/01	V-18	ARC STATIONERY CABINET	1 KITCHEN-P. MATELE	
EB011/01-02	V-20	ARC FLIPCHART STANDS	2 CONFERENCE	
EB013/01	V-21	ARC 2 DRAWER FILING CABINET	1 B. BADAMCHIAN	SOILS PHYSICS LAB
EB013/02	V-20	ARC UMFTAR SKISTING HEATER	1 B. BADAMCHIAN	SOILS LAB
EB014/01	V-22	ARC 2 DRAWER FILING CABINET	1 B. BADAMCHIAN	SOILS CHEMISTRY LAB
EB015/01	V-42	ARC 6 FOOT FILING CUPBOARD	1 H. HOMAN	
EB016/01	V-46	ARC KEY CABINET	1 B. ARNOLD	
EB017/01	V-47	ARC 6 FOOT FILING CUPBOARD	1 HORTICULTURE LAB	
EB018/01-02	V-46	ARC 4-DRAWER FILING CABINET	2 G. MARLOWE	
EB019/01-02	V-06	ARC ASBESTOS WALL HEATERS	2 SOILS LAB	
EB020/01	V-38	ARC 12-DRAWER CORNELL CABINETS	1 ENTOMOLOGY	
EB020/02	V-38	ARC CORNELL DRAWERS	12 ENTOMOLOGY	
EB020/03	V-38	ARC FREIGHT/INSURANCE CHARGES	1 ENTOMOLOGY	
EB020/04	V-38	ARC FREIGHT CHARGES	1 ENTOMOLOGY	
EB021/01	V-38	ARC 12-DRAWER CORNELL CABINETS	1 ENTOMOLOGY	
EB021/02	V-38	ARC CORNELL DRAWERS	12 ENTOMOLOGY	
EB021/03	V-38	ARC FREIGHT/INSURANCE CHARGES	1 ENTOMOLOGY	
EB021/04	V-38	ARC FREIGHT CHARGES	1 ENTOMOLOGY	
EB022/01-02	V-29	ARC O.B. BOOKCASES	2 B. BADAMCHIAN	
EB023/01-02	V-29	ARC STATIONARY CABINET	1 BETH ARNOLD	
EB024/01-02	V-51	ARC 4 DRAWER CABINET	2 ARC LIBRARY	
EB025/01-02	V-52	ARC GLASS DOOR CUPBOARD	2 WALT SCHACHT	
EB026/01	V-49	ARC STATIONERY CABINET	1	
EB027/01-02	V-42	ARC TYPIST CHAIRS	2 B. BADAMCHIAN	
EB028/01-02	V-50	ARC 4 DRAWER F/CABINET	2 RESEARCH LIBRARY	
EA029/01	V-06	ARC KEY CABINET	1 RESEARCH ADMIN.	
EB030/01-10	V-52	ARC NOTICE BOARDS	10 RESEARCH LIBRARY	
EB031/01	V-55	ARC 4 DRAWER FILING CABINETS	2 RESEARCH LIBRARY	
EB032/01	V-55	ARC WHITE BOARDS	2 RESEARCH LIBRARY	
EB033/01	V-56	ARC TABLE	1 RESEARCH LIBRARY	
EB034/01	V-62	ARC MOBLE TACK ON BULLETIN BOARD	3 J. CAMPBELL	
EB035/01	V-62	ARC STATIONERY CUPBOARD	1 J. CAMPBELL	
EB036/01	V-56	ARC TABLE	1 RESEARCH LIBRARY	
EB037/01	V-56	ARC TABLE	1 RESEARCH LIBRARY	
EB038/01-02	V-65	ARC TABLE - 3000*1000*700	2 RESEARCH LIBRARY	
EB039/01-02	V-55	ARC TABLE - 1850*100*700	2 RESEARCH LIBRARY	
EB040.01		ARC CONFERENCE TABLE	1 E. LOOMIS	
EB041.01-10		ARC OCCASSIONAL CHAIRS	10 E. LOOMIS -4; T. NAMANE - 6	
EB042.01		ARC D/PEDESTAL DESK	1 T. NAMANE	FROM PIC
EB043.01-06		ARC OCCASSIONAL CHAIRS	6 M. MATLI	FROM PIC
EB044.01		ARC EXECUTIVE CHAIR	1 T. NAMANE	FROM PIC

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ASSET NUMBER	VOUCHER No.	COM DESCRIPTION	ASSIGNED TO / QTY	LOCATION	SERIAL NUMBER COMMENTS
EA002/01	V-29	ARC;EPSON PRINTER	1	B.ARNOLD	190009625
EA003/01	V-29	ARC;LQ1000 CUT SHEET FEEDER	1	B.ARNOLD	
EA004/01	V-29	ARC;EPSON TRACTOR FEED UNIT	1	B.ARNOLD	
EA006/01	V-34	ARC;SPARTAN XT/SD 30mb MONO	1	COMPUTER ROOM	
EA009/01	V-34	ARC;EPSON PRINTER LQ1050	1	COMPUTER ROOM	02003268
EA010/01	V-36	ARC;MS-DOS AND GWBASIC	1	E.LOOMIS	
EA012/01	V-37	ARC;25m POWER CABLE	1	B.ARNOLD	
EA013/01-02	V-36	ARC;600 VA UPS (model f)	2	B.ARNOLD	
EA014/01	V-36	ARC;SEAGATE 20mb + CONTROLLER	1	ARC - E.LOOMIS	
EA015/01-02	V-36	ARC;LARGE PRINTER STAND	2	ARC - E.LOOMIS	
EA019/01	V-39	ARC;DATA ENTRY II PROGRAM	1	N. ARTZ	
EA019/01	V-36	ARC;MSTAT COMPUTER PROGRAM	1	ARC - E.LOOMIS	
EA020/01	V-38	ARC;MSTAT COMPUTER PROGRAM	1	COMPUTER ROOM	
EA021/01	V-35	ADM;COLUMBIA HARD DISK	1	N. ARTZ	
EA022/01	V-35	ADM;TBM PRO-PRINTER	1	N. ARTZ	
EA023/01	V-01	PIC;ZENITH P.C. GS 158	1	N. ARTZ	6180DF0657/1531566
EA028/01	V-01	PIC;POWERMAN 600VA SINE	1	N. ARTZ	
EA031/01	V-01	PIC;EPSON PRINTER	1	N. ARTZ	03000955
EA031/02	V-38	PIC;2mb RAM CARD - XT/36 256k RAM	1	N. ARTZ	
EA024/01	V-49	ARC;SPARTAN 30MB P.C.	1	J.Campbell	
EA025/01	V-49	ARC;ABCDE SWITCHBOX	1	J.Campbell	
EA026/01	V-49	ARC;COMPUTER SOFTWARE PROGRAM	1	ED LOONIS	
EA027/01-03	V-45	ARC;TRANSFORMERS	3	JIM CAMPBELL	ARC
EA029/01	V-51	ARC;1000 TRANSFORMER POWERMAN	1	B. BADAMCHIAN	ARC
EA030/01	V-55	ARC;SOFTWARE	1	B. BADAMCHIAN	ARC
EA033/01	V-62	ARC;SERIAL PORT + CONVERTOR	1	BETH ARNOLD	ARC
EA034/01	V-62	ARC;MEMORY UPDATE ON LAPTOP	1	J. CAMPBELL	ARC
EA035/01	V-58	ARC;3.5" D/DRIVE & CARD FOR P.C.	1	J. CAMPBELL	ARC
EA036/01	V-65	ARC;WORDPERFECT PROGRAM	1	J. CAMPBELL	ARC
EA037/01	V-64	ARC;TRANSFORMER 1000w	1	J. CAMPBELL	ARC
EA038/01	V-66	ARC;MSTAT PROGRAM	1	J. CAMPBELL	ARC
EA039/01	V-68	ARC;BUFFER SWITCHES	2	J. CAMPBELL	ARC
EA040/01	V-66	ARC;LINE FILTER - 1 PLUG	1	J. CAMPBELL	ARC
EA041/01-02	V-70	ARC;MOUSE SYSTEM & SERIAL PORT	2	J. CAMPBELL	ARC
EA042/01	V-70	ARC;SHIPER ANTI VIRUS PROGRAMS	1	J. CAMPBELL	ARC
EA043/01	V-70	ARC;LOTUS 2.2	1	J. CAMPBELL	ARC
EA001/01	V-29	ARC;SPARTAN 30MB P.C.	1	B.ARNOLD	871/37399
EA005/01	V-33	ARC;MEDIUM PRINTER STAND	1	B.ARNOLD	
EA007/01	V-34	ARC;SPARTAN XT/SD 30mb MONO	1	E.LOOMIS	88032114/'010264
EA008/01	V-34	ARC;EPSON PRINTER LX800	1	E.LOOMIS	2000885
EA032/01	V-62	ARC;LASER JET PRINTER	1	BETH ARNOLD	ARC
EA044/01	V-74	ARC;AB DATA SWITCH BOX	1	J. CAMPBELL	ARC

CA = COMPUTER EQUIP
 CH = CHICKEN COOPS
 CC = OFFICE EQUIP
 CD = OTHER EQUIP
 CG = GREENHOUSE
 CI = IRRIGATION
 CM = OFFICE FURNITURE
 CP = COMPUTERS
 CR = REFRIGERATION
 CS = OFFICE EQUIPMENT
 CT = TOOLS
 CU = OTHER EQUIPMENT
 CV = AGRICULTURAL EQUIPMENT

EDREGISTER OF NON-EXPENSE ITEMS EXCEEDING \$50 (M12)

ASSET NUMBER	VOUCHER No.	COMP	DESCRIPTION	QTY	ASSIGNED TO / PRESENT LOCATION	SERIAL NUMBER / COMMENTS
CA009/01	V-26	AI	APPLE IM/WRITER PRINTER	1	AEC(AIS)	
CA009/02	V-26	AI	APPLETALK PLUS KIT	1	AEC(AIS)	
CA009/03	V-26	AI	APPLE LASER PLU PRINTER	1	AEC(AIS)	C737021
CA009/04	V-26	AI	P.C. Mac SE HD/KEYBOARD	1	AEC(AIS)	C736090
CA009/05	V-26	AI	APPLE DRIVE 3.5"	1	AEC(AIS)	76B06H3
CA009/06	V-26	AI	APPLETALK KIT LASER	1	AEC(AIS)	
CA009/07	V-26	AI	CARRIAGE	1	AEC(AIS)	
CA009/08	V-26	AI	AIR FREIGHT	1	LAC	
CA025/01	V-26	AI	A DOBE ILLUSTRATOR	1	AEC(AIS)	
CA013/01	V-38	AI	OMNIPOWER 600VA UPS	1	AEC(AIS)	
CA011/01	V-26	AI	SUPER PAINT F/MAC	1	AEC(AIS)	
CA011/02	V-26	AI	LASER SPEED	1	AEC(AIS)	
CA011/03	V-26	AI	SWITCHER CONSTRUCTION SET	1	AEC(AIS)	
CA011/04	V-26	AI	PAGEMAKER PORTFOLIO	1	AEC(AIS)	
CA011/05	V-26	AI	HYPERCARD	1	AEC(AIS)	
CA011/06	V-26	AI	PAGEMAKER MAC VER 2.0	1	AEC(AIS)	
CA011/07	V-26	AI	MICROSOFT EXCEL MAC V 1.0	1	AEC(AIS)	
CA011/08	V-26	AI	WORD 3.0 F/MAC 250018	1	AEC(AIS)	
CA012/01	V-27	AI	MACMATE SOFTWARE	1	AEC(AIS)	
CA013/01	V-54	AI	FREIGHT BKS/COMPT. SWARE	1	AEC(AIS)	
CB051/01	V-05	AI	4-DRAWER FILING CABINET	1	AEC(AIS)	
CB052/01	V-05	AI	005 CHAIR	1	AEC(AIS)	
CB053/01	V-05	AI	D/PEDESTAL DESK	1	AEC(AIS)	
CB054/01	V-44	AI	4-DRAWER FILING CABINET	1	AEC(AIS)	
CB069/01-02	V-58	AEC	ADMIN. MARGANY D/P DESK	2	B. TYSON	NEW OFFICE BUILDING
CB070/01-02	V-58	AEC	LOWBACK SWIVEL/TILT CHAIR	2	B. TYSON	NEW OFFICE BUILDING
CB071/01	V-58	AEC	TYPIST CHAIR	1	B. TYSON	NEW OFFICE BUILDING
CB072/01	V-58	AEC	TYPIST CHAIR	1	B. TYSON	NEW OFFICE BUILDING
CB073/01	V-58	AEC	SENATOR H/B S/T CHAIR	1	B. TYSON	NEW OFFICE BUILDING
CB074/01	V-61	AEC	PIGEON HOLES X 12	1	S. GOERTZ/B. TYSON	NEW OFFICE BUILDING
CB079/01-07	V-65	AEC	SHELF UNITS	7	LAC LIBRARY- B. TYSON	
CB080/01-03	V-65	AEC	TABLES	3	LAC LIBRARY- B. TYSON	
CB081/01-18	V-65	AEC	CHAIRS	18	LAC LIBRARY- B. TYSON	
CB082/01-02	V-65	AEC	CARD BOXES	2	LAC LIBRARY- B. TYSON	
CB083/01	V-65	AEC	LIBRARIAN DESK	1	LAC LIBRARY- B. TYSON	
CB084/01	V-65	AEC	LIBRARY STEPS	1	LAC LIBRARY- B. TYSON	
CC032/01	V-24	AI	1218 OFFSET DUPLICATOR	1	AEC(AIS)	SERIAL NO. 986454
CC032/02	V-24	AI	PM45/25 TPM MASTER IMAGER	1	AEC(AIS)	SERIAL NO. 714891
CC033/02	V-47	AI	1218 OFFSET DUPLICATOR	1	AEC(AIS)	SERIAL NO. 714891
CC034/01	V-49	AI	BOOKLET MAKER	1	AEC(AIS)	SERIAL NO. 714891
CD021/02	V-26	AI	STAINLESSS STEEL SINK	1	AEC(AIS)	F. ROOYANI
CD021/03	V-26	AI	GEYSER 100 LITRE.	1	AEC(AIS)	F. ROOYANI
CD052/01	V-27	AI	GENERATOR SET R600	1	AEC(AIS)	
CD053/01	V-27	AI	GENERATOR SET R600	1	AEC(AIS)	
CD054/01-02	V-27	AI	FAN HEATERS	2	AEC(AIS)	
CJ031/01	V-53	AEC	LIGHT TABLE	1	LAC COLLEGE/STEVE GOERTZ	
CJ032/01	V-53	AEC	STAND	1	LAC COLLEGE/STEVE GOERTZ	
CJ033/01	V-53	AEC	FILM DRYER/HEATER	1	LAC COLLEGE/STEVE GOERTZ	
CJ034/01	V-53	AEC	PRINT WASTER/WALL MOUNTED	1	LAC COLLEGE/STEVE GOERTZ	
CJ035/01	V-53	AEC	REFRIGERATOR	1	LAC COLLEGE/STEVE GOERTZ	
CE008/01	V-31	AI	EXTENSION TO AG. INFO. BLDG	1	AEC(AIS)	

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EDREGISTER OF NON-EXPENSE ITEMS EXCEEDING \$50 (M12)

ASSET NUMBER	COMP/DESCRIPTION	QTY	ASSIGNED TO/ PRESENT LOCATION	SERIAL NUMBER COMMENTS
	AEC STONE	1		
	AEC PLAIN DOOR	1		
	AEC PINE AND CORR. IRON	1	BULL PENS	
	AEC KRAALS - MATERIALS	1		
	AEC CONCRETE BLOCKS	1		
	AEC CRUSHED STONE	1		
	AEC SAND AND STONE	1		
	AEC FLAT BARS	7		
	AEC KRAALS - MATERIALS:TIMBER	1		
	AEC ROUGH SAND	5		
	AEC CRUSHED STONE	6m.3		
CKR01/01	AEC KRAALS - MATERIALS	1		
CI001/01	AEC MICRO JET IRR. EQUIP.	1	W.NISHEK	
CI002/01	AEC PIPES	1	W.NISHEK	
PI001/01	PIC PLAMIMETER - G.P.SLIDING	1	PIC - H.MOORE	IRRIGATION SCHEME
PI002/01-06	PIC SKT3 ABNEY LEVELS	6		IRRIGATION EQUIPMENT
PI003/01	PIC PENTAX THEODOLITE	1	ROOM 42, W.WOODS, D.ALLEN, D.NICHOLS, C.L., B.D.	
PI004/01-02	PIC ST005 WOODEN TRIPODS	2	H.MOORE	
PI005/01	PIC 583Y/6m. BABONE STEEL TAPE	1	M.WOODS	
PI006/01-02	PIC 32520 5m/3 SECT STAVES	2	DAMAGED- H.MOORE	
PI007/01	PIC PV/50/5 FISCO PACER TUFCO	1	H.MOORE	
PI008/01	PIC PENTAX AUTO LEVEL	1	H.MOORE	
PI022/01	PIC PE STAND, D/UNIT, SCALE	1	H.MOORE - ROOM 20	
PI009/01-02	PIC WOODEN TRIPODS ST2005	2	H.MOORE/G.JOHNSON	SERIAL No. #621009
PI010/01-02	PIC TH 60 S DIGITAL THEODOLIT	2	H.MOORE/G.JOHNSON	4 520963
PI011/01-02	PIC OZATEC N44mm x 20m.	2	H.MOORE/G.JOHNSON	4 520963
PI012/01-03	PIC OZATEC D/W T 05mm.	3	H.MOORE/G.JOHNSON	4 520963
PI013/01-03	PIC HI-TECH SET	3	ROOM 42(2).C.LOGAN	
PI014/01-03	PIC PROTRACTOR SET	3	ROOM 42(2).C.LOGAN	
PI015/01	PIC TAKE-UP WINCH ELEC.MOTOR	1	STOLEN FROM LAC	
PI016/01-02	PIC SHARP CALCULATOR EL S103	2	ROOM 42(1).C.LOGAN	
PI017/01-02	PIC WINCH	1	PIC	
PI018/01-03	ADM TRAILER WITH 2 WHEELS+RAM	3	H.MOORE	
PI019/01-03	ADM PUMP TDH SUCTION & DELIVE	3	H.MOORE	IRRIGATION SCHEME
PI020/01-03	ADM DIESEL ENGINE -HATZ E79	3	H.MOORE	
PI021/01-03	ADM COUPLER F 50	3	H.MOORE	
CF007/01	AEC IRRIGATION PUMP/HYDROLOGY	1	AEC (BEN TYSON)	

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EDREGISTER OF NON-EXPENSE ITEMS EXCEEDING \$50 (M12)

ASSET NUMBER	COMP/DESCRIPTION	QTY	ASSIGNED TO/ PRESENT LOCATION	SERIAL NUMBER COMMENTS
AEC	GREENHOUSE - MATERIALS	1	LAC GREENHOUSE	
AEC	ELECTRICS FOR GREENHOUSE	1	LAC P. FORREST	
AEC	GREENHOUSE - 9" BLOCKS	50	LAC GREENHOUSE	
AEC	GREENHOUSE - 9" BLOCKS	300	LAC GREENHOUSE	
AEC	GREENHOUSE - MATERIALS	1	LAC GREENHOUSE	
AEC	GREENHOUSE-MATERIALS/GATE	10	LAC GREENHOUSE	
AEC	GREENHOUSE - MATERIALS	1	LAC GREENHOUSE	
AEC	16" CONCRETE BLOCKS (800)	1	LAC GREENHOUSE	
AEC	GREENHOUSE 8m x12m.	1	LAC GREENHOUSE	
AEC	2400 MAYIPAN CLEAR	7	LAC GREENHOUSE	
AEC	GREENHOUSE - WHEELBARROWS	4	LAC GREENHOUSE	
AEC	GREENHOUSE - MATERIALS	1	LAC GREENHOUSE	
AEC	GREENHOUSE - MATERIALS	1	LAC GREENHOUSE	
AEC	GREENHOUSE FOUNDATION	1	AEC/LAPIS	
AEC	ELECTRICAL INSTALLATION	1	LAC GREENHOUSE	
AEC	SUSPENDED GREENHOUSE RAIL	4	LAC GREENHOUSE	
AEC	STEEL TABLES 2500x750x650	2	LAC - S.GOERTZ	
AEC	STEEL TABLES 2500x1000x65	8	LAC - S.GOERTZ	
AEC	STEEL TABLES 2000x1000x65	1	LAC - S.GOERTZ	
AEC	STEEL TABLES 2000x1500x65	8	LAC - S.GOERTZ	
AEC	ELECTRICAL INSTALLATION	1	LAC GREENHOUSE	
AEC	DOUBLE SECURITY GATE	1	LAC GREENHOUSE	
AEC	OTHER MATERIALS	1		
AEC	LIVESTOCK KRAALS	X	AEC	
AEC	KRAALS	1	AEC/LAPIS	
AEC	KRAALS - BLOCKS	X	A. KING	
AEC	KRAALS CONSTRUCTION	1	A. KING	
AEC	KRAALS - SAND	1	A. KING	
AEC	KRAALS MATERIALS	1	A. KING	
AEC	KRAALS MATERIALS - GATES	7	A. KING	
AEC	KRAALS - CRUSHED STONES	1	AEC/LAPIS	
AEC	KRAALS - ROUGH SAND	3	LAC KRAALS	
AEC	KRAALS - RIVER SAND	6	AEC - A.KING	
AEC	KRAALS - TREATED POLES	X	LAC KRAALS	
AEC	KRAALS - MATERIALS	X	6" BLOCKS	
AEC	KRAALS - MATERIALS	X	LAC KRAALS	
AEC	KRAALS - MATERIALS	X	6" BLOCKS	
AEC	KRAALS - MATERIALS	X	6" BLOCKS	
AEC	KRAALS - ROUGH SAND	9	LAC KRAALS	
AEC	KRAALS - MATERIALS	1	LAC KRAALS	
AEC	KRAALS - WOOD FRAMES/PAINT	1	LAC KRAALS	
AEC	KRAALS - ROUGH SAND	6	LAC KRAALS	
AEC	KRAALS - MATERIALS	1	AEC - A.KING	
AEC	PVC NYLON TEMPS	18	AEC - A.KING	
AEC	KRAALS - POLES, WIRE MESH	1	LAC KRAALS	
AEC	SECURITY LIGHTING	1	LIGHTING FOR KRAALS	
AEC	STONES & SAND FOR KRAALS	14	LAC KRAALS	
AEC	800 CONCRETE BLOCKS	1	AEC - A.KING	LAC KRAALS
AEC	CORR. IRON/REINFORCING	1	AEC - A.KING	LAC KRAALS

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EDREGISTER OF NON-EXPENSE ITEMS EXCEEDING \$50 (M12)

ASSET NUMBER	COMP	DESCRIPTION	QTY	ASSIGNED TO/ PRESENT LOCATION	SERIAL NUMBER COMMENTS
CD045/01	AEC	NOVA 92 DRAFTING UNIT	1	COPY ROOM	
CD046/01	AEC	PROFILE DRAFTING CHAIR	1	COPY ROOM	
CD047/01	AEC	CLAMP LIGHT	1	A/V THEATRE	
CD048/01	AEC	ROLLING STANDS FOR PLAN	1	COPY ROOM	
CD051/01	AEC	LEVER ARCH BOOKSHELF	1	T/F TO LAC	
CD052/01-07	AEC	VISITORS CHAIRS	7	T/F TO LAC	
CD053/01	AEC	4 DRAWER FILING CABINET	2	T/F TO LAC	
CD054/01	AEC	MEASURING TAPE-50m. STEEL	1	T/F TO LAC	
CD055/01	AEC	SOCKET SET 3/8" DRIVE	1		
CD056/01-02	AEC	COMBISPANNER SET 6/22mm	2		
CD057/01-02	AEC	TOOL KITS	2	T/F TO LAC	
CD058/01	AEC	HEAVY DUTY CATTLE SCALE	1	A.KING	
CD059/01	AEC	PORTABLE LOADING RAMP	1	A.KING	
CD060/01	AEC	MULTIWAY SCALE - SMALL ST	1	A.KING	
CD061/01	AEC	SMALL STOCK HANDLING UNIT	1	A.KING	
CD062/01	AEC	1108 KYORITSU MULTIMETER	1	M.JOHNSON	
ED037/01-04	AEC	CULTIVATORS	4	AEC - S.GOERTZ	AGRIC. COLLEGE
ED038/01-02	AEC	SENIOR PLANTERS	2	AEC - S.GOERTZ	AGRIC. COLLEGE
ED039/01-04	AEC	CULTIVATORS	2	AEC - S.GOERTZ	AGRIC. COLLEGE
ED021/01	AEC	WELDING SET/LOMBARDINI EN	1	ARC/LAC	SER No.185850 WELDAHPWER
ED057/01	AEC	TABLE TOP SHELF 25x25x240	1	LABORATORY	AGRIC. COLLEGE
ED057/02	AEC	SINK/LAB BENCH	1	LABORATORY	AGRIC. COLLEGE
CE001/01	AEC	BUILDING CONSTRUCTION	X	LAC	CHICKEN COOP PROJECT
CE001/02	AEC	BUILDING CONSTRUCTION	X	AEC BLDG. CONSTR.	CHICKEN COOP PROJECT
CE001/03	AEC	BUILDING CONSTRUCTION	X	AEC BLDG. CONSTR.	CHICKEN COOP PROJECT
CE001/04	AEC	BUILDING CONSTRUCTION	X	AEC BLDG. CONSTR.	CHICKEN COOP PROJECT
CE002/01	AEC	BUILDING CONSTRUCTION	X	AEC BLDG. CONSTR.	CHICKEN COOP PROJECT
CE004/01	AEC	S/PHASE UNDERGROUND CONNE	1	LERIBE (FTC)	
CE005/01	AEC	CONCRETE STEPS/PAVING TO	1	A/V THEATRE	
CE006/01	AEC	EXT. TO ACTIVITIES HALL	1	A/V THEATRE	DEPOSIT PAID, TOTAL = M10
CE006/02	AEC	EXT. TO ACTIVITIES HALL	1	A/V THEATRE	
CE007/01	AEC	FENCING MATERIALS	1	LAC ORCHARD	LAC LERIBE
CE003/01	AEC	BUILDINGS -DAIRY PROJECT	1	STUDENT ENTERPRISE PROJECTS	
CE003/02	AEC	BUILDINGS -DAIRY PROJECT	1	STUDENT ENTERPRISE PROJECTS	
CE003/03	AEC	DAIRY PROJECT P/PAYMENT	1	STUDENT ENTERPRISE PROJECTS	
CE003/04	AEC	DAIRY PROJ. COMP.PAYMENT	1	STUDENT ENTERPRISE PROJECTS	
CE009/01	AEC	ASBESTOS PIPE/LAC ORCHARD	1	LAC ORCHARD	
CE010/01	AEC	ERECTION OF SOS OFFICES	1	SOS OFFICES LAC	
CE011/01	AEC	LIBRARY THEFT CONTROL	1	SOS OFFICES LAC	
CE012/01	AEC	SECURITY LIGHTING SYSTEM	1	SOS OFFICES LAC	
CE013/01	AEC	SECURITY LIGHTING SYSTEM	1	SOS OFFICES LAC	
CE014/01	AEC	MAINTENANCE OF CALF PENS	1	LAC - A.KING	
CE015/01	AEC	CHICKEN FENCING	1	LAC - A.KING	
CE016/01	AEC	WALLS FOR DAIRY UNIT	1	LAC - A.KING	
CE017/01	AEC	BUILDING MATERIALS	1	A. KING	
CE017/02	AEC	BUILDING MATERIALS	1	A. KING	
CE018/01	AEC	BUILDING MATERIALS	1	A. KING	
CE019/01-02	AEC	BURGLAR BARS	2	LAC OFFICES	
CE020/01	AEC	BURGLAR BARS - DEPOSIT	1	HOME ECONOMICS	
CE021/01	AEC	BURGLAR BARS - DEPOSIT	1	HOME ECONOMICS	
CE022/01-04	AEC	RABBIT CAGES	4	SEP PROJECT	

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EDREGISTER OF NON-EXPENSE ITEMS EXCEEDING \$50 (M12)

ASSET NUMBER	COMP	DESCRIPTION	QTY	ASSIGNED TO/ PRESENT LOCATION	SERIAL NUMBER COMMENTS
CT001/01-02	AEC	ARC WELDER 160A. F MODEL	2	LAC W. NISHEK/LERIBE	
CT002/01	AEC	2.4m. STEPLADDER	1	LAC	
CT003/01-02	AEC	CYL. SURF. HONING TOOLS	2	LERIBE/STUDENT DEMO TOOL BOX	
CT005/01	AEC	K3 TACKER/STAPLE GUN	1	AEC BLG MATS	
CT006/01	AEC	KAISE DIGITAL MULTIMETER	1	LAB CONSTRUCTION	
CT007/01	AEC	RADIO CONTROL SYSTEM	1	LAB CONSTRUCTION	
CT008/01	AEC	AVOMETER	1	LAB CONSTRUCTION	
CT009/01	AEC	HIGH LIFT TROLLEY	1	STUDENT DEMO TOOL BOX	
CT010/01	AEC	900mm PIPE WRENCH	1	IRRIGATION STORE	
CT011/01	ARC	DRILL BITS SET AF	1	METAL W/SHOP	
CT013/01	ARC	D19TAZ SOCKET SET 1/2"AF	1	STUDENT DEMO TOOL BOX	
CT014/01	ARC	D-1320 HAND DRILL , 750W.	1	CARPENTRY WORKSHOP	
CT015/01	ARC	D19TMZ SOCKET SET 1/2"DR.	1	STUDENT DEMO TOOL BOX	
CT016/01	ARC	700/25 IMPACT DRILL 700W.	1	WOOD W/SHOP	
CT017/01	ARC	D19TMZ SOCKET SET 1/2"DR.	1	IRRIGATION STORE/LERIBE	
CT018/01	ARC	H.P. SPRAY GUN	1	STUDENT DEMO TOOL BOXB.MAKHETHE	
CT019/01	AEC	STEEL TOOL BOX	1	IRRIGATION STORE	
CT020/01	AEC	FABRICATION OF TOOL BOX	1	STUDENT DEMO TOOL BOX	
CT022/01	AEC	TAPE MEASURE	1	IRRIGATION STORE	
CT023/01	AEC	50m.FILRAN MEASURING TAPE	1	LAC S.GOERTZ	
CT025/01	AEC	ELECTRIC WINCH	1	WAYNE NISHEK	
CD001/01	AEC	5m. SECURITY GATE	1	STUDENTS PLOTS	
CD002/01	AEC	90m. 3/4" GARDEN ROSE	1	GREENHOUSE	
CD005/01	AEC	METAL SIGNS 50x30	2	LAC - HALL	
CD011/01	AEC	WATERSTILL 2001/4-41./HR.	1	LAC SCIENCE LAB	
CD012/01	AEC	STOGOL SHEEPSCALE UNIT	1	STUDENT ENTERPRISE PROJECTS	
CD014/01	AEC	FREEZER FLP 7 C	1	TUCK SHOP	
CD015/01	AEC	6ft. COUNTER FRIDGE	1	TUCK SHOP	
CD019/01	AEC	WRAPPING MACHINE	1	LAC TUCKSHOP	REF. I. MOKHALI
CD020/01	AEC	G/FRONT COUNTER-TUCK SHOP	1	LAC TUCK SHOP	
CD021/01	AEC	PFPP SEWING MACHINE	1	LAC-HOME ECONOMICS	
CD022/01	AEC	U 100 (ACCESSORY)	1	LAC-HOME ECONOMICS	
CD023/01	AEC	DVO 80 KNITTING MACHINE	1	LAC-HOME ECONOMICS	
CD024/01	AEC	DECO (ACCESSORY)	1	LAC-HOME ECONOMICS	
CD026/01	AEC	4 COLOUR CHANGER	1	LAC-HOME ECONOMICS	
CD027/01	AEC	1000 LITRE WATERCART	1	LERIBE (FTC)	
CD028/01	AEC	3KW. CONVERSION HEATERS	4	LERIBE (FTC)	J. RUSK
CD029/01	AEC	WATER STANDS & tubing	2	LERIBE (FTC)	A. KING
CD034/01	AEC	5A PINE CLASSROOM TABLES	20	LERIBE (FTC)	B. TYSON
CD036/01	AEC	YAMAHA 185 MOTORCYCLE	1	IRRIGATION STORE	
CD037/01	AEC	TABLES AND CHAIRS + SINK	1	LESOTHO VILLAGE	
CD038/01	AEC	WATER TANK	1	POULTRY HOUSE	
CD039/01	AEC	MECHANICAL BALANCE (2610g)	3	LAC LABORATORY	
CD039/02	AEC	MECHANICAL BALANCE (1600g)	3	LAC LABORATORY	
CD039/03	AEC	MECHANICAL BALANCE (310g)	3	LAC LABORATORY	
CD039/04	AEC	WOODEN DRYING RACK	2	LAC LABORATORY	
CD039/05	AEC	VOLUMETRIC FLASK (5000ml.)	2	LAC LABORATORY	
CD042/01	AEC	ELECTRODE COMB	1	LAC COLLEGE	

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ASSET NUMBER	COMP/DESCRIPTION	QTY	ASSIGNED TO/ PRESENT LOCATION	SERIAL NUMBER COMMENTS
CJ025/01	AEC SCREEN TRIPOD	1	AUDIO VISUAL THEATRE	
CJ026/01	AEC 2 SHELF TROLLEY	1	AUDIO VISUAL THEATRE	
CJ027/01	AEC WALL SCREEN	1	AUDIO VISUAL THEATRE	
CJ028/01	AEC SINGLE PEDESTAL DESK	1	AUDIO VISUAL THEATRE	
CJ030/01	AEC IRRIGATION PUMP/HYDROLOGY	1	IRRIGATION WORKSHOP	
CJ036/01	AEC VIDEO TAPE	1	LIVESTOCK	
CJ040/01	AEC OVERHEAD PROJECTOR/SLIDES	1	AEC	
CJ040/02	AEC AIR FREIGHT	1	AEC	SHIPMENT
CJ041/01	AEC CHEST FREEZER	1	HOME ECONOMICS	
CJ046/01	AEC SINGER SEWING MACHINES	3	LESOTHO VILLAGE	
	AEC SPRINKLER IRR.MANUALS	99	LAC	
	AEC RABBIT SHED	1	LAC/SEP	
	AEC UPS	1	S. GOERTZ	
	AEC WATER TANKS	3	LAC	
	AEC GREENHOUSE HEATERS	1	LAC GREENHOUSE	
	AEC MOTHER BOARDS/DISK DRIVES	1	M.NISHEK-COMPUTER RO	
	AEC ORCHARD FENCING	1	LAC ORCHARD	
	AEC ISOLATOR/TRANSFORMER	1		
CH001/01	AEC TRANSPORT CHARGES	1	LAC - A.KING	
CH002/01	AEC 4 - LITRE DRINKERS	30	LAC - A.KING	
CH003/01	AEC ADD-ON UNIT	2	LAC - A.KING	
CH004/01	AEC STANDS	30	LAC - A.KING	
CH005/01	AEC DOUBLE WALL FOUNTS	30	LAC - A.KING	STUDENT ENTERPRISE PROJECTS
CH006/01	AEC TUBE FEEDERS	30	LAC - A.KING	
CH007/01	AEC 500 - CHICK BROODER	2	LAC - A.KING	
CH008/01	AEC BASIC UNIT	2	LAC - A.KING	
CH009/01	AEC 1200 CHICK BROODERS	2	LAC - A.KING	
CH010/01	AEC 10-HOLE NEST BOXES	6	LAC - A.KING	
CF001/01	AEC FARBOWING CRATES	2	LAC - A.KING	STUDENT ENTERPRISE PROJECTS
CF002/01-03	AEC CULTIVATORS	3	AGRONOMY STORES	
CF004/01-04	AEC PUSH CULTIVATORS	4	AGRONOMY STORES	
CF005/01-02	AEC PUSH CULTIVATORS	2	AGRONOMY STORES	
CF006/01	AEC SOLO KNAPSACK SPRAYER	1	MOHALES BOX (FTC)	
CF009/01	AEC 5000 LITRE WATER TANK	1	ALAN KING	
CF010/01	AEC TABLE	1	A.KING	SLAUGHTER HOUSE
CF012/01	AEC VETERINARY EQUIPMENT	1	A.KING	SLAUGHTER HOUSE
CF014/01	AEC CONSTRUCTION SHEEP TROUGH	1	A. KING	
CF015/01	AEC CONSTRUCTION SHEEP TROUGH	1	A. KING	
CF016/01-02	AEC CALF HUTCHES	2	A. KING	
CF017/01	AEC COMPOST BIN	1	LAC GREENHOUSE	

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EDREGISTER OF NON-EXPENSE ITEMS EXCEEDING \$50 (M12)

ASSET NUMBER	COMP/DESCRIPTION	QTY	ASSIGNED TO/ PRESENT LOCATION	SERIAL NUMBER COMMENTS
CC004/01	AEC 3M -516 PHOTOCOPIER	1	LAC, PRINCIPALS OFF.	TRADED-IN: PROCEEDS M4250
CC005/01	AEC OLYMPIA WP ETK 1 PLUS	1	LAC SECRETARY	S/N: 9401010-S,392569
CC006/01	AEC OLYMPIA PORT. TYPEWRITER	1	LAC SECRETARY	SERIAL # 61018791
CC007/01	AEC OLYMPIA MANUAL TYPEWRITER	1	LERIBE	SERIAL # 05668622
CC008/01	AEC OLYMPIA PORT. TYPEWRITER	1	LAC SECRETARY	SERIAL # 61018789
CC009/01	AEC OLYMPIA MANUAL TYPEWRITER	1	MOHALES HOEK(FTC)	SERIAL # 05668621
CC010/01	AEC CASIO CALCULATOR	1	COMPUTER ROOM	
CC011/01	AEC SHARP PHOTOCOPIER SF 8200	1	PHOTOCOPIING ROOM	SERIAL NO. 65602787
CC012/01	AEC XEROX PHOTOCOPIER	1	STOLEN	SERIAL NO. 2117944533
CC013/01	AEC ELECTRONIC SURVEILLANCE	1	LAC LIBRARY	CHECK UNIT M-055
CC014/01	AEC LUXOR BOOK TROLLEY	1	LAC LIBRARY	CARD CAT. TROLLEY
CC014/02	AEC CATALOGUE CABINET	1	LAC LIBRARY	
CJ001/01	AEC DRAWING SET ART # 532208	1	PHOTOCOPIING ROOM	
CJ001/02	AEC DRAWING INSTRUMENTS	1	PHOTOCOPIING ROOM	
CJ002/01	AEC TELEX 16MM FILM PROJECTOR	1	AUDIO VISUAL THEATRE	
CJ003/01	AEC TELEX 35MM S/FILM STRIP	1	AUDIO VISUAL THEATRE	
CJ004/01	AEC 35MM 1 FLIPCHART	1	AUDIO VISUAL THEATRE	
CJ005/01	AEC FLIPCHART STANDS	1	AUDIO VISUAL THEATRE	
CJ006/01-02	AEC FLIP CHART PAD/EASLES	2	AUDIO VISUAL THEATRE	
CJ007/01-02	ADM PROJECTOR SCREENS/CEILING	2	AUDIO VISUAL THEATRE	SERIAL NO. 65618606
CJ008/01	AEC 3274 IMAGE 1 CARAMATE	1	AUDIO VISUAL THEATRE	
CJ008/02	AEC SPIRAL ROOM/CARAMATE	1	AUDIO VISUAL THEATRE	
CJ009/01	AEC DUOSCOPES	2	AUDIO VISUAL THEATRE	
CJ010/01	AEC SLIDE PROJECTOR	1	AUDIO VISUAL THEATRE	
CJ010/02	AEC SHIPMENT/SLIDE PROJECTOR	1	AUDIO VISUAL THEATRE	
CJ011/01	AEC AUDIO CASSETTE RECORDER	1	AUDIO VISUAL THEATRE	
CJ012/01	AEC WHITEBOARDS/PEN TRAYS	2	AUDIO VISUAL THEATRE	
CJ013/01	AEC BLAUPUNKT TV 67cm.	1	AUDIO VISUAL THEATRE	
CJ014/01	AEC VHS TEDELEX 9934 VCR	1	AUDIO VISUAL THEATRE	
CJ015/01	AEC WALL MOUNTED SCREEN	1	AUDIO VISUAL THEATRE	
CJ016/01	AEC VISTA VARIA OHP	1	AUDIO VISUAL THEATRE	
CJ017/01	AEC PORTABLE SCREEN:8/QUALITY	1	AUDIO VISUAL THEATRE	
CJ018/01	AEC TANBERG AUDIO TUTOR 772	1	AUDIO VISUAL THEATRE	
CJ019/01	AEC EXTENSION SPEAKERS	1	AUDIO VISUAL THEATRE	
CJ020/01	AEC PROJECTOSTAND MODEL 2	1	AUDIO VISUAL THEATRE	
CJ022/01	AEC PHILIPS CAMCORDER,TRIPOD	1	AUDIO VISUAL THEATRE	
CJ023/01-02	AEC PORTOJECT OHP	2	AUDIO VISUAL THEATRE	ONE STOLEN
CJ024/01-02	AEC CHALKBOARD 1200x8000	2	CLASSROOM # 2	

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EDREGISTER OF NON-EXPENSE ITEMS EXCEEDING \$50 (M12)

ASSET NUMBER	COMP	DESCRIPTION	QTY	ASSIGNED TO/ PRESENT LOCATION	SERIAL NUMBER COMMENTS
CB026/01	AEC	ROUND DINING TABLE	1	LAC STAFF ROOM	
CB027/01-04	AEC	1.2m. BENCHES & UPHOLSTRY	4	LAC STAFF ROOM	
CB028/01-36	AEC	PLAIN DINING CHAIRS	36	LAC STAFF ROOM	
CB029/01-04	AEC	ARMCHAIRS STAINED	4	LAC STAFF ROOM	
CB030/01-02	AEC	OCCASIONAL TABLES	2	LAC STAFF ROOM	
CB031/01-05	AEC	.9m. BENCHES	5	LAC STAFF ROOM	
CB032/01	AEC	RECTANGULAR COFFEE TABLE	1	LAC STAFF ROOM	
CB033/01	AEC	SET SHELVING UNIT	1	F. BOBBITT	
CB034/01	AEC	005 SET CHAIR	1	F. BOBBITT	
CB036/01	AEC	CLASSROOM CURTAINS	1	LAC CLASSROOM	
CB037/01	AEC	1500 X 900 S.P. DESK	1	F. BOBBITT	
CB039/01	AEC	PLAQUE FOR AV THEATRE	1	A/V THEATRE	
CB038/01	AEC	KEY CABINET	1	BURSER'S ROOM	
CB041/01-02	AEC	1600 HERALD D/P DESK	2	F. ROOYANI/G. JOHNSON	
CB041/03-04	AEC	9401 MARVAL CHAIRS	2	F. ROOYANI/G. JOHNSON	
CB043/01	AEC	1800 CENTURY D/P DESK	1	AEC - HGP	
CB044/01	AEC	4 DRAWER FILING CABINET	1	F. BOBBITT	
CB045/01-04	AEC	SWIVEL + TILT # 705 CHAIR	4	P. FORREST, S. GOERTZ, AGRONOMY, MOOROSI	
CB046/01	AEC	EXECUTIVE DESK	1	MAKHETE	#38 F BUILDING MED
CB047/01-02	AEC	TYPISTS CHAIRS	2	W. HISHEK/MAKHETE	#38 F BUILDING MED
CB048/01	AEC	4-DRAWER FILING CABINET	1	A. KING	
CB049/01	AEC	OFFICE DESK	1	AEC - W. HISHEK	55583
CB051/01	AEC	CURTAINS AT A/V THEATRE	1	A/V THEATRE	
CB052/01	AEC	CURTAIN MATERIALS	1	LAC STAFF ROOM	
CB053/01	AEC	BRONZE PLAQUE	1	LAC STAFF ROOM	
CB054/01	AEC	4 DRAWER FILING CABINET	1	B. KING	
CB055/01-02	AEC	705 CHAIRS	1	B. TYSON	
CB056/01	AEC	DESK	1	LAC SECRETARY	
CB057/01	AEC	CHAIR	1	LAC SECRETARY	
CB058/01	AEC	DESK	1	P. FORREST	
CB061/01-09	AEC	HIGH BECK CHAIR	9	BEN TYSON	NEW OFFICE BUILDING
CB062/01-10	AEC	EASI DESK D/PEDESTAL	10	BEN TYSON	NEW OFFICE BUILDING
CB063/01	AEC	TYPIST CHAIR	1	BEN TYSON	NEW OFFICE BUILDING
CB064/01-09	AEC	4 DRAWER FILING CABINET	9	BEN TYSON	NEW OFFICE BUILDING
CB065/01	AEC	STUDENT DESK AND CHAIRS	150	BEN TYSON	NEW OFFICE BUILDING
CB066/01	AEC	STATIONARY CUPBOARD	1	BEN TYSON	NEW OFFICE BUILDING
CB075/01	AEC	DESK BUILD/CLASSROOM	1		
CB076/01	AEC	SA SAFE	1		
CB077/01-04	AEC	SUPER 3 HEATER	4		
CB078/01	AEC	PLANIMETER	1		

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EDREGISTER OF NON-EXPENSE ITEMS EXCEEDING \$50 (M12)

ASSET NUMBER	COMP	DESCRIPTION	QTY	ASSIGNED TO/ PRESENT LOCATION	SERIAL NUMBER COMMENTS
CA001/01	AEC	ZENITH P.C. GS 158	1	COMPUTER ROOM	6140F0470
CA002/01	AEC	POWERMAN 600VA SINE	1	COMPUTER ROOM	
CA003/01	AEC	EPSON PRINTER	1	COMPUTER ROOM	22004305
CA004/01	AEC	EPSON FX-105 PRINTER	1	COMPUTER ROOM	03000719
CA005/01	AEC	MITAC 640k P.C.	1	STOLEN	0002860/202482
CA005/02	AEC	MITAC 640k P.C.	1	OPERATIONS ROOM	0002806/202485
CA005/03	AEC	MITAC 640k P.C.	1	LAC SECRETARY	0002795/20500
CA006/01	AEC	2-WAY PRINTER SWITCH	1	COMPUTER ROOM	
CA023/01	AEC	SEAGATE 20MB CONTROLLER	1	COMPUTER ROOM	COMPUTER TRAINING
CA007/01	AEC	PRINTER SWITCH	1	COMPUTER ROOM	
CA008/01	AEC	25m POWER CABLE	1	COMPUTER ROOM	
CA026/01	AEC	ABC SWITCHBOX PARALLEL	1	COMPUTER ROOM	
CA024/01-02	AEC	LARGE PRINTER STANDS	2	COMPUTER ROOM	
CA010/01-03	AEC	COMPUTER ROOM TABLES	3	COMPUTER ROOM	
CA014/01	AEC	2mb RAM CARD XT	1	COMPUTER ROOM	
CA014/02	AEC	256k RAM CHIPS	36	COMPUTER ROOM	
CA016/01	AEC	EPSON PRINTER FX1000	1	COMPUTER ROOM	19008050
CA017/01	AEC	UPS 600VA (MODEL P)	1	OPERATIONS ROOM	
CA018/01	AEC	EPSON PRINTER LQ850	1	LAC SECRETARY	08020397
CA019/01	AEC	UPS 600VA (MODEL P)	1	COMPUTER ROOM	
CA020/01	AEC	LARGE PRINTER STANDS	1	COMPUTER ROOM	
CA021/01	AEC	TREN-TECH AT/XT 40mb	1	COMPUTER ROOM	88011228/'010206
CA022/01	AEC	EPSON PRINTER FX1050	1	LAC SECRETARY	0800168
CA023/01	PIC	UPS 600VA (MODEL P)	1	COMPUTER ROOM	
CA024/01	PIC	SEAGATE 20MB CONTROLLER	3	FOR MITAC P.C.s	
CA031/01	AEC	720K 3.5 DRIVE+FRAME+CAB	1	AEC M. NISHEK	
CB001/01	AEC	KEY CABINET	1		
CB004/01	AEC	DESKS	1	LAC - F. BOBBITT	
CB005/01	AEC	DESKS	1	LAC - A. KING	
CB006/01	AEC	DESKS	1	LAC - B. TYSON	
CB007/01-04	AEC	CARPETING FOR OFFICES	4	OFFICES 1-4	
CB008/01-02	AEC	FILING CABINETS	2	B. TYSON(2)	
CB009/01-04	AEC	FILING CABINETS	4	LAC SEC., P. Van Der VEURE, W. NISHEK, P. FORREST	
CB010/01	AEC	STATIONERY CABINET	1	LAC SECRETARY	
CB011/01-02	AEC	705 CHAIRS	2	A. KING/W. NISHEK	
CB012/01	AEC	BOOKSHELVES	1	F. BOBBITT	
CB013/01	AEC	705 CHAIRS	1	B. TYSON COUNTERPART	
CB014/01	AEC	COMORE L DESK	1	LAC PRINCIPAL	
CB015/01	AEC	702 CHAIRS	1	F. BOBBITT	
CB016/01	AEC	SECRETARIAL DESKS	1	LAC SEC.	
CB017/01-02	AEC	TYPIST CHAIR	2	LAC SEC./COMP. ROOM	
CB018/01	AEC	ROUND DINING TABLE	1	AEC(FTC)	PCV AT LERIBE & M/HOEX
CB018/01-03	AEC	TYPIST CHAIR	3	COMPUTER ROOM	
CB023/01	AEC	KEY CABINET	1	LAC SEC.	
CB025/01	AEC	FABRICS FOR STAFF ROOM	1	LAC STAFF ROOM	
CB025/01	AEC	DINING TABLE	1	LAC STAFF ROOM	

21-May-92

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LAPIS PROJECT
 REGISTER OF NON-EXPENSE ITEMS EXCEEDING \$50 (
 ADMINISTRATION COMPONENT

ASSET NUMBER	VOUCHER No.	COMP	DESCRIPTION	QTY	LOCATION/ASSIGNED TO	SERIAL NUMBER	COMMENTS
AC001/01	V-42	ADM	CONCORD SWITCHBOARD	1	LAPIS HQ	PBX SYSTEM	
AC002/01	V-04	ADM	CALCULATOR ; SHARP EL2607	1	ROOM 8-S.KUCKIAN	SERIAL # 7300112Y	
AC003/01	V-03	ADM	3M WHISPER SCRIB II TELEX	1			
AC003/02	V-03	ADM	COMMON STATION TABLE	1	UNIVERSITY OF ARIZONA		
AC003/03	V-03	ADM	TRANSISTOR SURGE PROTECTOR	1			
AC003/04	V-03	ADM	INSTALLATION CHARGES	1			
AC004/01-04	V-05	ADM	SHARP EL1607 CALCULATOR	4	ROOM 7-J.FISHER	SERIAL # 63016368	
AC005/01	V-09	ADM	OLYMPIA DG 505 DICTAPHONE	1	ROOM 10 - T.HAASE		
AC005/02	V-09	ADM	EARPHONE SET	1	ROOM 10 - T.HAASE	IN STATIONERY CUPBOARD	
AC005/03	V-09	ADM	FOOT CONTROL	1	ROOM 10 - T.HAASE		
AC006/01	V-09	ADM	SHARP PHOTOCOPIER SF8200	1	ROOM 25	SERIAL NO. 65618606 T-IN	
AC008/01	V-16	ADM	GUILLOTINE	1	ADM ROOM No. 25		
AC009/01	V-29	ADM	EL 2607 SHARP CAL.	1	ROOM 8-W.ARNOLD	SERIAL # 73034338	
AC010/01	V-30	ADM	TELEX MACHINE	1	ROOM 10 - T.HAASE	SERIAL # 23156117	
AC011/01	V-35	ADM	ELECTRONIC T/WRITER XL1000	1	ROOM 10 - T.HAASE	SERIAL NO. 19026	
AC012/01	V-37	ADM	SHARP PHOTOCOPY MACH. SF8600	1	ROOM 25	T-IN SF8200 -M.12000	
AC012/02	V-37	ADM	DEVELOPER UNIT	1	ROOM 25	S.N. 85516364	
AC013/01	V-36	ADM	CASIO FR 1015 CALCULATOR	1	ADMIN ROOM 8	SERIAL # 6321177	
AC015/01	V-39	ADM	SHARP CALCULATOR EL2607	1	ADMIN ROOM 7	SERIAL No. 63027691	
AC016/01	V-47	ADM	DYMO MACHINE	1	ADMIN- ROOM 7		
AC017/01	V-50	ADM	ELECTRIC HEATER	1	ADMIN- ROOM 7		

TOTAL OFFICE EQUIPMENT

A = COMPUTER EQUIPMENT
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LAPIS PROJECT
 REGISTER OF NON-EXPENSE ITEMS EXCEEDING \$50 (ADMINISTRATION COMPONENT)

ASSET NUMBER	VOUCHER No.	COMP	DESCRIPTION	QTY	LOCATION/ASSIGNED TO	SERIAL NUMBER	COMMENTS
AB061/01	V-49	ADM	L/BACK S/T CHAIR	1	ROOM 9 M.GARDINER		
AB062/01	V-49	ADM	BOOKCASE	1	ROOM10 DR.ROOYANI		
AB063/01	V-48	ADM	KEY CABINET	1	ROOM 7		
AB064/01	V-49	ADM	4-DRAWER FILING CABINET	1	ROOM10 DR.ROOYANI		
AB065/01	V-50	ADM	TELEPHONE CABINET	1	ROOM 9 M.GARDINER		
AB066/01	V-55	ADM	4 DRAWER FILING CABINET	1	ROOM 7		
AB067/01	V-56	ADM	MAHOGANY DESK	1	ROOM 7 - VICKY		
AB069/01	V-61	ADM	CARPET PROTECTOR	1	ROOM 7-B.MULVANEY	REPLACES AB008/01	
AB070/01	V-52	ADM	APOLLO 10459 TYPIST CHAIR	1	T/F TO MARKETING	- STOLEN	
AB071/01	V-03	ADM	SENIOR EXECUTIVE CHAIR	1	CARL FRANCK		
AB071/01-03	V-06	ADM	702 CHAIRS	3	VISITORS CHAIRS		
AB071/01	V-05	ADM	4-DRAWER FILING CABINET	1	CARL FRANCK		
AB072/01	V-68	ADM	4-DRAWER FILING CABINET	1	B.ARNOLD		
AB073/01		ADM	LARGE CONFERENCE TABLE	1	ROOM 10 ROOYANI		
AB074/01	V-74	ADM	CARPET PROTECTOR	1	M. KOSENE		
AB075/01-07	V74	ADM	BURGLER BARS	7	ROOMS 7, 8,9,10		
AB076/01-06	V74	ADM	BURGLER BARS	7	ROOMS 7, 8,9,10		
AB077/01	V85	ADM	4 drawer filing cabinet	1	Room 10 COP		
		ADM					
		ADM					
		ADM					
		ADM					
		ADM					
		ADM					

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LAPIS PROJECT
 REGISTER OF NON-EXPENSE ITEMS EXCEEDING \$50 (ADMINISTRATION COMPONENT

ASSET NUMBER	VOUCHER No.	COMP	DESCRIPTION	QTY	LOCATION/ ASSIGNED TO	SERIAL NUMBER COMMENTS
AB031/01	V-19	ADM	TYPIST CHAIR	1	ROOM 8-S.KUCKIAN	
AB032/01	V-27	ADM	BLINDS FOR WINDOWS	3	ADMIN ROOM 6.7,25	
AB033/01	V-28	ADM	TYPIST CHAIR	1	ROOM 10 - T.HAASE	
AB034/01	V-29	ADM	FREE L-EXTENSION DESK	1	ROOM 10 - T.HAASE	
AB035/01	V-29	ADM	UTILITY TABLE	1	ROOM 8 - W.ARNOLD	
AB037/01	V-32	ADM	STATIONERY CUPBOARD	1	ROOM 8	
AB038/01	V-33	ADM	STATIONERY CUPBOARD	1	ROOM 7	
AB039/01-02	V-34	ADM	4 DRAWER FILING CABINETS	2	ROOM 8, ROOM 10	
AB041/01	V-41	ADM	PRINTER STAND	1	ADMIN ROOM 7	
AB042/01	V-42	ADM	STANDARD BOARDROOM TABLE	1	ROOM 10	
AB043/01	V-42	ADM	LOTUS SWIVEL/TILT CHAIR	1	ROOM 7-J.FISHER	
AB044/01	V-42	ADM	HERALD D/P DESK	1	ROOM 7-J.FISHER	
AB045/01	V-42	ADM	FREESTANDING EXTENSION 900x450	1	ROOM 10 - T.HAASE	
AB046/01-02	V-46	ADM	PIGEON BOXES	2	ADMIN ROOM 7	ROOM # 7
AB047/01	V-18	ADM	4-DRAWER FILING CABINET	1	ADMIN ROOM 7	
AB049/01	V-05	ADM	4-DRAWER FILING CABINET	1	ROOM 10 - T.HAASE	
AB050/01	V-05	ADM	6ft. D/P DESK	1	ROOM 8-S.KUCKIAN	
AB051/01	V-05	ADM	005 CHAIR	1	ROOM 7	
AB052/01	V-28	ADM	705 CHAIR	1	ROOM 7-B.MULVANEY	
AB053/01	V-45	ADM	1600 HERALD D/P DESK	1	ROOM 9-F.ROOYANI	TRANSFERRED TO ROOM 11
AB054/01	V-40	ADM	4004 S/P DESK	1	ROOM 10 - T.HAASE	
AB055/01	V-49	ADM	CARPET PROTECTOR	1	ROOM 7 J. FISHER	
AB056/01	V-49	ADM	DESK	1	ROOM 9 M.GARDINER	
AB057/01	V-49	ADM	DRAWERS	1	ROOM 10 DR. ROOYANI	
AB058/01	V-49	ADM	CREDENZA	1	ROOM 9 M.GARDINER	
AB059/01-04	V-49	ADM	SIDE CHAIRS	4	ROOM 9 M.GARDINER	
AB060/01	V-49	ADM	CARPET PROTECTOR	1	ROOM 9 M.GARDINER	

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LAPIS PROJECT
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ASSET NUMBER	VOUCHER No.	COMP	DESCRIPTION	QTY	LOCATION/ ASSIGNED TO	SERIAL NUMBER COMMENTS
AB001/01	V-06	ADM	4 DRAWER FILING CABINET	1	ROOM 8 - W.ARNOLD	
AB002/01	V-06	ADM	SENIOR EXECUTIVE CHAIR	1	ROOM 8 - W.ARNOLD	
AB003/01	V-36	ADM	4 DRAWER FILING CABINET	1	ROOM 7	
AB004/01	V-36	ADM	4 DRAWER FILING CABINET	1	ROOM 7	
AB005/01	V-04	ADM	EXECUTIVE CHAIR	1	ADMIN COP	ROOM 9 & ROOM 10
AB006/01	V-05	ADM	4-DRAWER FILING CABINET	1	ADMIN COP	ROOM 10
AB007/01	V-05	ADM	NOTICE BOARD 1200x1000	1	ROOM 8 - W.ARNOLD	
AB008/01	V-05	ADM	CARPET COVER	1	ROOM 7-B.MULVANEY	DAMAGED BEYOND REPAIR
AB009/01-03	V-05	ADM	702 CHAIRS	3	ADMIN COP	2/ROOM 10 & 1/ROOM 8
AB010/01	V-05	ADM	MADLON CREDENZA EXTENSION	1	ADMIN COP	
AB011/01	V-05	ADM	702 CHAIRS	1	ROOM 8 - W.ARNOLD	
AB012/01	V-05	ADM	702 CHAIRS	1	ROOM 25-G.MOLAPO	
AB012/01-03	V-05	ADM	CARPET COVERS	3	ADMIN COP.	ROOM 10, WCA
AB013/01	V-05	ADM	702 CHAIRS	1	ROOM 10	
AB016/01	V-05	ADM	BOOKSHELVES	1	ROOM 25-G.MOLAPO	
AB017/01	V-05	ADM	BOOKSHELVES	1	ROOM 9	
AB018/01	V-05	ADM	BIG UTILITY TABLE	1	ROOM 7	
AB019/01	V-05	ADM	SECRETARIAL DESK	1	ROOM 25	
AB020/01	V-05	ADM	TYPIST CHAIR	1	ROOM 10 - T.HAASE	
AB021/01	V-05	ADM	TABLE WITHOUT DRAWERS	1	ROOM 10 - T.HAASE	TELEX M/C
AB022/01	V-05	ADM	MADISON EXECUTIVE DESKS	1	ROOM 8 - W.ARNOLD	
AB023/01	V-05	ADM	MADISON EXECUTIVE DESKS	1	ROOM 7-B.MULVANEY	
AB024/01	V-05	ADM	CPI PRINTER TROLLEY	1	ROOM 8 - W.ARNOLD	
AB025/01	V-05	ADM	CSI COMPUTER STAND	1	ROOM 8 - W.ARNOLD	
AB026/01-06	V-06	ADM	WOOD ARM CHAIRS 9103	6	ADMIN COP.	ROOM 10
AB027/01	V-05	ADM	L EXTENSION T/WRITER TABLE	1	ROOM 10 - T.HAASE	
AB028/01	V-09	ADM	6F STATIONERY CUPBOARD	1	ADMIN. ROOM 25	
AB029/01	V-17	ADM	CURTAINS	1	ADMIN. ROOM 7, 8, 25	
AB030/01	V-18	ADM	4-DRAWER FILING CABINET	1	ROOM 7	

A = COMPUTER EQUIPMENT
 B = OFFICE FURNITURE
 C = OFFICE EQUIPMENT

LAPIS PROJECT
 REGISTER OF NON-EXPENSE ITEMS EXCEEDING \$50
 ADMINISTRATION COMPONENT

ASSET NUMBER	VOUCHER No.	COMP	DESCRIPTION	QTY	LOCATION/ASSIGNED TO	SERIAL NUMBER	COMMENTS
AA001/01	V-04	ADM	OLIVETTI WP ETS 2010/ PR340	1	ROOM 10 - T.HAASE	S.N.#0896159/#0827037	
AA006/01	V-01	ADM	ZENITH P.C. GS 158	1	RM 8-GH 76470980	SERIAL # 614DF 0616	
AA007/01	V-01	ADM	POWERMAN - POWER PACK	1	ROOM 8 - W.ARNOLD	S.N. 8708014	
AA008/01	V-01	ADM	FUJITSU PRINTER DL2400	1	ROOM 8 - W.ARNOLD	SERIAL # 0168008	
AA009/01	V-01	ADM	MICROSOFT WORD	1	ADMIN - ROOM 7		
AA010/01	V-01	ADM	LOTUS V2	1	ADMIN - ROOM 7		
AA011/01	V-01	ADM	DBASE III	1	ADMIN - ROOM 7		
AA012/01	V-07	ADM	DOUBLE SHEET FEEDER	1	ROOM 10 - T.HAASE	S.N. ETS 2000	
AA013/01	V-09	ADM	SEIKOSHA PRINTER-MODEL SP1000/	1	ADMIN - B.ARNOLD	SL # 1602992	
AA014/01-05	V-18	ADM	SOFTWARE - DACEASY,GEM,PROJECT	5	ADMIN. SOFTWARE		
AA015/02	V-21	ADM	SPARTAN PC 640K D/D	1	ROOM 8 - W.ARNOLD	TRADED-IN /AA88015-02	
AA015/01	V-35	ADM	TREN-TECH XT/DD 30mb MOHO	1	W.ARNOLD - ROOM 8	SL# 88002801	
AA023/01	V-37	ADM	SEAGATE 30MB + CONTROLLER	1	ADMIN-B.ARNOLD		
AA024/01-02	V-36	ADM	TREN-TECH XT/DD 30mb MOHO	1	ROOM 7 - J.FISHER	S.N. 870528/1286-002646	
AA025/01-02	V-36	ADM	TREN-TECH XT/DD 30mb COLOR	1	ROOM 10 - T.HAASE	S.N. 880501073/91003240	
AA027/01	V-36	ADM	600VA UPS (MODEL P)	1	ROOM 10 - T.HAASE	SERIAL # 8805023	
AA029/01-02	V-36	ADM	FUJITSU DL2400 COLOUR PRINTER	1	ROOM 10 - T.HAASE	SERIAL # 0075910	
AA030/01	V-47	PIC	EPSON FX1050 PRINTER	1	ADMIN ROOM 7	SERIAL # 27002228	
AA033/01	V-39	ADM	POWERMAN UPS	1	ADMIN ROOM 7	SERIAL # 8807113	
AA034/01-02	V-43	ADM	TREN-TECH XT.360k/30mb D/D	1	ROOM 7-B.MULVANEY	S.N. 880801163/009696	
AA035/01	V-43	ADM	CUT-SHEET FEEDER	1	ROOM 10 - T.HAASE		
AA036/01	V-44	ADM	ABCDE SWITCHBOX PAR /CABLE	1	ROOM 7		
AA037/01	V-44	ADM	720K 3.5' FDD IN 5.25' FR	1	ROOM 8 - W.ARNOLD	REFER : AA015/01	
AA038/01	V-49	ADM	ABC SWITCHBOX PARALLEL	1	ROOM 8 - W.ARNOLD		
AA039/01	V-56	ADM	ANTI-GLARE PROTECTOR	1	ROOM 7 - JEAN		
AA040/01	V-56	ADM	DUAL RS232 INTERFACE	1	ROOM 7 - JEAN		
AA041/01	V-59	ADM	CHICONY ENHANCED K/BOARD	1	ROOM 6 - ARNOLD		
AA042/01	V-59	ADM	REPLACE PC 720K 3.5 DRIVE	1	B. MULVANEY	REFER : AA034/01	
AA043/01	V-61	ADM	SUPER PROJECT EXPERT	1	WC ARNOLD		
AA044/01-02	V-55	ADM	TREN-TECH P.C./40mb,AMBER MOHO	1	ROOM 7 VICKY	S/N 891025/90900726	
AA045/01-02	V-55	ADM	ANTI-GLARE PROTECTOR	2	VICKY & MAPOKANE		
AA046/01-02	V-70	ADM	CSIR ANTI VIRUS PROGRAMS	1	C.WEAVER		
AA047/01-02	V-70	ADM	SNIPER ANTI VIRUS PROGRAMS	1	C.WEAVER		
	V-75	ADM	HARVARD GRAPHICS SOFTWARE	1	WC ARNOLD		
	V-76	ADM	SEIKOSHA SL230AI PRINTER	1	WC ARNOLD	S/N 1307153	

TOTAL COMPUTERS

21-May-92

A = COMPUTER EQUIPMENT
 B = OFFICE FURNITURE
 C = OFFICE EQUIPMENT

LAPIS PROJECT
 REGISTER OF NON-EXPENSE ITEMS EXCEEDING \$50 (
 ADMINISTRATION COMPONENT

ASSET NUMBER	VOUCHER No.	COMP	DESCRIPTION	QTY	LOCATION/ ASSIGNED TO	SERIAL NUMBER COMMENTS
AI901/01	V-34	ARC	PROGRESS PAYMENT #1	1	AEC W. NISPEK	IRRIGATION SYSTEM
AI901/02	V-36	ARC	PROGRESS PAYMENT #2	1	AEC W. NISPEK	IRRIGATION SYSTEM
AI901/03	V-37	ARC	PROGRESS PAYMENT #3	1	IRRIGATION SYSTEM	
AI901/04	V-37	ARC	PROGRESS PAYMENT #4	1	IRRIGATION SYSTEM	
AI901/05	V-39	ARC	PROGRESS PAYMENT #5	1	IRRIGATION SYSTEM	
AI901/06	V-39	ARC	PROGRESS PAYMENT #6	1	IRRIGATION SYSTEM	
AI901/07	V-44	ARC	PROGRESS PAYMENT #7	1	IRRIGATION SYSTEM	
AI901/08	V-45	ARC	PROGRESS PAYMENT #8	1	IRRIGATION SYSTEM	
AI901/09	V-46	ARC	PROGRESS PAYMENT #9	1	IRRIGATION SYSTEM	
AI901/10	V-48	ARC	PROGRESS PAYMENT #10	1	IRRIGATION SYSTEM	
AI901/11	V-50	ARC	PROGRESS PAYMENT #11	1	IRRIGATION SYSTEM	
AI901/12	V-55	ARC	PROGRESS PAYMENT #12	1	IRRIGATION SYSTEM	
AI901/12-01	V-56	ARC	PROGRESS PAYMENT #13	1	IRRIGATION SYSTEM	
AI901/14	V-60	ARC	PROGRESS PAYMENT #14	1	IRRIGATION SYSTEM	
AI902/13	V-36	ARC	DESIGN OF WELL POINT SYSTEM	1	IRRIGATION SYSTEM	
AI902/14	V-39	ARC	PROF. FEES : W/POINT SYSTEM	1	IRRIGATION SYSTEM	
AI903/15		ARC	INVESTIGATION OF SAND ABSTRACT	1	IRRIGATION SYSTEM	
AI904/16	V-50	ARC	ELECTRICAL WINCH	1	IRRIGATION SYSTEM	

TOTAL IRRIGATION SCHEME

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DEPT. OF CROPS SERVICES LAPIS PROJECT
REGISTER OF NON-EXPENSE ITEMS EXCEEDING \$50 (M120)

ASSET NUMBER	DESCRIPTION	QTY	ASSIGNED TO	COMMENTS
PB003/01	DESKS	1	H. MOORE/T. BOSIU BDG	
PB004/01	DESKS	1	M. WOODS/T. BOSIU BDG	
PB005/01	DESKS	1	H. MOORE C'PART #42	
PB006/01	DESKS	1	D. BOSLEY ROOM 27	
PB008/01-03	705 CHAIRS	3	H. MOORE, H. MOORE C/PART, M. WOODS - ROOMS 42	
PB009/01	MADISON CREDENZA EXTENSION	1	H. MOORE - ROOM 42	
PB010/01	BOOKSHELVES	1	H. MOORE - ROOM 27	
PB012/01	BOOKSHELVES	1	C. FRANCK - ROOM 9	
PB015/01-03	702 CHAIRS	3	VISITORS - ROOM 25	
PB017/01	900X600 WHITE BOARD	1	D. BOSLEY	
PB018/01	CLAUDIA A/B S&T CHAIR	1	P. MOWBRAY - ROOM 25	
PB021/01	CHAIR TYPE 705	1	J. BRIO - ROOM 35	
PB026/01	DRAWING CHAIR	1	H. MOORE - ROOM 20	
PB032/01	SECRETARY CHAIR	1	M. SEMOLI - MARKETING	
PB033/01-02	1600 HEROLD D.P. DESKS	2	G. JOHNSON/ROOM 42	
PB034/01-02	9410 MARVEL CHAIRS	2	G. JOHNSON/ROOM 42	
PP035/01	IN-LINE DESK . 1200x750	1	P. MALEWA/T. BOSIU BDG	
PB037/01	BRASSILLA LOW BACK CHAIR	1	P. MOWBRAY - ROOM 25	
PB038/01	MORDIC D/P DESK	1	P. MOWBRAY - ROOM 25	
PB039/01	CARPET FITTING	1	P. MOWBRAY - ROOM 25	
PB040/01	D23 DESK	1	GREG	
PB062/01	CURTAIN RAILS & ACCESS.	1	PINKIE	
PC001/01-03	SHARP EL1607 CALCULATOR	2	P. MOWBRAY, C. FRANCK	
PC003/01	OLYMPIA DG 601 DICTAPHONE	1	C. FRANCK	
PC005/01	FLIP CHART	1	P. MOWBRAY	
PD001/01	DRILL VTP 13	1	H. MOORE	
PD002/01	PUMP STAND MATERIALS	1	H. MOORE	
PD003/01	SOCKET SET	1	H. MOORE	
PD014/01	SOLAR DRYER	1	J. BRIO	
PD015/01-04	VEG. PROCESSING FACILITY	4	MULANE, PELATSOEO, MALUTI FOODS, MEXALING	
PD022/01-04	GARDEN SEEDERS MODEL 1001	4	DAO'S	
PD023/01	STILL PETROL CHAIN SAW	1	J. BRIO	
PD025/01	PLASTIC BAG SEALER	2	COMPLETE WITH SHADE NETTING & TUBING	
PD041/01	100m MEASURING TAPE	1	P. MOWBRAY	SERIAL No. 63027691
PD044/01	HAND CULTIVATOR	1	E. TSOANE	
PD045/01	SOLO SPRAY	1	P. MOWBRAY	
PD056/01	WRENCH AND SOCKET SET	2	P. MOWBRAY/M. WOODS	
PD058/01	MEASURING TAPE 50m.	1	P. MOWBRAY	
PD060/01-03	FERTILISER SPREADER- HAND	4	M. WOODS	
PD061/01-04	SPRAYERS 201	4	M. WOODS, E. TSOANE, RAMAHOLI, MALEBELE	
PD062/01-02	SOLO SPRAYERS	2	M. WOODS	
PC065/01	SOLO SPRAYER	1	STOLEN FROM M. WOODS P/UP	
PD068/01	STORAGE DEMONSTRATION	1		
PD069/01	MAP BOARD	1		
PD073/01	KERONE HEATER	1	P. MOWBRAY	
PD074/01-03	SOLO BACK PACK SPRAYERS	3	PIC - MABK WOODS	
PD075/01-03	PRECISION SEEDERS	3	PIC	
PD076/01	SHADE NETTING	4	PIC - P. SARIQ	
PD082/01	VIDEX PLASTID 4m x 30M	4	PIC CROP DEMO MATS	

PRODUCTION COMPONENT
 REGISTER OF NON-EXPENSE ITEMS EXCEEDING \$50 (M120)

ASSET NUMBER	DESCRIPTION	QTY	ASSIGNED TO	COMMENTS
PD015/01-04	VEG. PROCESSING FACILITY	4	PULANE, PELATSOEO, MALUTI FOODS, MEKALING	
PD063/01-02	SEEDS/VEGETABLE STORAGE	2	FARM & DOMESTIC	
PD064/01-02	VEG. SORTING FACILITIES	2	MAPHOKEANE ASSOCIATION M.HOEK	
PD067/01-02	VEG. SORTING FACILITIES	2	FARM & DOMESTIC	

LAPIS PROJECT

REGISTER OF NON-EXPENSE ITEMS EXCEEDING \$50 (M120)

FARMER TRAINING COLLEGE - LERIBE/MOHALES HOEK

ASSET NUMBER	DESCRIPTION	QTY	ASSIGNED TO/ PRESENT LOCATION	SERIAL NUMBER
CB018/01	ROUND DINING TABLE	1	AEC(FTC)	PCV A. M/F
CB040/01	PINE TABLES 1350x800x730	20		
CB042/01	DOUBLE BED/MATTRESS	1	S.GOERTZ	
CB054/01	CURTAIN MATERIAL	1	AEC (FTC) LERIBE	
CC009/01	OLYMPIA MANUAL TYPEWRITER	1	MOHALES HOEK(FTC)	SERIAL # 05668621
CD003/01-02	ELECTRIC URNS	2	B. TYSON (AIS)	
CD006/01-04	50 L PAN	4	HOME ECONOMICS	
CD027/01	1000 LITRE WATERCART	1	LERIBE (FTC)	
CD028/01	3KW. CONVECTION HEATERS	4	LERIBE (FTC)	J. RUSK
CD029/01	WATER STANDS & tubing	2	LERIBE (FTC)	A. KING
CD034/01	SA PINE CLASSROOM TABLES	20	LERIBE (FTC)	B. TYSON
CD044/01	OX CARTS	2	LAC COLLEGE/STEVE GOERTZ	
CD057/01	WATER TANK	1	MOHALES HOEK FTC	
CD058/01	KRM 5500 PETROL GENERATOR	2	AEC (FTC) LERIBE	
CE003/01	CONSTRUCTION	X	AEC(FTC)MOHALES HOEK	
CE004/01	S/PHASE UNDERGROUND CONNE	1	LERIBE (FTC)	
CE007/01	FENCING MATERIALS	1	LAC ORCHARD	LAC LERIBE
CF006/01	SOLO KNAPSACK SPRAYER	1	MOHALES HOEK (FTC)	
CF007/01-02	PUSH CULTIVATORS	2	AEC- S.GOERTZ	
CJ015/01	WALL MOUNTED SCREEN	1	AUDIO VISUAL THEATRE	ONE AT LERIBE
CJ016/01	VISTA VARIA OHP	1	AUDIO VISUAL THEATRE	ONE AT LERIBE
CJ018/01	TANBERG AUDIO TUTOR 772	1	AUDIO VISUAL THEATRE	ONE AT LERIBE
CJ019/01	EXTENSION SPEAKERS	1	AUDIO VISUAL THEATRE	ONE AT LERIBE
CJ020/01	PROJECT STAND MODEL 2	1	AUDIO VISUAL THEATRE	ONE AT LERIBE
CJ021/01	FILM STRIP PROJECTOR	1	AUDIO VISUAL THEATRE	
CJ029/01	CANNON STOVE	1	LAC HOME ECONOMICS	
CJ037/01	BEEHIVE EQUIPMENT	1	LIVESTOCK	
CT003/01-02	CYL. SURF. HONING TOOLS	1	LERIBE/STUDENT DEMO TOOL BOX	
CT004/01	40/28mm TORQUE WRENCH	1	STUDENT DEMO TOOL BOX	
CT012/01	HIGH LIFT JACKS	1	STUDENT DEMO TOOL BOX/FARM SHOP STORES	
CT017/01-02	D19TMZ SOCKET SET 1/2"DR.	1	IRRIGATION STORE/LERIBE	
CT021/01	TORQUE WRENCH	1	AEC(FTC) TOOLS	

CA = COMPUTER EQUIPMENT
 CB = OFFICE FURNITURE
 CC = OFFICE EQUIPMENT
 CD = OTHER D = OTHCF = AGRIC EQUIPMENT

EDUREGISTER OF NON-EXPENSE ITEMS EXCEEDING \$50 (M12)

ASSET NUMBER	VOUCHER No.	COMP	DESCRIPTION	QTY	ASSIGNED TO / PRESENT LOCATION	SERIAL NUMBER / COMMENTS
CB054/01	V-38	FTC	CURTAIN MATERIAL	1	AEC (FTC) LERIBE	
TOTAL OFFICE FURNITURE						
CF007/01-02	V-29	FTC	PUSH CULTIVATORS	2	AEC - S.GOERTZ	
CT021/01	V-35	FTC	TORQUE WRENCH	1	AEC(FTC) TOOLS	
CD057/01	V-36	FTC	WATER TANK	1	MOHALES HOEK FTC	
CD053/01	V-36	FTC	KBM 5500 PETROL GENERATOR	2	AEC (FTC) LERIBE	
CE001/01	V-19	FTC	CONSTRUCTION	1	AEC(FTC)MOHALES HOEK	

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HOME GARDEN PROGRAM -

ASSET NUMBER	VOUCHER No.	COMP/DESCRIPTION	ASSIGNED TO/ QTY	PRESENT LOCATION	SERIAL NUMBER COMMENTS
PG001/01	W-53	PIC MONARCH BASE UNITS	6	HOME GARDEN PROGRAM	
PG002/01	W-53	PIC WARDROBES	6	HOME GARDEN PROGRAM	
PG003/01	W-53	PIC 3/4 BEDS & MATTRESSES	6	HOME GARDEN PROGRAM	
PG004/01	W-53	PIC DINING ROOM TABLES/CHAIRS	6	HOME GARDEN PROGRAM	
PG005/01	W-53	PIC PARAFFIN HEATERS	6	HOME GARDEN PROGRAM	
PG006/01	W-53	PIC V.I.P. TOILETS	3	HOME GARDEN PROGRAM	
PG008/01	W-55	PIC VIP TOILET	1	HOME GARDEN PROGRAM	
PG009/01	W-62	PIC HORSES	2	HOME GARDEN PROGRAM	
PG009/02	W-59	PIC HORSES - BALANCE	2	HOME GARDEN PROGRAM	
PG010/01	W-62	PIC GAS HEATER & REGULATOR	1	HOME GARDEN PROGRAM	
PG011/01	W-62	PIC HORSE EQUIPMENT	1	HOME GARDEN PROGRAM	
PA014/01	W-54	PIC EPSON PRINTER	1	BRUCE WHITE HGP	
PA015/01	W-54	PIC OMNITA POWER SUPPLY	1	BRUCE WHITE HGP	
PB049/01	W-48	PIC 4 DR. CABINET	1	BRUCE WHITE HGP	
PB050/01	W-48	PIC STATIONERY CABINET	1	BRUCE WHITE HGP	
PG012/01	W-54	PIC VIP TOILET & INSTALLATION	1	HOME GARDEN PROGRAM	
PG013/01-03	W-54	PIC PARAFFIN HEATERS	6	HOME GARDEN PROGRAM	
PG014/01-06	W-54	PIC GAS STOVES/CYLINDERS	6	HOME GARDEN PROGRAM	
PG015/01-05	W-55	PIC 3/4 BED & MATTRESS	5	HOME GARDEN PROGRAM	
PG015/01-05	W-55	PIC DINING TABLE	5	HOME GARDEN PROGRAM	
PG017/01-05	W-65	PIC WARDROBES	5	HOME GARDEN PROGRAM	
PG018/01-10	W-65	PIC KITCHEN CHAIRS	10	HOME GARDEN PROGRAM	
PG019/01	W-53	PIC USED MOUNTAIN BIKE	1	HOME GARDEN PROGRAM	
PG020/01-02	W-67	PIC CHIPBOARD SIDED CUPBOARD	2	HOME GARDEN PROGRAM	
PG021/01-06	W-64	PIC PARAFFIN HEATERS	6	HOME GARDEN PROGRAM	
PG022/01-02	W-67	PIC 3/4 BED WITH MATTRESS	2	HOME GARDEN PROGRAM	
PG023/01-02	W-67	PIC WASHBOARD CHAIRS	2	HOME GARDEN PROGRAM	
PG024/01	W-67	PIC WARDROBE	1	HOME GARDEN PROGRAM	
PG029/01-05	W-57	PIC BASE CABINETS	5	HOME GARDEN PROGRAM	
PG030/01	W-67	PIC PARAFFIN HEATER	1	HOME GARDEN PROGRAM	
PG031/01-04	W-66	PIC VIP TOILETS	4	HOME GARDEN PROGRAM	
PG032/01	W-71	PIC TOILET & FENCE CONSTRUCT	1	HOME GARDEN PROGRAM	EVA JO HALLVIK
CA015/01	W-36	AEC TREN-TECH AT/XT	1	COMPUTER ROOM	880501087/010593
CA027/01	W-59	AEC AIRFREIGHT Compt. S/WARE	1	AEC	
CA028/01	W-59	AEC MICROSOFT MOUSE	1	AEC	
CB003/01	W-04	AEC DESKS	1	LAC - S.GOERTZ	
CB003/01	W-04	AEC DESKS	1	LAC - W.WISHEK	
CB008/01-04	W-04	AEC FILING CABINETS	2	S.GOERTZ(2), B.TYSON(2)	
CB050/01	W-27	AEC 705 CHAIR	1	S. VAN DER VEUR	
CD049/01	W-48	AEC SWIVEL & TILT CHAIR	1	T/F TO LAC	
CD050/01-03	W-48	AEC VISITORS CHAIR	3	T/F TO LAC	
PC004/01	W-32	PIC SLIDE PROJECTOR MODEL 520	1	HOME GARDENS PROGRAM	VISUAL AIDS
PD080/01	W-35	PIC 4x30m WINDEK PLASTIC	4	PIC HGP	
PD081/01	W-35	PIC 4x30m WINDEK PLASTIC	4	PIC HGP	
PG033/01	W-74	PIC HORSES	2	PIC HGP	
PG034/01	W-73	PIC TRISTAND PIPE VICE	1	P.QUELLA	
PG035/01	W-73	PIC PIPE THREADER	1	P.QUELLA	
	W-72	PIC CHAIN PIPE THREADER	1	PIC HGP	
	W-77	PIC EPSON FX1050 PRINTER	1	PIC HGP MASERU	S/N 0E27000716
	W-77	PIC EPSON FX1050 PRINTER	1	PIC HGP MASERU	S/N 372E001891
	W-77	PIC MLA 600VA UPS	1	PIC HGP MASERU	
	W-77	PIC MLA 600VA UPS	1	PIC HGP MASERU	
	W-77	PIC 16MHZ 80286 AT COMPUTER	1	PIC HGP MASERU	S/N 000159
	W-77	PIC 15MHZ 80286 AT COMPUTER	1	PIC HGP MASERU	S/N 8805-01087
	W-79	PIC HORSE EQUIPMENT	1	PIC HGP	GIRTHS,BUCKETS,CRUPP
	W-79	PIC HORSE EQUIPMENT	1	PIC HGP	SADDLES,R.CAPS,BAGS
	W-79	PIC TAPE RECORDER	1		

'CI001/01	'V-58	::AEC	'MICRO JET IRR. EQUIP.	1	W.NISHEK		
'CI002/01	'V-61	::AEC	'PIPES	1	W.NISHEK		
'PI001/01	'V-18	::PIC	'PLANIMETER - G.P.SLIDING	1	PIC - H.MOORE	IRRIGATION SCHEME	
'PI002/01-06	'V-08	::PIC	'SKY ABNEY LEVELS	6	IRRIGATION EQUIPMENT		
'PI003/01	'V-08	::PIC	'PENTAX THEODOLITE	1	ROOM 42, M.WOODS, D.ALLEN, D.NICHOLS, C.L., B.D.		
'PI004/01-02	'V-08	::PIC	'ST005 WOODEN TRIPODS	2	H.MOORE		
'PI005/01	'V-08	::PIC	'6837/6m. RABONE STEEL TAPE	1	M.WOODS		
'PI006/01-02	'V-08	::PIC	'32520 5m/3 SECT STAVES	2	DAMAGED- H.MOORE		
'CI001/01	'V-58	::AEC	'MICRO JET IRR. EQUIP.	1	W.NISHEK		
'CI002/01	'V-61	::AEC	'PIPES	1	W.NISHEK		
'PI001/01	'V-18	::PIC	'PLANIMETER - G.P.SLIDING	1	PIC - H.MOORE	IRRIGATION SCHEME	
'PI002/01-06	'V-08	::PIC	'SKY ABNEY LEVELS	6	IRRIGATION EQUIPMENT		
'PI003/01	'V-08	::PIC	'PENTAX THEODOLITE	1	ROOM 42, M.WOODS, D.ALLEN, D.NICHOLS, C.L., B.D.		
'PI004/01-02	'V-08	::PIC	'ST005 WOODEN TRIPODS	2	H.MOORE		
'PI005/01	'V-08	::PIC	'6837/6m. RABONE STEEL TAPE	1	M.WOODS		
'PI006/01-02	'V-08	::PIC	'32520 5m/3 SECT STAVES	2	DAMAGED- H.MOORE		
'PI007/01	'V-08	::PIC	'PV/50/5 FISCO PACER TUFCO	1	H.MOORE		
'PI008/01	'V-08	::PIC	'PENTAX AUTO LEVEL	1	H.MOORE		
'PI022/01	'V-14	::PIC	'PH STAND, D/UNIT, SCALE	1	H.MOORE - ROOM 20		
'PI009/01-02	'V-37	::PIC	'WOODEN TRIPODS ST2005	2	H.MOORE/G.JOHNSON	SERIAL No. #621009	
'PI010/01-02	'V-37	::PIC	'TH 60 S DIGITAL THEODOLIT	2	H.MOORE/G.JOHNSON	& 520963	
'PI011/01-02	'V-38	::PIC	'OZATEC N841mm x 20m.	2	H.MOORE/G.JOHNSON	& 520963	
'PI012/01-03	'V-38	::PIC	'OZATEC D/M T 05mm.	3	H.MOORE/G.JOHNSON	& 520963	
'PI013/01-03	'V-38	::PIC	'HI-TECH SET	3	ROOM 42(2).C.LOGAN		
'PI014/01-03	'V-38	::PIC	'PROTRACTOR SET	3	ROOM 42(2).C.LOGAN		
'PI015/01	'V-43	::PIC	'TARE-UP WINCH ELEC.MOTOR	1	STOLEN FROM LAC		
'PI016/01-02	'V-38	::PIC	'SHARP CALCULATOR EL S103	2	ROOM 42(1).C.LOGAN		
'PI017/01-02	'V-52	::PIC	'WINCH	1	PIC		
'PI018/01-03	'V-41	::ADM	'TRAILER WITH 2 WHEELS+RAM	3	H.MOORE		
'PI019/01-03	'V-41	::ADM	'PUMP TDH SUCTION & DELIVE	3	H.MOORE	IRRIGATION SCHEME	
'PI020/01-03	'V-41	::ADM	'DIESEL ENGINE -HATZ E79	3	H.MOORE		
'PI021/01-03	'V-41	::ADM	'COUPLER F 50	3	H.MOORE		
'CF007/01	'V-52	::AEC	'IRRIGATION PUMP/HYDROLOGY	1	AEC (BEN TYSON)		

PA = COMPUTER EQUIPD = OTHER EQUIPMENT
 PB = OFFICE FURNITPR = IRRIGATION EQUIPMENT PRODUCTION COMPONENT
 PC = OFFICE EQUIPMENT

ASSET NUMBER	VOUCHER No.	COMP/DESCRIPTION	QTY	ASSIGNED TO	COMMENTS
PA003/01-02	V-36	PIC TREN-TECH XT 360k 30mb MO	1	M.SEMOLI - MARKETING	S/N 880101139/873858
PA013/01	V-51	PIC LARGE PRINTER STAND	1	M.SEMOLI - MARKETING	
PA017/01	V-50	PIC ANTI-GLARE PROTECTOR	1	M.SEMOLI - MARKETING	
PA018/01	V-30	PIC DUAL RS232 INTERFACE	1	M.SEMOLI - MARKETING	
PA020/01	V-74	PIC EPSON FX1050 PRINTER	1	G.FEASTER	
PA004/01-02	V-37	PIC TREN-TECH XT 360k 30mb MO	1	G.FEASTER/MARKETING	S/N 811057/006529
PA006/01	V-37	PIC EP/PRINTER (STOLEN DEC 88)	1	G.FEASTER/MARKETING	
PA008/01	V-44	PIC TREN-TECH XT / 30mb HD	1	P.MALEWA/PCC	S/N 880321145/376363
PA009/01	V-44	PIC EPSON PRINTER FX1050	1	TRADED IN PA020/01	S/N 22006827
PA011/01	V-46	PIC GENIOUS MOUSE INTERFACE	1	G.FEASTER/MARKETING	
PA012/01	V-36	PIC EPSON PRINTER FX1000	1	G.FEASTER/MARKETING	S/N 02002355
PA016/01	V-49	PIC PRINTER TROLLEY	1	P.MALEWA/PCC	
PA019/01	V-59	PIC STAT GRAPHICS PROGRAM	1	G.FEASTER- MARKETING	
	V-74	PIC EPSON PRINTER FX1050	1	P. MOWBRAY	
	V-36	PIC DBASE IV SOFTWARE	1	G.FEASTER	
PB001/01	V-04	PIC DESKS	1	G.HUNT COUNTERPART	
PB002/01	V-04	PIC DESKS	1	PLANNING - G.HUNT	
PB003/01	V-04	PIC DESKS	1	H.MOORE/T.BOSIU BDG	
PB004/01	V-04	PIC DESKS	1	M.WOODS/T.BOSIU BDG	
PB005/01	V-04	PIC DESKS	1	H.MOORE C'PART #42	
PB006/01	V-04	PIC DESKS	1	D.BOSLEY ROOM 27	
PB008/01-03	V-04	PIC 705 CHAIRS	3	H.MOORE,H.MOORE C/PART,M.WOODS	- ROOMS 42 & 27
PB009/01	V-05	PIC MADLON CREDENZA EXTENSION	1	H. MOORE - ROOM 42	
PB010/01	V-05	PIC BOOKSHELVES	1	H. MOORE - ROOM 27	
PB011/01	V-05	PIC BOOKSHELVES	1	G. HUNT	
PB012/01	V-05	PIC BOOKSHELVES	1	C. FRANCK - ROOM 9	
PB013/01	V-05	PIC 705 CHAIRS	1	G.HUNT COUNTERPART	
PB014/01-02	V-05	PIC 702 CHAIRS	2	G. HUNT/D.BOSLEY	
PB015/01-03	V-05	PIC 702 CHAIRS	3	VISITORS - ROOM 25	
PB017/01	V-06	PIC 900X600 WHITE BOARD	1	D.BOSLEY	
PB018/01	V-06	PIC CLAUDIA A/B SET CHAIR	1	P.MOWBRAY - ROOM 25	
PB021/01	V-18	PIC CHAIR TYPE 705	1	J.BRIO - ROOM 35	
PB023/01	V-36	PIC SLEIGH BASED CHAIR	1	G.FEASTER- MARKETING	
PB024/01	V-36	PIC BRASILLA VISITORS CHAIR	1	G.FEASTER- MARKETING	
PB025/01	V-36	PIC NORDIC D/P DESK	1	G.FEASTER- MARKETING	
PB026/01	V-38	PIC DRAWING CHAIR	1	H.MOORE - ROOM 20	
PB027/01	V-36	PIC 4 DRAWER FILING CABINET	1	PIC/BGP - MARKETING	
PB028/01	V-39	PIC 4 DRAWER FILING CABINET	1	G.FEASTER- MARKETING	
PB029/01	V-39	PIC DESK SNEEV/BG 1500 X 9000	1	G.FEASTER- MARKETING	
PB030/01	V-39	PIC SELF-STANDING EXT. SEE #2	1	G.FEASTER- MARKETING	
PB031/01	V-37	PIC HEROLD DESK 1600x800	1	M.SEMOLI - MARKETING	
PB032/01	V-37	PIC SECRETARY CHAIR	1	M.SEMOLI - MARKETING	
PB033/01-02	V-45	PIC 1600 HEROLD D.P. DESKS	2	G.JOHNSON/ROOM 42	
PB034/01-02	V-45	PIC 9410 MARVEL CHAIRS	2	G.JOHNSON/ROOM 42	
PB035/01	V-46	PIC IN-LINE DESK . 1200x750	1	P.MALEWA/T.BOSIU BDG	
PB036/01-12	V-36	PIC SLEIGH BASED CHAIR	12	ROOM 27(4), 42(1), 26(2), 35(3), 9(2)	
PB037/01	V-36	PIC BRASILLA LOW BACK CHAIR	1	P.MOWBRAY - ROOM 25	
PB038/01	V-36	PIC NORDIC D/P DESK	1	P.MOWBRAY - ROOM 25	
PB039/01	V-49	PIC CARPET FITTING	1	P.MOWBRAY - ROOM 25	
PB040/01	V-49	PIC D23 DESK	1	GREG	
PB042/01	V-50	PIC TELEPHONE CABINET	1	G. FEASTER'S OFFICE	
PB062/01	V-50	PIC CURTAIN RAILS & ACCESS.	1	PINKIE	
PB064/01	V-56	PIC TYPISTS CHAIR	1	R.NTSASA - MARKETING/T/F FROM ADM.	

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PA = COMPUTER EQUIP = OTHER EQUIPMENT
 PB = OFFICE FURNITURE = IRRIGATION EQUIPMENT PRODUCTION COMPONENT
 PC = OFFICE EQUIPMENT

ASSET NUMBER	VOUCHER No.	COMP	DESCRIPTION	QTY	ASSIGNED TO	COMMENTS
PB065/01-05	V-74	PIC	BURGLAR PROOFS	5	P.MOWBRAY -ROOM 25	
PB066/01-03	V-74	PIC	BURGLAR PROOFS	3	G. FEASTER'S OFFICE	
PC001/01-03	V-05	PIC	SHARP EL1607 CALCULATOR	3	P.MOWBRAY,C.FRANCK,G.FEASTER	
PC003/01	V-09	PIC	OLYMPIA DG 601 DICTAPHONE	1	C.FRANCK	
PC004/01	V-32	PIC	SLIDE PROJECTOR MODEL 520	1	HOME GARDENS PROGRAM	VISUAL AIDS
PC005/01	V-33	PIC	FLIP CHART	1	P.MOWBRAY	
PC006/01	V-35	PIC	XL1000 ELECTRONIC T/WRITE	1	G.FEASTER	
PC007/01	V-50	PIC	SHARP SF7350 PHOTOCOPIER	1	P.MOWBRAY	
PD001/01	V-06	PIC	DRILL VTP 13	1	H. MOORE	
PD002/01	V-06	PIC	PUMP STAND MATERIALS	1	H. MOORE	
PD003/01	V-06	PIC	SOCKET SET	1	H. MOORE	
PD005/01	V-09	PIC	HONDA GENERATOR EG 3000	1	PIC - H.MOORE	
PD006/01	V-14	PIC	HYDRAULIC OIL SEED PRESS	1	DEPOSIT PAID	
PD006/02	V-23	PIC	HYDRAULIC OIL SEED PRESS	1	DEPOSIT PAID	
PD006/03	V-54	PIC	HYDRAULIC OIL SEED PRESS	1	CASH RETURNED	
PD007/01	V-17	PIC	ORANS WEIGHING SCALES 750	1	MARKETING	
PD014/01	V-29	PIC	SOLAR DRYER	1	J.BRIO	
PD015/01-04	V-30	PIC	VEG. PROCESSING FACILITY	4	PULANE, PELATSOEO, MALUTI FOODS, MEKALING	
PD016/01	V-55	PIC	TRANSPORT	1	S.GOERTZ	
PD021/01	V-32	PIC	PETROL GENERATOR	1	HOME GARDEN PROGRAM	
PD022/01-04	V-32	PIC	GARDEN SEEDERS MODEL 1001	4	DAO's	
PD023/01	V-32	PIC	STILL PETROL CHAIN SAW	1	J.BRIO	
PD024/01	V-33	PIC	TARPAULINS	1	MARKETING	
PD025/01	V-34	PIC	PLASTIC BAG SEALER	1	COMPLETE WITH SHADE NETTING & TUBING	
PD026/01	V-34	PIC	PLASTIC BAG SEALER	1	COMPLETE WITH SHADE	
PD029/01-04	V-35	PIC	WATER TANKS 2500L	4	PULANE, PELATSOEO, MALUTI FOODS, MEKALING	
PD030/01-04	V-35	PIC	WATER TANKS STANDS	4	PULANE, PELATSOEO, MALUTI FOODS, MEKALING	
PD031/01-04	V-35	PIC	SINKS WITH TABLES	4	PULANE, PELATSOEO, MALUTI FOODS, MEKALING	
PD032/01-04	V-35	PIC	TABLES WITH SHELF	4	PULANE, PELATSOEO, MALUTI FOODS, MEKALING	
PD033/01-04	V-35	PIC	TANK AND SINK PLUMBING	4	PULANE, PELATSOEO, MALUTI FOODS, MEKALING	
PD034/01-04	V-35	PIC	STORAGE SHELVES	4	PULANE, PELATSOEO, MALUTI FOODS, MEKALING	
PD041/01	V-39	PIC	100m MEASURING TAPE	1	P.MOWBRAY	SERIAL No. 63027691
PD044/01	V-41	PIC	HAND CULTIVATOR	1	E.TSOANE	
PD045/01	V-41	PIC	SOLO SPRAY	1	P.MOWBRAY	
PD047/01-03	V-42	PIC	WASHING TABLES	3	PULANE, PELATSOEO, MALUTI FOODS, MEKALING	
PD048/01-03	V-42	PIC	4m/3 SECTION STAVES	3	PIC ENG. SUPPLIES - H.MOORE	
PD049/01-03	V-42	PIC	DRAINING TABLES	3	PULANE, PELATSOEO, MALUTI FOODS, MEKALING	
PD050/01-03	V-42	PIC	GRADING TABLES	3	PULANE, PELATSOEO, MALUTI FOODS, MEKALING	
PD056/01	V-26	PIC	WRENCH AND SOCKET SET	1	P.MOWBRAY	
PD057/01	V-26	PIC	WRENCH AND SOCKET SET	1	M.WOODS	
PD058/01	V-08	PIC	MEASURING TAPE 50m.	1	P.MOWBRAY	
PD059/01	V-26	PIC	FERTILISER SPREADER- HAND	1	P.MOWBRAY	
PD060/01-03	V-26	PIC	FERTILISER SPREADER- HAND	3	M.WOODS	
PD061/01-04	V-26	PIC	SPRAYERS 20L	4	M.WOODS, E.TSOSOANE, RAMAHOLI, MALEBELE	
PD062/01-02	V-36	PIC	SOLO SPRAYERS	2	M.WOODS	
PD063/01-02	V-39	PIC	SEEDS/VEGETABLE STORAGE	2	FARM & DOMESTIC	
PD064/01-02	V-42	PIC	VEG. SORTING FACILITIES	2	MAPHOKHOANE ASSOCIATION M.ROER	
PD065/01	V-45	PIC	SOLO SPRAYER	1	STOLEN FROM M.WOODS P/UP	

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ASSET NUMBER	VOUCHER No.	COMP	DESCRIPTION	QTY	ASSIGNED TO	COMMENTS
PD066/01	V-47	PIC	PRECISION SEEDER	1	DR. PHORORO	
PD067/01-02	V-38	PIC	VEG. SORTING FACILITIES	2	FARM & DOMESTIC	
PD068/01	V-48	PIC	STORAGE DEMONSTRATION	1		
PD069/01	V-52	PIC	MAP BOARD	1		
PD070/01	V-52	PIC	PARAFFIN HEATER	1	M.KHALANE	
PD072/01-02	V-61	PIC	100m. MEASURING TAPE	2	M.KHALANE	
PD073/01	V-62	PIC	KERONE HEATER	1	P.MOWBRAY	
PD074/01-03	V-49	PIC	SOLO BACK PACK SPRAYERS	3	PIC - MARK WOODS	
PD075/01-03	V-49	PIC	PRECISION SEEDERS	3	PIC	
PD076/01	V-34	PIC	SHADE NETTING	1	PIC - P.SARIG	
PD077/01	V-34	PIC	SHADE NETTING	1	PIC - P.SARIG	
PD078/01	V-34	PIC	SHADE NETTING	1	PIC - P.SARIG	
PD079/01	V-34	PIC	SHADE NETTING	1	PIC - P.SARIG	
PD080/01	V-35	PIC	4x30m WINDEK PLASTIC	4	PIC HGP	
PD081/01	V-35	PIC	4x30m WINDEK PLASTIC	4	PIC HGP	
PD082/01	V-41	PIC	VIDEK PLASTID 4m x 30M	2	PIC CROP DEMO MATS	
PD083/01	V-41	PIC	VIDEK PLASTID 4m x 30M	2	PIC CROP DEMO MATS	
PD084/01	V-63	PIC	100m. MEASURING TAPE	1	M.KHALANE	
	V-86	PIC	LERIBE MKTG CTR	1	G. FEASTER	
	V-82	PIC	MOHALES HOEK MKT CTR	1	G. FEASTER	
	V-33	PIC	LERIBE MKTG CTR	1	G. FEASTER	
	V-86	PIC	LERIBE MKTG CTR	1	G. FEASTER	

BA = COMPUTER EQUIPMENT RMA01 = SEHLABATHEBE RMA
 BB = OFFICE FURNITURE RMA02 = RMA'S GATE RMA
 BC = OFFICE EQUIPMENT RMA03 = PELANENG RMA RANGEREREGISTER OF NON-EXPENSE ITEMS EXCEEDING \$50 (=====
 BR = RADIO EQUIPMENT RMA04 = MOKHOTLONG RMA

ASSET NUMBER	VOUCHER No.	COMP.	DESCRIPTION	QTY	ASSIGNED TO/ LOCATION	SERIAL NUMBER COMMENTS
BA001/01	V-47	RLPU	NORTON ADV. UTILITIES PROGRAM	1	S.HAASE - T.BOSIU BL	
BA002/01	V-47	RLPU	IBM COMPUTER	1	S.HAASE - T.BOSIU BL	
BA003/01	V-47	RLPU	IBM COMPUTER	1	S.HAASE - T.BOSIU BL	
BA004/01	V-50	RLPU	XT COMPATIBLE COMPUTER	1	S.HAASE - T.BOSIU BL	
BA005/01	V-50	RLPU	WORDPERFECT CORPORATION	1		
BA006/01	V-51	RLPU	XT COMPATIBLE COMPUTER	1	CHRIS WEAVER	
BA006/02	V-51	RLPU	EPSON PRINTER	1	CHRIS WEAVER	
BA007/01	V-54	RLPU	EXTENDED STYLE KEYBOARD	1	CHRIS WEAVER	
BA008/01	V-56	RLPU	INTEL 8087-1 CO-PROCESSOR	1	J. HUNTER	
BA009/01	V-59	RLPU	1 SERIAL PORT FOR XT COMPUTER	1	S. HAASE	
BA010/01	V-62	RLPU	1.2MB DRIVE INTO XT COMPUTER	1	S. HAASE	
BA011/01	V-66	RLPU	MOMO COLOUR GRAPHICS CARD	1	C.WEAVER	
	V-79	RLPU	AT COMPUTER	1	M. SEKOTO	
	V-79	RLPU	SENDON 350 VA UPS	1	M. SEKOTO	
BB001/01-03	V-09	RLPU	4-DRAWER FILING CABINET	3	LCS3-RAMA'S GATE	
BB002/01	V-28	RLPU	705 CHAIR	1	C. DREW	
BB003/01-02	V-46	RLPU	DESKS 1500x900 W/DRAWERS	2	RMA-MALEFILOANE	
BB004/01-02	V-46	RLPU	TYPISTS CHAIRS	2	RMA-MALEFILOANE	
BB005/01	V-46	RLPU	CURTAINING	1	RMA-MALEFILOANE	
BB006/01	V-52	RLPU	GAS HEATER	1	ROBERT BUZZARD	
BB007/01	V-52	RLPU	SPACE HEATERS	2	ROBERT BUZZARD	
BB008/01	V-55	RLPU	CHALK BOARD	1	ROBERT BUZZARD	
BB009/01	V-62	RLPU	CARPET	1	ROBERT BUZZARD	
BB010/01	V-57	RLPU	NOTICE BOARD	1	ROBERT BUZZARD	
BB011/01	V-63	RLPU	4-DRAWER FILING CABINET	1	C.WEAVER	
BB012/01	V-65	RLPU	KEY CABINET	1	C.WEAVER	
BB013/01	V-64	RLPU	4-DRAWER FILING CABINET	1	PAT GRAY	
BC001/01	V-47	RLPU	XEROX 1012 PHOTOCOPIER	1	SEHLABATHEBE -P.GRAY	
BR015/01-02	V-46	RLPU	SLEEPING BAGS	2	S.DEFFENDOL	
BR016/01	V-46	RLPU	SLEEPING BAGS	1	S.DEFFENDOL	
BR017/01	V-45	RLPU	SLEEPING BAGS	1	N.NTLALE	
BR020/01	V-47	RLPU	BIGGS/STRATTON ENGINE	1	S.DEFFENDOL	
BR021/01	V-46	RLPU	DRILL RIGGING PARTS	1	S.DEFFENDOL	
BR021/02	V-46	RLPU	FREIGHT DRILL RIGGING PARTS	1	S.DEFFENDOL	
BR021/03	V-50	RLPU	FREIGHT DRILL RIGGING PARTS	1		
BR021/03	V-46	RLPU	DRILL RIGGING PARTS	1	S.DEFFENDOL	
BR021/03-01	V-47	RLPU	DRILL RIGGING PARTS	1	S.DEFFENDOL	
BR023/01	V-54	RLPU	DRILL RIGGING PARTS	1	EWD	
BR024/01	V-59	RLPU	DRILL RIGGING PARTS	1	EWD	
BR025/01	V-59	RLPU	MODEL X 3 WINCH-1588kg.	1	EWD	
BR026/01	V-51	RLPU	D19 SOCKET SET/POWER BAR	1	EWD	
BR027/01-02	V-46	RLPU	SINGLE MATTRESSES	2	RMA-MALEFILOANE	
BR028/01-02	V-46	RLPU	SINGLE MATTRESSES	2	RMA-MALEFILOANE	
BR029/01-04	V-46	RLPU	SINGLE BEDS	4	RMA-MALEFILOANE	
BR030/01	V-47	RLPU	SINGLE BEDS	1	EWD	
BR031/01	V-47	RLPU	VIP TOILET	1	EWD	
BR032/01	V-47	RLPU	WARDROBE	1	EWD	
BR033/01	V-47	RLPU	BASE UNIT	1	EWD	
BR034/01	V-47	RLPU	SINGLE BEDS	1	EWD	
BR035/01	V-47	RLPU	CAMEO TABLE/CHAIRS	1	EWD	

RA = COMPUTER EQUIPMENT RMA01 = SEHLABATHEBE RMA
 RB = OFFICE FURNITURE RMA02 = RMA5 GATE RMA
 RC = OFFICE EQUIPMENT RMA03 = PELANENG RMA RANGEREISTER OF NON-EXPENSE ITEMS EXCEEDING \$50 (
 RR = RADIO EQUIPMENT RMA04 = MOKHOTLONG RMA =====

ASSET NUMBER	VOUCHER No.	COMP.	DESCRIPTION	QTY	ASSIGNED TO/ LOCATION	SERIAL NUMBER COMMENTS
RMA03/01	V-53	RLPU	CURTAINS & RAILS	1	PELANENG	FOR RONDAVELS
RMA03/02	V-58	RLPU	FENCING MATERIAL	1	PELANENG	
RMA03/03	V-62	RLPU	FIELD TOILETS	2	PELANENG	
RMA03/04	V-53	RLPU	SHELVING	1	PELANENG	
RMA03/05	V-56	RLPU	FENCING MATERIAL	1	PELANENG	
RMA03/06	V-55	RLPU	FENCING MATERIAL	1	PELANENG	
RMA03/07	V-52	RLPU	BENCH VICE	1	PELANENG	
RMA03/08	V-52	RLPU	CIRCULAR SAW AND BLADE	1	PELANENG	
RMA03/09	V-56	RLPU	FENCING MATERIAL	1	PELANENG	
RMA03/10	V-61	RLPU	FENCING MATERIAL	1	PELANENG	RA LEJONE
RMA03/11	V-60	RLPU	BUILDING MATERIALS	1	PELANENG	
RMA03/12	V-56	RLPU	BAGS OF CEMENT	15	PELANENG	
RMA03/13	V-52	RLPU	GAS HEATER	1	PELANENG	
RMA03/14	V-52	RLPU	3 x 4 m. TARPAULIN	1	PELANENG	
RMA03/15	V-56	RLPU	6 x 8 m. TARPAULIN	1	PELANENG	
RMA03/16	V-51	RLPU	50m. MEASURING TAPE	1	PELANENG	
RMA03/17	V-51	RLPU	CLAW HAMMERS	1	PELANENG	RLPU
RMA03/18	V-52	RLPU	NYLON ROPE	1	PELANENG	RLPU
RMA03/19	V-55	RLPU	BOLT CUTTERS	1	PELANENG	
RMA03/20	V-55	RLPU	SKI ROPE	1	PELANENG	
RMA03/21	V-61	RLPU	FENCING MATERIAL	1	PELANENG	
RMA03/22	V-55	RLPU	FENCING MATERIAL	1	PELANENG	
RMA03/22	V-54	RLPU	TABLE	1	PELANENG	
RMA03/23	V-60	RLPU	STEEL FENCE BRACES	1	PELANENG	
RMA03/24	V-60	RLPU	VENTX 250	1	PELANENG	
RMA03/25	V-58	RLPU	TAUPAULIN & CANVAS	1	PELANENG	
RMA03/26	V-58	RLPU	TAUPAULIN & CANVAS	1	PELANENG	
RMA03/27	V-53	RLPU	NOTICE BOARDS	2	PELANENG	
RMA03/28	V-52	RLPU	PROPANE SPACE HEATERS/CYLS.	2	PELANENG	
RMA03/29	V-51	RLPU	CAMPING CHAIRS	2	PELANENG	
RMA03/30	V-61	RLPU	CATTLE PENS	1	PELANENG	
RMA03/31	V-55	RLPU	CHALK BOARD	1	PELANENG	
RMA03/32	V-56	RLPU	CHISELS, GLOVES, SUITS	2	PELANENG	
RMA03/33	V-63	RLPU	ACCESS ROAD	1	PELANENG	
RMA03/34	V-66	RLPU	STANDARD DRIVERS	4	PELANENG	
RMA03/35	V-57	RLPU	FENCE BRACES	***	PELANENG	
RMA03/36	V-67	RLPU	WOODEN POLES	***	PELANENG	
RMA03/37	V-58	RLPU	ACCESS ROAD	1	PELANENG	
RMA03/38	V-68	RLPU	FENCING	1	PELANENG	
RL001/01	V-59	RLPU	50m. MEASURING TAPE	1	C. DREW	
RL002/01	V-59	RLPU	6M3 STONE	1	A. KING - S.E.P.	
RL003/01	V-62	RLPU	LOAD OF CATTLE KRAALS	1	C. DREW	
RL004/01	V-59	RLPU	ROUGH SAND	1	A. KING - S.E.P.	
RL005/01	V-47	RLPU	DAIRY TRACK RECORD	1	S. DEFFENDOL	

RA = COMPUTER EQUIPMENT RMA01 = SEHLABATHEBE RMA
 RB = OFFICE FURNITURE RMA02 = RMAS GATE RMA
 RC = OFFICE EQUIPMENT RMA03 = PELANENG RMA RANGEREISTER OF NON-EXPENSE ITEMS EXCEEDING \$50 (
 RR = RADIO EQUIPMENT RMA04 = MOKHOTLONG RMA =====

ASSET NUMBER	VOUCHER No.	COMP.	DESCRIPTION	ASSIGNED TO/ QTY/LOCATION	SERIAL NUMBER COMMENTS
RMA04/01	V-52	RLPU	DRILL RIGGING PARTS	1 S. DEFFENDOL	
RMA04/02	V-53	RLPU	DRILL RIGGING PARTS	1 S. DEFFENDOL	
RMA04/03	V-51	RLPU	DRILL RIGGING PARTS	1 S. DEFFENDOL	
RMA04/04	V-51	RLPU	DRILL RIGGING PARTS	1 S. DEFFENDOL	
RMA04/05	V-54	RLPU	4 BURNER T/TOP COOKER	1 R. BUZZARD	
RMA04/06	V-54	RLPU	3 PANEL GAS HEATER	1 R. BUZZARD	
RMA04/07	V-36	RLPU	FENCING MATERIALS	1 LERIBE & MALEFILOANE	
RMA04/08	V-56	RLPU	FENCING MATERIAL	1 R. BUZZARD	
RMA04/09	V-48	RLPU	ELECTRIC DRILL SET	1 S. DEFFENDOL	
RMA04/11	V-49	RLPU	PIPE VICE & STAND	1 S. DEFFENDOL	
RMA04/12	V-48	RLPU	ELECTRIC DRILL SET	1 S. DEFFENDOL	
RMA04/13	V-49	RLPU	STOCKS & DIE SET	1 S. DEFFENDOL	
RMA04/14	V-47	RLPU	50m. FIBRE GLASS TAPE	1 RMA-MALEFILOANE	
RMA04/15	V-49	RLPU	PIPE CUTTER	1 S. DEFFENDOL	
RMA04/16	V-59	RLPU	LADDER DOUBLE EXTENSION	1 S. DEFFENDOL	
RMA04/17	V-53	RLPU	FENCING	1 ROBERT BUZZARD	
RMA04/18	V-62	RLPU	FINAL PAYMENT SA LEJONE	1 P. GRAY	
RMA04/19	V-46	RLPU	4-BURNER GAS COOKER	2 S. DEFFENDOL	
RMA04/20	V-48	RLPU	POLES, CRUSHED STONE & SAND	1 MARKET FACILITIES	
RMA04/21	V-50	RLPU	HEAVYDUTY CEMENT	1 S. DEFFENDOL	
RMA04/22	V-57	RLPU	PIPES, FITTINGS, TIMBERS	1 S. DEFFENDOL	
RMA01/01	V-48	RLPU	EMASCULATOR	1 PAT GRAY	
RMA01/02	V-53	RLPU	LOADING CHUTE FOR SHEEP	1 SEHLABATHEBE	
RMA01/03	V-60	RLPU	FASCIA BOARDS/BRACKETS	1 P. GRAY	
RMA01/04	V-53	RLPU	BUILDING MATERIALS	1 ROBERT BUZZARD	
RMA01/05	V-50	RLPU	TIMBER, PIPES, CEMENT ETC	1 MATATIELO/P. GRAY	
RMA01/06	V-56	RLPU	FENCING MATERIAL	1 SEHLABATHEBE	
RMA01/07	V-56	RLPU	FENCING MATERIAL	1 SEHLABATHEBE	
RMA01/08	V-55	RLPU	BUILDING MAT'L'S	1 PAT GRAY	
RMA01/09	V-59	RLPU	BUNK HOUSE CABINET	1 P. GRAY	
RMA01/11	V-48	RLPU	BUILDING MATERIAL	1 MATATIELO/P. GRAY	
RMA01/12	V-59	RLPU	TARPAULIN	1 P. GRAY	
RMA01/13	V-61	RLPU	BUILDING MATERIAL	1 RLPU	
RMA01/14	V-63	RLPU	AUTOVECTOR SPACE HEATER	1 FURNISHINGS/SEHLABAT	
RMA01/15	V-63	RLPU	DRAPES/CURTAINS	1 FURNISHINGS/SEHLABAT	
RMA01/16	V-61	RLPU	GAS HEATER	1 N. HTLALE	
RMA01/17	V-61	RLPU	CEMENT	22 RLPU	
	V-95	RLPU	PHOTOCOPIER	1 SEH TRNG CENTER	
	V-85	RLPU	SLAUGHTER BLOCK, STEEL TRAYS	1 SEH TRNG CENTER	
	V-85	RLPU	SOLAR HEATING UNIT	1 SEH TRNG CENTER	
	V-86	RLPU	CABINET, PROJECTOR	1 SEH TRNG CENTER	

COMMODITY HANDOVERS:

1. SEHLABATEHBE AND HA RAMATSELISO
RMAS
2. LAC-ARD IRRIGATION SYSTEM
3. LAC (EXCLUSIVE OF SEP)
4. FARMER TRAINING CENTERS
5. AGRICULTURAL INFORMATION SERVICES
6. COMMODITY HANDOVER OF JULY 10, 1991
7. COMMODITY HANDOVER OF JUNE 26, 1992

SEHLABATHEBE AND HA RAMATSELISO

RANGE MANAGEMENT AREAS

HANDED OVER TO: RANGE MANAGEMENT DIVISION

HAND OVER DATE: 4 JUNE, 1990

UNITED STATES A.I.D. MISSION TO LESOTHO

AMERICAN EMBASSY
P.O. BOX 333
MASERU 100
LESOTHO

Telephone 313954
Telox 4508 USAID LO

Mr. Reid L. Ntokoane
Principal Secretary
Ministry of Agriculture, Cooperatives
and Marketing
Maseru, Lesotho

May 22, 1991

1991-05-23

Subject: Termination of LAPIS Project Assistance to the
Sehlabathebe and Ha Ramatsellso RMAs

Dear Mr. Ntokoane:

The purpose of this letter is to officially confirm that as of May 31, 1990 the LAPIS Project terminated assistance to the above mentioned Range Management Areas and completed the final transfer of the two RMAs to the MOA Range Management Division.

As you know, the purpose of this assistance was to develop Range Management areas in order to improve productivity of livestock for participating communities through Grazing Associations; establish a sustainable production system in terms of land and water resources and set the stage for further commercialization in the livestock industry.

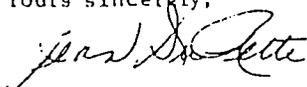
Project contributions have been in the areas of infrastructural development, including horizontal well drilling; technical assistance and institution building; and vehicles and other equipment. We are enclosing a copy of the final Handover Memorandum which provides greater details of project contribution to these two RMAs. We also note that through the same Memorandum the Range Division has acknowledged receipt of all infrastructure and commodities transferred by the project.

Please note that according to previous agreements, commodities purchased with project funds, including vehicles, are to continue to be used for the objectives of the project. In the event that Government contemplates other uses for the commodities, then USAID concurrence must be sought.

We are pleased with the results of this assistance and we hope that the Ministry will continue to provide necessary resources to nurture these RMAs in such a manner that they eventually become self sustaining through the local Grazing Associations.

Please acknowledge receipt of this letter by signing in the provided space below.

Yours sincerely,


Jean DuRette
Acting Mission Director


R. L. Ntokoane
Principal Secretary

cc: L. C. Weaver, COP LAPIS

NOA

1991-05-23

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M E M O R A N D U M

FROM: Chief Range Management Officer
RLPU Coordinator,
LAPIS Project

TO: Firouz Rooyani, COP/LAPIS

REF.: LAPIS/RLPU/B/1-90

SIGN: *B. Motsamai* *L. Chris Weaver*

NAME: B. Motsamai L. Chris Weaver

DATE: 4 June, 1990

Hand Over of Sehlabathebe and Ha Moshebi/Ha Ramatseliso RMAs From
LAPIS Project To MOA Range Management Division

As of May 31, 1990 the total operation and maintenance costs of the Sehlabathebe and Ha Moshebi/Ha Ramatseliso RMAs have been officially transferred from the LAPIS Project to the MOA Range Management Division. This process, which was initiated in April, 1989, has been done in such a manner that the Range Management Division has gradually absorbed operational costs as well as the practical management aspects of these two RMA programmes.

Following is a brief chronological recap of the steps followed during this important phasing out period for the LAPIS Project.

1. On April 26, 1989 the RLPU Coordinator submitted a Memorandum (ref. LAPIS/RLPU/B/1-14) to the Chief Range Management Officer (CRMO) proposing several recommendations with regard to the Range Management Division absorbing total programme support costs. These suggestions included:
 - o A reduction of RMA vehicle operation and maintenance costs, and a scheduled absorption of these costs by the Division; and
 - o A reduction of RMA labour staff, and a scheduled transfer of labour costs from the LAPIS Project to the Division.
2. In May, 1989 the Range Management Division started paying the wages of four RMA labourers (two at each RMA). The employees hired by the Division are as follows:

Sehlabathebe RMA

- a. Rapatso Mopola
- b. Marosi McWabe

Ha Moshebi/Ha Ramatseliso RMA

- a. Palo Lekata
- b. Mazenda Ntiamose

At this time, the LAPIS Project continued to fund two support staff workers (one for each RMA) and a mechanic. All other workers were dismissed.

3. In June, 1989 a tractor and its complementary support equipment were transported to Maseru to be sold. The removal of this equipment significantly reduced vehicle operation and maintenance costs. Income generated by the sale of these items was set aside by the Division for maintenance of the remaining RMA vehicles.
4. In July, 1989 the Range Management Division started paying for the bulk purchases of petrol and diesel for the Sehlabathebe and Ha Moshebi/Ha Ramatseliso RMAs.
5. In September, 1989 the Range Management Division established a fuel line item within their Headquarter's budget to cover some of the fuel (heating and cooking) costs incurred by the RMA Managers and staff within the Sehlabathebe and Ha Moshebi/Ha Ramatseliso RMAs. This line item was complemented by the District Agricultural Office (DAO), which also absorbed a portion of these costs.
6. In October, 1989 a nightly surcharge of M5.00/person was instituted for use of the Sehlabathebe bunkhouse. Funds derived from this surcharge are pooled to cover maintenance and operational (fuel) costs for running the bunkhouse facility.
7. In December, 1989 all LAPIS Project funded support positions were terminated. Funding for Thanini Nyokana, Range Assistant, to the Ha Moshebi/Ha Ramatseliso RMA was absorbed by the Qacha's Nek DAO.
8. In February, 1990 the Range Management Division started paying for repair costs of vehicles utilized by Range Management Division staff members at the two RMAs.
9. In February, 1990 the RMA Managers were taken to Matatiele, RSA and introduced to suppliers of all LAPIS Project accounts. From this date onwards, the Managers were given the responsibility for negotiating for supplies, maintenance of vehicles, and payment of accounts.
10. In February, 1990 the responsibility for organizing all livestock sales was handed over to the RMA Managers. This resulted in the successful conduct of four cattle sales and two small stock sales with RSA livestock marketing organizations.
11. In May, 1990 all RMA facilities and supplies were jointly inventoried by the LAPIS Project Advisor and RMA Managers.

12. In May, 1990 a Toyota 4-ton truck was transferred from Sehlabathebe to the Range Management Division Headquarters to further reduce vehicle operation and maintenance costs for the two RMAs.
13. In May, 1990 the Range Management Division re-employed Mojaki Mojaki as a Range Assistant to the Sehlabathebe RMA. This individual had been away on training at the Lesotho Agricultural College for three years. His presence substantially strengthens the extension capabilities of the Sehlabathebe management staff.
14. On May 31, 1990 LAPIS Project funding to the Sehlabathebe and Ha Moshebi/Ha Ramatseliso RMAs is terminated, and the LAPIS Project RMA Advisor, Pat Gray, is transferred to Range Management Division Headquarters. The Sehlabathebe and Ha Moshebi/Ha Ramatseliso RMAs are officially transferred to the Range Management Division.

During the remaining tenure of the LAPIS Project both of these RMAs and their respective grazing associations will be followed closely with regard to identifying areas of weakness which may affect the sustainability of the RMA Programme. Both RMA Managers will continue to provide monthly reports to the LAPIS Project and meet with Divisional staff on a monthly basis. As areas of concern are identified, they will be so documented and advice will be rendered to overcome such concerns.

LCRD/LAPIS PROJECT INPUTS INTO THE
SEHLABATHEBE AND HA MOSHEBI/HA RAMATSELISO RMAS

January, 1982 - May, 1990

I. Major Infrastructural Development Costs

A. Sehlabathebe RMA:

1.	(1) Junior House	
	(1) Woolshed	
	(1) Workshop	\$243,018.10
2.	(3) Rondavels	\$ 36,488.00
3.	(1) Storage Shed	\$ 7,757.98
4.	(1) Livestock Saleyard	\$ 11,000.00
	TOTAL INFRASTRUCTURAL COSTS	\$291,264.08

B. Ha Moshebi/Ha Ramatseliso RMA:

1.	(1) Junior House	\$ 21,080.00
2.	(2) Rondavels	\$ 36,000.00
3.	(1) Woolshed Extension	\$ 5,161.00
4.	(1) Diptank Construction	\$ 3,767.53
5.	(1) Storage Shed	\$ 7,237.70
6.	(1) Office	\$ 2,800.00
	TOTAL INFRASTRUCTURAL COSTS	\$ 76,046.23

II. Technical Assistance Inputs:

A.	LCRD Project	76 Person Months
B.	LAPIS Project	20 Person Months

25/1
1990

FUTURE CONSIDERATIONS FOR THE
SEHLABATHEBE AND HA MOSHEBI/HA RAMATSELISO RMAS

The Sehlabathebe and Ha Moshebi/Ha Ramatseliso RMAs were initiated in May, 1982 and October 1987, respectively. These RMAs were started by the MOA Range Management Division with financial and technical assistance through USAID funding in the forms of the Land Conservation and Range Development Project (1982-1988) and the Lesotho Agricultural Institutional Support Project (1988-90). As of May 31, 1990 direct USAID funding and technical assistance to these two RMAs was terminated, and the Range Management Division absorbed total operational costs and technical guidance to the RMAs.

Since the inception of these RMAs, numerous programs have been introduced which have substantially benefited both grazing association members and natural resource management within the RMAs. Such programs include:

- o Grazing Management Plans - Both RMAs, through coordinated management efforts which were designed, implemented and enforced by grazing association members have been successful in improving RMA rangeland productivity. These improvements include increased forage production, increased cover, reduced soil erosion, better species diversity (flora and fauna), better water quality, etc.
- o Livestock Improvement Programs - The grazing associations have initiated annual livestock culling programs, bull castration programs, and livestock breeding programs with improved breeding sires. This has increased total livestock productivity within each of the RMAs.
- o Livestock Marketing Programs - Sales for cattle, sheep, and goats have been routinely organized in each of the RMAs. Sales within these two RMAs are the most reliable in the country. In addition, these RMAs provide the only venues in Lesotho from which small stock have been routinely marketed.

These programs have resulted with increased income to livestock producers and residents in general within the RMAs.

Range Management Division plans for these RMAs includes not only the maintenance of these programs, but continual improvement upon them. These programs will receive intensified extension campaigns aimed at grazing association members. The extension efforts will be supported by short-term training courses offered to both RMA Managers and grazing association members.

The RMA Managers are scheduled for government sponsored courses on basic bookkeeping, accounting, and management skills. The Managers will transfer these skills to grazing association executive

- 2/26

committee members in formalized training courses. This approach will reduce the costs associated with utilizing other government organizations (Lesotho Distance Teaching Centre). Neither the Range Management Division nor grazing associations presently have adequate financial resources to cover such costs.

Grazing association members will be the benefactors of the planned Sehlabathebe Training Centre. This Centre will provide the venue for future range, livestock, management, and other identified training courses to be conducted in the RMAs. In addition, the Centre will serve as a central training site for grazing association executive committee members from throughout Lesotho. The location of the Centre at Sehlabathebe will allow the Range Management Division to capitalize on the demonstration capabilities of the two RMAs and the enthusiasm of grazing association members.

The Sehlabathebe Training Centre is being funded by USAID Wheat Monetization Funds, which have been channeled through the Lesotho Food Management Unit. The Range Management Division and the LAPIS Project will provide supervision of the Centre's construction, development and operation through year five of the LAPIS Project. From June 1, 1991, management of the Centre will be the sole responsibility of the Division.

The sustainability of these RMAs and their respective grazing associations is a major concern to the MOA, USAID, and LAPIS Project personnel. Therefore, activities implemented through the LCRD and LAPIS Projects will be monitored closely during year five of the LAPIS Project. Monitoring will be done on a routine basis, and results of the monitoring will be included in LAPIS Project quarterly reports. The monthly statistic sheet, which is presently being used to determine RMA outputs, will be maintained for both RMAs. Joint Range/Livestock Production Unit (RLPU) and Agric Research efforts to monitor participants' attitudes and the responses of vegetation to the grazing management plan will be maintained as well. In addition, all issues or problems arising regarding Grazing Association or RMA sustainability will be documented closely, and advice rendered to overcome these problems.

SEHLABATHIBE HEADQUARTERS SITE INVENTORY

31 May, 1990

Headquarters Site Fenced & Cross Fenced
Consisting

1. 1 Set of sale, Impoundment kraal with working lane, head & 10 ton digital platform scale & Auction Stand.
2. Woolshed with working; holding kraals, diptank and 4 X water tanks.
 - a) 4 Sets of wool classing bins
 - b) 1 Hydraulic Wool Press
 - c) 3 Sorting Tables
 - d) 1 Platform scale
 - e) 10 feet of Portable shelves
 - f) 1 Portable smallstock scale
3. Caravans - 1 CI Sprite
1 Jungers 1981 Flatline 1
4. Roundavels - 3 houses \ 24 Diameter \ modern facilities
 - a) Fully curtains for all.
 - b) 1 Refrigerator (Ocean)
 - c) 3 cooking stoves
 - d) 3 heating stoves
 - e) Government issue furnishing
 - f) LPG lights & 3 junkers hot water heaters
5. Well House (Storage) \ 2 X 4500L water tanks
 - a) Steelcraft 210 freezer
 - b) Extra Heating Stove
 - c) Pipelines to all buildings, kraals & Water trough
6. Boreholes 2 (a) 190m deep (b) 170m deep
 - i) Both equipped \ monostroom HK3 pumps both powered L models 5 Diesel Engines \ Pump house
 - ii) 30L Diesel Tank
7. Lister Electric Generator Plant 3.5KW \ Alternator Ch Unit, 210L diesel Tank & House.
8. Double wall insulated house 25' X 30' \ modern facilities
 - 1) 1 Gas refrigerator (Ocean)
 - 2) Electric & LPG lighting
 - 3) Xerox 1012 R&E copier
 - 4) 4 Drawer file cabinet
 - 5) Kachina Model Kc 102 2 way Radio \ Antenna & spare Ra
 - 6) 1 Heating Stove
 - 7) 1 Gas Cooking stove L.P.G
 - 8) 1 Junkers Hot Water Heater.
 - 9) Government supply furniture

9. Storage Shed 20' X 20'

- a) 2 - 13Ply Tractor tyres 12.4 - 24
1 - 13Ply " " 16.9 - 30
- b) 1 X 50kg Tie wire
- c) 1 X 50kg Cement
- d) 10 X 25Kg Rumivite Block, 6 x 50kg Stock Salt,
4 X 50kg Sheep pellets
- e) 4 sacks wood & 3 x 50kg bags of coal.
- f) 5 X 210L Feed-drums
- g) 27 X 48kg LPG Container Bottles
18 X 9kg " " "

10. Staff house - 9' x 12' \ LPG Cooking stove & Portable heater

11. Bunk House \ Toilet and shower

- a) Bedding for 6 bunkbeds
- b) 10 Thin Mattresses & 5 Thick Mattresses
- c) Cooking & eating appliances & assorted food &
- d) 2 storage bins
- e) Sibir Deluxe LPG Refrigerator.
- f) 1 LPG Cooking stove
- g) 1 Junkers hot water heater
- h) 4 sets of curtains
- i) 2 footlockers \ 4 locks
- j) 2 space heaters
- k) Locked utility cabinet

12. Office

- a) 8' Shelving, 12' counter & built-ins
- b) 5 Major 6205 CB Radio \ 5 Auto Batteries
- c) 1 Space Heater
- d) 1 Slide, 1 Overhead & 1 movie projector
- e) 3 Dry chemical fire extinguishers
- f) 2 Digital readout for platform scale
- g) 22 Boxes educational slides
- h) 6 Card files
- i) 1 Dumpy Level (wild heerbugg) \ Tripod & stada staff.
- j) 1 Set of Aerial Photos
- k) 1 Storage cabinet

1 Emasculator Budizzo, Elastrator, dehorner,
2 Sets drenching Guns, 4 sets eartag applicators,
Inventory of veterinary supplies & medicine (Revolving Fund)

13. Shop

- a) 1 Stationery Grinder & 1 1\2" drill press .
- b) Floor jack 1.5 ton & 164kg Anvil
- c) 1 Acetylene welding & cutting set \ spare cylinders & tips.
- d) 1 Portable 225 amp welder \ cart & leads
- e) 1 cutting metal table
- f) 1 Portable high pressure low volume water pump.
- g) 6 Saddlery & supporting tack, 1 Pack saddle with 2

- h) Seating Benches 4 x 12'
6 x 8'
- i) 23 x 50kg Rolls of Barbed Wire.
- j) 3 Queen Stoves\ 8 links of stove pipe
- k) 4.5 Jackal wire 3 foot
1 Roll 4' Jackal wire
1 4 x 8' 3/4 expanded metal
- l) 9 single bed springs
- m) Planks - 30 - 2 x 6 x 18'
22 - 2 x 4 x 16'
23 - 2 x 2 x 16'
12' Bars 5\16 x 1
- n) 1 Floor Creeper
- o) 1 Honda CD1 Electric Generator\2 x 50' Extension c
- p) 1 Swan Model YP 21 Air Compressor\hoses

Tents

- 1 x 6 man tents & 1 x 4 man tents
- 2 Tubs - 8' x 12'

Tyres & Tubes

- 4 x 7.50 - 16 8 Ply tyres & 8 x 7.50 - 16 tubes
- 2 x 6.00 - 14
- 2 x 7.00 - 20
- 1 x 11.5 - 24
- 1 x 7.00 - 20 tubes
- 1 x 19.5 - 14 "

6 sales for woolshed

50' Water Hose

1 Movie Screen

50 Project Signs

4 cyclon Seed Sower

2200 Assorted Cattle & Sheep tags

4 Welding Helmets

11 shovels, 2 Rakes 4 Brooms 3 Digging bars

1 Pitch fork, 1 Hoe, 1 soil auger, 2 Picks

4 x 6kg L.P.G Cylinders

1 Water Pump for Tractor P.T.O

2 Sheep Yokes (dipping sticks)

1 ox yoke

2 x 50kg tie wire

60' Rope

1 x 8' Step Ladder

1 x 16' Extension Ladder

4 Jack Stands, 2 Paint Pans, 3 Rollers & 6 Brushes

1 plane, Brace, set of bits, 2 saws, 1 ply hammer, 4

chisels, 3 nail bars, 2 bolt cutters, 2 levels (1 x

x 2') 6 Chain binders, 2 wire come alongs, 8 s

binders, 2 x 16' tow chains, 2 ox chains, 20' gate ch

3 sets jumper cables, 2 hack saws, 3 sets compres

tyre inflators, 1 x 4 way spinner lug wrench, 4

irons, assorted patching & patchin glue, 4 pair fer

pliers, 4 files, 4 LPG gas regulators

Assorted Electrical Hydraulic supplies & plumbing supp

- " Nuts, washers & Bolts - 1\4 to 5\8
- " Nails 3" to 6"
- 3 Tyre gauges & 1 valve\stem wrench
- 2 Rivet guns & Assorted rivets
- 1 Villiers water pump 1 1\4" \ gas engine
- Assorted wood & metal screws
- .5, 5\8 & 1" copper tubing fittings
- 1.5 4kg hand cleaner
- 1 set Gedore .5" drive socket open-end & Box-end socket set (Ratchet)
- 1 Partial Gedore Socket Set.
- 4 x 18" break over handles
- 1 set of punches & chisels (R,W) set
- 2 x 6 Pound hammer & 2 Mason chisels
- 3 Ball-pean ", 1 T-square & 2 Tapes (5m)
- 3 Pair Pliers, 1 portable tool cart
- 6 x 12" clamps, 4 vicegrips & 1 chain tonggrip
- 4 Welding chipping hammers
- 24" adjustable clamp & 2 adjustable clamps
- Assorted Mason Trowels
- 1 Welding Box
- 1 Silicon gun - 2 tubes silicon filler
- 18 Boxed & open end spanners - (13mm to 30mm)
- 3 Adjustable crescent wrenchs (1 x 24" & 2 x 18")
- 4 Pipe wrenches (2 x 18" 1 x 24" & 1 x 36")
- 3 Pipe cutters; Tap & Dies 1\4" - 3\4" set
- 2 Hand-drills & 1 electric Hand grinder
- Assorted gasket stock & Gas pipe lines repair kit
- 80% Emery Paper & 2 sheets sand paper
- 10kg - 3\16 Brass rods, 10kg 1\16 Brass rods
- 10kgs Cast Iron rods 1\16 & 3\16
- 5 wire brushes
- 3 core of sodder (1kg)
- 3 x 500g welding flux, 200HL Pic-A-Nin
- 2L Brake fluid, 500HL SAE 90 oil
- 6 x 350 DWF oil, 2 x 400g starting fluid
- 5 Boxes Assorted hose clamps
- 100 Bars chalk stones, 500HL finish stain
- 1 Copper pipe flairing tool. 1 Battery tester
- 2 x 500HL Wynns Radiator treatment
- 3 Partial fealer sets 1\16" - 1\2
- 1 Paint gun & 1\4 Torque Wrench
- 1 Rac dwell & tachometer tester
- 1 Rac Engine Analyzer tester
- 4 Grease guns, 1 @ Oxygen & Acetylene pressure regulators

LAND CRUISER PARTS

- 1 Fuel pump, 8 oil filters & 6 fuel filters
- 1 Air filter, 2 fuel pump & 1 hydrolic jack
- 8 U-Bolts & 6 center bolts
- 2 condenser, 3 point sets
- 1 Alternator
- 1 Radiator

OTHERS

- 1 Set of disc backbone bolts & 1 disc gang bearing
- 10 Pounds E613 5\16 welding rods
- 24 x 5kg 2.5mm welding rods
- 10kg ms 2 welding rods
- 9 3" Link 1\2" all thread
- 2 x 1" tank clamps & tyre breaker.
- 1 Handyman Jack, 2 sledge hammer handles
1 sledge hammer
- 4 Cans red spray paint
- 2 Rubber well guides
- 1 Bench vice

JOHN DEERE Parts

- 3 Dust collector
- 2 Air filters
- 2 Hydrolic filters
- 4 Fuel filters
- 4 Lock Nuts 1"
- 8" Hydrolic hose
- 2 Hitch Pins
- Pipe Fittings Assorted
1\2", 3\4", 1, 1 1\4, & 2". Tees, Ellis & Street-
valves, check valves, short nipples bushing reducer
bell-reducer
- 1 Pipe vise with stand, 1 rubber mallet
- Plastic pipe fittings 1 3\4"
- 1 Set of pipe dies 3\4", 1", 1 1\4", 1 1\2" & 2"
- 1 " " gas torches (assorted)
- 1 " " drills. 1-13 + 14, 15, 16 & 17
- 1 Hand drill
- 2 Partial rolls of auto electric wire
- 1 Electric repair kit
- 1 Foot rasp (Hoof Trimmer)
- 1 1641 JOHN DEERE TRACTOR 4-WD\Front End Loader
- 1 Hydrolic dump utility trailer
- 2 wheel barrows & 1 Metal saw horse
- 3 Horizontal wells - est 2 miles pipeline
- 2 water tanks & 1 x 4500 storage tank
- 10 x 20L Motor oil 30wt
- 2 Ox-carts
- 53 cement blocks & 2500 - 4 x 8 cement bricks
- 4 x 5m 3\4" Pipe
- 3 x 8m 1" "
- 7 x 8m 1 1\4" Pipe
- 6 x 8m 2" "
- 3 x 12' - Tripod Pipe
- 60 x 8" Posts
- 100 - 8H Rails
- 3 - 4 x 8 1\8 sheets (metal)
- Various length sizes of plastic pipes
- 1 Platform stock scale

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RAMATSELISO & HOSHEDI RANGE MANAGEMENT AREA

INVENTORY OF EQUIPMENT AT HEADQUARTERS

YEAR 1990

<u>QUANTITY</u>	<u>ITEM DESCRIPTION</u>
4	Fliers
1	Imasculator
1	Horse Nippers
1	Horse Rasp
2	Scalpsets
1	Hole Punch (leather)
1	Spirit Level
4	Tag Applicators
2	Pipe Wrenches
2	Hand Saws
20	Hand Saw Blades
2	Horse Combs
2	Horse Brushes
2	75mm Paint Brushes
6	Academy Paint Brushes
1	100 ft. Tape Measr.
2	30m Tape Measure
1	Office 4 x 6 metres
1	7 x 14 metres storage shed
1	Wire Stretcher
1	Claw Hammer
1	125mm Brushes
1	Bull Nose Holder
1	Putty Knife
8	Clip Boards
1	Tape Holder
1	Auto. Syringe (50cc)
1 PK	50mm (2") x 500g Nail
4 PK	32mm x 500g Nails
2 PK	75mm x 500g Nails
2 PK	125 x 500g Nails
2 PK	100mm x 500g Nails
1 Box	Roofing Screws
1	12 Volt Battery
1	Electronic Scale Monitor
1	Filing Cabinet
2 Box	150 x 5.60 Nails
1	Sealant Gun
1	Dosing Gun
5	Bridles
4	Halters

4	Lead Ropes
4	Saddles
4	Saddle Packs
1	Handy Man
2	Rakes
2	Shovels
2	Spades
28	Cement
2	Wheel Barrows
4	Pick Ax
1	Soil Auger
1	Set of Sale & Impoundment yard with 10 ton scale
1	Cattle head catch.
2	Post Pounders
1\2 Roll	Jackel Wire
1900	Standards
104	Barbed Wire
3750	Droppers
1	Bed Frame
4	Red Benches
6	White Benches
1	Desk
6	Chairs
1	Ladder
1	1985 Toyota Landcruiser
2	6 Metres Diameter Roundavels & Modern Plumbing & Curtains
3	Cooking Stoves
1	25 x 30 Feet Double Walled Modern House
1	Gas Refrigerator
1	Kachina Model KC 102, 2 Way Radio & Spare
3	Horses
1	20' x 40' Shelter attached to woolshed

AMERICAN AG INTERNATIONAL



P.O. Box 333 • Maseru 100 • Lesotho • Tel 311932 • Telex 4510 LO

MEMORANDUM

TO: R. L. Ntokoane, P.S./MOA

FROM: COP/LAPIS Project

REF.: LAPIS/A/23-54

SIGN: Barry N. Freeman

NAME: B. N. Freeman

DATE: 18 May, 1990

Enclosure-Certification by the Agricultural Research Division And
Lesotho Agriculture College, Ministry of Agriculture, That
They have Officially Received the LAC-ARD Irrigation
System From the LAPIS Project as Constructed

Please find enclosed a copy of a certification of receipt of the LAC-ARD Irrigation System from the LAPIS Project by the Agricultural Research Division and Lesotho Agriculture College, Ministry of Agriculture. The certification of receipt is signed by Dr. M. 'Matli, Director, ARD and Mr. P. Q. Cweba, Principal, LAC. This certification document completes the official handing over of the irrigation system to the MOA/GOL.

cc: C. Reintsma, ADO, USAID/Lesotho
M. 'Matli, D,ARD/MOA
P. Q. Cweba, Principal, LAC/MOA
F. Rooyani, DCOP/LAPIS
W. C. Arnold, Admin. Mgr./LAPIS
W. Nishek, Agric. Engr./LAPIS

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M E M O R A N D U M

TO: M. 'Matli, Director, Agricultural Research Division
Q. Cweba, Principal, Lesotho Agricultural College/MOA

FROM: COP/LAPIS Project

REF.: LAPIS/A/23-52

SIGN: Barry N. Freeman

NAME: B. N. Freeman

DATE: May 14, 1990

Official Handing Over of the LAC-ARD Irrigation System
From the LAPIS Project to the Agricultural Research
Division-Lesotho Agricultural College,
Ministry of Agriculture

Please find herein the communication documentation that verifies that the LAC-ARD Irrigation System as constructed under the LAPIS-SWEC contract has been completed as designed and amended according to the construction specifications as noted on the "As Built Drawings".

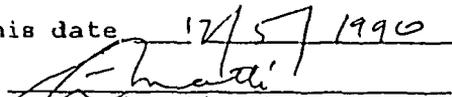
- ° On February 12, 1990, Mr. Homer C. Moore, LAPIS Consulting Irrigation Engineer, certified to Mr. W. C. Arnold, LAPIS Administrative Manager, by letter (copy attached) that the LAC-ARD Irrigation System, SWEC Contract had been completed as designed and amended according to the construction specifications, with the exception of ten (10) numbered minor items.
- ° On March 7, 1990, Mr. Wayne Nishek, LAPIS AEC Agricultural Engineer, inspected the noted (10) deficiencies and certified that they had been completed satisfactorily (copy of certification attached). On the same date, Mr. Nishek issued the OK for final payment to the construction contractor, SWEC, and noted that the one year guarantee on workmanship on the LAC-ARD Irrigation System began on the same date, i.e. March 7, 1990.

Also find included as an integral part of the handing-over process of the LAC-ARD Irrigation System, a copy of the LAC-ARD Irrigation System Operation Plan and the Construction Completion Report (copy of each attached).

In addition to the above, I have included for the case files of ARD and LAC, 2 cartons, each containing the following additional documentations:

- a) Irrigation System Design and Specifications.
- b) Engineer's Cost Estimates.
- c) Copies of Tenderer's Reply.
- d) Manufacturer Catalogs and Literature.
- e) Copies of all Correspondence From the Construction Engineer's Files.
- f) Recommendations on General Operations of the System.
- g) "As Built Drawings".

On this date 17/5/1990, with my signature


Dr. M. Matli, Director, ARD


P. Q. Cweba, Principal, LAC

I certify that the Agricultural Research Division and the Lesotho Agricultural College, Ministry of Agriculture, has officially received from the LAPIS Project/USAID, the completed LAC-ARD Irrigation System as designed, amended and shown on the "As Built Drawings" and according to the construction specifications.

LESOTHO AGRICULTURAL COLLEGE PROGRAM

(EXCLUSIVE OF SEP ACTIVITIES)

HANDED OVER TO: LESOTHO AGRICULTURAL COLLEGE

HAND OVER DATE: 27 MARCH, 1991

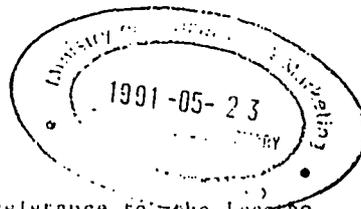
UNITED STATES A.I.D. MISSION TO LESOTHO

AMERICAN EMBASSY
P.O. BOX 333
MASERU 100
LESOTHO

Telephone 313954
Telex 4566 USAID LO

May 22, 1991

Mr. Reid L. Ntokoane
Principal Secretary
Ministry of Agriculture, Cooperatives
and Marketing
Maseru, Lesotho



Subject: Termination of LAPIS Project Assistance to the Lesotho
Agricultural College (Excluding SEP Program)

Dear Mr. Ntokoane:

Further to past discussions and communications with your staff, the purpose of this letter is to officially confirm that LAPIS Project assistance to the Agricultural College has, as of March 23rd 1991 been terminated, as part of the planned phase-down of the project.

As you know, the purpose of this assistance was to enable the College to provide high quality, practical and production oriented formal education as well as short-term training for Ministry extension and technical staff, farmers, and other public and private sector personnel.

Project assistance to the College has been mainly in the areas of technical advisory services; infrastructure, facilities and equipment improvement; curriculum development, especially the introduction of the highly regarded and successful Student Enterprise Program (SEP); and staff development.

We are enclosing a copy of the Assistance Program Termination Report which provides more details of the project contribution to LAC. We also note that the Principal of LAC has acknowledged receipt of the commodities purchased by the project.

Please note that according to previous agreements, commodities purchased with project funds, including vehicles, are to continue to be used for the objectives of the project. In the event that Government contemplates other uses for the commodities, then USAID concurrence must be sought.

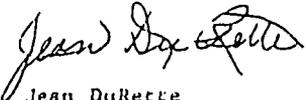
We are very pleased with the results of this assistance. We hope that the Ministry will be able to provide the resources to sustain and maintain project initiatives so that the College continues to efficiently and effectively provide relevant and meaningful agricultural education.

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Mr. Reid L. Ntokoane
Page Two

Please acknowledge receipt of this letter by signing in the space provided below.

Yours sincerely,

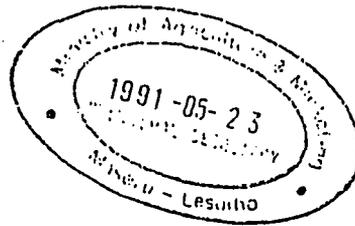


Jean DuRette
Acting Mission Director



R. I. Ntokoane
Principal Secretary, MOA

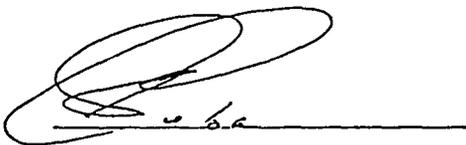
cc. I. C. Weaver, COP LAPIS



LETTER OF RECOGNITION

I have reviewed the LAPIS Project Lesotho Agricultural College Termination and Assessment Report and find it acceptable. The activities outlined in the report are what I know to have taken place. The commodities outlined in the report have been supplied and are now part of our inventory. The recommendations outlined in the report are accepted and well taken. On behalf of the College, I wish to express my appreciation to the LAPIS Project for this assistance.

SIGNED:



P.Q. Cweba, Principal, Lesotho
Agricultural College

DATE:

27 / 03 / 1991

USAID/LAPIS PROJECT ASSISTANCE TO THE
MINISTRY OF AGRICULTURE'S

LESOTHO AGRICULTURE COLLEGE

JUNE 1986 to MARCH 1991

PROGRAM TERMINATION AND
ASSESSMENT REPORT
(Excluding SEP Program Final Termination)

MARCH 1991

By:

The USAID Funded,

Lesotho Agriculture Production and
Institutional Support Project (LAPIS)

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Introduction

M.G. Blase defines an institution as a "multiphased production process where "raw" inputs are transformed and the resulting intermediate products, in turn, are further transformed in the production of end products that are injected into the using society". AEC support to LAC is largely institution building. The component seeks to improve the organization's stock resources (human and physical capital) and capability at moulding its intermediate products (administration, staff, programs, etc.) so as to produce a better calibre product (graduate). Specifically, AEC seeks to improve the teaching, curriculum and administration at LAC. Three tactics are followed in these endeavours: manpower technical assistance; long-term and short-term training of staff; facilities construction and various commodities support.

This report covers AEC activities at LAC from June 1986 to March 1991. It details all activities with the exception of those relating to the Student Enterprise Project (SEP) program. LAPIS project support to the SEP program will continue through May 1992. A termination and assessment report will be issued on this program at a later date.

The Background of LAC

Since LAC's initiation in 1955, change has been an ever present factor, especially in the last decade. In the beginning the college offered only a Certificate in Agriculture. In 1986, prior to the LAPIS project there were three certificate programs (general agriculture, home economics and agriculture mechanization) and two, 2 year diploma programs (general agriculture and forestry). LAC teaching staff were having to keep pace with these changes. Once certificate holders were the norm. In early 1986, Bsc. and Msc. degree holders were required.

The objectives of the college's programs changed with time. Prior to 1980, the MOA was in the habit of hiring nearly 100% of the college's graduates, ie. students were trained for civil service employment. From 1980 to 1986, the MOA began to phase out these opportunities as civil service rolls became financially unwieldy. LAC, in response to these changes, initiated a review of their objectives in 1982. It was concluded that the college's charter should involve training for private sector or self-employment and for opportunities in the education sector. In early 1986, LAC had been able to do little to adapt its curriculum to meet these desired changes.

LAC was once able to retain income derived from the sale of farm produce and, given the more simplified nature of the programs at that time, was able to operate sufficiently. In 1980, the Government of Lesotho (GOL) initiated a policy in which LAC was required to submit all proceeds to the central treasury. In theory, LAC could then justify their annual budget based on this revenue. In practice this was not happening. LAC staffing, operations and maintenance expenditures were severely handicapped. Annual budget submissions were not being adequately met. Many teaching staff had to be seconded from other MOA divisions. Prior to 1986, seeking to alleviate these constraints, LAC actively sought to increase what had always been a low to moderate level of assistance by foreign donors. At the time of LAPIS Project initiation the only

ongoing donor assistance was an FAO implemented project affecting the Diploma in Forestry program.

RESULTS AND DISCUSSION

Flow Inputs

Budget

Budget continues to be the principal factor limiting LAC's operations. The most important contribution is the college's annual allocation from government. From 1986-87 to 1989-90, this amount increased by 35.8%, 3.8% and 37.6% annually, to roughly M1.58 million or US\$634,000. The budget request for 1990-91 included another 42.6% increase. Annual increases have compensated for inflation the majority of time and the ratio of personnel vs. operating expenses has remained constant with approximately 57% of the budget going to personnel and 37% going to operations.

The college's administrators expressed guarded optimism concerning the potential of GOL to increase, in future years, the LAC budget beyond what is normally awarded. The basis for these feelings is the fact that GOL has stated on occasion their interest in specifically supporting the more successful programs of the LAPIS Project. MOA considers the LAC program successful. Indications of this are already apparent in that MOA has responded favourably to an initial request for a new staff position and has recently upgraded five lecturer positions from grade 10 to 13. The GOL has also recently embarked on an effort to review budget submissions more closely with the intention of targeting monies in a more justifiable manner. Revenue generated by the college's produce and a clear understanding of how additional monies will be used to support established programs may contribute to increased GOL support.

LAC has undergone many changes since 1980. Course offerings have increased and become more sophisticated. LAC administrators believe that their production and revenue have increased over the years without a corresponding increase in GOL budget allocations. Because of the recent infrastructure developments and improvements in the quality of the academic curriculum at LAC, more monies and additional quality staff are needed to sustain this higher level of performance.

The LAPIS project has had an impact on assisting LAC reach these higher levels of performance and subsequently affected the institutions need for increased resources. LAC administrators feel that the project instigated Student Enterprise Program (SEP), a program aimed at training students for private sector and self employment, is in good shape with the origination of a US\$65,000 Trust Fund. But they feel that additional financial resources are needed to sustain vehicle operation and maintenance, building and other equipment upkeep, equipment depreciation and replacement, salaries for additional staff required to offset the loss of many project direct-hire personnel, and continued training opportunities for staff as were initiated by the project.

LAC has been moderately successful in attracting foreign donor support to offset the inadequacies of their GOL supplied budget. In 1985, FAO/SIDA, through a forestry education support project, was the only major source of outside funding. From 1988/89 to 1990/91, two donor-supported efforts not including LAPIS, will contribute a total of US\$.33 million - the RSTTP, Dutch funded education programs support project and an FAO/Finnish funded forestry education support project. This assistance is critical to LAC. It allows the institution to sustain its ongoing activities and to continue developing itself in response to changing needs.

The estimated cumulative LAPIS financial contribution to AEC/LAC as of February 1991 are allocated to the following line items. Costs associated with long-term TA and contingencies are not reported here as they have little relevance to AEC's budget. The rate of expenditure of these funds was constant across the term.

- Commodities, includes some construction/building modifications (\$431126: all @ LAC)
- Long-term training (US\$687564: 11 LAC Staff; 3 AIS Staff)
- Vehicle operation and maintenance (US\$79288: all @ LAC)
- Local hire support (US\$148586; 457 person mnths @ LAC; 15 @ AIS)
- Short-term training (US\$144496: 322 persons @ LAC; 55 @ AIS)
- Consultants (US\$46485: 96 person days @ LAC; 90 @ AIS)
- Office supplies (US\$25059: all @ LAC)
- Miscellaneous support (US\$15,381: all @ LAC)
- Per diem/field operations (US\$2658: all @ LAC)
- Communications (US\$8929: all @ LAC)
- Construction (US\$75000)

The specific breakdown of the AEC/LAC commodity list as of February 1991 is as follows:

- | | |
|---------------------------------|--------------------------------|
| - Hand Tools, \$14,760 | - Irrigation Equip., \$117,722 |
| - Bldg. Modifications, \$74,879 | - Fertilizer, \$2975 |
| - Orchard Fencing, \$6858 | - Seed/Plants, \$3922 |
| - Bldg. Materials, \$24,374 | - Lab Equip., \$5515 |
| - Greenhouse, \$18,759 | - Lesotho Village, \$3244 |
| - Livestock, \$9822 | - Lvstk.Kraals, \$29,312 |
| - Milk Process, \$1191 | - Library Books, \$35,421 |
| - Library Furniture, \$3774 | - Lib.Theft Control, \$9759 |
| - VCR/TV, \$406 | - AV Equip., \$30,489 |
| - Print Services, \$24,810* | - Slaughter Room, \$906 |
| - AV Theatre, \$11,064 | |

- * the budget for Print Services, as of late 1990, includes activities of other components.

When rough estimates of funding for operating and capital costs, excluding personnel/TA costs and contingencies, were calculated for GOL, other donors and LAPIS during the 1989-90 fiscal year, the magnitude of outside support becomes clear. GOL contributed about US\$271,023; other donors about US\$134,455; and LAPIS about US\$415,112¹. In other words, outside funding exceeded local funding about two fold. This factor could be reduced by removing outside expenditures for unique costs such as: long-term training (averaging more than US\$100,000 annually), some consultancies and one-time infrastructure development efforts. Optimistically, the ratio could be balanced. The magnitude, comparatively less alarming than with other MOA institutions, still indicates a real dependency on foreign donor support for everyday operations.

A funding void after 1992, when LAPIS input ceases, is inevitable. The college must continue to attract outside money to avoid a decrease in the quality and extent of its activities. Any such decrease will threaten the long-term viability of progress made to date.

Unique Inputs

The unique inputs, in the case of LAC, are the students. In 1986, at the beginning of the project, TA staff met with class sizes less than 20. In 1990-91, certain class sizes approached 40 and certain joint courses were being taught to over 70 students. Given the already limited number of available and appropriately qualified teaching staff, this factor puts further stress on LAC's ability to provide students with high quality experiences. Each year the college is inundated with student applications and there is much public and private pressure to accept as many of them as possible. Student selection criteria need to be rigidly adhered to and student rolls need be kept manageable within the context of limited teaching resources (both staff and physical facilities). LAC administrators recognize this issue and beginning with the 1990-91 academic year have attempted to deal with the problem.

Stock Resources

Change Propensity

As an LAC administrator stated, "change in an institution where the objective is to induce change (educate) is inevitable". Since the institutions inception, LAC programs, curricula, facilities and staff have been in a constant state of flux. Recently, the basic charter and objectives of the college have undergone major changes. This was precipitated by the declining will of MOA to employ graduates at the rate of past years. LAC administrators agree that the LAPIS project has been instrumental in facilitating

¹ 1989-90 figures calculated by taking the percentage of the totals allocated to LAC only and dividing by 4.25 (August 1986 to October 1990, 4.25 years, the period the data were gathered for.

what is an historically large amount of positive change at the college. The project TAs who were interviewed agree, much has happened during their tenure.

Specifics as to the exact changes which took place at LAC since 1986 will be dealt with in a later section on **Programs**. Below are what were considered to be those factors which helped foster or impede the change processes:

Positive Factors

- Decision making at LAC is a systematic process which generally begins with the college's academic staff. Ideas concerning potential academic improvements are initiated at this level. These ideas are then passed to the college's Governing Council where, if approved, are submitted to the MOA's Permanent Secretary (PS) as the final authority. LAC management, by conscious design, is kept flexible so as to be open to innovation. This environment contributes to a feeling of shared ownership among staff pertaining to the programs of the college. The result is a greater affinity for successful change.
- The multi-disciplinary nature of the LAPIS AEC team, the levels of expertise and their effective integration into LAC; combined with the inherent environment at the college as described above; permitted LAC and project staff to work together effectively instituting project objectives.
- The multi-disciplinary nature of the LAPIS Project as a whole, with various teams of TAs representing research, training, production, crop and livestock disciplines, had positive influence on the varied programs at LAC.
- The return of graduates trained under LAPIS auspices favourably affected the environment at LAC to be better able to induce and cope with change.

Negative Factors

- The relatively slow acceptance of change by some graduates upon their return concerning innovations which took place at LAC during their absence.
- Insufficient GOL/MOA support since the early 1980s was/is a continuous source of frustration (see **Budget, Human Capital, Resource Mobilization, Linkages and Influence**).
- Staffing problems relating to numbers and qualifications was/is a perennial problem limiting program(s) effectiveness.
- Resentment and low motivation of staff due to low grades and salaries in comparison to their peers in other MOA divisions and other GOL ministries was/is a constant source of frustration.

- Uncertainty regarding the college's vs. the National University of Lesotho's (NUL) responsibilities concerning the two diploma level education programs and the evolution of the Bsc. program was/is a source of frustration which threatens to strain further an already limited budget, staff and facility.
- Frequent changes in the leadership at LAC and within other sections of the MOA disrupts the continuity of ongoing programs.
- Management skills requiring further development and lack of liaison among MOA administrators limit the potential of some LAC programs.

As was stated, LAC by its very nature is an institution of change. The last five years has seen change evolve quickly and with great depth. The potential to sustain the quality and pace of this evolution is there. Many of the strengths and weaknesses cited above, details of progress made and further needs are more completely detailed in the following sections.

Human Capital

In terms of overall staff numbers, the established positions at LAC have remained essentially constant since 1986 at about 157. In terms of lecturing staff only, at the beginning of the project there were 45 persons. In 1990 there were 51 lecturers. These numbers include LAC established staff, donor project staff, Peace Corps Volunteers, those seconded from other MOA divisions and those away training. At present there are twelve expatriate lecturing staff. The variation in these numbers can be accounted for by an increase in expatriate staff and those seconded from other MOA divisions. It is interesting to note that the 1990 LAC annual catalog listed 17 "visiting lecturers". This was not the case in 1986. This unaccounted for assistance came primarily from ARD, but also the MOA's Nutrition Division and NUL staff (see a later section on **Linkages**).

Because of the limited size of the college's establishment list it has historically been necessary for some lecturing staff to be seconded from other MOA divisions. During the life of the project there have been ten cases of this. At present there are seven. Three animal science lecturers were recently taken back after spending between one and two years. These individuals were replaced by one other. Concerning the Agronomy Department, since the inception of LAPIS, three members of staff have been seconded. At present these individuals represent three of the four staff members in residence. There is some question concerning their continued tenure at LAC and the administration is negotiating with the Crops Department to resolve this issue. As pertains to the Forestry Department, three of seven staff members presently teaching are seconded. These factors, in the past not viewed with considerable alarm by LAC administrators, are increasingly being seen as potential threats to the quality and sustainability of the recently improved academic programs.

The tables below depict trends in the educational qualifications of the academic staff since 1986 and the LAPIS contribution to this:

Table 1. Numbers and levels of training of academic staff.
(Numbers in brackets represent expatriate staff)

<u>Type of Degree</u>	<u>8/86</u>	<u>3/91</u>	<u>Still Studying</u>
PhD.	0(3)	1(3)	0
Msc.	3(6)	7(6)	1
Bsc./BA.	8(1)	11(3)	3
Dip./Cert.	24	16	0

Table 2. LAPIS sponsored degree training.
(note: an additional MSC. candidate is deceased)

<u>Type of Degree</u>	<u>University</u>	<u>Completion</u>
1. MSc. Irrigation	S. Dakota State	Feb. 1991
2. Msc. Agronomy	Arizona	Dec. 1988
3. MSc. Home Econ.	Iowa State	Aug. 1988
4. MSc. Ag. Econ.	Idaho	Aug. 1988
5. BSc. Horticulture	Cal.Poly.	June 1991
6. BSc. Home Econ.	Michigan State	March 1991
7. BSc. Ag. Engin.	Cal.Poly.	June 1990
8. BSc. Animal Sci.	Cal.Poly.	June 1990*
9. BSc. Animal Sci.	Arizona	May 1990
10. BSc. Ext. Educ.	New Mexico	May 1990
11. BSc. Animal Sci.	Cal.Poly.	June 1990

* returning June 1991, with self-initiated MSc.

Donor support of degree training has been substantial over the term of the project. LAPIS was the main vector of this support.

The project sponsored eleven individuals (8M/3Fm); four at Msc. and seven at BSc. levels. Also, two other individuals secured funding for their MSc. degrees from the Canadian and Australian governments and at present two others are processing final papers with FAO for their initiation of BSc. and MSc. degrees. During the length of the project three individuals left the college for positions elsewhere, one had a MSc. and two had their BSc. degrees.

It is interesting to note that the original LAPIS Project plan set a quota of 7 degree trainees from LAC; the actual figure is much higher at 11. In the short run this puts great pressure on the remaining staff to compensate for their loss while away studying; in the long run (at present and in the near future) the beneficial effects of having a greater percentage of degree level teaching staff should be reflected by an improved standard of teaching and improved management of the institution's programs.

Aside from degree-level training, the project's main input to LAC's human capital has been the provision of long-term TA specialists. This TA served two purposes - as a provision for technology transfer via counterpart relationships and as backup for the gaps left while local staff were away studying. The TA effort (through May 1991) can be broken down as follows:

- Team Leader, 51 person months
- Irrigation/Ag. Engineer, 45 person months
- Animal Science Specialist, 57 person months
- Horticulture Specialist, 58 person months
- Agronomist/Soils Specialist, 36 person months
- Operations Management Specialist, 34 person months
- Extension Education Specialist, 58 person months

This effort comprised 28.2 person years, 10.2 in excess of the amount stipulated in the original project paper. It was agreed that this extra level of TA was essential to the ultimate success of many programs, though LAC administrators expressed their regret that the individuals did not have sufficient overlap with returning graduates; they felt the TA would have been more effective had this been the case.

In addition to long-term TA, there was a considerable amount of project sponsored "local-hire" assistance. Discounting secretarial support and occasional labourers, this effort of TA amounted to 303 person months. Based on the original project document, this is twelve times more than was initially intended. Ten individuals served for varying periods of time as basic sciences, animal science, veterinary science, and sociology lecturers; computer operation specialists, special programs bookkeeper, A-V materials specialist, and an ag. engineering technician. Their assistance was also viewed as invaluable to successes achieved, though LAC administrators expressed great concern that the ultimate loss of these individuals will seriously hamper the institution's ability to carry out established programs as effectively. They doubted the ability of MOA to absorb many of these individuals into the establishment. To date, only two labourers have been absorbed. Three others turned down employment because they could not accept LAC's lower pay scale.

LAC administrators and project staff expressed the same perception concerning the greatest problem affecting human capital. They all felt that there remained an insufficient number of supervisors to tend to the SEPs (a project initiated curriculum activity). The greatest pressure was felt in the realm of livestock husbandry, though crop production enterprises were also constrained. The intensity of supervision required, the large number of students needing this assistance and the few numbers of staff available for these purposes are major issues. Efforts are presently underway to solicit assistance from appropriately experienced staff in other MOA divisions. This is a short-term solution, given the long-term needs for additional, full-time, permanent staff.

Physical Capital

Physically, LAC is divided into two campuses; the main campus in Maseru, the capital, offering the five diploma programs and a satellite campus in Leribe, to the north, offering the two certificate programs. In 1986, LAC encompassed a 300 acre farm (shared with the MOA Agricultural Research Division- ARD) in Maseru, a small working farm in Leribe, student vegetable and fruit gardens, laboratories, classrooms, workshops, offices, libraries, dormitories, and refectory facilities. At the beginning of LAPIS many aspects of both campuses needed upgrading. Project resources were not infinite and through negotiation it was decided that the Maseru campus would receive the bulk of available support.

LAPIS Project infrastructural support comprised:

- An extensive irrigation system for the LAC/ARD farm (in collaboration with the ARC).
- A furnished classroom and office complex for the department involved with socio-economic and education studies.
- A produce marketing centre for SEP and LAC products including a 14 cubic meter storage cooler.
- A 96 sq. meter temperature controlled fibreglass greenhouse and 225 sq. meter shade area.
- A 110 seat audio-visual theatre equipped with three projection screens, two overhead projectors, two slide projectors, three filmstrip projectors, a PA/recording system, TV, VCR, Camcorder and an extensive supply of viewing materials procured locally and internationally. (SEE APPENDIX FOR DETAILED LIST)
- A cafe/bookstore used for sale of LAC/SEP produce, lecture notes and general supplies to students and the public.
- An addition to the refectory for 80 students.
- Renovations to the library including a security system and over 1000 volumes of books.
- A staff lounge for informal gatherings and committee meetings.
- Office renovations and furniture for the Director of Studies and Student File Office.
- Computer laboratory for LAC records, six computers, five printers and extensive software.

- 1300 sq.meter fenced parking area for securing LAC vehicles.
- Renovations to the college vegetable farm including fencing and the establishment of a small vineyard and irrigation system.
- Replanting of the college orchard including fencing and the installation of a microjet irrigation system.
- Construction of a pasture demonstration area, w/fence.
- Renovations at the "Lesotho Village", an appropriate technology demonstration area.
- Construction of an SEP livestock complex including appropriate, small scale production facilities for dairy, broilers, layers, pigs, beef, lamb and Angora rabbits.
- Livestock slaughter room.
- Two bull pens.
- Two copy machines and three portable typewriters.
- Various office equipment, furniture and classroom desks (150).
- Chemistry/Soils Laboratory equipment.
- A knitting machine for the Home Economics Department.
- Multiple copies of LAC/AEC produced "Lecture Notes" and catalogues.
- Security devices for various offices and laboratories.
- Storage shed for farm implements and machinery (Leribe).
- Small greenhouse (Leribe).
- Renovations and expansion of the refectory (Leribe).
- Renovations to classrooms (Leribe).
- Renovations and fencing of the orchard and construction of a spillway at the orchard reservoir (Leribe).

In addition, LAC's inventory of agricultural equipment and implements improved markedly under LAPIS with the addition of a farm tractor, two walking tractors, and various hand tools for the agronomy and engineering departments. The project also purchased various livestock for both campuses. LAC's fleet of vehicles expanded

substantially. The project provided: a 4-ton truck, a 30 seat bus, a 16 seat van, two 4x4 trucks, three 2x4 trucks, a sedan and a Landcruiser (which was stolen soon into the project and never recovered).

Other types of physical capital which the project helped to acquire may be considered to have a higher technological value (computers, books and journals, audio-visual equipment, etc.) and will be further dealt with in the following section on **Technology Acquisition**.

Intermediate Products

Leadership

There are no concerns pertaining to leadership emanating externally from the Deputy Permanent Secretaries (DPS) office, the next step in the management tier. Of the internal leadership which was critiqued, three aspects were reviewed - that of the Principal and Director of Studies, that of the Department Heads, and that of LAPIS staff.

During the life of the project there have been four different Principals. This was believed to be mildly disruptive to project implementation. One would guess that this would be the case, yet it is interesting to note that this disruption was perceived as only slight. The loss of the original Principal, Mr. M. Motsoene, was viewed as probably having the greatest negative impact. He played a major part in the original conception and design of the project, was present for the first years of implementation and can be credited with facilitating its initial successful integration. He left the college to fill the position of Director of the DFS, an influential posting. He maintained his status on the college's Governing Council and continued to play an important role in its operations while with the DFS.

Criticism of the present administration is relatively slight. The Principal's "too patient" management style and the Director of Studies "too rigid" management style are factors. As could be expected, occasional conflict will arise under these circumstances.

Critiquing the leadership provided by Department Heads, there seems to be a general lack of confidence in decision making. Contributing to this is the fact that these individuals, the Principal and Director of Studies do not meet regularly and there is too little liaison or monitoring of activities taking place.

Criticism of LAPIS activities concerns the fact that the AEC Teamleader served as counterpart to the Principal when in fact it would have been more rational to have him coupled with the Director of Studies. The reasoning behind this reflects the perception that there was in a sense two separate administrations functioning, one for LAPIS TA staff reporting via their Teamleader to the Principal and one for LAC staff reporting via the Director of Studies. This apparently caused some contention and confusion in the ranks.

The leadership situation has greatly improved over the course of the project. Much of this progress was attributed to LAPIS support in several areas:

- Historically, a good counterpart relationship existed between the Principal and the AEC Teamleader. Joint decision making concerning college and project management was effective;
- Similar relationships were realized between LAC Department Heads and LAPIS TA staff at a more micro management and operations or program level.
- Long-term degree training probably had the greatest effect on improved leadership ability according to those interviewed. Those graduates who returned and took up Department Head posts for the most part have done so with clarity.
- Short-term training has also apparently had an effect. Two types were mentioned: those activities which enabled LAC staff to visit other institutions outside the country, deliver academic papers and mix with their peers, and those short courses which were designed specifically to impart management skills.

A few issues can be identified as important to sustaining and further developing these newly acquired leadership abilities:

- The need to minimize the frequency of change in the Principal's post.
- The need to upgrade staff posts commensurate with educational backgrounds and experience relative to peers in other MOA divisions and sections of the GOL.
- The need to increase administrative and managerial training for appropriate staff.
- The need to ensure effective incorporation of returning graduates into leadership roles.
- The need to obtain permanent LAC positions for key staff (vs. secondment).

Internal Structure

The college's position in the internal structure of the MOA was remarkably free of ambiguities in 1986 and continues likewise today. LAC acts as a division of MOA central administration and the Principal reports directly to the DPS. The internal structure of LAC follows suit, the structure is now as it was at the beginning of the project. It functions well.

P.S.

D.P.S.

PRINCIPAL

DIRECTOR OF STUDIES (Maseru)		ADMINISTRATIVE STAFF (Maseru)	DIRECTOR OF STUDIES (Leribe)		
FARM MANAGER	DEPARTMENT HEADS		DEPT HEAD	FARM MANAGER	ADMIN STAFF
STAFF	STAFF		STAFF	STAFF	

The internal structure of LAC also makes good use of committees for management purposes. One new committees and one new board were formed during the time of LAPIS and several were given new life according to those interviewed.

- The College Governing Council: The DPS and Principal are permanent members, eight other senior MOA staff (generally Dept. Heads) are elected for three to five year terms. The council deals with major policy initiatives. LAPIS, by design, had no direct input into these activities. The council continues to functions well.
- The Academic Board: Chaired by the Principal and made up of the Director of Studies(2) and Department Heads, the group shapes rules, regulations, curriculum and oversees academic reports. It existed prior to the project but was apparently made more dynamic by LAPIS TA staff input, selected individuals of which participated in the meetings. These dynamics are expected to be sustained.
- The Curriculum Development Committee: Essentially the same make-up as the above and in existence prior to LAPIS, it deals with curriculum review, changes, sequencing, course descriptions and SEPs. LAPIS is said to have played an identical role as in the above committee. The dynamics are also expected to be sustained.
- The Farm Policy Committee: Made up of members from the farm staff and of the agronomy, livestock and ag. engineering departments; in existence prior to LAPIS, it deals with procedural matters concerning farm use and operations. LAPIS input was moderate. Farm production has increased due to project inputs (equipment and buildings) it is believed, but concern was expressed over the sustained operation and maintenance of the fairly sophisticated project supplied irrigation system (to be further addressed under the section on **Technology Acquisition**). This committee's work will continue.
- Student Enterprise Committee: Made up of the Director of Studies, SEP Coordinator, SEP supervisors and one SEP student, was originated by LAPIS in 1986. Project TA staff played a key role in its initial set-up and continuing

functions. The committee sets policy dealing with SEPs, approves new equipment purchases, sets LAC facilities use charges, oversees the supervision of the various SEP ventures and serves as a forum for SEP inservice training of staff. The perceptions are that the committee is fully institutionalized and that sustainability of its activities is assured.

- Board of Trustees for the SEP Trust Fund: Made up of the Director of the Department of Field Services, the Principal and SEP Coordinator and representatives of NUL and the Lesotho Agriculture Development Bank (LADB); the board oversees management of the USAID/LAPIS supplied monies (US\$65,000) creating the SEP Trust Fund. The LAPIS AEC Teamleader is presently an unofficial member. The board is institutionalized.

The internal management structure of LAC, as was stated, has changed very little since 1986; personalities may have changed but the structure did not. One new committee and one new board were added, both to facilitate the new SEP program. Few constraints to the efficiency of the present structure could be identified. The only one being that there is a need, given the vast amount of innovation the college has seen since 1986, for new Terms of Reference to be drawn for many LAC staff so as to avoid any potential confusion in the future. The quality and pace of the work flowing through the system has improved during the tenure of LAPIS.

Doctrine

The new doctrine of LAC, which began to evolve in the early 1980s, has actually been realized only in the past five years. As has been stated, the MOA was cutting back on numbers of new personnel and LAC graduates who historically had been picked up by MOA no longer had this "guaranteed" option. LAC, in response to this, took a hard look at its charter (doctrine) and came up with a new strategy better suited to the times.

This new doctrine can be broken down into "formal education programs" and "non-formal education activities":

Formal Education Programs - Two main thrusts were defined; one dealing with the need of the country for secondary school teachers of agriculture and home economic sciences, and one dealing with the need of the country for private sector and self-employed entrepreneurs. LAC's response to these factors was the origination of two diploma level education programs in general agriculture and home economics at LAC in 1987 (taken over from NUL) and the adaption in the same year of the two year diploma in general agriculture program to a three year curricula which included a third year of SEP experience. LAPIS played a major role in the evolution of both innovations, particularly concerning the SEPs.

Non-Formal Education Activities - This aspect of LAC's doctrine has evolved gradually over the past five years and was strongly supported by LAPIS project activity both at LAC and elsewhere in the MOA. Extensive short-term training activities were facilitated by LAPIS for an array of MOA personnel and farmers and much of the coordination

of these programs emanated from the AEC's work with LAC staff. LAC/AEC activities in this realm and also at AIS, at FTCs, at ARD, within the DFS, and with local community schools have all influenced the adoption of this new doctrine. The Department of Socio-economic and Education Studies at the college is the clearing house for this work. LAC/AEC played a key role in the origination of the Training/Communications Coordination Committee (T/CCC), a committee recently institutionalized by the MOA to provide leadership to non-formal education and communication media coordination. A proposal was recently launched by this committee for the construction at LAC of a Continuing Education Centre designed to enable the MOA to institutionalize what LAC has already accepted as their mandate.

It should be noted that the BSc.Faculty, which is slated to become part of the college's portfolio in September 1991 and of which the preliminary stages for its development are nearly complete, will cause a further evolution of the college's doctrine. The forecasted changes will probably include the mandate to supply mid and upper level management expertise to the public and private sector (graduates with BSc.degrees). The BSc.program's initial curriculum looks to include SEP activities and the initial faculty design looks to include research and extension activities. If this is the case, the BSc. Faculty should compliment the present mandate of LAC as defined above.

Linkages

Linkages provide a vital, two-way flow of information required to inform the college of what the community's needs are. It is the role of LAC to assist in meeting these needs. Linkages also help provide LAC with a source of support which assists them fulfil these needs when they find themselves lacking the required resources. Looking back to 1986 and comparing the extent of the institution's linkages then, as to what they are now, LAPIS was credited with much of the extensive progress that has been made.

Without exception, the most improved linkage is with the ARD. LAPIS is viewed, because of the nature of the project's design where by components supported each LAC and ARD, as being instrumental in facilitating this bond. ARD and LAC (MOA and LAPIS) staff cooperated on joint research projects, teaching responsibilities (both formal and non-formal), work of the T/CCC and a sharing of irrigation, farm equipment and buildings. ARD staff's assistance to LAC academic programs is in fact mandatory to its successful completion on a semester by semester basis. This level of cooperation, as indicated by those interviewed, is expected to continue after the project's end.

"Extensive progress" is how it can be termed. Because of the pervasive nature of LAPIS activity at LAC and elsewhere, extensive linkages were formed within the public and private sectors of Lesotho, within the southern African region and internationally. Because most of these links were formed jointly by LAC/MOA staff, LAPIS staff and those parties concerned, for the most part the linkages are expected to be maintained. The one exception may be those with RSA suppliers of livestock for the

SEP programs. It was noted by an LAC administrator that the LAPIS staff have a much easier time gaining the attention of these individuals and that the LAC/MOA staff are all too frequently not given the attention they deserve.

It is not the intention of this report to insinuate that it is perceived that all linkages that LAC has built were precipitated by LAPIS influence. Links with NUL and with various institutions in the Ministry of Education (MOE) were matured with the influence of the RSTTP (Dutch project in support of the two education programs). Links with the MOA's Department of Conservation, Forestry and Land Use Planning, with certain District Agriculture Offices (DAO) and with certain rural villages in Lesotho were facilitated with the influence of the long-term FAO supported forestry education projects. And important regional linkages have been formed at the MOA's initiation via SADCC. Four LAC Department Heads sit on four SADCC management committees for regional planning concerning crop, livestock, nutrition and economic issues.

The following institutions are those which the LAPIS project had some degree of influence in establishing supportive linkages with:

- ARD (research, teaching, T/CCC, facilities)
- NUL (academic policy, educ. programs, BSc.Faculty proposal)
- MOE (education programs)
- AIS (AEC objectives, teaching, T/CCC)
- Department of Livestock Services (DLS) - (teaching, vet. services, facilities, SEPs)
- Nutrition Division (teaching, training)
- FTCs (training)
- DAOs (training, T/CCC, SEPs)
- DFS (training, T/CCC, DAOs, AIS, FTCs, ARD, Nutrition Division)
- National Feedlot and Abattoir Complex (NAFC) - (SEPs)
- Ministry of Health (training)
- Banks; LADB, Lesotho Bank, Les.Bldg.Finance - (SEPs & Trust)
- Basotho Cannery (SEPs, teaching)
- Lesotho Flour Mills, COOP Lesotho, Garden Centre, Agri-Vet, etc. (input supply)
- Lesotho and RSA farmers (input supply, livestock for SEPs)
- University of Bophuthatswana's Ag. College (professional exchange)
- Swaziland Ag. College (professional exchange)
- Botswana Ag. College (professional exchange)
- Various other east and southern African colleges (SEP program)
- South Dakota State University (sister college)
- University of Arizona
- Michigan State University

Technology Acquisition

Concerning managerial technology, those advances which have taken place since 1986 are essentially covered in the previous sections on **Leadership and Internal Structure**. To recap, the internal management structure of LAC was well established prior to the project. The professional union of LAC and LAPIS TA staff and the good

working relationships of the past five years have apparently precipitated what is perceived as a better managed system. The progress made by the various LAC management committees over the past five years and the expressed feelings that these functions are now carried out more efficiently attest to this. Leadership has improved at the college, as was previously mentioned and perceptions are that the long and short-term training provided by the project was a contributing factor.

What has not been mentioned is that the computerization of the college records, a tremendous task initiated by the project in 1986, has improved the efficiency of this managerial function considerably. Student records, college accounts, SEP data and the college's annual catalog are now stored and retained cleanly and with ease. Extensive training which was provided for applicable administrative staff on the operation and maintenance of the new system ensures its sustainability.

The major achievement to be cited in the realm of substantive technology acquisition is the number of staff receiving long-term degree and short-term training. Details of the degree-level training can be found in a previous section on **Human Capital**.

Concerning project sponsored short-term training: 175 LAC staff (55%M-45%Fm) since 1986 received training in areas such as teaching methodology, institutional management, computer systems operation, technical fields or attended local, regional or international study tours/conferences. Individuals may have been trained (counted) more than once. Concerning short-term training by other donors, the contribution has been minimal with SADCC, the Italian government and now the Finnish government being the principal benefactors.

Other major forms of substantive technology are important to the development of LAC, the bulk were supplied by LAPIS, some by other donors. They are:

- Computerization: Six computers, five printers, software and staff training provided by LAPIS; Three computers, printer provided by RSTTP and FAO. Prior to 1986 computers were non-existent. Now, most administrative work and record keeping is computerized.
- Library Renovation: LAPIS supplied over 1000 books, cataloguing hardware, and theft control devices worth over US\$50,000. In 1986 there was but a skeleton of a library, now there is a reasonable structure.
- The creation of nineteen published "Lecture Notes" covering most of the LAC curriculum. These materials are used to support classwork and some program's operations. Prior to the project, LAC was lacking reference materials to support students' instruction, now well developed materials specifically designed to support lectures exist (see appendix for detailed list).
- Audio-Visual Equipment: LAPIS supplied the equipment to outfit the theatre which was constructed in 1987. Video, slide, film, overhead, and public address equipment were provided. Instructional materials designed to support the various subjects taught at the college were procured from appropriate

sources (see appendix for detailed list). A photo-copy machine was supplied by the project and another was jointly purchased by LAPIS and RSTTP.

- Irrigation System: An extensive irrigation system (cost exceeding US\$100,000) was installed by the project on the LAC/ARD farm. It is a relatively high-tech system for the country and can efficiently supply water throughout a relatively complex set of fields.

Defining substantive technological hardware and distinguishing the material which fall under its heading, as opposed to other materials which would not (that listed under **Physical Capital**), is somewhat of an academic exercise in semantics. The authors of this report have had to exercise their own judgement in deciding where best to draw the line. The examples above reflect this. One comment by an LAC administrator brings meaning to this issue and reminds us of the ever relevant question concerning, which technologies are appropriate? It was stated in an interview, that prior to LAPIS much of the technology concerning agricultural implements which LAC could obtain was generally of the more advanced type. LAPIS introduced a level of technology (small walking tractors, hand seeders and cultivators, etc.) which was apparently more appropriate to the college's uses.

The other mode of technology acquisition to be mentioned is that of the project's support for short-term consultancy expertise. There have been eight examples of this as of the time of this writing:

- Dr. F. Bobbitt, Michigan State University; one month, 1987, 1988 and 1991 - Extension management training, AEC short-term training plan assistance, training evaluation, instructional methodology and team building.
- Ms. B. Robinson, VOCA volunteer, University of Arizona; two months, 1987 - Home Economic curriculum design, Training assistance.
- Mr. C. Tibbits, VOCA volunteer; two months, 1987 - Farm management strengthening and curriculum design.
- Drs. T. Box, D. Dwyer, J. Jacobs; Utah State, New Mexico State, Wyoming Universities; two weeks, 1988 - Appraisal study for proposal for origination of BSc. Faculty program at LAC.
- Ms. D. Ives, California Polytechnic Institute, Kellogg Foundation; one week, 1989 - Appraisal study for origination of SEP Trust Fund.
- Dr. A. Christensen, California State Polytechnique Institute; one week, 1989 - SEP program assessment, SEP Symposium keynote speaker.

LAC administrators identified four types of problems affecting the sustainability or continued acquisition of these new technologies. They are:

- The anticipated difficulty LAC will have meeting maintenance, depreciation and eventual replacement costs for computers, A-V equipment, photo-copiers, the irrigation system, vehicles, etc.
- The historical problem with theft of equipment and materials (the perceptions were that the project had done all it could to address this issue by providing outdoor lighting and burglar proofing on windows - it was up to MOA to supply additional guards).
- The anticipated difficulties LAC will have in identifying opportunities for continued training of staff.
- And in general terms, a universal constraint is felt by the limited availability of funds (see **Budget**). This has bearing on the three issues cited above.

Resource Mobilization

Resource mobilization remains a concern, both in terms of money (see **Budget**) and staff (see **Human Capital**). While LAC has not been totally successful to date in increasing its budget or manpower allocations from GOL, the institution's improved leadership and programming capability may lead to some progress along these lines in the future. This optimistic note stems from the fact that LAC did recently secure one new position, grade increases for five staff and a few new labourer positions. Time will tell as LAC is presently fighting a battle to get all BSc.holders advanced two grades. The GOL's austerity or structural adjustment program presently in effect will not make this task any easier.

In terms of donor funding, the future is questionable. FAO/FINIDA has pledged continued support to the forestry education program until 1994; LAPIS, in a very reduced state (one or two TA staff), will complete in 1992; and the RSTTP is scheduled to end in 1991. The potential near advent of the BSc.Faculty may serve to attract donor support (or at least increased GOL funding). The financial horizon for LAC under these limited circumstances looks constrained. One LAC administrator expressed the hope that the SEP program might serve to attract additional funds. The belief is that the program's basic objective of training potential entrepreneurs for private sector or self employment is in line with many foreign donors' views.

There is a real shortage of staff to fill SEP supervisory positions and even if filled, that overall grade levels at LAC are inequitable. Pressures on LAC staff are mounting as LAPIS winds down and TA staff depart. In theory, the returned graduates are there to take over. In some cases this is working, in others it is not. The Animal Sciences, Agronomy and Ag. Engineering Departments are hardest hit. One graduate has not returned as planned; one key person who did is leaving again, this time for MSc.studies; and two who returned are having difficulty accepting the changes which have taken place.

Historically, many lecturing staff at LAC have been seconded from other MOA divisions (see **Human Capital**). A drive is presently underway to drum up additional support within the MOA to assist in alleviating the staffing constraints at LAC especially as concerns the SEP program.

Staff retention has not been a critical issue to date, but three staff members have left the college since 1985. It is felt that the threat of attrition was always there but that it is not a great concern at present because staff morale is up due to recent grade increases. The pending advent of the BSc. Faculty and the potential for some LAC staff to receive not only a higher salary but a more prestigious position also helps to reduce concern. LAPIS was credited with helping along these lines by providing degree training and infrastructural support to LAC, both of which assist in creating a more professionally satisfying environment - insurance against staff attrition.

Outputs

Current Services

In the case of current services LAC's output can be broken down into three areas - formal education programs, non-formal education activities and general support services.

Formal Education Programs: Prior to the 1987/88 school year at LAC there were five academic programs at the college - three certificate programs in Agriculture Mechanization (CIAM-2 year), Home Economics (CHE-2 year) and General Agriculture (CIA-3 year); and two, two year diploma programs in Forestry (DIF) and General Agriculture (DIA). At the beginning of this year LAPIS assisted the college in changing the DIA program and such that it would require three years to complete and upgrading the CHE to a three year diploma program (DHE). One option students then had was to spend this extra time with the SEP program. The program (DIA and DHE) was the LAC/LAPIS answer to the country's need for private sector entrepreneurs. Another option students had was to involve themselves with education studies, either in Home Economics (DHEE) or General Agriculture (DIAE). The third year of these two programs was initially taught at the NUL campus but moved to LAC in 1988/89 with the advent of the RSTTP project. These programs were LAC's answer to the country's need for secondary teachers of agriculture science. In 1987, with FAO assistance, a review was completed of what was then the DIF program; it was concluded that it too should be changed. The program was subsequently redesigned to include a resource conservation emphasis, was renamed the DFRC program and expanded from two to three years. As these changes were evolving the BSc. Faculty proposal was rejuvenated. It now looks as if the program may get underway in September 1991. With the pending advent of the Faculty, it was decided in 1989 that both certificate programs should be located at the Leribe campus. The CIAM program was subsequently moved for the 1989/90 school year.

The trends in student enrolment since 1986 for these various programs, student enrolment in the SEP program, areas of specialization and a summary of the amounts

borrowed by students to support their enterprises are depicted below:

PROGRAM	1986	1987	1988	1989	1990
CIA	26/23	21/17	33/23	18	18
CIAM	13/12	10/9	8/8	13	12
DIA	15/13	20/17	19/18	23	36
DIAEE	12/11	21/20	24/20	11	*undecided
DHE	5/5	6/2	5/3	5	19
DHEEE	12/11	17/16	17/17	17	*undecided
	1985	1987	1988	1990	
DFRC	13/12	15/12	23/20	20	

* future NUL DIAE program support is uncertain

Year	No. Students	Livestock	Crops	Home Ec.
1987/88	5	4	1	0
1988/89	18	10	4	4
1989/90	19	12	5	2
1990/91	21*	13	6	3

* two students take two projects

Year	Students	Borrowed	Repaid	Int. Rate	Student Profile
1987/88	5	M.49,654	M.61,329	12%	M.10,172
1988/89	18	M.108,682	M.148,426	12%	M.34,168
1989/90	19	M.159,130	M.213,052	15%	M.60,804
1990/91	21	not yet available		18%	not yet avail.

In early 1990 a study, now institutionalized at LAC, was initiated surveying students who had graduated between 1987 and 1989. A mail out questionnaire was sent to these 158 former students. As of this writing, 98 (or 62%) (49M/49Fm) had responded. Below is a brief summary of the preliminary results:

- 53% are age 20-25; 37% are 26-30; 10% are over 30.
- All districts are represented; Maseru = 46%, Berea = 11%
- 72% have diplomas, 28% have certificates.
- 30% CIA, 14% DIAE, 16% DFRC, 14% DIA, 12% CIAM, 7% DHEE, 3% DHE, 3% CHE.
- 82% are employed.
- 97% of these are employed in an agricultural discipline.
- 83% work for GOL, 17% privately (90% response).
- Job satisfaction: 17% very satisfied, 76% somewhat satisfied, 12% not satisfied.
- 84% felt instruction at LAC in agronomy was excellent or good (97% response).
- 74% felt the same about animal science (70% response).
- 46% felt the same about ag.engineering (78% response).
- 71% felt the same about forestry (68% response).
- 87% felt the same about socio-economic studies (86% response).
- 92% felt the same way about home economics (100% response from HE students).
- 94% felt the same way about SEPs (94% response from SEP students).

Non-Formal Education Activities: Prior to the advent of LAPIS project assistance at LAC, non-formal education activities had been minimal. Besides the ongoing internship programs for CIA, CIAM, DHE and DIF students not much else was happening. Today these type of programs have been expanded; those mentioned continue, and additional programs have been developed for DIA, DHE, DIAE and DHEE students which involve assisting community schools with their agricultural and home economic programs. LAPIS had an effect on the development of the DIA and DHE internship programs. They are considered by LAC administrators to be very important to the community given the recent phase out of what was a long-term public school student feeding project. An additional activity affecting students concerns the Supervised Occupational Experience (SOE) program initiated by LAPIS. This program, which is conducted every summer and winter break, provides students with paid work experiences at LAC and ARD.

Another example of non-formal education activities at LAC which has evolved in the past few years concerns ad hoc participation by lecturing staff as instructors in various training workshops, symposiums, conferences, etc. The frequency of these activities has increased in recent years with the corresponding return of the degree graduates. In a sense LAC staff are now viewed as a pool of potential consultants. Their involvement takes place locally and regionally. Examples of these endeavors include: symposiums at regional colleges; conferences organized by SADCC, local banks, foreign donors, etc.; and workshops for various public and private sector groups. (see section on **Linkages**)

Involvement of LAC staff in the initiation, planning and implementation of various short-term workshops for the public and private sector has become a major activity in itself. The reader should refer back to the previous section on **Doctrine** for further reference to this issue. It should suffice to say at this point that the AEC of LAPIS had a broad mandate which included a considerable amount of non-formal education activities. To achieve these objectives the AEC worked closely with LAC staff. Hence, the evolution of a much stronger non-formal education doctrine at LAC was born. To date the project has provided training to: 404 extension agents, 466 subject matter specialists, 769 MOA headquarters staff, 1159 farmers, 70 extra-curricular students and 1956 various other types of individuals (predominantly "Herdboys") (3767M/1057Fm). Individuals may have been trained (counted) more than once. Much of this training was coordinated out of LAC and/or used LAC facilities.

Two associated issues, more micro in their focus on LAC, both affect the college's Department of Socio-Economic and Education Studies. This department houses the extension education branch of the college (and the project) and is the chief designer/implementer of non-formal education activities. Counterpart members of this department were instrumental in the origination of the four member MOA Training/Communication Coordination Committee (T/CCC) which works to provide inservice training to extension staff on a sustained basis and provide overall communications coordination to the various MOA divisions and district offices. A second and related issue concerns a proposal which the T/CCC recently put forward to the MOA for potential funding and construction of a Continuing Education Center at LAC. If this goes through successfully, it will enable the MOA to mount non-formal education activities more efficiently and more fully institutionalize this function at LAC.

General Support Services: this final category of current services comprises two activities - supplying the community at large with
1) informational materials and 2) farm produce.

The first activity involves services offered by the LAC library, publications produced by LAC/AEC and use of the audio-visual theatre. Prior to the project the library was ill equipped and its services dysfunctional for the most part. LAPIS helped to rejuvenate it by supplying over 1000 volumes of new books, procured volumes of various journals, provided an updated means of cataloguing by computer, provided theft control devices, and trained the library staff. Another mechanism for information dissemination which the project had great impact on was the production of various publications. Prior to the project there were few materials produced. The list below reflects the extent of change in this. (SEE APPENDIX FOR DETAILED LIST)

- LAC/AEC Administrative Materials; annual catalogs(4), staff handbook, information outlines(2).

- Lecture Notes; nineteen texts to support instruction in agronomy, horticulture, animal science, soil and water, nutrition, social sciences, education and SEP related subjects.
- Reports; fourteen technical and administrative reports.
- Extension Circulars; thirteen publications directly attributable to LAC/AEC staff on irrigation and horticulture related subjects - another nineteen publications attributable to various instructors of LAC/AEC induced short-term training activities on nutrition, livestock, and horticulture related subjects.
- Workshop Proceedings; twenty proceedings of LAC/AEC induced short-term training workshops from 1986 to 1990.
- Training Manuals; eight manuals produced for instructional support of LAC/AEC induced short-term training workshops.
- Video Documentaries; four documentaries, three of major LAC/AEC induced short-term training efforts and one on LAC.

The audio-visual theatre was nonexistent in 1986, the project gutted an old storage building and constructed a 110 seat theatre in early 1988. Once completed it was equipped with video, film, slide, public-address and overhead projection equipment. Appropriate teaching materials were then procured from world-wide sources (see appendix for detailed list). This was done to support efforts at upgrading the calibre of instruction at the college. The theatre has served to do just that, but also plays a similarly important role for the general public. The facility is in constant demand.

The second activity involves the services offered by the LAC farm. This is not a historically new activity; in 1986 it was evident that the college had always played an important role in supplying neighbouring communities with meat, milk and vegetables. These activities have continued and expanded. The project instigated SEP program generates a wide variety of produce and the penchant of the public to buy direct has made for a self-supporting relationship between student and buyer. Project related improvements to the more general activities of the farm have also contributed to an increased supply of produce. The project provided funds for the construction of a café/bookstore and marketing center which help facilitate these activities.

SUMMARY AND CONCLUSIONS

This analysis indicates that the institutional capability of LAC grew solidly over the term of the project and that LAPIS project AEC support was instrumental in facilitating this. However there are perceived impediments to both sustainability of some recently induced activities and to the continuation of the dynamics which allow LAC to remain responsive to the changing agricultural education needs of the country.

Progress Through the Term

Prior to 1986, LAC had an established management system which was operating relatively efficiently and since 1980 the program offerings had become increasingly more sophisticated. Yet since 1980 the college had been feeling progressive budgetary pressures concerning personnel, operating and maintenance costs. And since 1980 it was apparent that the numbers and education levels of lecturing staff and the limitations of the physical infrastructure were causing a strain on the institutions capability to cope. Simultaneously, the basic charter of LAC was under fire as MOA, the historical employer of most graduates, was phasing out this concession. The college was clearly aware of how it needed to change, ie. train for the needs of secondary schools and for private sector and self-employment. As of 1986 LAC had not been able to make much headway in implementing these fundamental changes given the previously mentioned constraints.

Since 1986, the institution has changed considerably. The new charter, as mentioned above, has been successfully implemented. Major curriculum revisions facilitated this. Additional outside funding was attracted to offset the MOA's limited contribution. This funding enabled LAC to renovate and expand its physical infrastructure and to acquire much needed training (degree and short-term) for staff.

Institutional capabilities have improved in several areas. With increased training and experience, the level of leadership has improved and the college's ability to program operations has benefitted from this. Important linkages with other MOA, GOL, public/private sector institutions and individuals have expanded extensively, especially with the ARD. These links keep LAC aware of community activities and secure support for ongoing college programs. The college is rapidly acquiring the managerial and substantive technology it needs to maintain its present dynamics and has met with some minor success in mobilizing financial and human resources to meet its needs.

The services the college offers the community have expanded. Curriculum changes have resulted in graduates being more ably equipped to meet the need for teachers of secondary schools and to meet the need of the country for an expanded private sector. As concerns non-formal education, the college lecturing staff now play a major role in providing services and leadership pertaining to continuing education, coordination of communication links and policy formation within the public and private sectors. The college's ability to provide informational materials to the public at large has vastly expanded, as has the ability to supply neighbouring communities with farm produce.

Project Impact

LAPIS project support, directly or indirectly, had a positive impact on those developments cited above. In most cases project support was instrumental in affecting these changes. Very little criticism was expressed of the AEC's means of implementation, only a real concern was expressed for what will happen in the future

without this support. The primary benefits of project influence were said to have included:

- The provision of TA for counterpart relations with LAC staff affecting teaching, curriculum revision, technical and managerial guidance.
- The provision of long-term degree and short-term training for lecturing staff.
- The provision of financial support for infrastructural improvements and additional manpower assistance (local hire and consultants).
- The expanded realm of influence (both on the college and by the college) that the institution now exercises locally, regionally and internationally.

The following could be listed as shortcomings of project activities:

- The duration of TA support was too short; additional time was required to ensure that the overlap between the project TA staff and the LAC staff returned/returning from degree studies was sufficient to preserve the integrity of programs that had been developed.
- The current financial situation at the college is insufficient to sustain many of the activities initiated during the years of project influence. Problems are expected concerning: transport and facilities maintenance, equipment depreciation, additional staffing needs and continuing staff training opportunities. It was felt that too little had been done by the project to help LAC head-off these impending problems, especially as concerns staffing needs.
- The role that LAC plays in assisting the MOA with their non-formal education activities is vague. The project design and subsequent implementation of the associated tasks did not provide a clear path toward full institutionalization of these activities.

Immediate and Future Needs

The immediate and future needs of LAC can be distinguished in three ways; financial, managerial and academic:

Financial

An increased source of funds must be found. As expressed in an earlier section on **Budget**, at best one-half of LAC's operating funds presently derive from foreign donor projects. LAPIS is by far the primary contributor. With the imminent closure of LAPIS and the RSTP, something must be done to attract additional monies. The primary

need is in the realm of infrastructural sustenance. It is thought that the SEP program may evoke enough interest among the donor community to justify the needed financial support. These thoughts must be marketed quickly and effectively.

Managerial

Given the great change that has taken place in the past few years at LAC and the subsequent varied impact on the individuals comprising the management structure, there seems to be a real need to review the present Terms of Reference for these individuals to ensure that everyone fully comprehends their role in the present system. These individual's grades, salaries and incentive packages need to also be reviewed to ensure that they equitably reflect their present levels of responsibility. More regularly scheduled staff meetings need to be held to ensure that the new levels of program complexity are handled efficiently and effectively.

Academic

An adequate number of LAC-based SEP student supervisors need to be secured. Present levels of staffing are inadequate and threaten the sustainability of what is considered an extremely important program. A follow-up mechanism for SEP student graduates which will assist them in securing land, capital, technical advice, etc. needs to be employed immediately.

Staff secondment from other MOA department/divisions needs to be reduced or permanent agreements reached so that LAC can operate from a more secure footing. An appropriate size staff must be maintained.

Confusion presently exists concerning the future role NUL is to play concerning the two diploma level education programs. If NUL is to withdraw total support than excessive pressure will be placed on LAC and it will not be able to contend. Clarification is also required on the role of LAC in the impending BSc.Faculty. At present LAC is stretched to the limit and additional responsibilities without a commensurate increase in resources would strain the system beyond its ability to cope.

The inclusion of non-formal education activities in the doctrine of LAC needs to be officially mandated. Funding for the construction of a Continuing Education Center at LAC needs to be secured. This center would do much to institutionalize this function, provide MOA staff with a needed source of in-service training and assist in keeping LAC (and ARD) staff in close touch with agricultural activities nationwide.

FARMER TRAINING CENTERS

HANDED OVER TO: DEPARTMENT OF FIELD SERVICES

HAND OVER DATE: 8 AUGUST, 1990

October 19, 1990

The Principal Secretary
Ministry of Agriculture, Cooperatives
and Marketing
P.O. Box 24
Maseru 100

Subject: Termination of LAPIS Project Assistance to three
Farmer Training Centers

Dear Mr Ntokoane:

Further to past discussions and communications with your staff, the purpose of this letter is to officially confirm that the LAPIS Project assistance to the Mohale's Hoek, Matela and Leribe FTCs has now been terminated, as a part of the planned phase-down of the project.

As you know, the purpose of this assistance was to strengthen the capacity of these centers, so that they could better accommodate farmer training activities. Project assistance was rendered in the areas of management, training and upgrading of the infrastructure and equipment, including livestock and crop production facilities. We are enclosing a copy of the Assistance Program Termination Report which provides more details of the project contribution to the FTCs. We also note that the Field Services Division has acknowledged receipt of the commodities purchased by the project.

Yours sincerely,


F. Gary Towery
Mission Director

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AMERICAN AG INTERNATIONAL



P.O. Box 333 • Maseru 100 • Lesotho • Tel 311932 • Telex 4510 LO

MEMORANDUM

TO: Curt Reintzma, ADO USAID Mission/Lesotho
FROM: COP/LAPIS (Acting)
REF.: LAPIS/A/1-103
SIGN: L. Chris Weaver
NAME: L. Chris Weaver
DATE: 8 August, 1990

Program Termination Report for LAPIS Project Assistance To The Leribe, Mophale's Hoek, and Matela Farmer Training Centres

Please find attached the Termination Report for LAPIS Project assistance to the Leribe, Mophale's Hoek, and Matela Farmer Training Centres (FTCs). Following is some additional background information on FTC assistance.

FTC assistance commenced in 1986, shortly after the initiation of the LAPIS Project. As can be gathered from the Report, the major emphasis of LAPIS Project support was infrastructural improvements, procurement of basic commodities, and in addition, assistance was rendered toward acquisition of PCVs to enhance management of the facilities. Such assistance was in line with the LAPIS Project Benchmark Report which determined that the Project's role with regard to FTCs should be to strengthen the capacity of the facilities rather than to provide direct institutional support.

Phasing down of LAPIS Project support was initiated in 1988-89 following the decision to change the PIC's work objectives and reduce its scale of effort. Final termination of support was planned for 1990, and has now tentatively been accomplished.

At the time of support termination, a total of \$6,637.44 remained in the LAPIS Project FTC support budget. These funds will be transferred into the AEC budget for supporting LAC pending your approval.

It is my understanding that the formality of informing the MOA on the termination of LAPIS Project support to FTCs will be handled by USAID.

If you have any further questions on this matter please contact either myself or Ben Tyson, and we will respond accordingly.

cc: Ben Tyson
W.C. Arnold

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LETTER OF RECOGNITION

I, Director of the Department of Field Services of the Lesotho Ministry of Agriculture, having administrative responsibility over the Leribe, Maseru and Mophale's Hoek Farmer Training Centers, have reviewed the LAPIS Project FTC Support Program Termination Report and find it acceptable. The activities outlined in the report are what I know to have taken place. The commodities outlined in the report have been supplied and are now part of the relevant FTCs inventory. The recommendations outlined in the report are accepted and well taken. On behalf of the Department of Field Services, I wish to express my appreciation to the LAPIS Project for this assistance.

SIGNED:


/

M. LESENYA, DIRECTOR OF THE
DEPARTMENT OF FIELD SERVICES (Acting)

DATE:

14-7-80

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LAPIS PROJECT ASSISTANCE TO LERIBE, MOHALE'S HOEK
AND MATELA FARMER TRAINING CENTERS (9/86-7/90)

LAPIS AGRICULTURE EDUCATION COMPONENT; JULY 1990

PROGRAM TERMINATION REPORT

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INTRODUCTION

The objective of LAPIS Project assistance to the above named Farmer Training Centers (FTCs), as implemented by the LAPIS Agriculture Education Component, was to upgrade these facilities so as to better accommodate intended project related training workshops. This objective was designed to support the FTCs as institutions of the Ministry of Agriculture (MOA) and to increase the self-sufficient nature of activities at these institutions. Leribe and Mohale's Hoek FTCs were the principal recipients of this support. Matela FTC, in the Maseru district, also received some minor assistance. The intended use by the LAPIS project of these centers was curtailed in 1988 with the phasing out of the project's farmer crop production initiatives. Prior to this phasing out, the Leribe and Mohale's Hoek FTCs were used for 14 project related workshops affecting 51 MOA staff and 365 farmers.

SITUATION PRIOR TO LAPIS PROJECT INTERVENTION

Leribe FTC

Administration - The FTC was under the management of the Leribe MOA District Agriculture Office (DAO) until 1988 when it's management was turned over to the Lesotho Agriculture College (LAC), Leribe campus administration. The FTC and LAC Leribe share common ground. A manager and matron exist at the FTC. Occasional laborers supply operational assistance. Short-term district initiated training workshops represent the center's principal use.

Facilities - The FTC shares the campus of LAC Leribe. A small farm (crops and livestock) exists. The FTC is comprised of a classroom, refectory, office and dormitories for 40 people. Classroom facilities were adequate, refectory facilities needed expansion and equipping, dormitory facilities needed upgrading.

Livestock - The FTC livestock facilities needed upgrading. Old breeding stock required replacement. The buildings and equipment were in disrepair and needed upgrading. Pastures were in poor shape due to overgrazing and uncontrolled burning by villagers.

Crops/Irrigation - Theft of produce was a major problem in the orchard and vegetable fields. The irrigation pump was in disrepair and a spillway was needed at the dam so as to protect the pump house from potential flooding. No growing structures were in place for production of vegetable seedlings. Tools and implements were in short supply and FTC budgetary constraints limited access to seed and fertilizer.

Mohale's Hoek FTC

Administration - The FTC is managed by the Mohale's Hoek MOA District Office. A manager, matron, crops supervisor and livestock supervisor exist. Occasional laborers supply operational assistance. Four different managers have been in residence since 1986. Short-term district initiated training workshops and a ten month per year young farmer residence program represent the centers principal uses.

Facilities - The FTC facilities are expansive and include three classrooms, dormitory for 40 people, office, refectory, a small orchard, a crop production area and large areas for field crops/fodder production and livestock rearing. Classroom facilities were adequate; refectory and dormitory facilities needed equipping.

Livestock - FTC livestock programs were being conducted under serious and chronic constraints. Buildings and equipment are in disrepair and needed upgrading. Pastures were in poor shape. Existing livestock were of low quality. There were inadequate funds available for livestock feeding.

Crops/Irrigation - The existing irrigation system was not designed to service the orchard. The pump was broken and beyond repair. Vegetable plots were suffering from lack of irrigation. No growing structures were in place for production of vegetable seedlings. Tools and implements were in short supply and FTC budgetary constraints limited access to seed and fertilizer.

Matela FTC

Administration - The FTC is managed by the Maseru MOA District Office. It is staffed by a manager, program officers and matron. Occasional laborers supply operational assistance. Short-term district initiated training workshops and a ten month per year young farmer residence program represent the center's principal uses.

Facilities - The FTC facilities include three classrooms, dormitories for 40 people, office, refectory and areas for crop and livestock production. Facilities in general were adequate. Improvement to the dormitory and refectory roof was requested.

Livestock - Lack of breeding stock was a constraint which hindered the intended self sufficiency of the center especially concerning eggs and milk.

Crops/Irrigation - No indepth assessment was conducted. A growing structure for vegetable seedlings was needed.

STRATEGY FOR LAPIS PROJECT INTERVENTION

Leribe FTC

Administration - Peace Corps Volunteer (PCV) assistance was identified as a need to supply managerial guidance and coordinate project interventions. Discussion was held with the office of Chief Extension Officer, District and FTC management to ascertain their perceived needs. These needs were reviewed and a strategy agreed upon.

Facilities - Equipment for the refectory and dormitory were prioritized. Expansion of the refectory and minor improvement to the classroom were jointly designed by FTC and LAPIS project staff.

Livestock - Emphasis was placed on improving the quality and quantity of livestock and improving/maintaining existing buildings. Improved training capability and the center's self-sufficiency were the aim.

Crops/Irrigation - Security fence construction, so as diminish the theft of produce, was a priority activity. Pump repair and spillway construction were planned. The relocation of an existing LAC greenhouse to the FTC and the procurement of various hand tools were agreed upon. Technical assistance and minor amounts of production inputs (seed and fertilizer) were set as an ongoing strategy.

MOHALE'S HOEK FTC

Administration - Same as above for Leribe FTC.

Facilities - Equipment for the refectory and dormitory were prioritized jointly by FTC and LAPIS project staff.

Livestock - Same as above for Leribe FTC. Pasture improvement and some provision for supplying livestock feed were also included in the overall strategy.

Crops/Irrigation - Expansion of the existing irrigation system and replacement of the pump were priority issues. The need for a greenhouse and the procurement of hand tools were also indicated. Technical assistance and minor amounts of production inputs (seed and fertilizer) were set as an on-going strategy.

MATELA FTC

Administration - Matela FTC was never intended for major project support. Basic assistance was provided in 1988 at the initiative of the resident PCV.

Facilities - Materials for roof repair were coordinated and installed by the resident PCV.

Livestock - Emphasis was placed on improving the quality and quantity of livestock.

Crop/Irrigation - The need for a greenhouse was indicated.

PROJECT INPUTS

The underlying commodity list details the principal categories of expenditure. These expenditures were allocated by the following estimated percentages: 50% Leribe FTC, 40% Mohale's Hoek FTC, 10% Matela FTC.

Tool kits	\$ 643.54
Qx drawn equipment/oxen	\$ 4424.67
Crop Demo materials	\$ 3160.77
Instruction materials	\$ 104.17
Portable video presenters	\$ 3671.51
Generator	\$ 5597.77
Audio visual equipment	\$ 627.66
Room/Boarding facilities	\$27,494.91
Irrigation equipment	\$2,856.86
Building materials	\$ 9530.63
Total	<hr/> \$ 58,112.69

Note: Expenditures as of 1/7/90.

Note: Portable video presenter is located at Maseru LAC.

project inputs cont'd:

Leribe FTC

Administration - PCV assistance was secured on three different occasions beginning in 1987 and continues to date. These PCVs have assisted both FTC management in the daily running of the center and LAC administration as needed for teaching purposes. The PCVs, with supervisory support by LAPIS project staff, were the coordinating force for project funded interventions.

Facilities - (see appendix A for details)

- a) Classroom - new roof, A-V equipment, heaters
- b) Refectory - building expansion, tables, chairs, stove repair, eating and preparation utensils
- c) Dormitory - flooring, blankets, linen
- d) Staff Housing - extensive renovations

Livestock - (see appendix A for details)

- a) Rebuilding - beef fattening pen, piggery pens, sheep and goat kraals, dairy building
- b) Construction - calf house
- c) Livestock - cows, calves, goats, boar
- d) Materials - oxcart
- e) Assistance - frequent visits were made by LAPIS Project staff to advise on details of construction and livestock management

Crop/Irrigation - (see appendix A for details)

- a) Repair - irrigation pump
- b) Construction - spillway, security fence, greenhouse
- c) Tools/Implements - selected handtools, portable water tank
- d) Production Inputs - seed/fertilizer
- e) Assistance - frequent visits were made by LAPIS Project staff to advise on details of construction and crop management. Demonstration plots were constructed for training purposes.

Mohale's Hoek FTC

Administration - PCV assistance was secured on two different occasions beginning in 1987 and continues to date. These PCVs assist the FTC administrators in the daily running of the center. The PCVs, with supervisory support by LAPIS Project staff, were the coordinating force for project funded interventions.

Facilities - (see appendix B for details)

- a) Classroom - A-V equipment, heaters
- b) Refectory - stove repair, freezer, eating and preparation utensils
- c) Dormitory - blankets, linen

Livestock - (see appendix B for details)

- a) Rebuilding - pasture fencing, piggery, haybarn, feedstore,
- b) Construction - water tanks (4)
- c) Livestock - oxen, gilts, chickens (layers)
- d) Materials - block making machine, pasture seed, oxcart
- e) Funds - cost of a particular DAO initiated livestock workshop
- f) Assistance - frequent visits were made by LAPIS Project staff to advise on details of construction, pasture and livestock management.

Crops/Irrigation - (see appendix B for details)

- a) Construction - irrigation system, greenhouse
- b) Materials - irrigation pump, pipe and fittings
- c) Tools/Implements - selected handtools
- d) Production Inputs - seed, fertilizer, fruit trees
- e) Assistance - frequent visits were made by LAPIS Project staff to advise on details of construction and crop management. Demonstration plots were constructed for training purposes.

Matela FTC

Administration - Matela FTC received only minor commodity assistance; no administrative inputs were made.

Facilities - (see appendix C for details)

- a) Refectory - roofing materials
- b) Dormitory - roofing materials

Livestock - (see appendix C for details)

- a) Livestock - calf, goats and sheep
- b) Assistance - occasional assistance was provided.

Crops/Irrigation - (see appendix C for details)

- a) Construction - greenhouse

IMPACT ASSESSMENT

Leribe FTC

Administration - PCV assistance continues yet future support is questionable. Management of the center remains the responsibility of Leribe LAC. Training workshops continue to be staged by the MOA District Office. The center and its administration continue to be plagued by financial short-comings.

Facilities - Classroom facilities are adequate. Dormitory facilities are basic but need a heating system. The bathroom block needs renovating and hot water system installed. Refectory facilities require a new cooking stove but are otherwise adequate.

Livestock - Project inputs have enabled the FTC staff to mount successful training programs. A much greater degree of self-sufficiency has also been obtained. Management of the livestock facilities has improved.

Crops/Irrigation - Reduced theft of produce has been realized by the security fence. Effective irrigation of crop and orchard areas is now a capability. The threat of flood damage to the pump station has been eliminated. Production of seedlings is now possible for early and late season cropping. An adequate number of hand tools exists and transportation of materials has been facilitated by the use of an ox-cart. In general, the FTC can now better support intended training activities.

Mohale's Hoek FTC

Administration - PCV assistance continues very effectively yet future support is questionable. The present management seems very conscientious. Training workshops continue to be staged by the MOA District Office. The center and its administration continue to be plagued by financial shortages. A good relationship exists between the District Office and the FTC.

Facilities - Classroom facilities are adequate and have received additional improvements from the locally operating FISC project. Dormitory facilities are basic yet adequate. Refectory facilities are basic yet adequate. Refectory facilities need a new cooking stove but are otherwise adequate.

Livestock - Project inputs have enabled the FTC staff to mount successful training programs. A much greater degree of self sufficiency has also been obtained. Management of the livestock facilities has improved tremendously and pertinent management decisions are now made using economic records.

Crops/Irrigation - Effective irrigation of crop and orchard areas is now a capability. Production of seedlings is now possible for early and late season cropping as well as for growing for the FTC woodlot. An adequate number of handtools exists and transportation of materials has been facilitated by the use of an oxcart. The orchard has been considerably improved. In general, the FTC can now better support intended training activities.

Matela FTC:

Administration - Matela FTC received only minor support, hence project impact was minimal.

Facilities - Matela FTC received only minor support, hence what assessment is possible reflects the need for further assistance.

Livestock - Project inputs have undoubtedly helped the FTC to mount more successful training activities and achieve self-sufficiency to a minor degree.

Crop/Irrigation - The greenhouse has assisted year round crop production.

RECOMMENDATIONS

Leribe FTC

Administration - In 1988 the FTC management (financial and administrative) went from the centralized office of Chief Extension Officer (with then active support by the Leribe MOA District Office) to that of LAC, Leribe. The efficiency of the move is yet to be ascertained. The past direct tie to the District Office facilitated their use of the center; the primary purpose. Financial problems are apparent at the center and at the District Office. Transportation, clerical equipment, adequate salaries and inservice training opportunities for FTC staff are needed. Continued PCV assistance to the center is warranted. If the proposed Scandinavian Forestry Training Center Project is launched important support to the center would be continued.

See also relevant comments concerning Mohale's Hoek FTC administration.

Facilities - Needs include: a heating system for the dormitories, the bathroom block needs extensive renovating and a hot water supply, and the refectory needs a new cooking stove.

Livestock - The productivity of livestock should be increased in several ways:

- (a) Take steps, in consultation with the D.A.O., to secure the grazing area which is in dispute with a nearby village.
- (b) Increase the acreage devoted to fodder production.
- (c) Replace breeding and production stock on time. Too many old stock have been retained in the past.
- (d) Construct another broiler house since this is a good source of income and is required for training purposes.
- (e) Construct a small stock kraal to demonstrate lamb fattening as an alternative income-generating enterprise.
- (f) A PCV with all-round experience in livestock production would be of great value.

Crops/Irrigation - The MOA should consider the creation of a mechanism for allowing revenues generated from sales of produce to be kept within the FTC. Such a system would save the MOA operating expenses for the FTC and should considerably enhance the capability of the FTC to function as an effective and credible training/demonstration site.

In efficiently using the FTC's irrigation system, the center's management should make use of the LAPIS-trained District Resource Planning Officer.

It is recommended that development of the orchard and establishment of multi-purpose trees around the should FTC continue.

Mohale's Hoek FTC:

See also Appendix D for situational report prepared by M.H. FTC staff

Administration - In 1987 FTC budgets were decentralized and financial as well as managerial responsibilities went from the centralized office of Chief Extension Officer to that of the Mohale's Hoek District Office. The efficiency of the move is yet to be ascertained but what is certain is that the present budget is insufficient to accommodate proper support. A revolving fund should be established to allow the considerable crop and livestock sales revenue to remain at the FTC hence evoking increased motivation to produce. Staff should be supported with transportation, clerical equipment, adequate salaries and inservice training opportunities.

Continued PCV assistance to the center is warranted. In such an environment, systematic manpower development activities (training) could be planned and carried out in a much more effective manner.

Facilities - Needs include: a hot water system and a new cooking stove.

Livestock - The considerable improvements at Mohale's Hoek FTC need to be supplemented by:

- (a) Renovation of the feed store.
- (b) Construction of two new storage sheds.
- (c) Construction of cattle roughage feeder.
- (d) Purchase of silage chopper.
- (e) Construction of 3 livestock water troughs.
- (f) Purchase of milking equipment.
- (g) Construction of crush-pens for treating cattle with cattle weigh scale.
- (h) Purchase of a weigh scale for small stock.

Crops/Irrigation - Considerable progress has been made in improving the productivity of the apple orchard and vegetable fields. This should continue. The lower orchard, which has the potential for irrigation, is not in good condition. The site might be better used for expansion of irrigated vegetable production.

Now that the irrigation system is functioning, it should be well maintained with the assistance of the District Resource Planning Officers.

Production and planting of multipurpose trees at the FTC should continue. Different species of trees can be planted as a demonstration for farmers.

Young Farmer Residence Program - This ten month per year resident program requires considerable assistance to meet its objective of effectively training future farmers (see Appendix D). The program presently operates at three FTCs in the country. Approximately 25 pupils enroll each year at each FTC, yet because of staff and financial shortages the program lacks effectiveness. Trained staff, a refined curriculum and instructional materials are needed.

Matela FTC:

Administration - Matela FTC received only minor support, hence objective recommendations would be unfounded.

Facilities - Matela FTC received only minor support, hence objective recommendations would be unfounded.

Livestock - The main requirement is a regular replacement policy for livestock which have reached the end of their useful life. Other requirements are: weigh scales for cattle and small stock, and construction of a broiler house.

Crops - The FTCs small greenhouse can be used for production of early and late vegetable seedlings, as well as for starting multi-purpose trees. The report "Feasibility of Building Plastic Greenhouses in the foothills of Lesotho" by PCV Pat Freeman covers both greenhouse construction and seasonal management of this type of greenhouse.

Young Farmer Residence Program - same as for Mohale's Hoek FTC and as per Appendix D comments.

APPENDIX A

(Inputs to Leribe FTC)

Facilities

- 1) Renovations to Staffhouse
- 2) Renovations to Refectory Building (enlarge dining area)
- 3) Renovations to Classroom Building
- 4) Repair Cooking Stove
- 5) Electric Heaters (4)
- 6) Coal Heater
- 7) Extension Cords
- 8) Flip Chart Easels
- 9) Generator
- 10) Chairs and Table for 40
- 11) Electric Urn
- 12) Kitchen Utensils
- 13) Blankets (80)
- 14) Projector Screen
- 15) Bulletin Board

Livestock:

- 1) Beef fattening pen: rebuilt with strong fencing, concrete floor and new feed trough
- 2) Calf house: constructed new pens, feed trough, gates and concrete floor
- 3) Piggery: installed new water supply with nipple drinkers, rebuilt boarpen and repaired concrete floors
- 4) Sheep and goat kraal was re-fenced

- 5) Dairy: loafing yard floor was concreted and one wall rebuilt with concrete blocks
- 6) Supplied 2 dairy cows and 4 calves
- 7) Supplied one boar
- 8) Supplied 10 angora goats
- 9) Ox-cart

Crops/Irrigation

- 1) Assorted gardening and construction handtools
- 2) Portable 1000 litre water tank
- 3) Security Fence (577m long by 2.1 high)
- 4) 3m x 10m plastic greenhouse
- 5) Overhauled diesel engine for irrigation
- 7) Construction of rock-filled dam spillway
- 8) Fruit trees (50)
- 9) Seeds, chemicals, and technical materials.

APPENDIX B
(Inputs to Mohale's Hoek FTC)

Facilities

- 1) Electric Heater
- 2) Electric Urn
- 3) Cooking Stove Repair
- 4) Kitchen Utensils
- 5) Extension Cords
- 6) Flip Chart Easels
- 7) Projector Screen
- 8) Chairs and Tables for 40
- 9) Blankets (80)
- 10) Area Rugs (80)
- 11) Bulletin Board
- 12) Folding Classroom Tables
- 13) Repair Water Tank
- 14) Deep Freezer
- 15) Kitchen Scale
- 16) Renovations to Staff Housing

Livestock

- 1) Improvements to fencing using treated poles and strainers
- 2) Construction of one large and three smaller tanks to increase water supply points
- 3) Piggery: permanent piped water supply with nipple drinkers installed
- 4) Haybarn: old thatched roof and timbers removed and re-roofed with corrugated iron
- 5) Livestock feed store: re-roofed with corrugated iron
- 6) Provided machine for making concrete blocks

- 7) Provided seed for improving species and quality of pasture
- 8) Provided 2 oxen for general farm work
- 9) Provided 2 groups of 200 pullets for egg production
- 10) Provided one boar and 3 gilts to strengthen piggery section
- 11) Supplied 2 portable calf pens
- 12) Ox-cart

Crops/Irrigation

- 1) Portable diesel engine, pump, and fittings
- 2) 2, 3-wheel hand-pulled irrigation trailer
- 3) Assorted gardening and construction handtools
- 4) 3m x 6m plastic greenhouse
- 5) Fruit trees (60)
- 6) Seeds, chemicals, and technical materials

APPENDIX C
(Inputs to Matela FTC)

Facilities

- 1) Roofing materials for refectory, classrooms and dormitories

Livestock

- 1) 1 in-calf Frisian heifer
- 2) 1 Angora ram and 5 Angora ewes
- 3) 1 Merino ram and 5 Merino ewes

Crops/Irrigation

- 1) 3m x 6m plastic greenhouse

The Mophale's Hoek Farmer's Training Centre (F.T.C.) has been providing training and extension to farmers of all ages and backgrounds for over two decades. It not only serves the people of Mophale's Hoek but of Mafeteng and Guthing as well. It is an important and valuable institution, but upon closer examination, it becomes apparent that the potential for the F.T.C. has hardly been tapped.

Currently, the Centre has the following goals:

- A.) To train farmers in various agricultural subjects.
- B.) To maintain a working farm
 - 1.) growing crops and vegetables
 - 2.) keeping improved stock
 - 3.) practicing current and appropriate technology
- C.) To conduct a 10 month course for young farmers.
 - 1.) to prepare young farmers to initiate their own ag. projects
 - 2.) to minimize migration of young men to R.S.A. mines by equipping them with the necessary skills and know-how to start small income generating projects
 - 3.) to ease the reliance of Lesotho on imported foodstuffs by introducing improved ag. techniques to the villages through returning students and follow-up

Keeping the main goals in mind, a number of questions arise. The first, and everpresent, question is that of money. The F.T.C. has been allowed to decline over the past few years. This is due to a number of reasons but foremost is the austerity programs undertaken by the Lesotho Government. This austerity has led to drastic cuts within the Ministry of Agriculture which in turn creates a chronic shortage of necessary operating funds for the F.T.C.'s. This chronic shortage of funds, and the difficulty of obtaining available funds (due to bureaucratic constraints) has led to the current physical state of the Mophale's Hoek F.T.C..

Fortunately, the conditions beyond the physical state of the F.T.C. are fairly good. The staff is well trained and dedicated and serious problems, such as corruption and absenteeism, do not exist on the staff. The curriculum is met and surpassed every year, and courses are catered to efficiently nearly every week. The only hindrance to realizing potential is the self evident problems in trying to run a center, short of funds and top heavy. For example, students complete a 10 month course, covering topics in sewing, knitting, nutrition, cooking, crops, soil conservation, horticulture, animal husbandry, english, book-keeping, carpentry, and basic construction without a single book! The reason for this is some of the students, at the F.T.C.'s are those who cannot afford to continue their regular schooling, therefore they pay 60 Rands tuition to go to the F.T.C. which by itself is not enough to pay for food.

It is evident that the basic infrastructure needs to be built up in order for the F.T.C. to begin to realize some of its potential. A massive infusion of funds is not the answer. In fact, considering the current financial problems of the Ministry of Agriculture, a solution allowing the F.T.C. more financial autonomy, while simultaneously lessening the burden of the M.O.A. could be reached. Namely, allowing the F.T.C. to retain, manage, and re-invest some of its revenues, or a revolving fund. By doing so, costly bureaucratic obstacles could be hurdled, the financial burden of the M.O.A. eased, and the efficiency needed to improve the F.T.C. could be obtained.

In the long run, this re-investment of revenues would increase the revenues of the F.T.C. to much greater value which would eventually enrich the citizens and government of Lesotho to an even higher degree, while at the same time allowing the farmers and students an even better education as well as better facilities. Therefore, greater financial autonomy or a revolving fund is essential for the fundamental improvement of the F.T.C..

Another pertinent question is, when students leave the F.T.C., where can they find the necessary "start up" funds to start their enterprises? The answer could be the creation of an F.T.C student affiliate at the local credit union, where a young trainee can begin to establish a credit rating, while still in training, through the establishment of F.T.C. entrepreneurial projects. The student can learn to produce market, and manage his/her own small project, while still under F.T.C. supervision, and eventually have established a credit rating enabling him/her to strike out on his/her own small business after graduation.

This leads to the necessity of implementing a system of follow up on the students after graduation. Current obstacles are transportation, and red tape. The F.T.C. needs its own vehicle, not only to conduct follow up, but for the day to day operation of a farm and a centre. If transportation was made available, follow up could begin immediately; student's parents could be visited and involved in the program; village councils and local chiefs could be consulted, and more accurate data could be compiled about the successes of student's enterprises.

This short report shows that many of the F.T.C.'s problems are structural. Re-structuring of the F.T.C.'s monetary situation is the most important of these. By undertaking this, the F.T.C. could run more efficiently, and more effectively disperse knowledge to students and farmers, eventually creating domestic jobs and domestically produced food.

By creating entrepreneurial skills at the F.T.C., students can be trained in the business side of agriculture and

development. Through effective follow up, student successes could be ascertained and emulated. The creation of small businesses will create jobs and incomes and add to an improving standard of living for all Basotho.

Having attained greater efficiency, through the above prescribed methods, The F.T.C. will be enabled to begin to reach its potential. In tangible terms this includes better farmer training, more effective courses for students, greater yields from the garden, farm, woodshop, and orchard (which in turn increases government revenues and Lesotho GDP) and finally a greater vehicle through which improved and appropriate agricultural, and business, methods and knowledge can be dispersed.

AGRICULTURAL INFORMATION SERVICES

**HANDED OVER TO: AGRICULTURAL INFORMATION SERVICES
DIVISION**

HAND OVER DATE: 9 NOVEMBER, 1990

Mr. Reid L. Ntokoane
Principal Secretary
Ministry of Agriculture, Cooperatives
and Marketing
P.O. Box 24
Maseru 100, Lesotho

Subject: Termination of LAPIS Project Assistance to the
Agricultural Information Services

Dear Mr. Ntokoane:

Further to past discussions and communications with your staff, the purpose of this letter is to officially confirm that the LAPIS Project assistance to the Agricultural Information Services has now been terminated, as a part of the planned phase-down of the project.

As you know, the purpose of this assistance was to strengthen the capacity of Agric Information to undertake its mission as an effective information dissemination system of the Ministry. Assistance was rendered in the areas of upgrading of the infrastructure and equipment, provision of technical advisory services and staff development. We are enclosing a copy of the Assistance Program Termination Report which provides more details of the project contribution to Agric Information. We also note that the Field Services Division has acknowledged receipt of the commodities purchased by the project.

We are pleased with the results of this assistance and we note that Agric Information is now operating effectively with minimal outside assistance. We hope that the Ministry will be able to provide the resources to sustain and maintain project initiatives so that this division continues to efficiently and effectively undertake the agricultural information dissemination tasks for which it was originally founded.

Sincerely,



F. Gary Towery
Mission Director

cc: F. Rooyani, Chief of Party
LAPIS Project
DRAFTED:AG/SPEC/MCKhalikane:mck:03/5/91
bcc: chron, subject, RF & ADO chron
Clearance: S/ADO/CARaintsma (draft)

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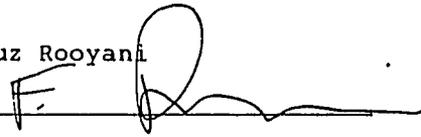


MEMORANDUM

TO: Mr. C. Reintsma
ADO
USAID Mission

FROM: COP/LAPIS Project

NAME: Firouz Rooyani

SIGN: 

DATE: November 9, 1990

REF: LAPIS/A/1-118

Program Termination Report for the LAPIS Project assistance to
Agricultural Information Services (AIS).

Please find attached a comprehensive report covering the LAPIS
Project support to AIS for the period, June 1986 through December
31, 1990.

This letter and the report accompanied serve as termination
documentation for the LAPIS Project's inputs and contributions
towards AIS development.

The major areas of Project's support to AIS include:

1. Strengthening the infrastructure at AIS; building modifications, press equipment, computerized typesetting equipment, photo and graphic laboratory equipment, library and overall computerization.
2. Staff development; longterm degree level and shortterm training.
3. Advisory services; longterm technical assistance (part time), local hires and shortterm consultants.
4. Development of an effective information dissemination system particularly printed materials.
5. Development of an effective information network between AIS and other MOA institutions.

The handovering of the Project supported activities necessitated by the following factors:

1. Successfully achieving the objectives of the AIS outputs established in the LAPIS Project paper.
2. Completion of utilization of funds allocated to AIS development.
3. Completion of longterm training of three key AIS staff in the USA and their return back to Lesotho.
4. Termination of the TA position, extension/training coordinator (Mr. B. Tyson) in May 1991.

I should add that effective 1990, UNFPA/FAO launched a three year project on "Education and Communication" in Lesotho which is centered around AIS. The Project is providing management and technical advise to, and training and staff development at AIS. The UNFPA/FAO Project will continue to financially support certain activities initiated by the LAPIS Project e.g, funding for in-service training and quarterly seminars for MOA information officers and members of the training/communication Coordination Committee.

I would like to take this opportunity to express my thanks to Mr. Lesenya Chief of AIS, the AIS staff and Mr. B. Tyson for their well coordinated efforts in maximum capitalization of LAPIS resources towards the strengthening of AIS. The LAPIS Project team truly enjoyed a 4.5 year exemplary working relationship with AIS staff.

cc: Mr. Arnold
Mr. Tyson
AAI/Tucson

Ps. This report constitutes the third handing over report of LAPIS Project's activities. The preceding reports included handing over reports on FTC (August 1990) and the Sehlabathebe and Ramatseliso's Gate RMAs (June 1990).

VSD

LETTER OF RECOGNITION

I, Chief Agriculture Information Officer of the Lesotho Ministry of Agriculture, having administrative responsibility over the Agriculture Information Service (AIS) have reviewed the LAPIS Project AIS Support Program Termination Report and find it acceptable. The activities outlined in the report are what I know to have taken place. The commodities outlined in the report have been supplied and are now part of our inventory. The recommendations outlined in the report are accepted and well taken. on behalf of the Agriculture Information Service I wish to express my appreciation to the LAPIS Project for this assistance.

SIGNED:


M. LESENYA, CHIEF AGRICULTURE
INFORMATION OFFICER

DATE:

27-03-1991

USAID/LAPIS PROJECT ASSISTANCE TO THE
MINISTRY OF AGRICULTURE'S
AGRICULTURE INFORMATION SERVICE
AUGUST 1986 TO NOVEMBER 1990

PROGRAM TERMINATION AND
ASSESSMENT REPORT

Date: October 19, 1990

BY: C. BEN TYSON
LAPIS PROJECT EXTENSION EDUCATION SPECIALIST
AGRICULTURE EDUCATION COMPONENT

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INTRODUCTION

A. Agriculture Inform. Service (AIS)

AIS is a division of the Department of Field Services (DFS). Actual staff size is 41. Three staff members are posted to three rural districts. Other staff are centrally based at headquarter.

There are eight sections within the division. These are: Accounts, Stores, Maintenance, Art, Radio, Audio-visual, Press and Campaigns. AIS is primarily concerned with mass media communication in support of MOA development objectives. Activities involve production of circulars, leaflets, newsletters, posters, photographic materials, radio broadcasts and multi-media campaigns.

In 1986 USAID/LAPIS project assistance was initiated and in 1987 FAO began implementation of two short-term programs (one year each). In 1990, as LAPIS project support was phasing out, UNDP/UNFPA committed itself to a three year program of continued support. The nature of this continued support is based directly on lessons learned and improvements made during earlier activities.

B. LAPIS Project Support to AIS

LAPIS project support to AIS was initiated in August, 1986. This program was the responsibility of the project's Agriculture Education Component (AEC). One Technical Assistant, the Extension Education Specialist, was assigned to spend approximately 25% of his time coordinating project inputs. Short-term consultants and local hire assistants were occasionally employed to help with project implementation.

The LAPIS/AEC budget for support to AIS totalled \$107,078.00 (USD). Project objectives (as interpreted by the LAPIS Benchmark Report) indicated the following:

- o Selected staff to be adequately trained (both long-term degree level and short-term).
- o Improved (quantity and quality) of publications and radio outputs; improved means of distribution.
- o Improved equipment inventory, usage and maintenance.
- o Improved coordination with other MOA Divisions (especially DFS-Extension, ARD-Research and LAC-Education).

II. SITUATION AT AIS PRIOR TO LAPIS PROJECT ASSISTANCE

A. Flow Inputs/Stock Resources

1. AIS Budgets 1985/86

Salaries and Wages (41 positions)	M	153959
Travel and Transport (5 vehicles)	M	45792
Office Administration	M	4354
Operating Costs	M	14464
Special Expenditure	M	45264
Total	M	263833

2. Change Propensity

Prior to LAPIS project intervention in 1986, AIS had never received directed donor support. Some ad hoc assistance was provided prior to this time by the USAID/LCRD project. This support comprised occasional technical assistance to the press and radio sections and included some radio broadcast equipment. AIS staff evidenced a pride in their institution beyond compare. It is hypothesized that much of this pride stemmed from the fact that they had been on their own, without directed donor support, since their inception and that what they had operating they had done autonomously themselves. They recognized that there was room for improvement in their operations, sought support for these improvements and for the first time welcomed donor support to help achieve their perceived needs.

3. Capital

a) Physical Capital

A short-term consultant was employed by LAPIS in October 1986 to refine the project's strategy. His observations indicated that "AIS seems to be operating on only a few cylinders the constraints of space, equipment and trained personnel in some areas, together with the lack of financial resources, all make production of materials difficult the existence of much obsolete, inoperable equipment and out-of-date supplies takes up valuable space and obscures the true state of production capabilities". Word processing, printing, photographic and graphic equipment were identified as needs. A thorough cleaning, possible expansion of the

physical structure, modification of the existing electrical supply and a reallocation of space to the various AIS sections were prioritized.

b) Human Capital

There were 41 staff positions of which ten were vacant. Seven professional staff, twelve assistant-level staff and 12 junior staff were in position. Two staff members had B.S. degrees, the chief administrator and one information officer. The same short-term consultant identified the need to fill many of the vacant posts, for staff training at degree level for three staff members and for short-term training in printing, typing, press maintenance, radio broadcasting and photography for selected staff.

B. Intermediate Products

1. Leadership

Leadership at AIS was vested in the hands of the Chief Information Officer, Senior Information Officer and heads of the seven technical sections. According to the short-term consultant "a lack of coordinated effort with potential clients within the NOA means that the demand for services is not planned and much of the materials seem to be produced on an ad hoc basis". Leadership pertaining to personnel issues was fair; leadership pertaining to technical issues and to external linkages needed improvement.

2. Internal Structure

The Chief and Senior Information Officers and section heads served as managers for four technical sections (Press, A-V, Radio, Art/Printing) and three operations sections (Maintenance, Stores, Accounts). A fifth technical section for managing multi-media campaigns was a perceived need. At this time, AIS was completely centralized having no permanent staff members assigned to the districts.

3. Doctrine

In 1986, AIS's mandate was often viewed as direct support to the MOA administrative forces. AIS staff spent the majority of their time covering the activities of various officials. Radio broadcasts were a regularly scheduled event. Occasional technical publications, posters and multi-media campaigns were produced. Media support to MOA extension field activities, though of perceived importance, seemed to take a back seat to the more public-relations type of information reporting.

4. Program

The objectives of AIS, as explained in the previous section (B.3) concerning "Doctrine", were primarily defined as public-relations type of information reporting. However, there was a feeling that more should have been done to provide instructional media support to rural development. Programming to meet the institution's objectives, as explained in an earlier section (B.1) concerning "Leadership" was essentially done on an ad hoc basis.

5. Linkages

The statement by the 1986 short-term consultant to AIS, included earlier (section B.1), best reflected the overall status of external linkages to/from AIS. Linkages were loose. Production was carried out on an ad hoc basis and contact within the MOA with other divisions and district offices followed suit. Informal contacts had been established in the Range and Conservation Divisions and semi-frequent contact was evidenced with the Research Division.

6. Technology Acquisition

AIS was in a somewhat static state pertaining to the acquisition of new technologies as evidenced by infrequent occurrences of short-term training activities and the elemental state of it's library. Only occasional technical assistance by the USAID/LCRD project brought minor innovation to the press and radio sections.

7. Resource Mobilization

As was stated, in 1986 AIS was in a somewhat static state. MOA expenditure on AIS was basic. The best reflection of AIS's ability to mobilize resources to its benefit was probably the intended advent of USAID/LAPIS and FAO support. AIS had been successful in attracting these resources.

C. Outputs

1. Current Services

- a) Press Section - This section produced bulletins, new articles and technical information for print and radio. The focus was on public-relations type of information reporting. This particular section probably generated the most output from AIS at the time. The printing done in 1986 was mimeographing of bulletins sent to extension personnel and farmers via bulk mailing to the district offices. The distribution mechanism was ineffective and according to the consultant, "quality is not good and the bulletins are not attractive; though considered cheap, they are in fact expensive if not read." At that time there were approximately 30 of these bulletins (in sesotho language) produced and reprinted each year.
- b) Radio Section - Ten programs per week were produced and aired over Radio Lesotho; eight of fifteen minutes and two of thirty minutes. Both public relations and instructional content were evidenced. According to the 1986 short-term consultant; "they seem to meet their schedules and to be in good shape."
- c) A-V Section - Quantifiable data is unavailable. This section was charged with producing photographs for public-relations and instructional purposes. The equipment used in 1986 was somewhat antiquated. Black and white developing was a capability; color photos were processed in the RSA. Slide shows for instructional purposes were completed infrequently. Video production was not a capability.

- d) Art Section - Quantifiable data is unavailable. According to the 1986 short-term consultant, the art section which primarily produced posters on an old silk screen press "obtained results remarkably good considering the equipment used." Production of graphics materials for inclusion in publications had been rudimentary and improvements were inhibited by lack of skill and equipment on the part of the artist.

2. Influence

The level of influence which AIS exerted in attempts to expand its support base is best reflected by those statements included in an earlier section (B.7.) pertaining to "Resource Mobilization". AIS was in a static state, MOA expenditure was basic and the best indication of positive influence concerned AIS's ability to attract USAID/LAPIS and FAO support. Within the MOA, a minor degree of influence was evidenced in a public-relations sense at higher administrative levels and in a technical sense among the divisions of Range, Conservation and Research.

3. Institutional reinvestment

As stated. AIS's static state, and MOA's limited investment in the institution severely handicapped any possibility at internally generated reinvestment or expansion.

III. LAPIS PROJECT STRATEGY/PROGRAM DESCRIPTION FOR AIS

A. Objectives

The objectives of LAPIS project assistance to AIS were defined with the help of a short-term consultant in October 1986. Technical assistance time and budgetary allocations dictated the extent of support. In consultation with AIS staff it was decided that support should concentrate on improvements to AIS's capability at producing extension publications. Other, more minor levels of support, would address the art and photography sections and improvements to the AIS library. These activities took the form of consultant, local-hire and TA assistance, short-term and long-term training opportunities, and commodities. In addition, activity which sought to ensure sustainability of the various improvements was initiated. This particular activity addressed improved coordination among the various facets of the MOA and farming community concerning demand for and usage of AIS services. Collaborative activity at AIS evolved with FAO and UNDP/UNFPA/Projects in pursuit of joint development objectives.

The LAPIS Project Benchmark Report established the following set of indicators for evaluative purposes when assessing project interventions at AIS:

- ° Effectiveness of short and long-term training efforts
- ° Quantity of publications and broadcasts for support to farmers and extension staff
- ° Quality and delivery time of information
- ° Equipment inventory and usage
- ° Effectiveness of information distribution systems
- ° Equipment maintenance and "down-time"
- ° Extent of coordination within MOA
- ° Management bodies/committees being functional

B. Technical Assistance

The strategy which the LAPIS project sought to follow concerning the degree of manpower technical assistance to AIS was varied. Technical assistance was required to identify and coordinate commodity purchases, to coordinate the integration and usage of these commodities and to provide leadership and training for effective running of the institution. One project Technical Assistant (TA), the Extension Education Specialist, was nominated on behalf of the project's

Agriculture Education Component to coordinate these activities. Because of the various responsibilities this TA had, it was decided that only an approximate 25% of his time would be allocated to these tasks. Hence, project interventions were designed to employ the use of local hire personnel and short-term consultant assistance for this TA.

C. LAPIS Project Commodity List (1986-1990)

0	Workshop Tools	\$ 1,778.00
0	Building Modifications	\$31,547.25
0	Electronics	\$ 2,000.00
0	Graphics	\$ 2,000.00
0	Audio-Visual Equipment	\$ 2,549.53
0	Photo Lab	\$ 1,203.22
0	Offset Print Press/Access	\$43,000.00
0	Computer Typesetting/Access.	\$23,000.00
	TOTAL:	<u>\$107,078.00</u>

D. Press Section Improvements

The primary objective of LAPIS project support to AIS concentrated on the institution's capability at producing extension publications. Short-term consultant assistance was employed to assist in designing this strategy. The program sought to supply computer typesetting equipment (and software), plate making and off-set press equipment, training in the operation and maintenance of this equipment and technical assistance concerning the production and dissemination of materials.

E. Other Institutional Improvements

Secondary objectives of LAPIS project support to AIS targeted the art and photography sections and improvements to the AIS library. Improvements to the Radio Section were not targeted as it was deemed adequate. Supportive assistance by an FAO sponsored communication specialist involved with a short-term program at AIS in 1988 lent guidance as to what materials were required to improve graphics and photo capabilities. The physical facilities of AIS, as identified by the 1987 LAPIS short-term consultant, were severely constrained by lack of space. A strategy set by the project was to construct an addition to the facility so as to accommodate expanded work space and an improved library to facilitate storage, retrieval and dissemination of materials.

F. Improved MOA Inter-Institutional Coordination

Improved coordination among the various facets of the MOA and farming community concerning demand for and usage of AIS services was a project objective. The LAPIS Project Paper proposed a "Task-Force for Training and Extension Packages" comprised of members from AIS, DFS, LAC and ARD as a coordinating body for this purpose. This task force, operational during the early stages of the project, later expanded its role and changed to meet the evolving needs of the MOA. The overall goal of these activities was to put in place a permanent mechanism which would facilitate the flow of "infusion information" from the farmers via extension staff to headquarter staff and "diffusion information" back from the headquarter specialists via AIS and extension staff to the farmer. The process was designed to ensure that AIS maintained a steady flow of information and that the information was factual and generated in response to actual needs.

G. LAPIS: FAO and UNDP/UNFPA Coordination

Two short-term assistance programs to AIS were planned by FAO (1987-89) and later a three year UNDP/UNFPA project was launched (1990). The LAPIS project sought close collaboration with these activities. The goal was to obtain a complimentary effect between the donors' pursuit of joint objectives at developing AIS.

IV. LAPLS PROJECT INPUTS

A. Technical Assistance

1. Long-Term Technical Assistance

The Extension Education Specialist of the project's Agriculture Education Component was assigned to spend approximately 25% of his time (August 1986 - November 1990) coordinating project interventions at AIS.

2. Short-Term Consultant Assistance

- a) R.B. MacMakin; (USA) October 5-12, 1986. Identified the type of printing equipment needed and suppliers. He advised on remodeling of the existing building and manpower and management development issues.
- b) R.B. MacMakin; (USA) October 22-November 11, 1987. Advised on the operation of the newly equipped publication section; i.e. developed formats for publications, identified staff training needs and began training, identified management and costing issues, identified building renovation needed, prioritized commodity needs.
- c) E.B. Coelho (Lesotho); November 17 to February 11, 1988. Continued training the computer typeset operators as was initiated by R.B. MacMakin and installed additional computer equipment and software.
- d) D. Hilleman (USA); February 5 - March 14, 1990. Evaluated the publication function at AIS and advised on required improvements. Evaluated the means of information generation/dissemination and advised on required improvements. Advised on the means for establishing an evaluation section for continuous assessment of materials.
- e) D. Hilleman (USA); June 25-29, 1990. Facilitated the ongoing origination of an infusion:diffusion mechanism for training and media messages within the MOA. Assessed and made recommendations on the status of an ongoing evaluation exercise for AIS materials.

3. Local Hire Assistance

Mr. T. Foko was employed by the project from August 1988 to August 1990 as a computer typesetter at AIS. Mr. Foko, from Lesotho, provided overall leadership to the publications section. He originated and managed formatting, typesetting, record keeping and distribution mechanisms. He was replaced in August, 1990 by an AIS staff member who had returned from USA degree training.

B. Training

1. Long-Term USA Based Degree Training

- a) S. Thulo, B.S. Degree, Ag. Communications; Utah State University; December 1989
- b) A. Ts'iu, B.S. Degree, Journalism; Utah State University; June 1990
- c) M. Mosito; B.S. Degree, Ag. Communications; University of Arizona; June 1991

2. Short-Term Training (M, Male/FM, Female)

- a) Tour of RSA Directorate of Agric. Information (RSA); September 28 - October 1, 1986; 5M.
- b) Equipment Operation and Maintenance (Lesotho); January 15-16, 1987; 4M/2FM.
- c) Film and Audio Production (Lesotho - FAO); June 1987 (2 weeks); 4M/3FM.
- d) Printing Training (Lesotho - NOE); October 15 - December 15, 1987; 2M/2FM.
- e) Photography Training (Lesotho - NOE); November - December, 1987; 1M.
- f) Typeset Training (Lesotho); May, 1988 - July, 1990; 2M/3FM.
- g) Press Operation (Lesotho - RSA); May - October, 1988; 2M/2FM.
- h) Electronics Repair (RSA); October 31 - November 25, 1988; 1M
- i) Typeset Training (Lesotho); November - February, 1988; 1M
- j) Management Correspondence Course (Lesotho - RSA); September 1989; 1M.
- k) Business Studies (Lesotho - NOE); September, 1989; 1FM.
- l) Communications and Media (USA); June 12-July 21, 1989; 1M.
- m) Information Officer Training (Lesotho); November, 1989 (3 days); 4M/6FM.
- n) Leadership Training (Lesotho); January, 1990 (5 days); 1M.

- o) USA Graduate Re-integration Conference (Lesotho); February and July, 1990/91 3M.
- p) MOA Communications/Training Coordination (Lesotho); June, October, January, April 1990/91; 14M/10FM (institutionalized within MOA on a quarterly basis).
- g) Electronics Equipment Repair (Lesotho - RSA); October, 1990; 1M.

Totals: AIS staff - 32M/13FM.
 Other MOA divisional associates-15M/16FM.
 Note: The same individual may have been trained more than once, counted more than once.

C. Commodities (Total cost = \$ 107,000.00)

1. Commodities Supporting Press Section

- a) Offset printing press (2)
- b) Supplies for press operation (ink, wash, solvent)
- c) Plate-maker for press operation
- d) MacIntosh computers (2)
- e) MacIntosh laser printer
- f) MacIntosh ribbon printer
- g) MacIntosh Stapler/Folder machine
- h) Hot water geyser and sink
- i) Three-phase electrical hook-up
- j) Desk, chair, file cabinet
- k) Workshop benches
- l) Computer software
- m) Computer scanner

2. Commodities Supporting Other Institutional Improvements

- a) Repair of A-V equipment
- b) Projector carrying cases (5)
- c) Projector bulbs and cords
- d) Refrigerator for chemical storage
- e) Generators (2)
- f) Light-Table
- g) Scalpels, blades and other graphic supplies
- h) Developing tank
- i) Print washer
- j) Print dryer
- k) Photography utensils
- l) Electronic equipment repair kits (2)
- m) Desk, chair, file cabinet
- n) Expansion of building (library, computer room, office)
- o) Library furnishings (shelves, tables, chairs, desk, file boxes, multiple publication copies)

D. Technical Services

1. Press Section

Technical assistance, training and commodity support to the press section was designed so as to enable AIS to produce factual and attractive printed training materials (circulars, leaflets, handbooks, reports, etc.) for timely and effective distribution to farmers and extension staff. Services expended by the project included: equipment selection and procurement, operation and maintenance training, publication design and production, distribution system design and up-keep, record keeping and materials storage, coordination within the MOA for sustained usage of AIS services and finally materials evaluation. An MOA newsletter was also initiated by the project (The "Temo Times") and later institutionalized by AIS.

2. Other Institutional Activities

- a) Technical assistance was offered to AIS concerning the coordination of radio broadcast design with messages being generated for print media.
- b) Technical assistance was offered to AIS concerning the selection and procurement of materials for the art and photo sections.
- c) Technical assistance was offered to AIS concerning the design and contracting of an expansion to the existing building. This expansion housed the new library facilities and assistance was provided in designing and equipping this facility.
- d) Technical assistance was provided to AIS for the repair of 25 existing pieces of A-V equipment.
- e) Technical assistance was provided to AIS concerning the design, collection and analysis of evaluative data assessing the effectiveness of AIS services and other sources of information preferred by the farming and extension community (to be completed February 1991).

3. MOA Inter-Institutional Coordination

Technical assistance was provided early on to the project initiated "Task Force for Training and Extension Packages". The objective of this work was to facilitate coordination between the MOA and AIS. The details of this work, responding to evolving needs, changed in 1989. A replacement group the Training/Communications Coordination Committee (T/CCC) then took over for the Task Force. Technical assistance by the project was active in the formation and subsequent successes of the T/CCC.

The T/CCC put in place a sustainable mechanisms linking farmer activities with extension in-service training by headquarter specialist staff. This mechanism ensured a constant infusion of informational needs from the farmer via extension staff to headquarter based specialists and diffusion of information in reverse. AIS staff play a key leadership role in managing this mechanism, hence ensuring that AIS generated media messages are responding to real needs and are factual. The T/CCC initiated the establishment of Training/Information Officers in all headquarter technical divisions and all ten rural districts. They serve to facilitate coordination for all training and instructional media issues.

4. LAPIS, FAO and UNDP/UNFPA Coordination

In 1987-89, FAO initiated two short-term assistance programs at AIS. These programs trained and equipped AIS staff for the capability of conducting multi-media campaigns. LAPIS project technical assistance and funding were provided in support of these efforts. In 1990 UNDP/UNFPA launched a three year support project at AIS. This project seeks to support and expand the successes of previous LAPIS project and FAO program interventions. This project will help decentralize much of AIS's activities and utilize the capabilities of conducting campaigns extensively. The project will carry on directly with the work of the T/CCC. LAPIS project technical assistance was provided in the design and initial implementation stages of this project.

V. CURRENT STATE OF DEVELOPMENT AT AIS

A. Flow Inputs/Stock Resources

1. AIS/NOA Budget 1985/86 - 1990/91

a) Budgets:

1985/86

Salaries and wages (41 positions*)	M.	153959
Travel and transport (5 vehicles)	M.	45792
Office administration	M.	4351
Operating costs	M.	14464
Special expenditure	M.	45264
Total	M.	263833

1986/87

Salaries and wages (40 positions*)	M.	165109
Travel and transport (4 vehicles)	M.	69520
Office administration	M.	9382
Operating costs	M.	18910
Special expenditure	M.	17370
Total	M.	280291

1987/88

Salaries and wages (40 positions*)	M.	182746
Travel and transport (4 vehicles)	M.	116830
Office administration	M.	19305
Operating costs	M.	30866
Special expenditure	M.	95588
Total	M.	445335

1988/89

Salaries and wages (42 positions*)	M.	177407
Travel and transport (5 vehicles)	M.	145654
Office administration	M.	31752
Operating costs	M.	69220
Special expenditure	M.	-
Total	M.	424033

1989/90

Salaries and wages (49 positions*)	M.	328615
Travel and transport (6 vehicles)	M.	220430
Office administration	M.	63496
Operating costs	M.	110303
Special expenditure	M.	-
Total	M.	843278

1990/91

Salaries and wages (50 positions*)	M. 341522
Travel and transport (6 vehicles)	M. 225212
Office administration	M. 87808
Operating costs	M. 153948
Special expenditure	-
Total	M. 808490

- * Position numbers stated are established positions - in 1985/86, 31 of 41 positions were filled; in 1986/87, 32 of 40 positions were filled; in 1987/88, 30 of 40; in 1988/89, 32 of 42; in 1989/1990, 41 of 49; and in 1990/91, 41 of 50 positions were filled.

b) Analysis of Budgetary Trends

The approximate 50% increase in the AIS budget from 1986/87 to 1987/88 was based specifically on increased expenditures for: local travel, postage, printing supplies, equipment maintenance, book purchases and media equipment purchases (recorders). The approximate 100% increase in the budget from 1988/89 to 1989/90 was based on increased expenditures for the same items as listed above and for the salaries of an additional seven new staff members. These seven staff members are extension personnel holding assistant-level positions. The increase in staff numbers may be viewed as increased MOA support for AIS; yet they are junior staff, inexperienced, and their professional contribution will be basic initially. The increase in commodity, travel and maintenance budgets should be viewed as increased MOA support and reflects an awareness of the need to sustain ongoing services, contact with the rural districts and maintenance of newly acquired equipment.

2. Change Propensity

Change at AIS from 1986 to 1990 has been dramatic. The number of degree holders has increased by 150%, from 2 to 5. Short-term training opportunities have provided for increased skill levels. Commodity purchases have enabled AIS to mount a relatively sophisticated publication function. Exposure and coordination with other MOA divisions and district offices has improved the ability to provide for real needs. AIS has changed alot and given the fact that they played the key role in implementing

this change (LAPIS technical assistance was only one of guidance), the propensity for growth and change in this institution was and continues to be great. LAPIS and FAO assistance has come to a close but UNDP/UNFPA assistance has recently been initiated and AIS services should continue to improve with this guidance.

3. Capital

a) Physical Capital

The physical facilities housing AIS are small. The addition to the building funded by the project has provided for an office, a computer room and a library. This has helped considerably, yet space remains constrained. LAPIS has fully equipped AIS with the capability of producing and distributing professional publications for the MOA. All necessary equipment is operational. A fully equipped library can now service the MOA and its clientele. The radio section continues well off. The audio-visual and press sections, supported by FAO, have improved with the addition of video and audio recorder equipment. The photography function at AIS is adequately equipped to produce black and white photos; yet equipment for making half-tones and for processing color slides is needed. The graphics function is equipped at a basic level and if these operations are to develop, equipment will be required. Transportation (3 Land Cruisers) provided by UNDP/UNFPA has helped to alleviate the constraint affecting mobility.

b) Human Capital

See earlier section (A.1.) concerning staffing trends. There are presently 50 positions of which nine are vacant. Twelve professional staff, Twenty one assistant-level staff and eight junior level are in position. The increase in staff numbers during the life of the project may be viewed as supportive; yet these additional staff are assistant-level (recent certificate holders), inexperienced, and their professional contributions will be basic for a sometime to come. In the 1989/90 and 1990/91 budget estimates submitted to the MOA by AIS, four new positions (Production Supervisor, Printing/Computer Assistant and two Typists) were requested. In both cases these requests were denied. These positions are needed to adequately support the new publication function initiated by LAPIS. Five AIS staff members now have degrees and 45 staff members received short-term training opportunities under LAPIS since 1986. Skills levels are better, yet there is still need for improvement especially in the realm of management for the professional staff.

B. Intermediate Products

1. Leadership

Leadership at AIS is vested in the hands of the Chief Information Officer (CIO), Senior Information Officer (SIO) and heads of the eight operations/technical sections. Five of these individuals will have B.S degrees (CIO and four technical section heads). Leadership is better now than it was in 1986, yet still requires some development. Upper level management (CIO and SIO) need to more closely monitor section activities, facilitate planning and hold staff accountable for production targets. Section heads need to do likewise. Constraints to production no longer lie in a lack of technical expertise but in a lack of administrative accountability. Leadership dealing with external linkages to other MOA divisions and districts has improved considerably. Important leadership to the MOA's Training/Communications Coordination Committee (T/CCC) is provided by an AIS staff member. UNDP/UNFPA project are doing much to improve the decentralized link between MOA district activities and AIS.

2. Internal Structure

The internal structure of AIS is adequate. The C.I.O., S.I.O and section heads serve as managers for five technical sections (Press, A-V, Radio, Graphics, and the new Campaigns section) and three operations sections (Maintenance, Stores and Accounts). The ratio of administrator to subordinate is manageable. AIS now has three staff members posted to the three districts of Butha-Buthe, Thaba-Tseka and Mohale's Hoek. AIS staff should also be posted to the remaining seven districts. Good linkages with other MOA divisions and rural districts now takes place via the T/CCC.

3. Doctrine

AIS now views it's mandate differently than it did in 1986. The feeling at AIS now is that it's services should primarily supply the needs of the farmers and the MOA extension services and secondarily the public-relations needs of the various GOI/NOA officials. Radio broadcasts, publications and campaigns are regularly scheduled activities targeting farmers and extension staff. The ongoing UNDP/UNFPA project, picking up on the past activities of the two FAO programs, is specifically working with farming communities in three districts.

4. Program

The objectives of AIS, as explained in the previous section (B.3.) concerning "Doctrine", are primarily defined as supplying the farmers and MOA extension services with the required instructional media materials. To meet these objectives AIS now takes advantages of it's links to other MOA divisions and districts via the activities of the T/CCC and network of Training/Information Officers. These links provide an infusion process of transferring needs from the farmer/extension level to the headquarter division specialists and a diffusion of information in reverse. These links keep the programming process at AIS aware of priority issues and guarantee a supply of factual information. The ongoing UNDP/UNFPA project has put into effect another infusion:diffusion process using various community groups in three districts as their means of coordination for effective programming. The UNDP/UNFPA project has also pledged support to the activities of the T/CCC until 1993.

5. Linkages

As was stated in the previous section (B.4.) concerning "Programming", linkages between AIS and the various MOA headquarter divisions and rural district offices has improved considerably. The T/CCC and network of Training/Information Officers represent a permanent means of coordination. The terms of reference for these T/I Officers has been agreed to at all levels in the MOA. They are charged with coordinating the training and instructional media needs of their divisions/districts offices. The T/CCC acts as a steering committee for this group and AIS provides important leadership in the T/CCC. The marriage of training and media inherent in this coordinating system and the link provided between farmer, extension and headquarter staff ensures that AIS is kept current and that their information is factual. The UNDP/UNFPA project also works to improve the link between AIS and farmers/extension staff via their work in three rural districts. This effort has done much to improve the link to district offices.

6. Technology Acquisition

The situation at AIS pertaining to their ability at acquiring new technology has much improved. The presence of LAPIS project, FAO program and UNDP/UNFPA project activity has allowed AIS to take on new printing, computer, photography, recording and video technologies. LAPIS intervention cemented the adoption by AIS staff of a publication function and FAO affected greatly AIS staff's ability to conduct multi-media campaigns. UNDP/UNFPA will make use of these new technologies. The improved ability of AIS to acquire new technologies on their own, from non-donor sources, is best reflected by their commitment to improving their library facility. LAPIS provided the funds for the structure, but MOA has provided (since 1987) the money for book and periodical purchases. The MOA, since 1987, has also increased the budget for AIS purchasing of printing supplies and media equipment (audio, graphics, photo, etc.). UNDP/UNFPA support will continue until 1993, hence technology acquisition will be facilitated. For AIS to remain a dynamic institution computer software must be constantly updated, graphics technology must be advanced and photo/video

capabilities must be more fully integrated. AIS needs to convince MOA of the importance of supporting these activities on a systematic and on-going basis.

7. Resource Mobilization

As was reflected in all previous sections, AIS's ability at mobilizing resources has improved dramatically. Prior to 1986 AIS had never received directed donor support. Now three projects/programs have been implemented and MOA's budget for AIS has increased over 220% since the beginning of the LAPIS project. UNDP/UNFPA assistance will continue until 1993 and should help further expand AIS's realm of influence in mobilizing resources to help itself.

C. Outputs

1. Current Services

a) Press Section

Now managed by a recently returned B.S. degree graduate. This section continues to produce bulletins, news articles and technical information for print and radio. Because of the decreased focus on public-relations type of information reporting, this section now produces much more technical information. "The Temo Times", an MOA newsletter initiated by the LAPIS project, is now institutionalized. Leaflets, circulars, bulletins, reports, handbooks, lecture notes and research guidelines are produced for farmers, MOA staff and students in english and sesotho. To date, over 60 leaflets, 70 circular, 10 reports and bulletins, 17 handbooks, 25 lecture notes and 25 research guidelines have been or are in the process of being produced.

Because of the abnormal pressures exerted by LAPIS project activity on the production of publications some of the reports, lecture notes, and research guidelines were not printed at AIS. These materials were patterned on AIS formats and are cataloged and distributed via AIS. As pressures are reduced, project precipitated printing at AIS will phase in more completely.

Distribution of these materials is now much more effective. To date over 4500 copies of materials are distributed in mass mailings to community groups, school groups, associations and institutions. To date over 3800 copies of materials are distributed individually to farmers and extension staff. The mailing lists were compiled by receipt of questionnaires requesting personal inclusion and are maintained on a computer which generates mailing labels. Other forms of distribution include support to campaigns, pitsos and direct distribution via COOP Lesotho depots.

A mechanism for ensuring a steady flow of information to the press section has been institutionalized. This mechanism, facilitated by the T/CCC, serves to link extension staff training with publication and radio broadcast production. This mechanism, a quarterly extension training program, ensures that priority issues are handled factually. The T/CCC and its network of division/district Training/Information Officers serves to coordinate publication production and dissemination throughout the MOA and Lesotho.

An evaluation of the perceived effectiveness of AIS publications and radio broadcasts is presently being implemented. The results should be available in February of next year and will be published as a separate report.

b) Radio Section

The number of radio broadcasts aired over Radio Lesotho by AIS is the same now as it was in 1986. Ten programs are produced each week; eight of fifteen minutes and two of thirty minutes. Instructional information is now much more prominent. As was stated above (section C.1.a), a mechanism linking extension staff training with publications and radio broadcasts has been institutionalized. This ensures that priority issues are handled factually. Also, as stated above, an evaluation of the effectiveness of radio broadcasts is being implemented and will be reported in February.

c) A-V Section

Now managed by a recently returned degree graduate. This section, charged with producing photographs and video programs for public-relations and instructional purposes, has developed somewhat. Photo developing equipment was upgraded by LAPIS and video equipment installed by FAO. Video equipment was also supplied to the three districts that UNDP/UNFPA work in (Butha-Buthe, Thaba-Tseka, Mophale's Hoek). Color photo developing (slides) has yet to be a capability. Production by this section has not met it's full potential. Slide and video shows are produced but quality and quantity need improvement. It is expected that the new head of section, tapping the impetus to produce provided by the UNDP/UNFPA project, should provide the required leadership. It is expected that slides and video will play an important role in the future.

d) Art-Section

This section, charged with producing posters and graphics materials for inclusion in publications, requires further development. LAPIS supplied a minor amount of equipment for these purposes. Output from this section is minimal. Posters are occasionally produced; graphics material for publications are rarely developed. The recent absence of a trained artist has inhibited the inclusion of work from this section into publications. A computer scanner was recently purchased to offset this deficiency and the press section is just now learning how to use it.

e) Campaign Section

This section was put in place in 1988 and was instigated by the FAO programs. This section, headed by a degree graduate, seeks to tap the resources of the other four technical sections. Multi-media campaigns were routinely run by AIS prior to program/project intervention but have improved greatly in past years. The ongoing UNDP/UNFPA project will make constant use of this capacity. An infusion mechanism for generating the specific content of messages is in place. An evaluation mechanism for assessing their effectiveness is now being developed.

2. Influence

The level of influence which AIS exerts today is considerably greater than in past years. Those statements included in an earlier section (B.7) pertaining to "Resource Mobilization" lend credence to this fact. Not only has AIS influenced IAPIS, FAO and UNDP/UNFPA but has also influenced the MOA (reflected by a 220% budget increase since 1986). Influence by AIS is facilitated throughout the MOA and Lesotho by the work of the T/CCC and network of division/district Training/Information Officers. AIS staff have also expanded their influence since 1987 by assisting with the teaching of a course on "Extension Methods" at the Lesotho Agriculture College.

3. Institutional Reinvestment

As mentioned previously, AIS has managed to attract resources from both the MOA and donor community. Their own monies have been allocated to further development of their press section, library and district based work in the way of books, printing materials, postage and travel costs. The reorganization of staff and subsequent creation of a "campaign section" evidenced an investment in more effective operations. The change in doctrine from one of public-relations reporting to one of instructional media assistance for farmers and extension staff evidences an investment in Lesotho's development. Training for the staff both long-term degree and short-term, represents an investment in human capital. Ongoing UNDP/UNFPA assistance should help to maintain and institutionalize this momentum.

VI. IMPLICATIONS FOR THE FUTURE

A. Management Issues

1. The size of the headquarter based staff at AIS has nearly reached it's maximum. Additions of assistant-level personnel, hired by the MOA based on historical precedent (habit), should be discouraged.
2. District based AIS officers should be posted to the seven districts which do not have officers at this point in time (Butha-Buthe, Thaba-Tseka and Mhale's Hoek do have officers). This will do much to improve the decentralized activities of AIS.
3. Incentives for increased job performance should be made available to all Section Heads. Section Heads must take a more active role in supervising their staff. Personnel management training should be provided.

B. Budget Issues

Each year NOA/GOL should provide systematic adjustments to the budget based on calculated annual salary increases and inflation pressures on operating costs. Systematic increases have not been the case. Occasional annual increases and decreases during the past six years confuses planning and operation procedures. See also the comments following in section (C.1.b.) concerning operating costs for the printing function.

C. Services

1. Printing Function

- a) Better management of this function needs to be provided. The appropriate section head post should be upgraded to compensate for the level of responsibility required. This particular position carries management responsibilities for a large number of staff and activities (typesetting, printing, collating, distribution, record keeping). The position might be renamed "production supervisor", as per past request to NOA for upgrading/establishing the status of this position.
- b) The positions of printing/computer assistant and two typesetters, previously requested of the NOA, should be established and filled.

- c) The mechanism for maintaining operating costs for this function needs to be improved. Either a revolving fund should be set up to accept revenue from other divisions and/or the AIS budget should be increased to accommodate all printing requirements of the divisions. It estimated that over M3000 per month is at stake.
- d) Size of the run and distribution of all publications should be carefully checked to make sure that the capacity of AIS is not exceeded. Time factors, quality of print, personnel constraints and level of cost should be monitored with the focus on optimum production capacity.
- e) Graphics should be incorporated to a greater degree in all publications. Equipment for making half-tones so as to enable the inclusion of black and white photos should be purchased.

2. Photo/Video Function

These functions should be more adequately developed. Video can play an important role in documenting "infusion" information from the field and delivering it to appropriate sources. Video and photo media can play an important role in providing instructional information to extension staff and farmers.

3. Graphics Function

A full-time skilled artist should be employed. Graphics technology should be improved. Half tone equipment should be supplied. The computer scanner should be used more professionally. Publications should incorporate more graphics to improve readability and appearance (especially for less literate audiences).

4. Equipment Maintenance Function

Maintenance is of growing importance given the increased numbers of fairly sophisticated equipment (computer, print, video). Adequate training should be provided to staff in the appropriate section. Fault tracing of electronic equipment should be emphasized.

D. Training

Long-term (degree) and short-term training opportunities should be maintained for the staff. This can provide incentives for improved job performance as well as increased skill levels. In particular, training should be provided in equipment maintenance and personnel management.

E. Technology Acquisition

Books and periodicals for the library should be constantly updated and the facility should be maintained in a way that encourages AIS staff and clientele to use it. Computer software should be periodically upgraded.

F. Physical Facility

AIS operations remain severely constrained by a lack of physical space. The adjacent buildings, now controlled by the Conservation Division, should be allocated to AIS.

G. Linkages

Activities of the T/CCC and network of Training/Information Officers, including the Quarterly Extension In-Service Training Program, should be firmly supported. These activities are an important institutionalized source of coordination between AIS, MOA divisions and the farming community.

H. Donor Support

The ongoing UNDP/UNFPA project and all future projects, regardless of the theme which they wish to support, if involved with using AIS services should recognize the need for building on the capabilities of (improving) the institution.

COMMODITY HANDOVER OF JULY 10, 1991

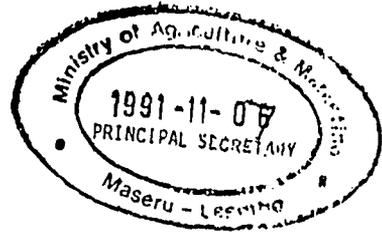
- HANDED OVER TO:**
- 1. ADMINISTRATION DEPARTMENT**
 - 2. LESOTHO AGRICULTURAL COLLEGE**
 - 3. AGRICULTURAL RESEARCH DIVISION**
 - 4. DEPARTMENT OF CROPS SERVICES**
 - 5. DEPARTMENT OF ECONOMICS AND
MARKETING**

UNITED STATES A.I.D. MISSION TO LESOTHO

AMERICAN EMBASSY
P.O. BOX 333
MASERU 100
LESOTHO

Telephone 313954
Telex 4506 USAID LO

October 30, 1991



The Principal Secretary
Mr. R. L. Ntokoane
Ministry of Agriculture, Co-operatives
and Marketing
P.O. Box 24
Maseru 100

Subject: Official Transfer of Commodities Procured through the LAPIS Project to the Ministry of Agriculture, Co-operatives and Marketing

Dear Reid:

As you know, the LAPIS Project is in the process of winding down its activities and systematically handing over commodities to relevant Ministry Sections, Divisions and Departments.

Attached is a list of commodities for which AAI has already transferred control to:

1. The Administration Department
2. The Lesotho Agricultural College
3. The Agricultural Research Division
4. The Crops Department and
5. The Department of Economics and Marketing

You will notice that the appropriate Department and Division Heads have by signature already acknowledged receipt of the commodities. However, USAID is, as of the date of this letter officially requesting you to accept the listed commodities on behalf of the Ministry of Agriculture and the Lesotho Government in general.

Please acknowledge receipt of these commodities by signing in the space provided below, and returning the signed copy to us; the second original is for your files.

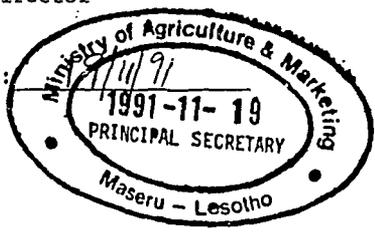
Sincerely,

F. Gary Towery
F. Gary Towery
Mission Director

Reid

for Mr. Reid Ntokoane
Principal Secretary
Ministry of Agriculture

DATE:



160

AMERICAN AG INTERNATIONAL

P.O. Box 333 • Maseru 100 • Lesotho • Int 311932 • Telex 4510 LO

M E M O R A N D U M

TO: Ms. Catherine McIntyre, ADO/USAID
FROM: Administrative Manager, LAPIS
REF: LAPIS/AAI/109
SIGN: 
NAME: W. C. Arnold
DATE: 10 July, 1991

An extensive exercise has been completed wherein commodities purchased by the LAPIS Project have been inventoried by the respective recipient Department/Division of the MOA. At this time, we are officially transferring those items identified on the attached lists to the ministry. In each case receipt has been indicated by the Department/Division Head's signature on the applicable listing.

American Ag International requests the USAID Mission to formally hand over these commodities to the MOA/GOL. AAI will submit to AID an amended 1991 "Annual Report of Government Property in Contractor's Custody" report so indicating that these items are now removed from the control responsibility of the contractor.

Commodities purchased for the Agriculture Information Service (AIS) and the Farmer Training Centers (FTC) were officially handed over by AAI on previous submissions and documentation is one file at USAID.

Those commodities yet remaining under the control of AAI will be handed over in a follow-on exercise prior to the end of the project in May 1992. Thank you for your consideration on this matter.

Regards,

cc: RCO, Swaziland
COP/LAPIS
Property File

AMERICAN AG INTERNATIONAL



P.O. Box 333 • Maseru 100 • Lesotho • Tel 311932 • Telax 4510 LO

MEMORANDUM

TO: Mr. R.L. Ntokoane/P.S. Ministry of Agric

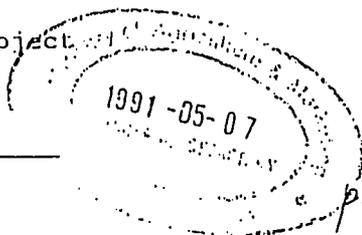
FROM: Administrative Manager/LAPIS Project

REF.: LAPIS/II/5-9

SIGN: W.C. Arnold

NAME: W.C. Arnold

DATE: 7 May, 1991

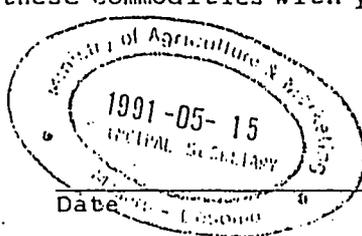


Transfer of LAPIS ADMINISTRATION Commodities to MOA

In keeping with the phasing-out of the LAPIS Project and subsequent handing over of activities to MOA that were formerly supported by the Administration Division of LAPIS, we are handing over certain commodities to MOA.

The items are listed on the attached page which should be initialled by you on behalf of the Government. Other items which were, or will be purchased by the project will be transferred in due course.

Please concur and indicate receipt of these commodities with your signature below.



R.L. Ntokoane

R.L. Ntokoane
Principal Secretary
Ministry of Agriculture & Marketing

R

1/66

LAPIS PROJECT

MINISTRY OF AGRICULTURE

COMMODITY REGISTER

ASSET NUMBER	DESCRIPTION	QTY	ASSIGNED TO/ LOCATION	SERIAL NUMBER/ COMMENTS
01/01	SPARTAN PC 640K D/D	1	DFS OFFICE ✓	S.N.8704101015/002538
02/01	FUJITSU PRINTER & CABLE	1	DFS OFFICE ✓	S.N. T0004596
02/01-03	702 CHAIRS	3	DIR. FIELD SERVICES ✓	
03/01-02	EXECUTIVE DESKS	2	PS & DPS ✓	
04/01	SECRETARIAL DESKS	1	PS SEC. ✓	
05/01	SECRETARIAL DESKS	1	PS SEC. ✓	
06/01	MADISON DESK WITH L-EXTEN.	1	Mrs. HONYANE	FORESTRY DIVISION #200
07/01	BOARDROOM TABLE	1	DFS OFFICE ✓	
08/01	BOOKSHELF	1	DFS OFFICE ✓	
09/01-05	4-DRAWER FILING CABINET	5	DFS OFFICE ✓	
10/01	CHAIR TYPE 702	1	DFS OFFICE ✓	
11/01-03	CHAIR TYPE 702	3	DFS OFFICE ✓	
12/01-04	CHAIR TYPE 702	4	DFS OFFICE ✓	
13/01	COMORE L DESK	1	DFS OFFICE ✓	
15/01	SNR. EXECUTIVE CHAIR	2	P.S. SECRETARY ✓	
16/01	SECRETARY CHAIR	1	DIR. FIELD SCES. SEC ✓	
17/01	CIRCULAR TABLE 1350 DIAMETER	1	P.S. - R.NTOKOANE ✓	
18/01	DROPPED L-EXTENSION	2	P.S. SECRETARY ✓	
19/01-02	CURTAIN FITTED	2	GUGUSHE'S OFFICE ✓	
20/01-06	BURGLAR BARS	6	P.S. - R.NTOKOANE ✓	

1) Received
 DATED : _____
 14/05/91

LESOTHO AGRICULTURAL PRODUCTION AND
INSTITUTIONAL SUPPORT PROJECT (LAPIS)

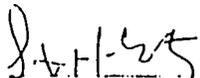
AMERICAN AG INTERNATIONAL



P.O. Box 333 • Maseru 100 • Lesotho • Tel 311932 • Telex 451010

To : Mr. C. Cweba - IAC Principal

From : S. Goertz - AEC Team Leader.

Sign :  _____

Date : 3 Mar, 1991

RE : Transfer of LAPIS commodities to IAC.

In keeping with the phasing-out of the LAPIS Project and subsequent handing over of activities to IAC that were formerly supported by LAPIS, we are handing over certain commodities to IAC.

The items are listed on pages 1 through 9 for Maseru, and one page each for Ag. Information Services and the Farmer Training Centres (attached). Each page should be initialled by you on behalf of the Government. Other items which were, or will be purchased by the project will be transferred in due course.

Please concur and indicate receipt of these commodities with your signature below.



C. Cweba - IAC Principal

3/25/91
Date

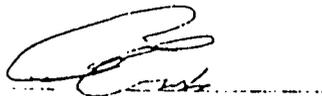
1/68

REGISTER OF NON-EXPENSE ITEMS EXCEEDING \$50 (M120)

EDUCATION COMPONENT

ASSET NUMBER	DESCRIPTION	QTY	ASSIGNED TO/ PRESENT LOCATION	SERIAL NUMBER COMMENTS
CE001/01	CHICKEN COOP PROJECT	X	LAC	
CE005/01	CONCRETE STEPS/PAVING	1	A.V THEATRE	
CE003/01	BUILDINGS - DAIRY PROJECT	1	STUDENT ENTERPRISE PROJECTS	
CE009/01	ASBESTOS PIPE/LAC ORCHARD	1	LAC ORCHARD	
CE010/01	ERECTION OF SOS OFFICES	1	SOS OFFICES LAC	
CE011/01	LIBRARY THEFT CONTROL	1	SOS OFFICES LAC	
CE012/01	SECURITY LIGHTING SYSTEM	1	SOS OFFICES LAC	
CE017/01	BUILDING MATERIALS	1	A. KING	
CE017/02	BUILDING MATERIALS	1	A. KING	
CE018/01	BUILDING MATERIALS	1	A. KING	
CE019/01-02	BURGLAR BARS	2	LAC OFFICES	
CE020/01	BURGLAR BARS	1	HOME ECONOMICS	
CE022/01-04	RABBIT CAGES	4	SEP PROJECT	
CG001/01	GREENHOUSE	1		
CK001/01	KRAALS	X		
CI001/01	MICRO JET IRR. EQUIP.	1	W.HISHEK	
PI001/01	PLANIMETER - G.P. SLIDING	1	PIC - H. MOORE	IRRIGATION SCHEME
PI002/01-08	8FT3 ABNEY LEVELS	8	IRRIGATION EQUIPMENT	
PI003/01	PENTAX THEOLITE	1	ROOM 42, H. WOODS, D. ALLEN, D. NICHOLS, C. L. „B. D.	
PI004/01-02	ST005 WOODEN TRIPDS	2	H. MOORE	
PI005/01	883Y/8m. RADONE STEEL TAPE	1	H. WOODS	
PI006/01-02	32520 5m/3 SECT STAVES	2	DAMAGED- H. MOORE	
PI007/01	PV750/5 FISCO PACER TUFCO	1	H. MOORE	
PI008/01	PENTAX AUTO LEVEL	1	H. MOORE	
PI022/01	PH STAND, D/UNIT, SCALE	1	H. MOORE - ROOM 20	
PI009/01-02	WOODEN TRIPDS ST2005	2	H. MOORE/G. JOHNSON	SERIAL No. #621009
PI010/01-02	TH 80 S DIGITAL THEOLIT	2	H. MOORE/G. JOHNSON	& 520983
PI011/01-02	OZATEC N841mm x 20m.	2	H. MOORE/G. JOHNSON	& 520983
PI012/01-03	OZATEC D/H T 05mm.	3	H. MOORE/G. JOHNSON	& 520983
PI013/01-03	HI-TECH SET	3	ROOM 42(2). C. LOGAN	
PI014/01-03	PROTRACTOR SET	3	ROOM 42(2). C. LOGAN	
PI015/01	TAKE-UP WINCH ELEC. MOTOR	1	STOLEN FROM LAC	
PI016/01-02	SHARP CALCULATOR EL S103	2	ROOM 42(1). C. LOGAN	
PI017/01-02	WINCH	1	PIC	
PI019/01-03	PUMP/DIESEL ENGINE - TRAI	3	H. MOORE	1 IRRIGATION SCHEME
CF007/01	IRRIGATION PUMP/HYDROLOGY	1	AEC (BEN TYSON)	
AI001/01	WELL-KOIRT SCHEME	1	LAC	SWEC

SIGNED :



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REGISTER OF NON-EXPENSE ITEMS EXCEEDING \$50 (M120)

EDUCATION COMPONENT

ASSET NUMBER	DESCRIPTION	QTY	ASSIGNED TO/ PRESENT LOCATION	SERIAL NUMBER COMMENTS
CA001/01	ZENITH P.C. GS 158	1	COMPUTER ROOM	614000470
CA002/01	TOWERMAN 600VA SINE	1	COMPUTER ROOM	
CA003/01	EPSON PRINTER	1	COMPUTER ROOM	22004305
CA004/01	EPSON FX-105 PRINTER	1	COMPUTER ROOM	03000719
CA005/01	MITAC 840R P.C.	1	STOLEN	0002860/202402
CA005/02	MITAC 840R P.C.	1	OPERATIONS ROOM	0002808/202485
CA005/03	MITAC 840R P.C.	1	LAC SECRETARY	0002795/20560
CA006/01	2-WAY PRINTER SWITCH	1	COMPUTER ROOM	
CA007/01	PRINTER SWITCH	1	COMPUTER ROOM	
CA026/01	ABC SWITCHBOX PARALLEL	1	COMPUTER ROOM	
CA024/01-02	LARGE PRINTER STANDS	2	COMPUTER ROOM	
CA010/01-03	COMPUTER ROOM TABLES	3	COMPUTER ROOM	
CA016/01	EPSON PRINTER FX1000	1	COMPUTER ROOM	19008050
CA017/01	UPS 600VA (MODEL P)	1	OPERATIONS ROOM	
CA018/01	EPSON PRINTER LQ850	1	LAC SECRETARY	08020397
CA019/01	UPS 600VA (MODEL P)	1	COMPUTER ROOM	
CA020/01	LARGE PRINTER STANDS	1	COMPUTER ROOM	
CA021/01	TREN-TECH AT/XT 40mb	1	COMPUTER ROOM	88011228/010208
CA022/01	EPSON PRINTER FX1050	1	LAC SECRETARY	0800168
CA023/01	UPS 600VA (MODEL P)	1	COMPUTER ROOM	

SIGNED :



REGISTER OF NON-EXPENSE ITEMS EXCEEDING \$50 (M120)

EDUCATION COMPONENT

ASSET NUMBER	DESCRIPTION	QTY	ASSIGNED TO/ PRESENT LOCATION	SERIAL NUMBER COMMENTS
CB001/01	KEY CABINET	1		
CB004/01	DESKS	1	LAC F. BOBBITT	
CB005/01	DESKS	1	LAC - A. KING	
CB006/01	DESKS	1	LAC - B. TYSON	
CB007/01-04	CARPETING FOR OFFICES	4	OFFICES 1-4	
CB008/01-02	FILING CABINETS	2	B. TYSON(2)	
CB009/01-04	FILING CABINETS	4	LAC SEC., P. Van Der VEURE, W. NISHEK, P. FORREST	
CB010/01	STATIONERY CABINET	1	LAC SECRETARY	
CB011/01-02	706 CHAIRS	2	A. KING/W. NISHEK	
CB012/01	BOOKSHELVES	1	F. BOBBITT	
CB013/01	705 CHAIRS	1	B. TYSON COUNTERPART	
CB014/01	COMMO L. DESK	1	LAC PRINCIPAL	
CB015/01	702 CHAIRS	1	F. BOBBITT	
CB016/01	SECRETARIAL DESKS	1	LAC SEC.	
CB017/01-02	TYPIST CHAIR	2	LAC SEC./COM. ROOM	
CB018/01-03	TYPIST CHAIR	3	COMPUTER ROOM	
CB023/01	KEY CABINET	1	LAC SEC.	
CB025/01	FABRICS FOR STAFF ROOM	1	LAC STAFF ROOM	
CB025/01	DINING TABLE	1	LAC STAFF ROOM	
CB026/01	ROUND DINING TABLE	1	LAC STAFF ROOM	
CB027/01-04	1.2m. BENCHES & UPHOLSTRY	4	LAC STAFF ROOM	
CB028/01-36	PLAIN DINING CHAIRS	36	LAC STAFF ROOM	
CB029/01-04	ARMCHAIRS STAINED	4	LAC STAFF ROOM	
CB030/01-02	OCCASSIONAL TABLES	2	LAC STAFF ROOM	
CB031/01-05	.9m. BENCHES	5	LAC STAFF ROOM	
CB032/01	RECTANGULAR COFFEE TABLE	1	LAC STAFF ROOM	
CB033/01	SET SHELVING UNIT	1	F. BOBBITT	
CB034/01	005 SET CHAIR	1	F. BOBBITT	
CB036/01	CLASSROOM CURTAINS	1	LAC CLASSROOM	
CB037/01	1500 X 800 S.P. DESK	1	F. BOBBITT	
CB039/01	PLAQUE FOR AV THEATRE	1	A/V THEATRE	
CB038/01	KEY CABINET	1	BURSER'S ROOM	
CB041/01-02	1800 HERALD D/P DESK	2	F. ROOYANI/G. JOHNSON	
CB041/03-04	9401 MARVAL CHAIRS	2	F. ROOYANI/G. JOHNSON	
CB043/01	1800 CENTURY D/P DESK	1	S. GOERTZ	

SIGNED :



02 May-91

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REGISTER OF NON-EXPENSE ITEMS EXCEEDING \$50 (M120)

EDUCATION COMPONENT

ASSET NUMBER	DESCRIPTION	QTY	ASSIGNED TO/ PRESENT LOCATION	SERIAL NUMBER COMMENTS
CB044/01	4 DRAWER FILING CABINET	1	F. BOBBITT	
CB045/01-04	SWIVEL & TILT # 705 CHAIR	4	P. FORREST, S. GOERTZ, AGRONOMY, MOOROSI	
CB046/01	EXECUTIVE DESK	1	MAKHETE	#38 F BUILDING MED
CB047/01-02	TYPISTS CHAIRS	2	W. NISHEK/MAKHETE	#38 F BUILDING MED
CB048/01	4-DRAWER FILING CABINET	1	A. KING	
CB049/01	OFFICE DESK	1	AEC - W. NISHEK	55583
CB051/01	CURTAINS AT A/V THEATRE	1	A/V THEATRE	
CB052/01	CURTAIN MATERIALS	1	IAC STAFF ROOM	
CB053/01	BRONZE PLAQUE	1	IAC STAFF ROOM	
CB054/01	4 DRAWER FILING CABINET	1	B. KING	
CB055/01-02	705 CHAIRS	1	B. TYSON	
CB058/01	DESK	1	IAC SECRETARY	
CB057/01	CHAIR	1	IAC SECRETARY	
CB058/01	DESK	1	P. FORREST	
CB061/01-09	HIGH BECK CHAIR	9	BEN TYSON	NEW OFFICE BUILDING
CB062/01-10	EAST DESK D/PEDESTAL	10	BEN TYSON	NEW OFFICE BUILDING
CB063/01	TYPIST CHAIR	1	BEN TYSON	NEW OFFICE BUILDING
CB064/01-09	4 DRAWER FILING CABINET	9	BEN TYSON	NEW OFFICE BUILDING
CB065/01	STUDENT DESK AND CHAIRS	150	BEN TYSON	NEW OFFICE BUILDING
CB066/01	STATIONARY CUPBOARD	1	BEN TYSON	NEW OFFICE BUILDING
CB075/01	DESK BUILD/CLASSROOM	1		
CB076/01	SA SAFE	1		
CB077/01-04	SUPER 3 HEATER	4		

SIGNED :



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02-May-91

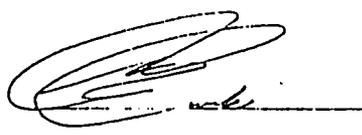
PAGE 4

REGISTER OF NON-EXPENSE ITEMS EXCEEDING \$50 (M120)

EDUCATION COMPONENT

ASSET NUMBER	DESCRIPTION	QTY	ASSIGNED TO/ PRESENT LOCATION	SERIAL NUMBER COMMENTS
CC005/01	OLYMPIA WP ETK 1 PLUS	1	LAC SECRETARY	S/N: 9401010-S,392569
CC006/01	OLYMPIA PORT. TYPEWRITER	1	LAC SECRETARY	SERIAL # 81010791
CC007/01	OLYMPIA MANUAL TYPEWRITER	1	LERIBE	SERIAL # 05660822
CC008/01	OLYMPIA PORT. TYPEWRITER	1	LAC SECRETARY	SERIAL # 81010789
CC010/01	CASIO CALCULATOR	1	COMPUTER ROOM	
CC011/01	SHARP PHOTOCOPIER SF 8200	1	PHOTOCOPYING ROOM	SERIAL NO. 65602787
CC012/01	XEROX PHOTOCOPIER	1	STOLEN	SERIAL NO. 2117944533
CC013/01	ELECTRONIC SURVEILLANCE	1	LAC LIBRARY	CHECK UNIT H-055
CC014/01	LUXOR BOOK TROLLEY	1	LAC LIBRARY	CARD CAT. TROLLEY
CC014/02	CATALOGUE CABINET	1	LAC LIBRARY	

SIGNED :



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02-May-91

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REGISTER OF NON-EXPENSE ITEMS EXCEEDING \$50 (M120)

EDUCATION COMPONENT

ASSET NUMBER	DESCRIPTION	QTY	ASSIGNED TO/ PRESENT LOCATION	SERIAL NUMBER COMMENTS
CJ0678/01	PLANIMETER	1		
CJ0601/01	DRAWING SET ART # 532208	1	PHOTOCOPIING ROOM	
CJ0601/02	DRAWING INSTRUMENTS	1	PHOTOCOPIING ROOM	
CJ0602/01	TELEX 16MM FILM PROJECTOR	1	AUDIO VISUAL THEATRE	
CJ0603/01	TELEX 35MM S/FILM STRIP	1	AUDIO VISUAL THEATRE	
CJ0604/01	WM 1 FLIPCHART	1	AUDIO VISUAL THEATRE	
CJ0605/01	FLIPCHART STANDS	1	AUDIO VISUAL THEATRE	
CJ0606/01-02	FLIP CHART PAD/EASLES	2	AUDIO VISUAL THEATRE	
CJ0607/01-02	PROJECTOR SCREENS/CEILING	2	AUDIO VISUAL THEATRE	SERIAL NO. 65618608
CJ0608/01	3274 IMAGE 1 CARAMATE	1	AUDIO VISUAL THEATRE	
CJ0608/02	SPIRAL ROOM/CARAMATE	1	AUDIO VISUAL THEATRE	
CJ0609/01	MOOSCOPES	2	AUDIO VISUAL THEATRE	
CJ0610/01	SLIDE PROJECTOR	1	AUDIO VISUAL THEATRE	
CJ0610/02	SHUTTMENT/SLIDE PROJECTOR	1	AUDIO VISUAL THEATRE	
CJ0611/01	AUDIO CASSETTE RECORDER	1	AUDIO VISUAL THEATRE	
CJ0612/01	WHITEBOARDS/PEN TRAYS	2	AUDIO VISUAL THEATRE	
CJ0613/01	BLAUFUNKT TV 67cm.	1	AUDIO VISUAL THEATRE	
CJ0614/01	VHS TEDELEX 9514 VCR	1	AUDIO VISUAL THEATRE	
CJ0615/01	WALL MOUNTED SCREEN	1	AUDIO VISUAL THEATRE	
CJ0616/01	VISTA VARIA OHF	1	AUDIO VISUAL THEATRE	
CJ0617/01	PORTABLE SCREEN:H/QUALITY	1	AUDIO VISUAL THEATRE	
CJ0618/01	TANBERG AUDIO TUTOR 772	1	AUDIO VISUAL THEATRE	
CJ0619/01	EXTENSION SPEAKERS	1	AUDIO VISUAL THEATRE	
CJ0620/01	PROJECTORSTAND MODEL 2	1	AUDIO VISUAL THEATRE	
CJ0622/01	PHILIPS CAMCORDER,TRIFOD	1	AUDIO VISUAL THEATRE	
CJ0623/01-02	PROJECTOR OHF	2	AUDIO VISUAL THEATRE	ONE STOLEN
CJ0624/01-02	CHALKBOARD 1200x8000	2	CLASSROOM # 2	
CJ0625/01	SCREEN TRIFOD	1	AUDIO VISUAL THEATRE	
CJ0626/01	12 SHELF TROLLEY	1	AUDIO VISUAL THEATRE	
CJ0627/01	WALL SCREEN	1	AUDIO VISUAL THEATRE	
CJ0628/01	SINGLE PEDESTAL DESK	1	AUDIO VISUAL THEATRE	
CJ0630/01	IRRIGATION PUMP/HYDROLOGY	1	IRRIGATION WORKSHOP	
CJ0636/01	VIDEO TAPE	1	LIVESTOCK	
CJ0640/01	OVERHEAD PROJECTOR/SLIDES	1	AEC	
CJ0641/01	CHEST FREEZER	1	HOME ECONOMICS	
CJ0646/01	SINGER SEWING MACHINES	3	LESOTHO VILLAGE	

SIGNED :



4/91

02-May-91

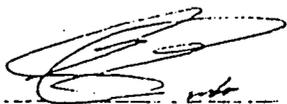
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REGISTER OF NON-EXPENSE ITEMS EXCEEDING \$50 (H120)

EDUCATION COMPONENT

ASSET NUMBER	DESCRIPTION	QTY	ASSIGNED TO/ PRESENT LOCATION	SERIAL NUMBER COMMENTS
CF001/01	FARMING CRATES	2	LAC - A.KING	STUDENT ENTERPRISE PROJECTS
CF002/01-03	CULTIVATORS	3	AGRONOMY STORES	
CF004/01-04	PUSH CULTIVATORS	4	AGRONOMY STORES	
CF005/01-02	PUSH CULTIVATORS	2	AGRONOMY STORES	
CF009/01	5000 LITRE WATER TANK	1	ALAN KING	
CF010/01	TABLE	1	A.KING	SLAUGHTER HOUSE
CF012/01	VETERINARY EQUIPMENT	1	A.KING	SLAUGHTER HOUSE
CF014/01	CONSTRUCTION SHEEP TROUGH	1	A. KING	
CF015/01	CONSTRUCTION SHEEP TROUGH	1	A. KING	
CF016/01-02	CALF HUTCHES	2	A. KING	
CF017/01	COMPOST BIN	1	LAC GREENHOUSE	
CT001/01-02	ARC WELDER 160A. F MODEL	2	LAC W. NISHEK/LERIBE	
CT002/01	2.4m. STEPLADDER	1	LAC	
CT003/01-02	CYL. SURF. HONING TOOLS	1	STUDENT DEMO TOOL BOX	
CT005/01	K3 TACKER/STAPLE GUN	1	AEC BLDG MATS	
CT006/01	KAISE DIGITAL MUTINETER	1	LAB CONSTRUCTION	
CT007/01	RADIO CONTROL SYSTEM	1	LAB CONSTRUCTION	
CT008/01	AVOMETER	1	LAB CONSTRUCTION	
CT009/01	HIGH LIFT TROLLEY	1	STUDENT DEMO TOOL BOX	
CT010/01	900mm PIPE WRENCH	1	IRRIGATION STORE	
CT011/01	DRILL BITS SET AF	1	METAL W/SHOP	
CT013/01	D19T4Z SOCKET SET 1/2"AF	1	STUDENT DEMO TOOL BOX	
CT014/01	D-1320 HAND DRILL . 750W.	1	CARPENTRY WORKSHOP	
CT015/01	D19T4Z SOCKET SET 1/2"DR.	1	STUDENT DEMO TOOL BOX	
CT016/01	700/25 IMPACT DRILL 700W.	1	WOOD W/SHOP	
CT017/01	D19T4Z SOCKET SET 1/2"DR.	1	IRRIGATION STORE	
CT018/01	H.P. SPRAY GUN	1	STUDENT DEMO TOOL BOX B. MARHETTE	
CT019/01	STEEL TOOL BOX	1	IRRIGATION STORE	
CT020/01	FABRICATION OF TOOL BOX	1	STUDENT DEMO TOOL BOX	
CT022/01	TAPE MEASURE	1	IRRIGATION STORE	
CT023/01	50m. FILKAN MEASURING TAPE	1	LAC S. GOERTZ	
CT025/01	ELECTRIC WINCH	1	WAYNE NISHEK	

SIGNED :



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02-May-91

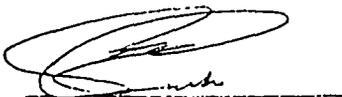
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REGISTER OF NON-EXPENSE ITEMS EXCEEDING \$50 (M120)

EDUCATION COMPONENT

ASSET NUMBER	DESCRIPTION	QTY	ASSIGNED TO/ PRESENT LOCATION	SERIAL NUMBER COMMENTS
CD001/01	5m. SECURITY GATE	1	STUDENTS PLOTS	
CD002/01	90m. 3/4" GARDEN HOSE	1	GREENHOUSE	
CD005/01	METAL SIGNS 50x30	2	LAC - HALL	
CD011/01	WATER STILL, 2001/4-41. AIR.	1	LAC SCIENCE LAB	
CD012/01	STOGOL SHEET/SCALE UNIT	1	STUDENT ENTERPRISE PROJECTS	
CD014/01	FREEZER FLP 7 C	1	TUCK SHOP	
CD015/01	6FT. COUNTER FRIDGE	1	TUCK SHOP	
CD019/01	WRAPPING MACHINE	1	LAC TUCKSHOP	REF. I. NOKHALI
CD020/01	G/FRONT COUNTER-TUCK SHOP	1	LAC TUCK SHOP	
CD021/01	PFPP SEWING MACHINE	1	LAC-HOME ECONOMICS	
CD022/01	U 100 (ACCESSORY)	1	LAC-HOME ECONOMICS	
CD023/01	DUO 80 KNITTING MACHINE	1	LAC-HOME ECONOMICS	
CD024/01	DECO (ACCESSORY)	1	LAC-HOME ECONOMICS	
CD026/01	4 COLOUR CHARGER	1	LAC-HOME ECONOMICS	
CD036/01	YAMAHA 185 MOTORCYCLE	1	IRRIGATION STORE	
CD037/01	TABLES AND CHAIRS + SINK	1	LESOHO VILLAGE	
CD038/01	WATER TANK	1	POULTRY HOUSE	
CD039/01	MECHANICAL BALANCE (2610g)	3	LAC LABORATORY	
CD039/02	MECHANICAL BALANCE (1600g)	3	LAC LABORATORY	
CD039/03	MECHANICAL BALANCE (910g)	3	LAC LABORATORY	
CD039/04	WOODEN DRYING RACK	2	LAC LABORATORY	
CD039/05	VOLUMETRIC FLASK (5000ml)	2	LAC LABORATORY	
CD042/01	ELECTRODE COBH	1	LAC COLLEGE	
CD045/01	NOVA 92 DRAFTING UNIT	1	COPY ROOM	
CD046/01	PROFILE DRAFTING CHAIR	1	COPY ROOM	
CD047/01	CLAMP LIGHT	1	A/V THEATRE	

SIGNED :



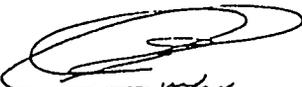
02-May-91

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REGISTER OF NON-EXPENSE ITEMS EXCEEDING \$50 (M120)

EDUCATION COMPONENT

ASSET NUMBER	DESCRIPTION	QTY	ASSIGNED TO/ PRESENT LOCATION	SERIAL NUMBER COMMENTS
CI048/01	ROLLING STANDS FOR PLAN	1	COPY ROOM	
CI051/01	LEVER ARCH BOOKSHELF	1	T/F TO LAC	
CI052/01-07	VISITORS CHAIRS	7	T/F TO LAC	
CI053/01	4 DRAWER FILING CABINET	2	T/F TO LAC	
CI054/01	MEASURING TAPE-50m. STEEL	1	T/F TO LAC	
CI055/01	SOCKET SET 3/8" DRIVE	1		
CI056/01-02	COMBISPANNER SET 6/22mm	2		
CI057/01-02	TOOL KITS	2	T/F TO LAC	
CI058/01	HEAVY DUTY CATTLE SCALE	1	A.KING	
CI059/01	PORTABLE LOADING RAMP	1	A.KING	
CI060/01	MULTIWAY SCALE - SMALL ST	1	A.KING	
CI061/01	SMALL STOCK HANDLING UNIT	1	A.KING	
CI062/01	1108 KYORITSU MULTIMETER	1	H. JOHNSON	
EI037/01-04	CULTIVATORS	4	AEC - S. GOERTZ	AGRIC. COLLEGE
EI038/01-02	SENIOR PLANTERS	2	AEC - S. GOERTZ	AGRIC. COLLEGE
EI039/01-04	CULTIVATORS	2	AEC - S. GOERTZ	AGRIC. COLLEGE
EI021/01	WELDING SET/IMBARDINI EN	1	ARC/LAC	SER No. 185850 WELDPANPOWER
EI057/01	TABLE TOP SHELF 25x25x240	1	LABORATORY	AGRIC. COLLEGE
EI057/02	SINK/LAB BENCH	1	LABORATORY	AGRIC. COLLEGE

SIGNED : 

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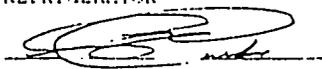
LAPIS PROJECT

EDUCATION COMPONENT

REGISTER OF NON-EXPENSE ITEMS EXCEEDING \$50 (M120)

ASSET NUMBER	DESCRIPTION	QTY	ASSIGNED TO/ PRESENT LOCATION	SERIAL NUMBER COMMENTS
CA009/01	APPLE II-WRITER PRINTER	1	AEC(AIS)	
CA009/03	APPLE LASER II-L PRINTER	1	AEC(AIS)	C737021
CA009/04	P.C. Mac SE HD/KEYBOARD	1	AEC(AIS)	C736090
CA013/01	COMPUTER 800VA UPS	1	AEC(AIS)	
SOFTWARE				
CA011/01	SUPER PAINT F/MAC	1	AEC(AIS)	
CA011/02	LASER SPEED	1	AEC(AIS)	
CA011/04	PAGEMAKER PORTFOLIO	1	AEC(AIS)	
CA011/06	PAGEMAKER MAC VER 2.0	1	AEC(AIS)	
CA011/07	MICROSOFT EXCEL MAC V 1.0	1	AEC(AIS)	
CA011/08	WORD 3.0 F/MAC 250018	1	AEC(AIS)	
CA012/01	HACKMKN SOFTWARE	1	AEC(AIS)	
CB051/01	4-DRAWER FILING CABINET	1	AEC(AIS)	
CB052/01	005 CHAIR	1	AEC(AIS)	
CB053/01	D/PEDESTAL DESK	1	AEC(AIS)	
CB054/01	4-DRAWER FILING CABINET	1	AEC(AIS)	
CB069/01-02	ADMIN. MAHOGANY D/P DESK	2	B. TYSON	NEW OFFICE BUILDING
CB070/01-02	LOWBACK SWIVEL/TILT CHAIR	2	B. TYSON	NEW OFFICE BUILDING
CB071/01	TYPIST CHAIR	1	B. TYSON	NEW OFFICE BUILDING
CB072/01	TYPIST CHAIR	1	B. TYSON	NEW OFFICE BUILDING
CB073/01	SENATOR H/B S/T CHAIR	1	B. TYSON	NEW OFFICE BUILDING
CB074/01	PIGEON HOLES X 12	1	S. GOERTZ/B. TYSON	NEW OFFICE BUILDING
CB079/01-07	SHELF UNITS	7	AIS LIBRARY- B. TYSON	
CB080/01-03	TABLES	3	AIS LIBRARY- B. TYSON	
CB081/01-18	CHAIRS	18	AIS LIBRARY- B. TYSON	
CB082/01-02	CARD BOXES	2	AIS LIBRARY- B. TYSON	
CB083/01	LIBRARIAN DESK	1	AIS LIBRARY- B. TYSON	
CB084/01	LIBRARY STEPS	1	AIS LIBRARY- B. TYSON	
CC032/01	1218 OFFSET DUPLICATOR	1	AEC(AIS)	SERIAL NO. 986454
CC032/02	1445/25 T/M MASTER IMAGER	1	AEC(AIS)	SERIAL NO. 714891
CC033/02	1218 OFFSET DUPLICATOR	1	AEC(AIS)	SERIAL NO. 714891
CC034/01	BOOKLET MAKER	1	AEC(AIS)	SERIAL NO. 714891
CF021/02	STAINLESS STEEL SINK	1	AEC(AIS)	F. ROOYANI
CF021/03	GEYGER 100 LITRE	1	AEC(AIS)	F. ROOYANI
CF052/01	GENERATOR SET R600	1	AEC(AIS)	
CF053/01	GENERATOR SET R600	1	AEC(AIS)	
CF054/01-02	FAN HEATERS	2	AEC(AIS)	
CF031/01	LIGHT TABLE	1	LAC COLLEGE/STEVE GOERTZ	
CF032/01	STAND	1	LAC COLLEGE/STEVE GOERTZ	
CF033/01	FILM DRYER/HEATER	1	LAC COLLEGE/STEVE GOERTZ	
CF034/01	PRINT MASTER/WALL MOUNTED	1	LAC COLLEGE/STEVE GOERTZ	
CF035/01	REFRIGERATOR	1	LAC COLLEGE/STEVE GOERTZ	

SIGNED :



APIS PROJECT

REGISTER OF NON EXPENSE ITEMS EXCEEDING \$50 (M120)

ARMER TRAINING COLLEGE - LERIBE/MOHALES HOEK

ASSET NUMBER	DESCRIPTION	QTY	ASSIGNED TO/ PRESENT LOCATION	SERIAL NUMBER COMMENTS
B018/01	ROUND DINING TABLE	1	AEC(FTC)	PCV AT LERIBE & M/HOEK
B040/01	PINE TABLES 1350x800x730	20		
B042/01	DOUBLE BED/MATTRESS	1	S.GOERTZ	
B054/01	CURTAIN MATERIAL	1	AEC (FTC) LERIBE	
C009/01	OLYMPIA MANUAL TYPEWRITER	1	MOHALES HOEK(FTC)	SERIAL # 05868621
D003/01-02	ELECTRIC URNS	2	B. TYSON (ATS)	
D006/01-04	50 L. PAN	4	HOME ECONOMICS	
D027/01	1000 LITRE WATERCART	1	LERIBE (FTC)	
D028/01	SEW. CONVECTION HEATERS	4	LERIBE (FTC)	J. RUSK
D029/01	WATER STANDS & tubing	2	LERIBE (FTC)	A. KING
D034/01	SA PINE CLASSROOM TABLES	20	LERIBE (FTC)	B. TYSON
D044/01	OX CARTS	2	LAC COLLEGE/STEVE GOERTZ	
D057/01	WATER TANK	1	MOHALES HOEK FTC	
D058/01	KIM 5500 PETROL GENERATOR	2	AEC (FTC) LERIBE	
E003/01	CONSTRUCTION	X	AEC(FTC)MOHALES HOEK	
E004/01	S/PHASE UNDERGROUND CONNE	1	LERIBE (FTC)	
E007/01	FENCING MATERIALS	1	LAC ORCHARD	LAC LERIBE
F006/01	SOLD KNAPSACK SPRAYER	1	MOHALES HOEK (FTC)	
F007/01-02	PUSH CULTIVATORS	2	AEC- S.GOERTZ	
G015/01	WALL MOUNTED SCREEN	1	AUDIO VISUAL THEATRE	ONE AT LERIBE
G016/01	VISTA VARIA OHF	1	AUDIO VISUAL THEATRE	ONE AT LERIBE
G018/01	TANBERG AUDIO TUTOR 772	1	AUDIO VISUAL THEATRE	ONE AT LERIBE
G019/01	EXTENSION SPEAKERS	1	AUDIO VISUAL THEATRE	ONE AT LERIBE
G020/01	PROJECTO STAND MODEL 2	1	AUDIO VISUAL THEATRE	ONE AT LERIBE
G021/01	FILM STRIP PROJECTOR	1	AUDIO VISUAL THEATRE	
H029/01	CANNON STOVE	1	LAC HOME ECONOMICS	
H037/01	BEEHIVE EQUIPMENT	1	LIVESTOCK	
I003/01-02	CYL. SURF. HONING TOOLS	1	LERIBE/STUDENT DEMO TOOL BOX	
I004/01	40/28mm TORQUE WRENCH	1	STUDENT DEMO TOOL BOX	
I012/01	HIGH LIFT JACKS	1	STUDENT DEMO TOOL BOX/FARM SHOP STORES	
I017/01-02	D19TMZ SOCKET SET 1/2"DR.	1	IRRIGATION STORE/LERIBE	
I021/01	TORQUE WRENCH	1	AEC(FTC) TOOLS	

IGNED :



LESOTHO AGRICULTURAL PRODUCTION AND
INSTITUTIONAL SUPPORT PROJECT (LAPIS)

AMERICAN AG INTERNATIONAL



PO Box 333 • Maseru 100 • Lesotho • Tel 311932 • Telex 451010

To : Mr. M. Matli - ARD Director.

From : E. Loomis - ARC Team Leader.

Sign : E. Loomis

Date : 2 May 1991

RE : Transfer of LAPIS commodities to ARD.

In keeping with the phasing-out of the LAPIS Project and subsequent handing over of activities to ARD that were formerly supported by LAPIS, we are handing over certain commodities to ARD.

The items are listed on pages 1 through 5 (attached). Each page should be initialled by you on behalf of the Government. Other items which were, or will be purchased by the project will be transferred in due course.

Please concur and indicate receipt of these commodities with your signature below.

M. Matli

M. Matli - ARD Director

2/5/91

Date

420

SECURITY REGISTER

LAPIS PROJECT

RESEARCH COMPONENT

ASSET NUMBER	DESCRIPTION	QTY	ASSIGNED TO / LOCATION	SERIAL NUMBER / COMMENTS
EA002/01	EPSON PRINTER LQ1000	1	COMPUTER ROOM	190009825
EA005/01	MEDIUM PRINTER STAND	1	ROOM 190	
EA006/01	SPARTAN XT/SD 30MB COMPUTER	1	COMPUTER ROOM	
EA009/01	EPSON PRINTER LQ1050	1	COMPUTER ROOM	02003268
EA013/01-02	600 VA POWERMAN	2	COMPUTER ROOM	
EA015/01-02	LARGE PRINTER STAND	2	COMPUTER ROOM	
EA022/01	TEM PRO-PRINTER	1	COMPUTER ROOM	SWAPPED FOR LX800 PRINTER
EA023/01	ZENITH GS 158 COMPUTER	1	H. ARTZ	61801F0657/1531566
EA028/01	POWERMAN 600VA SINE	1	H. ARTZ	01851370
EA031/01	EPSON PRINTER FX100	1	H. ARTZ	03060955
EA024/01	SPARTAN 30MB COMPUTER	1	JIM CAMPBELL	02396
EA025/01	ABCDE SWITCHBOX	1	JIM CAMPBELL	BROKEN - DISCARDED
EA027/01-03	TRANSFORMERS	3	JIM CAMPBELL	HOME
EA037/01	TRANSFORMER 1000w	1	J. CAMPBELL	
EA039/01	BUFFER SWITCHES	2	COMPUTER ROOM	
EA040/01	LINE FILTER - 1 PLUG	1	COMPUTER ROOM	

SOFTWARE

EA042/01	SNIPER ANTI VIRUS PROGRAMS	1	J. CAMPBELL	ARC
EA043/01	LOTUS 2.2	1	J. CAMPBELL	ARC
EA010/01	MS-DOS AND GWBASIC	1	J. CAMPBELL	
EA018/01	DATA ENTRY II PROGRAM	1	J. CAMPBELL	
EA019/01	MSTAT COMPUTER PROGRAM	1	J. CAMPBELL	
EA020/01	MSTAT COMPUTER PROGRAM	1	J. CAMPBELL	
EA026/01	SIDEWAYS PROGRAM	1	J. CAMPBELL	
EA030/01	FREELANCE PLUS	1	J. CAMPBELL	ARC
EA036/01	WORDPERFECT 5.1 PROGRAM	1	J. CAMPBELL	ARC
EA038/01	MSTAT PROGRAM	1	J. CAMPBELL	ARC

SIGNED :

[Handwritten Signature]

DATE :

2/5/91

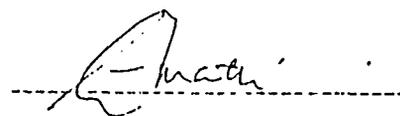
COMMODITY REGISTER

LAPIS PROJECT

RESEARCH COMPONENT

ASSET NUMBER	DESCRIPTION	ASSIGNED TO / (QTY) LOCATION	SERIAL NUMBER COMMENTS
EB001/01	HADISON DP DESK	1 H. MATLI	
EB002/01-03	SENIOR EXECUTIVE CHAIRS	3 J. CAMPBELL, G. MASREY, SOILS.	
EB003/01	4 DRAWER FILING CABINET	1 N. ARTZ	
EB004/01-02	SENIOR EX. CHAIR	2 HORTICULTURE, SOILS.	
EB005/01	HADISON DP DESK	1 E. LOOMIS	
EB006/01	SENIOR EXEC. CHAIR	1 H. MATLI	
EB007/01	SENIOR EXEC. CHAIR	1 E. LOOMIS	
EB008/01	BOOKSHELVES	1 E. LOOMIS	
EB009/01	BOOKSHELVES	1 ANIMAL SCIENCE	
EB010-01	STATIONERY CABINET	1 DIRECTOR CABINET	
EB012/01	STATIONERY CABINET	1 KITCHEN P. MATELE	
EB011/01-02	FLIPCHART STANDS	2 HORTICULTURE LAB, H. MATLI	
EB013/01	2 DRAWER FILING CABINET	1 B. BADANCIAN	SOILS PHYSICS LAB
EB015/02-03	HEFTAR SKIRTING HEATER	2 B. BADANCIAN	SOILS OFFICE
EB014/01	2 DRAWER FILING CABINET	1 B. BADANCIAN	SOILS CHEMISTRY LAB
EB015/01	8 FOOT FILING CUPBOARD	1 HORTICULTURE LAB	
EB016/01	KEY CABINET	1 ROOM 190	
EB017/01	8 FOOT FILING CUPBOARD	1 HORTICULTURE LAB	
EB018/01-02	4-DRAWER FILING CABINET	2 HORTICULTURE LAB	
EB019/01-02	ASBESTOS WALL HEATERS	2 SOILS LAB	
EB020/01-02	CORNELL CABINETS	2 ENTOMOLOGY	
EB022/01-02	O.B. BOOKCASES	2 SOILS OFFICE	
EB023/01-02	STATIONARY CABINET	1 ROOM 190	
EB024/01-02	4 DRAWER CABINET	2 ARC LIBRARY	
EB025/01-02	GLASS DOOR CUPBOARD	2 ANIMAL SCIENCE/SO	
EB026/01	STATIONERY CABINET	1 HORTICULTURE LAB	
EB027/01-02	TYPIST CHAIRS	2 SOILS LABS	
EB028/01-02	4 DRAWER F/CABINET	2 RESEARCH LIBRARY	
EA029/01	KEY CABINET	1 HORTICULTURE LAB	
EB031/01-02	4 DRAWER FILING CABINETS	2 RESEARCH LIBRARY	
EB032/01-02	WHITE BOARDS	2 RESEARCH LIBRARY	
EB033/01	TABLE	1 J. CAMPBELL	
EB034/01-03	BULLETIN BOARD	3 J. CAMPBELL, 2: COMPUTER ROOM - 1	
EB035/01	STATIONERY CUPBOARD	1 COMPUTER ROOM	
EB038/01-02	TABLE - 3000*1000*700	2 COMPUTER ROOM	
EB039/01-02	TABLE - 1850*1000*700	2 COMPUTER ROOM	
EB040.01	CONFERENCE TABLE	1 E. LOOMIS	
EB041.01-10	OCCASSIONAL CHAIRS	10 E. LOOMIS - 4: T. NAMANE - 6	
EB042.01	D/PEDESTAL DESK	1 T. NAMANE	FROM PIC
EB043.01-06	OCCASSIONAL CHAIRS	6 H. MATLI	FROM PIC
EB044.01	EXECUTIVE CHAIR	1 T. NAMANE	FROM PIC

SIGNED :



DATE :

2/5/91

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2-May-91

PAGE 3

COMMODITY REGISTER

LAPIS PROJECT

RESEARCH COMPONENT

ASSET NUMBER	DESCRIPTION	ASSIGNED TO / CITY	LOCATION	SERIAL NUMBER COMMENTS
EC001/01	STARTYPE OLYMPIA WP	1	COMPUTER ROOM	SERIAL NO. 3401655
EC002/01	OLYMPIA DG 501	1	PROJECTOR CABINET	
EC002/02	OLYMPIA DG 505	1	PROJECTOR CABINET	S/N 50531772
EC002/03	OLYMPIA DG 501/EARPHONE SET	1	PROJECTOR CABINET	
EC002/04	OLYMPIA DG 505/FOOT CONTROL	1	PROJECTOR CABINET	
EC003/01	SHARP PHOTOCOPIER	1	ROOM 190	S/N 85814155
EC005/01-02	KODAK SLIDE PROJECTOR B-2 AR	2	PROJECTOR CABINET	
EC006/01-02	ZOOM LENS 100-150 F3.5	2	PROJECTOR CABINET	
EC007/01	FLITCHART	1	CONFERENCE ROOM	
EC008/01-02	SCIENTIFIC CALCULATORS	2	G. HASSEY	
EC009/01	BULLHORN (mk+)	1	PROJECTOR CABINET	
EA010/01	RPN SCIENTIFIC CALCULATOR	1	T. JOBO	ARC

SIGNED:

R. Mathi

DATE:

2/2/91

493

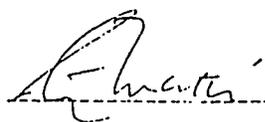
COMMODITY REGISTER

LAPIS PROJECT

RESEARCH COMPONENT

ASSET NUMBER	DESCRIPTION	QUANTITY	ASSIGNED TO / LOCATION	SERIAL NUMBER COMMENTS
ED042/01	GARDEN HOSE 3/4" x 90m.	1	AGRONOMY SHED	
ED043/01	FIBRE MEASURING TAPE 100m	1	ARC - G.MASSEY	
ED044/01	FIBRE MEASURING TAPE 50m	1	HORT. LAB	
ED045/01	FIBRE MEASURING TAPE 50m	1	HORT. LAB	
ED048/01-02	QUEEN STOVE AND PIPES	2	ARC - G.MASSEY	AGRONOMY SHED
ED049/01-02	SAPELEBOARD 2750x1830	2	ARC - G.MASSEY	
ED051/01	WILEY HILL AND ACCESS. -SORGHUM	1		ANIMAL SCIENCE / RANGE
ED052/01	STANHAY PLANTER	1	HORTICULTURE STORAGE SHED	
ED053/01-03	GANDY SPREADER	3	ARC W.SHACHT	
ED054/01	TANDEM AXLE EASY LOAD TRAILER	1	ARC- PARKING LOT	
ED055/01-02	BACKPACK PESTICIDES	2	HORT. STORE	
ED058/01	LM THRESHING MACHINE	1	ARC- PARKING LOT	
ED060/01-02	RESPIRATORS	1	ENTOMOLOGY	ARC
ED062/01	RAIN RECORDING GAUGE	1	FIELD	ARC
ED065/01	BATTERY CHARGER	1	ARC	ARC
ED066/01	FIBRE MEASURING TAPE 100m	1	J.CAMPBELL	
ED067/01	WATER COMPUTER	1	HORT. LAB	TO BE EXCHANGED
ED068/01	3m.X 50m. SHADE NETTING	1	FIELD	
CJ038/01-02	CAMERA & LENS	1	PROJECTOR CABINET	
CJ038/02	PROJECTOR/LENS/CAMERA/FHT	1	PROJECTOR CABINET	
EA038/01	1KVA CVT TOWERMAN	1	SOILS LAB	
ED069/01	200 kg. SCALE	1	ANIMAL SCIENCE	
ED070/01	ELECTRONIC SCALE	1	ANIMAL SCIENCE	
ED071/01	SIDEDRESS FERTILISER UNIT	1	IMPLEMENTS SHED	
ED072/01-02	OX-DRAWN COLE PLANTERS	2	IMPLEMENTS SHED	
ED073/01	OIL SEED PRESS - CRS	1	AGRONOMY SHED	
EE001/01	FEEDLOT PEN CONSTRUCTION	1	ARC W.SHACHT	NATIONAL FEEDLOT-LEKUBANE
EE002/03	30m ROLL OF DIAMOND MESH	1	JIM CAMPBELL	
EE0011/01	SIGN BOARDS	2	TEBHO LEBABO	
VE0014/01	FENCING - PERENNIAL GRASS PLOT	1	PHAFISO SEFIEA	
EG001/01	GREENHOUSE	1	E.LOOMIS	
EG001/02	GREENHOUSE	1	E.LOOMIS	
W 3688	MASSEY FERGUSON TRACTOR	1		
W 3689	MASSEY FERGUSON TRACTOR	1		

SIGNED :



DATE :

2/5/91

AMERICAN AG INTERNATIONAL



P.O. Box 333 • Maseru 100 • Lesotho • Tel 311932 • Telex 4510 LO

To : Mr. M. Petlane : Director of Crop Services

From : P.Mowbray - PIC Team Leader.

Sign : Phillip Mowbray

Date :

RE : Transfer of LAFIS commodities to The Dept. of Crop Services

In keeping with the phasing-out of the LAFIS Project and subsequent handing over of activities to The Department of Crop Services that were formerly supported by LAFIS, we are handing over certain commodities to The Ministry Of Agriculture.

The items are listed on the attached schedule. The schedule should be initialled by you on behalf of the Government. Other items which were, or will be purchased by the project will be transferred in due course.

Please concur and indicate receipt of these commodities with your signature below.

M. Petlane

M. Petlane - Director of Crop Services

May 15, 1981

Date

15-May-91

DEPT. OF CROPS SERVICES

LAPIS PROJECT

REGISTER OF NON-EXPENSE ITEMS EXCEEDING \$50 (M120)

ASSET NUMBER	DESCRIPTION	QTY	ASSIGNED TO	COMMENTS
PB003/01	DESKS	1	H. MOORE/T. BOSIU BKG	
PB004/01	DESKS	1	M. WOODS/T. BOSIU BKG	
PB005/01	DESKS	1	H. MOORE C/PART #42	
PB006/01	DESKS	1	D. BOSLEY ROOM 27	
PB008/01-03	705 CHAIRS	3	H. MOORE, H. MOORE C/PART, M. WOODS	ROOMS 42
PB009/01	MADLON CREDENZA EXTENSION	1	H. MOORE	ROOM 42
PB010/01	BOOKSHELVES	1	H. MOORE	ROOM 27
PB012/01	BOOKSHELVES	1	C. FRANCK	ROOM 9
PB015/01-03	702 CHAIRS	3	VISITORS	ROOM 25
PB017/01	900x600 WHITE BOARD	1	D. BOSLEY	
PB018/01	CLAUDIA A/B S&T CHAIR	1	P. MOWBRAY	ROOM 25
PB021/01	CHAIR TYPE 705	1	J. BRIO	ROOM 35
PB026/01	DRAWING CHAIR	1	H. MOORE	ROOM 20
PB032/01	SECRETARY CHAIR	1	M. SEMOLI	MARKETING
PB033/01-02	1600 HEROLD D.P. DESKS	2	G. JOHNSON/ROOM 42	
PB034/01-02	9410 MARVEL CHAIRS	2	G. JOHNSON/ROOM 42	
PB035/01	IN-LINE DESK . 1200x750	1	P. MALEWA/T. BOSIU BKG	
PB037/01	BRASILIA LOW BACK CHAIR	1	P. MOWBRAY	ROOM 25
PB038/01	NORDIC D/P DESK	1	P. MOWBRAY	ROOM 25
PB039/01	CARPET FITTING	1	P. MOWBRAY	ROOM 25
PB040/01	D23 DESK	1	GREG	
PB062/01	CURTAIN RAILS & ACCESS.	1	PINKIE	
PC001/01-03	SHARP EL1607 CALCULATOR	2	P. MOWBRAY, C. FRANCK	
PC003/01	OLYMPIA DG 601 DICTAPHONE	1	C. FRANCK	
PC005/01	FLIP CHART	1	P. MOWBRAY	
PDX01/01	DRILL VTP 13	1	H. MOORE	
PDX02/01	PUMP STAND MATERIALS	1	H. MOORE	
PDX03/01	SOCKET SET	1	H. MOORE	
PDX14/01	SOLAR DRYER	1	J. BRIO	
PDX22/01-04	GARDEN SEEDERS MODEL 1001	4	DAO'a	
PDX23/01	STILL PETROL CHAIN SAW	1	J. BRIO	
PDX25/01	PLASTIC BAG SEALER	2	COMPLETE WITH SHADE NETTING & TUBING	
PDX41/01	100m MEASURING TAPE	1	P. MOWBRAY	SERIAL No. 63027691
PDX44/01	HAND CULTIVATOR	1	E. TSOANE	
PDX45/01	SOLO SPRAY	1	P. MOWBRAY	
PDX56/01	WRENCH AND SOCKET SET	2	P. MOWBRAY/M. WOODS	
PDX58/01	MEASURING TAPE 50m.	1	P. MOWBRAY	
PDX60/01-03	FERTILISER SPREADER- HAND	4	M. WOODS	
PDX61/01-04	SPRAYERS 20L	4	M. WOODS, E. TSOANE, RAMAHOLI, MALEBELE	
PDX62/01-02	SOLO SPRAYERS	2	M. WOODS	
PDX65/01	SOLO SPRAYER	1	STOLEN FROM M. WOODS P/UP	
PDX68/01	STORAGE DEMONSTRATION	1		
PDX69/01	MAP BOARD	1		
PDX73/01	KERONE HEATER	1	P. MOWBRAY	
PDX74/01-03	SOLO BACK PACK SPRAYERS	3	PIC - MARK WOODS	
PDX75/01-03	PRECISION SEEDERS	3	PIC	
PDX76/01	SHADE NETTING	4	PIC - P. SARIG	
PDX82/01	VIDEX PLASTID 4m x 30M	4	PIC CROP DEMO MATS	

mark

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LESOTHO AGRICULTURAL PRODUCTION AND
INSTITUTIONAL SUPPORT PROJECT (LAPIS)

AMERICAN AG INTERNATIONAL



P.O. Box 333 • Maseru 100 • Lesotho • Tel 311932 • Telex 4510 LO

To : Mr. T.J. Ramatsoari - Director of Economics and Marketing

From : P. Mowbray - PIC Team Leader.

Sign : *P. Mowbray*

Date :

RE : Transfer of LAPIS commodities to The Dept. of Economics and Marketing

In keeping with the phasing-out of the LAPIS Project and subsequent handing over of activities to The Department of Economics and Marketing that were formerly supported by LAPIS, we are handing over certain commodities to The Ministry Of Agriculture.

The items are listed on pages the attached schedule. The schedule should be initialled by you on behalf of the Government. Other items which were, or will be purchased by the project will be transferred in due course.

Please concur and indicate receipt of these commodities with your signature below.

T.J. Ramatsoari

T.J. Ramatsoari - Director of
Economics and Marketing

17/5/91

Date

17/5

14-May-91

MARKETING DIVISION

REGISTER OF NON-EXPENSE ITEMS EXCEEDING \$50 (M120)

ASSET NUMBER	DESCRIPTION	QTY	ASSIGNED TO	COMMENTS
PA003/01-02	TREN-TECH XT 360K 30mb HD	1	M.SENOLI - MARKETING	S/N 380101139/87386
PA013/01	LARGE PRINTER STAND	1	M.SENOLI - MARKETING	
PA017/01	ANTI-GLARE PROTECTOR	1	M.SENOLI - MARKETING	
PE001/01	DESKS	1	G.HUNT COUNTERPART	
PE002/01	DESKS	1	PLANNING - G.HUNT	
PE011/01	BOOKSHELVES	1	G. HUNT	
PE013/01	705 CHAIRS	1	G.HUNT COUNTERPART	
PE014/01-02	702 CHAIRS	2	G. HUNT/D. BOSLEY	
PE023/01	SLEIGH BASED CHAIR	1	G.FEASTER- MARKETING	
PE024/01	BRASSILLA VISITORS CHAIR	1	G.FEASTER- MARKETING	
PE025/01	NORDIC D/P DESK	1	G.FEASTER- MARKETING	
PE027/01	4 DRAWER FILING CABINET	1	PIC/HGP - MARKETING	
PE028/01	4 DRAWER FILING CABINET	1	G.FEASTER- MARKETING	
PE029/01	DESK SNEEV/BG 1500 X 9000	1	G.FEASTER- MARKETING	
PE030/01	SELF-STANDING EXT. SEE #2	1	G.FEASTER- MARKETING	
PE031/01	CHEROLD DESK 1500X800	1	M.SENOLI - MARKETING	
PE032/01	SECRETARY CHAIR	1	M.SENOLI - MARKETING	
PE042/01	TELEPHONE CABINET	1	G. FEASTER'S OFFICE	
PE062/01	CURTAIN RAILS & ACCESS.	1	PINKIE	
PE064/01	TYPISTS CHAIR	1	R.NTCASA - MARKETING	T/F FROM AIM.
PC001/01-03	SHARP EL1607 CALCULATOR	1	G.FEASTER	
PC006/01	XL1000 ELECTRONIC T-WRITE	1	G.FEASTER	
PD007/01	OHANS WEIGHING SCALES 750	1	MARKETING	
PD024/01	TARPAULINS	1	MARKETING	
PD025/01	PLASTIC BAG SEALER	2	COMPLETE WITH SHADE NETTING & TUBING	
PD070/01	PARAFFIN HEATER	1	M.KHALANE	
PD072/01-02	100m. MEASURING TAPE	2	M.KHALANE	
PD084/01	100m. MEASURING TAPE	1	M.KHALANE	

[Handwritten signature]

COMMODITY HANDOVER OF JUN^Y 26, 1992

- HANDED OVER TO:
1. DEPARMTENT OF ADMINISTRATION
 2. RANGE MANAGEMENT DIVISION
 3. DEPT. OF ECONOMICS AND MARKETING
 4. DEPARMENT OF CROPS SERVICES
 5. AGRICULTURAL RESEARCH DIVISION
 6. LESOTHO AGRICULTURAL COLLEGE

AMERICAN AG INTERNATIONAL



P.O. Box 333 • Maseru 100 • Lesotho • Tel 311932 • Telex 4510 LD

M E M O R A N D U M

TO: Curt Reinstma, ADO
USAID Mission/Lesotho

FROM: COP LAPIS Project

REF.: LAPIS/A/1-478

SIGN: L. Chris Weaver

NAME: L. Chris Weaver

DATE: 26 June, 1992

Handing Over of LAPIS Project Commodities To Appropriate Divisions of The Ministry of Agriculture, Cooperatives and Marketing

Please find attached copies of the LAPIS commodities which have been handed over and signed for by the following departments/divisions:

1. Department of Administration
2. Range Management Division
3. Department of Economics and Marketing
4. Department of Crops
5. Agricultural Research Division
6. Lesotho Agricultural College

AAI would be most grateful if USAID would finalize the official handing over of these commodities to the MOA.

All remaining LAPIS commodities will be handed over to the MOA in November, at termination of the AAI contract to implement the LAPIS Project.

cc: AAI/Tucson

AMERICAN AG INTERNATIONAL



P.O. Box 333 • Maseru 100 • Lesotho • Tel 311932 • Telex 4510 LO

MEMORANDUM



TO: Mr. R. L. Ntokoane/P.S. Ministry of Agriculture

FROM: Administrative Manager/LAPIS Project

REF: LAPIS/H/5-10

SIGN: W. C. Arnold

NAME: W. C. Arnold

DATE: 19 May, 1992

Transfer of LAPIS Administration Commodities to MOA

In keeping with the phasing-out of the LAPIS Project and subsequent handing over of activities to MOA that were formerly supported by the Administration section of LAPIS, we are handing over certain commodities to the MOA.

The items are listed on the attached pages which should be individually initialled by you on behalf of the Government. The remaining items to be transferred will be done so in November of 1992 at the final close-out exercise.

Please concur and indicate receipt of these commodities with your signature below.

R. L. Ntokoane
Principal Secretary
Ministry of Agriculture, Coops & Marketing

2-6-92
Date

CC: COP/LAPIS

A = COMPUTER EQUIPMENT
 B = OFFICE FURNITURE
 C = OFFICE EQUIPMENT

LAPIS PROJECT

ADMINISTRATION COMPONENT

ASSET NUMBER	INVOICE DATE	COMP	DESCRIPTION	LOCATION/CITY	ASSIGNED TO	SERIAL NUMBER	COMMENTS
AA001/01	08/09/86	ADM	OLIVETTI WP ETS 2010/ PR340	1	ROOM 10 - T.HAASE	S.N.#0896159/0827037	
AA006/01	07/05/86	ADM	ZENITH P.C. GS 158	1	RM 8-SH 76470980	SERIAL # 6140F 0616	
AA008/01	07/05/86	ADM	FUJITSU PRINTER DL2400	1	ROOM 8 - W.ARNOLD	SERIAL # 016808	
AA009/01	07/05/86	ADM	MICROSOFT WORD	1	ADMIN - ROOM 7		
AA010/01	07/05/86	ADM	LOTUS VZ	1	ADMIN - ROOM 7		
AA011/01	07/05/86	ADM	DBASE III	1	ADMIN - ROOM 7		
AA013/01	24/06/86	ADM	SEIKOSHA PRINTER-MODEL SP1000/	1	ADMIN - B.ARNOLD	SL # 1602992	
AA014/01-05	23/04/87	ADM	SOFTWARE - DACEASY, GEM, PROJECT	5	ADMIN. SOFTWARE		
AA015/02	16/07/87	ADM	SPARTAN PC 640K D/D	1	ROOM 8 - W.ARNOLD	TRADED-IN /AA88015-02	
AA023/01	15/06/88	ADM	SEAGATE 30MB + CONTROLLER	1	ADMIN-B.ARNOLD		
AA024/01-02	18/05/88	ADM	TREN-TECH XT/0D 30mb MOMO	1	ROOM 7 - J.FISHER	S.N. 870528/1286-002616	
AA030/01	17/01/89	PCM	EPSON FX1050 PRINTER	1	ADMIN ROOM 7	SERIAL # 27002228	
33/01	28/07/88	ADM	POWERMAN UPS	1	ADMIN ROOM 7	SERIAL # 8897113	
AA034/01-02	09/09/88	ADM	TREN-TECH XT.360k/30mb D/D	1	ROOM 7-B.MULVANEY	S.N. 880801167/009696	
AA036/01	10/11/88	ADM	ABCDE SWITCHBOX PAR /CABLE	1	ROOM 7		
AA037/01	10/11/88	ADM	720K 3.5" FDD IN 5.25" FR	1	ROOM 8 - W.ARNOLD	REFER : AA015/01	
AA038/01	28/07/89	ADM	ARC SWITCHBOX PAPER FL	1	ROOM 8 - W.ARNOLD		
AA039/01	01/11/89	ADM	ANIT GLARE PROTECTOR	1	ROOM 7 - JEAN		
AA040/01	01/11/89	ADM	DUAL RS232 INTERFACE	1	ROOM 7 - JEAN		
AA042/01	05/02/90	ADM	REPLACE PC 720K 3.5 DRIVE	1	B. MULVANEY	REFER : AA034/01	
AA043/01	21/03/90	ADM	SUPER PROJECT EXPERT	1	WC ARNOLD		
AA045/01-02	01/09/89	ADM	ANTI-GLARE PROTECTOR	2	VICKY & MAPOKANE		
AA046/01-02	17/01/91	ADM	CSIR ANTI VIRUS PROGRAMS	1	C.WEAVER		
AA047/01-02	17/01/91	ADM	SNIPER ANTI VIRUS PROGRAMS	1	C.WEAVER		
		ADM	HARVARD GRAPHICS SOFTWARE	1	WC ARNOLD		

SIGNATURE

DATE

2-6-92

In this page some items are tran to Agric collodge & others are book * one item broken. Makubela 25-05

16-May-92

A = COMPUTER EQUIPMENT
 B = OFFICE FURNITURE
 C = OFFICE EQUIPMENT

LAPIS PROJECT
 ADMINISTRATION COMPONENT

ASSET NUMBER	INVOICE DATE	COMP	DESCRIPTION	LOCATION/ QTY ASSIGNED TO	SERIAL NUMBER COMMENTS
AB008/01	23/10/86	ADM	CARPET COVER ✓	1 ROOM 7-B. MULVANEY	DAMAGED BEYOND REPAIR
AB009/01-03	09/10/86	ADM	702 CHAIRS ✓	3 ADMIN COP	2/ROOM 10 & 1/ROOM 8
AB011/01	09/10/86	ADM	702 CHAIRS ✓	1 ROOM 8 - W. ARHOLD	
AB012/01	09/10/86	ADM	702 CHAIRS ✓	1 ROOM 25-G. HOLAPO	
AB012/01-03	21/10/86	ADM	CARPET COVERS ✓	3 ADMIN COP. ROOM 10, WCA	
AB017/01	18/11/86	ADM	BOOKSHELVES ✓	1 ROOM 9	
AB018/01	18/11/86	ADM	BIG UTILITY TABLE ✓	1 ROOM 7	
AB019/01	24/10/86	ADM	SECRETARIAL DESK ✓	1 ROOM 25	
AB023/01	24/10/86	ADM	HADISON EXECUTIVE DESKS ✓	1 ROOM 7-B. MULVANEY	
AB029/01	09/03/87	ADM	CURTAINS ✓	1 ADMIN. ROOM 7, B, 25	
AB032/01	11/11/87	ADM	BLINDS FOR WINDOWS ✓	3 ADMIN. ROOM 6:7, 25	
AB041/01	22/09/88	ADM	PRINTER STAND ✓	1 ADMIN ROOM 7	
AB043/01	27/10/88	ADM	LOTUS SWIVEL/TILT CHAIR ✓	1 ROOM 7-J. FISHER	
AB044/01	27/10/88	ADM	HERALD D/P DESK ✓	1 ROOM 7-J. FISHER	
AB050/01	13/10/86	ADM	66c. D/P DESK ✓	1 ROOM 8-S. KUCKIAN	
AB051/01	13/10/86	ADM	005 CHAIR ✓	1 ROOM	
AB052/01	07/10/87	ADM	705 CHAIR ✓	1 ROOM 7-B. MULVANEY	
AB053/01	29/12/88	ADM	1600 HERALD D/P DESK ✓	1 ROOM 9-F. ROOYANI	TRANSFERRED TO ROOM 11
AB055/01	20/04/89	ADM	CARPET PROTECTOR ✓	1 ROOM 7 J. FISHER	
AB056/01	20/04/89	ADM	DESK ✓	1 ROOM 9 M. GARDINER	
AB057/01	20/04/89	ADM	DRAWERS ✓ - cabinet	1 ROOM 10 DR. ROOYANI	
AB058/01	20/04/89	ADM	CREDENZA ✓	1 ROOM 9 M. GARDINER	
AB059/01-04	20/04/89	ADM	SIDE CHAIRS ✓	3 ROOM 9 M. GARDINER	
AB060/01	20/04/89	ADM	CARPET PROTECTOR ✓	1 ROOM 9 M. GARDINER	

SIGNATURE

DATE

2-6-92

Items cancelled to the low quantities
 are supposed to be typing errors.

Atakubela 25-05-92.

A = COMPUTER EQUIPMENT
 B = OFFICE FURNITURE
 C = OFFICE EQUIPMENT

LAPIS PROJECT

ADMINISTRATION COMPONENT

ASSET NUMBER	INVOICE DATE	COMP	DESCRIPTION	LOCATION/ QTY ASSIGNED TO	SERIAL NUMBER COMMENTS
AB061/01	20/04/89	ADM	L/BACK S/T CHAIR ✓	1 ROOM 9 N.GARDNER	
AB065/01	18/05/89	ADM	TELEPHONE CABINET ✓	1 ROOM 9 N.GARDNER	
AB067/01	02/11/89	ADM	MAROGANY DESK ✓	1 ROOM 7 - VICKY	
AB069/01	06/06/90	ADM	CARPET PROTECTOR	1 ROOM 7-B.MULVANEY	REPLACES AB008/01
AB070/01	26/07/89	ADM	APOLLO 10459 TYPIST CHAIR	1 T/F TO MARKETING - STOLEN	
AB071/01-03	30/10/86	ADM	702 CHAIRS ✓	3 VISITORS CHAIRS	
AB075/01-07	08/04/91	ADM	BURGLER BARS	7 ROOMS 7, 8, 9, 10	
AB076/01-06	08/04/91	ADM	BURGLER BARS	7 ROOMS 7, 8, 9, 10	
AC002/01		ADM	CALCULATOR ; SHARP EL2607	1 ROOM 8-S.KUCKIAN	SERIAL # 7300112Y
AC003/01	15/05/86	ADM	3M WHISPER SCR N TELEEX ✗	1	
AC003/02	15/05/86	ADM	COMMUNI STATION TARI.E ✗	1	UNIVERSITY OF ARIZONA
AC003/03	15/05/86	ADM	TRANSTECTOR SURGE PROTECTOR ✗	1	
03/04	15/05/86	ADM	INSTALLATION CHARGES ✗	1	
AC004/01-04	14/11/86	ADM	SHARP EL1607 CALCULATOR ✓	4 ROOM 7-J.FISHER	SERIAL # 63016368
AC005/01	19/09/86	ADM	OLYMPIA DG 505 DICTAPHONE	1 ROOM 10 - T.HAASE	
AC005/02	19/09/86	ADM	EARPHONE SET ✓	1 ROOM 10 - T.HAASE	IR STATIONERY CUPBOARD
AC005/03	19/09/86	ADM	FOOT CONTROL ✓	1 ROOM 10 - T.HAASE	
AC006/01	30/09/86	ADM	SHARP PHOTOCOPIER SF8200	1 ROOM 25-TRADE IN	SERIAL NO. 65618606 T-IN
AC013/01	11/05/88	ADM	CASIO FR 1015 CALCULATOR	1 ADMIN ROOM 8	SERIAL # 6321177
AC015/01	26/08/88	ADM	SHARP CALCULATOR EL2607 ✓	1 ADMIN ROOM 7	SERIAL No. 63027691
AC016/01	02/03/89	ADM	DYMO MACHINE	1 ADMIN- ROOM 7	
AC017/01	21/04/89	ADM	ELECTRIC HEATER ✓	1 ADMIN- ROOM 7	

SIGNATURE

DATE

2-6-92

* Four Different Items belongs to the university of Arizona. Thatubela 25-05-92

495

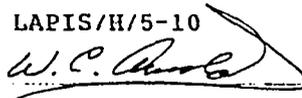
LESOTHO AGRICULTURAL PRODUCTION AND
INSTITUTIONAL SUPPORT PROJECT (LAPIS)

AMERICAN AG INTERNATIONAL



P.O. Box 333 • Maseru 100 • Lesotho • Tel 311932 • Telex 4510 LO

M E M O R A N D U M

TO: Mr. Bore Motsamai/Chief Range Management Officer
FROM: Administrative Manager/LAPIS Project
REF: LAPIS/H/5-10
SIGN: 
NAME: W. C. Arnold
DATE: 19 May, 1992

Transfer of LAPIS Range Management Commodities to MOA

In keeping with the phasing-out of the LAPIS Project and subsequent handing over of activities to MOA that were formerly supported by the LAPIS Project, we are handing over certain commodities to the MOA.

The items are listed on the attached pages which should be individually initialled by you on behalf of the Government.

Please concur and indicate receipt of these commodities with your signature below.



Bore Motsamai
Chief Range Management Officer
Ministry of Agriculture, Coops & Marketing

8 June 1992
Date

CC: COP/LAPIS

RA = COMPUTER EQUIPMENT RMA01 = SEHLABATHEBE RMA
 RB = OFFICE FURNITURE RMA02 = RMA'S GATE RMA
 RC = OFFICE EQUIPMENT RMA03 = PELANENG RMA
 RR = RADIO EQUIPMENT RMA04 = MOKHOTLONG RMA

RANGEREISTER OF NON-EXPENSE ITEMS EXCEEDING \$50 (====)

ASSET NUMBER	INVOICE DATE	COMP.	DESCRIPTION	QTY	ASSIGNED TO/LOCATION	SERIAL NUMBER COMMENTS
RA001/01	16/02/89	RLP	NORTON ADV. UTILITIES PROGRAM	1	S.HAASE - T.BOSIU BL	
RA002/01	13/04/89	RLP	IBM COMPUTER	1	S.HAASE - T.BOSIU BL	
RA003/01	13/04/89	RLP	IBM COMPUTER	1	S.HAASE - T.BOSIU BL	
RA004/01	02/06/89	RLP	XT COMPATIBLE COMPUTER	1	S.HAASE - T.BOSIU BL	
RA005/01	TELEX	RLP	WORDPERFECT CORPORATION	1		
RA006/01	13/04/89	RLP	XT COMPATIBLE COMPUTER	1	CHRIS WEAVER	
RA006/02	13/04/89	RLP	EPSON PRINTER	1	CHRIS WEAVER	
RA007/01	13/10/89	RLP	EXTENDED STYLE KEYBOARD	1	CHRIS WEAVER	
RA008/01	10/11/89	RLP	INTEL 8087-1 CO-PROCESSOR	1	J. HUNTER	
RA009/01	22/02/90	RLP	1 SERIAL PORT FOR XT COMPUTER	1	S. HAASE	
RA010/01	13/02/90	RLP	1.2MB DRIVE INTO XT COMPUTER	1	S. HAASE	
RA011/01	12/09/90	RLP	MONO COLOUR GRAPHICS CARD	1	C.WEAVER	
	20/08/91	RLP	AT COMPUTER	1	M. SEKOTO	
	20/08/91	RLP	SENDON 350 VA UPS	1	M. SEKOTO	
RB001/01-03	01/09/86	RFP	4-DRAWER FILING CABINET	3	LCDR-RAMA'S GATE	
RB002/01	07/10/87	RFP	705 CHAIR	1	C. OREW	
RB003/01-02	25/01/89	RFP	DESKS 1500x900 W/DRAWERS	2	RMA-MALEFILOANE	
RB004/01-02	25/01/89	RFP	TYPISTS CHAIRS	2	RMA-MALEFILOANE	
RB005/01	13/01/89	RFP	CURTAINING	1	RMA-MALEFILOANE	
RB006/01	21/07/89	RFP	GAS HEATER	1	PELANENG	
RB007/01	19/07/89	RFP	SPACE HEATERS	2	PELANENG	
RB008/01	25/09/89	RFP	CHALK BOARD	1	PELANENG	
RB009/01	17/05/90	RFP	CARPET	1	PELANENG	
RB010/01	03/11/89	RFP	NOTICE BOARD	1	PELANENG	
RB011/01	04/07/90	RFP	4-DRAWER FILING CABINET	1	C.WEAVER	
RB012/01	22/08/90	RFP	KEY CABINET	1	C.WEAVER	
RB013/01	04/07/90	RFP	4-DRAWER FILING CABINET	1	PAT GRAY	
RC001/01	03/02/89	RFP	XEROX 1012 PHOTOCOPIER	1	SEHLABATHEBE -P.GRAY	
RD016/01	24/01/89	RFP	SLEEPING BAGS	1	RMA-MALEFILOANE	
RD017/01	02/12/88	RFP	SLEEPING BAGS	1	H.NTLALE	
RD020/01	21/02/89	RFP	BIGGS/STRATTON ENGINE	1	RMA-MALEFILOANE	
RD021/01	17/01/89	RFP	DRILL RIGGING PARTS	1	RMA-MALEFILOANE	
RD021/02	31/01/89	RFP	FREIGHT DRILL RIGGING PARTS	1	RMA-MALEFILOANE	
RD021/03	05/11/89	RFP	FREIGHT DRILL RIGGING PARTS	1		
RD021/03	17/01/89	RFP	DRILL RIGGING PARTS	1	RMA-MALEFILOANE	
RD021/03-01	04/04/89	RFP	DRILL RIGGING PARTS	1	RMA-MALEFILOANE	
RD023/01	01/09/89	RFP	DRILL RIGGING PARTS	1	RWD UNIT	
RD024/01	13/02/90	RFP	DRILL RIGGING PARTS	1	RWD UNIT	
RD025/01	19/07/89	RFP	MODEL X 3 WINCH-1588kg.	1	RWD UNIT	
RD026/01	09/06/89	RFP	D19 SOCKET SET/POWER BAR	1	RWD UNIT	

HWD

[Signature]
 SIGNATURE

8 June 1992
 DATE

RA = COMPUTER EQUIPMENT RMA01 = SEHLABATHEBE RMA
 RB = OFFICE FURNITURE RMA02 = RMA5 GATE RMA
 RC = OFFICE EQUIPMENT - RMA03 = PELANENG RMA
 RR = RADIO EQUIPMENT RMA04 = WOKROTLONG RMA

RANGEREREGISTER OF NON-EXPENSE ITEMS EXCEEDING \$50 (=====
 =====

ASSET NUMBER	INVOICE DATE	COMP.	DESCRIPTION	QTY	ASSIGNED TO/ LOCATION	SERIAL NUMBER COMMENTS
RDO05/01	09/02/90	R	LEATHER SEAT COVERS/FLAPS	2	R	
RDO06/01	09/02/90	R	HOOF PARER	1	R	
RDO07/01	13/03/90	R	CALF DEBORNER	1	R	
RMA03/01	04/08/89	R	CURTAINS & RAILS	1	P	
RMA03/02	15/01/90	R	FENCING MATERIAL	1	P	
RMA03/03	08/05/90	R	FIELD TOILETS	2	P	
RMA03/04	14/08/89	R	SHELVING	1	P	
RMA03/05	20/11/89	R	FENCING MATERIAL	1	P	
RMA03/06	30/10/89	R	FENCING MATERIAL	1	P	
RMA03/07	21/07/89	R	BENCH VICE	1	P	
RMA03/08	21/07/89	R	CIRCULAR SAW AND BLADE	1	P	
RMA03/09	24/10/89	R	FENCING MATERIAL	1	P	
RMA03/10	28/03/90	R	FENCING MATERIAL	1	P	
RMA03/11	21/02/90	R	BUILDING MATERIALS	1	P	
RMA03/12	16/10/89	R	BAGS OF CEMENT	15	P	
RMA03/13	21/07/89	R	GAS HEATER	1	P	
RMA03/14	19/07/89	R	3 x 4 m. TARPULIN	1	P	
RMA03/15	23/10/89	R	6 x 8 m. TARPULIN	1	P	
RMA03/16	13/06/89	R	50m. MEASURING TAPE	1	P	
RMA03/17	13/06/89	R	CLAW HAMMERS	1	P	
RMA03/18	19/07/89	R	NYLON ROPE	1	P	
RMA03/19	18/09/89	R	BOLT CUTTERS	1	P	
RMA03/20	18/09/89	R	SKI ROPE	1	P	
RMA03/21	03/04/90	R	FENCING MATERIAL	1	P	
RMA03/22	08/09/89	R	FENCING MATERIAL	1	P	
RMA03/22	25/09/89	R	TABLE	1	P	
RMA03/23	26/02/90	R	STEEL FENCE BRACES	1	P	
RMA03/24	21/03/90	R	VENTX 250	1	P	
RMA03/25	18/01/90	R	TAUPAULIN & CANVAS	1	P	
RMA03/26	18/01/90	R	TAUPAULIN & CANVAS	1	P	
RMA03/27	28/08/89	R	NOTICE BOARDS	2	P	
RMA03/28	19/07/89	R	PROPANE SPACE HEATERS/CYLS.	2	P	
RMA03/29	19/06/89	R	CAMPING CHAIRS	2	P	
RMA03/30	30/03/90	R	CATTLE PENS	1	P	
RMA03/31	25/09/89	R	CHALK BOARD	1	P	
RMA03/32	23/10/89	R	CHISELS, GLOVES, SUITS	2	P	
RMA03/33	07/09/90	R	ACCESS ROAD	1	P	

PS

[Signature]
 SIGNATURE

8 June 1992
 DATE

RA = COMPUTER EQUIPMENT- RMA01 = SEHLABATHEBE RMA
 RB = OFFICE FURNITURE RMA02 = RMAS GATE RMA
 RC = OFFICE EQUIPMENT RMA03 = PELANENG RMA RANGEREISTER OF NON-EXPENSE ITEMS EXCEEDING \$50 (=====
 RR = RADIO EQUIPMENT RMA04 = MOKHOTLONG RMA

ASSET NUMBER	INVOICE DATE	COMP.	DESCRIPTION	QTY	ASSIGNED TO/ LOCATION	SERIAL NUMBER COMMENTS
RMA03/34	24/10/90	RLPU	STANDARD DRIVERS	4	PELANENG	
RMA03/35	24/10/90	RLPU	FENCE BRACES	***	PELANENG	
RMA03/36	30/10/90	RLPU	WOODEN POLES	***	PELANENG	
RMA03/37	15/11/90	RLPU	ACCESS ROAD	1	PELANENG	
RMA03/38	19/11/90	RLPU	FENCING	1	PELANENG	
RL001/01	05/02/90	RLPU	50m. MEASURING TAPE	1	C. DREW	
REDACTED						
RL003/01	20/04/90	RLPU	LOAD OF CATTLE KRAALS	1	C. DREW	
REDACTED						
RL005/01	04/04/89	RLPU	DAIRY TRACK RECORD	1	MOKHOTLONG	
RMA04/01	19/06/89	RLPU	DRILL RIGGING PARTS	1	MOKHOTLONG	A/C RENTAL
RMA04/02	25/07/89	RLPU	DRILL RIGGING PARTS	1	MOKHOTLONG	A/C RENTAL
RMA04/03	26/07/89	RLPU	DRILL RIGGING PARTS	1	MOKHOTLONG	A/C RENTAL
RMA04/04	26/07/89	RLPU	DRILL RIGGING PARTS	1	MOKHOTLONG	A/C RENTAL
RMA04/05	06/09/89	RLPU	4 BURNER T/TOP COOKER	1	PELANENG	
RMA04/06	06/09/89	RLPU	3 PANEL GAS HEATER	1	PELANENG	
RMA04/07	24/05/88	RLPU	FENCING MATERIALS	1	LERIBE & MALEFILOANE	
RMA04/08	16/11/89	RLPU	FENCING MATERIAL	1	PELANENG	
RMA04/09	08/03/89	RLPU	ELECTRIC DRILL SET	1	MOKHOTLONG	
RMA04/11	04/04/89	RLPU	PIPE VICE & STAND	1	MOKHOTLONG	
RMA04/12	08/03/89	RLPU	ELECTRIC DRILL SET	1	MOKHOTLONG	
RMA04/13	04/04/89	RLPU	STOCKS & DIE SET	1	MOKHOTLONG	
RMA04/14	03/02/89	RLPU	50m. FIBRE GLASS TAPE	1	RMA-MALEFILOANE	
RMA04/15	04/04/89	RLPU	PIPE CUTTER	1	MOKHOTLONG	
RMA04/16	04/01/90	RLPU	LADDER DOUBLE EXTENSION	1	MOKHOTLONG	
RMA04/17	18/08/89	RLPU	FENCING	1	ROBERT BUZZARD	
RMA04/18	14/05/90	RLPU	FINAL PAYMENT BA LEJOHE	1	P. GRAY	
RMA04/19	16/01/89	RLPU	4-BURNER GAS COOKER	2	MOKHOTLONG	
RMA04/20	21/03/89	RLPU	POLES, CRUSHED STONE & SAND	1	MARKET FACILITIES	
RMA04/21	10/05/89	RLPU	HEAVYDUTY CEMENT	1	MOKHOTLONG	
RMA04/22	10/05/89	RLPU	PIPES, FITTINGS, TIMBERS	1	MOKHOTLONG	

[Handwritten Signature]

8 June 1992

SIGNATURE

DATE

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RA = COMPUTER EQUIPMENT RMA01 = SEHLABATHEBE RMA
 RB = OFFICE FURNITURE RMA02 = RMA5 GATE RMA
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RANGEREREGISTER OF NON-EXPENSE ITEMS EXCEEDING \$50 (

=====

ASSET NUMBER	INVOICE DATE	COMP.	DESCRIPTION	ASSIGNED TO/ QTY	LOCATION	SERIAL NUMBER COMMENTS
RMA01/01	13/03/89	RLPU	EMASCULATOR	1	PAT GRAY	
RMA01/02	29/08/89	RLPU	LOADING CRUTE FOR SHEEP	1	SEHLABATHEBE	
RMA01/03	16/02/90	RLPU	FASCIA BOARDS/BRACKETS	1	P. GRAY	
RMA01/04	21/06/89	RLPU	BUILDING MATERIALS	1	PELANENG	
RMA01/05	10/05/89	RLPU	TIMBER, PIPES, CEMENT ETC	1	MATATIELO/P. GRAY	
RMA01/06	11/11/89	RLPU	FENCING MATERIAL	1	SEHLABATHEBE	
RMA01/07	03/11/89	RLPU	FENCING MATERIAL	1	SEHLABATHEBE	
RMA01/08	30/09/89	RLPU	BUILDING MATL'S	1	PAT GRAY	
RMA01/09	30/01/90	RLPU	BUNK HOUSE CABINET	1	P. GRAY	
RMA01/11	10/07/89	RLPU	BUILDING MATERIAL	1	MATATIELO/P. GRAY	
RMA01/12		RLPU	TARPAULIN	1	P. GRAY	
RMA01/13	30/03/90	RLPU	BUILDING MATERIAL	1	RLPU	
RMA01/14	31/05/90	RLPU	AUTOVECTOR SPACE HEATER	1	FURNISHINGS/SEHLABAT	
RMA01/15	31/05/90	RLPU	DRAPES/CURTAINS	1	FURNISHINGS/SEHLABAT	
RMA01/16	27/04/90	RLPU	GAS HEATER	1	N. NTLALE	
RMA01/17	03/05/89	RLPU	CEMENT	22	RLPU	
		RLPU	PHOTOCOPIER	1	SEH TRNG CENTER	
		RLPU	SLAUGHTER BLOCK, STEEL TRAYS	1	SEH TRNG CENTER	
		RLPU	SOLAR HEATING UNIT	1	SEH TRNG CENTER	
		RLPU	CABINET, PROJECTOR	1	SEH TRNG CENTER	

[Handwritten Signature]
 SIGNATURE

8 June 1992
 DATE

AMERICAN AG INTERNATIONAL



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M E M O R A N D U M

TO: Mr. T.J. Ramatsoari/Director Economics and Marketing
FROM: Administrative Manager/LAPIS Project
REF: LAPIS/H/5-10
SIGN: W.C. Arnold
NAME: W. C. Arnold
DATE: 19 May, 1992

Transfer of LAPIS Marketing Commodities to MOA

In keeping with the phasing-out of the LAPIS Project and subsequent handing over of activities to MOA that were formerly supported by the LAPIS Project, we are handing over certain commodities to the MOA.

The items are listed on the attached pages which should be individually initialled by you on behalf of the Government.

Please concur and indicate receipt of these commodities with your signature below.

T. J. Ramatsoari
T. J. Ramatsoari
Director Economics and Marketing
Ministry of Agriculture, Coops & Marketing

25/5/92
Date

CC: COP/LAPIS

PA = COMPUTER EQUIPMENT
PB = OFFICE FURNITURE
PC = OFFICE EQUIPMENT

PRODUCTION COMPONENT

ASSET NUMBER	INVOICE DATE	COMPONENT	DESCRIPTION	QTY	ASSIGNED TO	COMMENTS
PA006/01	19/05/88	PIC	PRINTER (STOLEN DEC 30)	1	G. FEASTER/HANDELING	
PA008/01	21/11/88	PIC	TECH KIT / Stolen	1	P. MALAM/PC	5/11 02632145/17061
PA009/01	21/11/88	PIC	PRINTER FX1050 Stolen	1	TRADED IN PA020/01	5/11 22006871
PA011/01	16/02/89	PIC	CONTINUOUS MOUSE INTERFACE	1	G. FEASTER/HANDELING	Shelbstuffs
PA012/01	18/05/88	PIC	PRINTER FX1050 Stolen	1	G. FEASTER/HANDELING	5/11 02602345
PA015/01	10/03/89	PIC	PRINTER TROLLEY	1	P. MALAM/PC	
PA019/01	07/12/90	PIC	IGAT GRAPHICS PROGRAM	1	G. FEASTER/HANDELING	
		PIC	PERSON PRINTER FX1050	1	P. MALAM	Cross > Am. Long 26/5/92
		PIC	IMAGING IV SOFTWARE	1	G. FEASTER	Shelbstuffs
PD036/01-12	06/05/88	PIC	5-HEIGHT BASED CHAIR	12	ROOM 27(4), 42(11), 26(2), 35(3), 9(2)	Shelbstuffs
PD065/01-05	22/04/91	PIC	NUMERAR PROFS	5	P. MALAM/PC ROOM 25	Cross Am. Long 26/5/92
PD066/01-03	22/04/91	PIC	NUMERAR PROFS	3	G. FEASTER'S OFFICE	Shelbstuffs
PD004/01	16/02/88	PIC	SLIDE PROJECTOR MODEL 500	1	HOME GARDENS PROGRAM/INDIVIDUAL AIDS	G.M. Trade 26/5/92
PD005/01	27/11/86	PIC	INVERTER GENERATOR EG 3000	1	PIC - HOME	Cross Am. Long 26/5/92
PD015/01-04	14/01/83	PIC	IND. PROFESSING FACILITY	4	INDIAN, MALAYSIAN, MALAY FOLKS, HINDU	Shelbstuffs
PD016/01	13/10/89	PIC	STAND	1	INDIAN	Less than \$500 Kwate
PD021/01	30/01/88	PIC	INVERTER GENERATOR	1	HOME GARDEN PROGRAM	
PD026/01	10/02/83	PIC	PLASTIC BAG SEALER	1	COMPLEX WITH SHAW	
PD027/01-04	20/04/88	PIC	INDIAN TABLES 7500L	4	INDIAN, MALAYSIAN, MALAY FOLKS, HINDU	G.M. Trade
PD030/01-04	20/04/88	PIC	INDIAN TABLES STANDS	4	INDIAN, MALAYSIAN, MALAY FOLKS, HINDU	
PD031/01-04	20/04/88	PIC	INDIAN TABLES WITH TABLES	4	INDIAN, MALAYSIAN, MALAY FOLKS, HINDU	
PD032/01-04	20/04/88	PIC	INDIAN TABLES WITH SHELF	4	INDIAN, MALAYSIAN, MALAY FOLKS, HINDU	Shelbstuffs
PD033/01-04	20/04/88	PIC	INDIAN TABLES AND STIK PLUMBING	4	INDIAN, MALAYSIAN, MALAY FOLKS, HINDU	
PD034/01-04	20/04/88	PIC	INDIAN SHELVES	4	INDIAN, MALAYSIAN, MALAY FOLKS, HINDU	
PD047/01-03	21/10/88	PIC	INDIAN TABLES	3	INDIAN, MALAYSIAN, MALAY FOLKS, HINDU	
PD048/01-03	21/10/88	PIC	INDIAN SECTION STAVES	3	PIC RM. SUPPLIES HOME	
PD049/01-03	21/10/88	PIC	INDIAN TABLES	3	INDIAN, MALAYSIAN, MALAY FOLKS, HINDU	
PD050/01-03	21/10/88	PIC	INDIAN TABLES	3	INDIAN, MALAYSIAN, MALAY FOLKS, HINDU	
PD057/01	10/10/87	PIC	INDIAN AND SOCRAT SET	1	INDIAN	Less than \$500
PD058/01	12/07/87	PIC	INDIAN STRAWER HAND	1	INDIAN	Less than \$500
PD063/01-02	01/07/88	PIC	INDIAN/VEGETABLE STORAGE	2	FARM & DOMESTIC	Shelbstuffs
PD064/01-02	07/10/88	PIC	INDIAN SORTING FACILITIES	2	INDIAN/INDIAN ASSOCIATION HOME	Shelbstuffs
PD066/01	20/02/83	PIC	INDIAN SERVER	1	INDIAN	Less than \$500
PD067/01-02	23/06/88	PIC	INDIAN SORTING FACILITIES	2	FARM & DOMESTIC	Shelbstuffs
		PIC	INDIAN HRTG CTR	1	G. FEASTER	
		PIC	INDIAN HRTG CTR	1	G. FEASTER	Shelbstuffs
		PIC	INDIAN HRTG CTR	1	G. FEASTER	
		PIC	INDIAN HRTG CTR	1	G. FEASTER	

[Handwritten Signature]
SIGNATURE

25/5/92
DATE



M E M O R A N D U M

To: Mr. A. M. Gugushe, Director, Department of Crops Services
From: James Sunta, Irrigation Engineer, LAPIS Project
Sign: James D. Sunta
Date: 29 May, 1992
Re: Turnover of all Irrigation Resource Planners (IRP) to the DCS.

Since June of 1989, 15 Ministry of Agriculture extension advisors and subject matter specialists have been involved in the Irrigation Resource Planners program with assistance from the LAPIS Project. With the conclusion of the LAPIS Project on 31 May, 1992, the Department of Crops Services will assume responsibility for all IRP activities.

In preparation of the turnover, a folder containing the significant documents related to the IRP program has been put together. These documents detail the activities related to IRP training and support from the inception of the program in June 1989 until the end of LAPIS support in May 1992.

All materials and instruments purchased by LAPIS for use in support of the IRP's have been turned over to the lead IRP, Mr. T. Sedio. These include:

- Two sets of survey instruments, each set consisting of a Pentax theodolite, theodolite tripod, and survey rod.
- Files related to irrigation planning accumulated throughout the duration of the project and extra copies of training lecture notes.
- A box of tools containing spanners, pipe wrenches, sockets, etc. for use in the field and a 30 m measuring tape.
- Various drafting equipment and materials left over from the IRP training course.

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M E M O R A N D U M

TO: Mr. Trower Namane/Director ARD
FROM: Administrative Manager/LAPIS Project
REF: LAPIS/H/5-10
SIGN: W. C. Arnold
NAME: W. C. Arnold
DATE: 19 May, 1992

Transfer of LAPIS ARD Commodities to MOA

In keeping with the phasing-out of the LAPIS Project and subsequent handing over of activities to MOA that were formerly supported by the LAPIS Project, we are handing over certain commodities to the MOA.

The items are listed on the attached pages which should be individually initialled by you on behalf of the Government.

Please concur and indicate receipt of these commodities with your signature below.

Trower Namane
Trower Namane
Director ARD
Ministry of Agriculture, Coops & Marketing

26-6-1992
Date

CC: COP/LAPIS

501

Attached to this letter is a memorandum briefly outlining the past activities of the IRP's with recommendations made by the LAPIS Irrigation Engineer on the role of the IRP's in the future. Included with this memorandum is a propose terms of reference for the Lead IRP.

With your signature below, the MOA/DCS will assume the responsibility of the IRP activities as dated.



29 May. 1992

Mr. A. M. Gugushe. Director. Department of Crops Services
Ministry of Agriculture, Marketing and Cooperatives

cc: COP. LAPIS Project.
IRP File

506

EA = COMPUTER EQUIPMENT
 EB = OFFICE FURNITURE
 EC = OFFICE EQUIPMENT

LAPIS PROJECT

RESEARCH COMPONENT

ASSET NUMBER	INVOICE DATE	DESCRIPTION	ASSIGNED TO / QTY	LOCATION	SERIAL NUMBER / COMMENTS
EA001/01	23/12/87	ARC;101000 CUT SHEET FEEDER	1	B. AENGLD	
EA004/01	23/12/87	ARC;EPSON TRACTOR FEED UNIT	1	B. AENGLD	
EA012/01	15/06/88	ARC;25m POWER CABLE	1	B. AENGLD	
EA014/01	15/04/88	ARC;SEAGATE 20mb + CONTROLLER	1	ARC - E. LOOMIS	
EA021/01	26/04/88	ADM;COLUMBIA HARD DISK	1	N. ARTZ	
EA031/02	27/06/88	PIC;2mb RAM CARD - XT/36 256k RAM	1	N. ARTZ	
EA029/01	12/06/89	ARC;1000 TRANSFORMER POWERMAN	1	B. BADAMSTAN	ARC
EA030/01	17/04/90	ARC;SERIAL PORT + CONVERTOR	1	BETH ARNOLD	ARC
EA034/01	05/04/90	ARC;MEMORY UPDATE ON LAPTOP	1	J. CAMPBELL	ARC
EA035/01	15/01/90	ARC;3.5" D/DRIVE + CARD FOR P.C.	1	J. CAMPBELL	ARC
EA041/01-02	12/12/90	ARC;MOUSE SYSTEM & SERIAL PORT	2	J. CAMPBELL	ARC
EA001/01	23/12/87	ARC;SPARTAN 30MB P.C.	1	B. AENGLD	871/37399
EA007/01	11/04/88	ARC;SPARTAN XT/SD 30mb MONO	1	E. LOOMIS	88032114/010264
EA008/01	11/04/88	ARC;EPSON PRINTER LX800	1	E. LOOMIS	2060885
EA002/01	05/31/90	ARC;LASER JET PRINTER	1	BETH ARNOLD	ARC
EA044/01	04/03/91	ARC;AB DATA SWITCH BOX	1	J. CAMPBELL	ARC
EA003/01-10	10/07/89	ARC;NOTICE BOARDS	10	RESEARCH LIBRARY	
EA005/01	17/11/89	ARC;TABLE	1	RESEARCH LIBRARY	
EA007/01	17/11/89	ARC;TABLE	1	RESEARCH LIBRARY	
EA001/01	18/09/87	ARC;ELECTRODE COMB EPOXY/GEL DIN10	1	ARC BEJI	SOILS LAB ✓
EA001/01	23/09/87	ARC;BRIGGS AND STRATON MOTOR	1	ARC	
EA041/01-02	13/02/89	ARC;SHELVING UNITS/FRAMES	2	ARC	
EA044/01	26/02/87	ARC;DRAG LINE AT ARC IRRIGATION	1	INTASBERA	
EA007/02	29/05/89	ARC;RAIN GAUGE "HELMAN"	1	ARC	ARC
EA008/02	17/05/89	ARC;FANS WET WALL SYSTEM	1	ARC	ARC
EA001/01	02/23/89	ARC;ELECTRODE COMB	1	ARC	
EA001/01	23/02/89	ARC;ELECTRODE COMB	1	ARC SOIL LAB.	
		ARC;GREENHOUSE BENCHES	1	GREENHOUSE	
		ARC;SLASSEE	1	AGEONOMY	
		ARC;PUMP	1	IRRIGATION	
EA007/01	14/06/89	ARC;15m3 CRUSHED STONE	1	GREENHOUSE	
EA008/01	22/06/89	ARC;1000 BRICKS	1	GREENHOUSE	
EA009/01	24/07/89	ARC;6m STONE	1	GREENHOUSE	
EA012/01	30/11/89	ARC;STONE	1	GREENHOUSE	
EA002/01	28/07/89	ARC;GREENHOUSE SERVICE CONNECTION	1	E. LOOMIS	
EA003/01	14/08/89	ARC;CAGES	2	GEORGE MARLOWE	
EA004/01	08/09/89	ARC;FOOTINGS FOR GREENHOUSE	1	JIM CAMPBELL	
EA005/01	11/10/89	ARC;GREENHOUSE BENCHES	10	GEORGE MARLOWE	
EA005/02	11/10/89	ARC;GREENHOUSE BENCHES	10	GEORGE MARLOWE	
EA007/01	14/12/89	ARC;FINAL PAYMENT PLUMBING	1	ARD GREENHOUSE	
EA007/02	21/11/89	ARC;INSTALLATION OF WATER SYSTEM	1	ARD GREENHOUSE	
EA009/01	30/01 90	ARC;WIRING OF GREENHOUSE	1	ARD GREENHOUSE	
EA0010/01	07/12/89	ARC;WATER CONNECTION	1	ARD GREENHOUSE	
EA0011/01	19/04/90	ARC;GENCON CONTRACT CREDIT	1	ARD GREENHOUSE	

SIGNATURE

DATE

*For: Items and agree to be present at ARD. Others have notified
 they were not even recalled to have been seen
 Jim Gold 192*

A = COMPUTER EQUIPMENT
 B = OFFICE FURNITURE
 C = OFFICE EQUIPMENT

LAPIS PROJECT
 ADMINISTRATION COMPONENT

ASSET NUMBER	INVOICE DATE	COMP	DESCRIPTION	QTY	LOCATION/ASSIGNED TO	SERIAL NUMBER	COMMENTS
AIRC1/01		ADM	PROGRESS PAYMENT #1	1	AEC W. HISHEK		IRRIGATION SYSTEM
AIRC1/02		ADM	PROGRESS PAYMENT #2	1	AEC W. HISHEK		IRRIGATION SYSTEM
AIRC1/03		ADM	PROGRESS PAYMENT #3	1	IRRIGATION SYSTEM		
AIRC1/04		ADM	PROGRESS PAYMENT #4	1	IRRIGATION SYSTEM		
AIRC1/05		ADM	PROGRESS PAYMENT #5	1	IRRIGATION SYSTEM		
AIRC1/06		ADM	PROGRESS PAYMENT #6	1	IRRIGATION SYSTEM		
AIRC1/07		ADM	PROGRESS PAYMENT #7	1	IRRIGATION SYSTEM		
AIRC1/08		ADM	PROGRESS PAYMENT #8	1	IRRIGATION SYSTEM		
AIRC1/09		ADM	PROGRESS PAYMENT #9	1	IRRIGATION SYSTEM		
AIRC1/10		ADM	PROGRESS PAYMENT #10	1	IRRIGATION SYSTEM		
AIRC1/11		ADM	PROGRESS PAYMENT #11	1	IRRIGATION SYSTEM		
AIRC1/12		ADM	PROGRESS PAYMENT #12	1	IRRIGATION SYSTEM		
AIRC1/12-01		ADM	PROGRESS PAYMENT #13	1	IRRIGATION SYSTEM		
AIRC1/14	13/03/90	ADM	PROGRESS PAYMENT #14	1	IRRIGATION SYSTEM		
AIRC2/13	25/04/88	ADM	DESIGN OF WELL POINT SYSTEM	1	IRRIGATION SYSTEM		
AIRC2/14	23/08/88	ADM	PROF. FEES : W/POINT SYSTEM	1	IRRIGATION SYSTEM		
AIRC3/15	09/02/87	ADM	INVESTIGATION OF SAND ABSTRACT	1	IRRIGATION SYSTEM		
AIRC4/16	30/05/89	ADM	ELECTRICAL WIRCH	1	IRRIGATION SYSTEM		

Agreement by Kins was signed by Mr. Martti and Mr. Corbett in 1990.
 RL
 30/6/92

TOTAL IRRIGATION SCHEME

SIGNATURE

DATE

An ordinary Irrigation System is still functional as of Wednesday 24th June, 1992. The System IS NOT AT ALL A WELL POINT IRRIGATION SYSTEM.

24/06/92

BB

LESOTHO AGRICULTURAL PRODUCTION AND
INSTITUTIONAL SUPPORT PROJECT (LAPIS)

AMERICAN AG INTERNATIONAL



P.O. Box 333 • Maseru 100 • Lesotho • Tel 311932 • Telex 4510 LD

TO: Mr. C. Cweba, LAC Principal
FROM: S. Goertz, ACD Specialist LAC/LAPIS
SIGN: 
DATE: April 30, 1992

RE: Final Transfer of LAPIS Commodities to LAC

With the termination of LAPIS Project support to LAC, we are handing over the remaining LAPIS-purchased commodities to the college. The items are listed on the following pages. Please initial each page on behalf of the Government. Also, please concur and indicate receipt of these commodities with your signature below.



C. Cweba, LAC Principal

27-4-92
Date

cc: COP/LAPIS

LETTER OF RECOGNITION

I have reviewed the LAPIS Project Student Enterprise Program, Student Trust Fund & LAC Administrative Activities Lesotho Agricultural College Termination and Assessment Report and find it acceptable. The activities outlined in the report are what I know to have taken place. I understand that all remaining, LAPIS - procured commodities yet to be turned over to LAC will be done prior to May 31, 1992. The recommendations outlined in the report are accepted and well taken. On behalf of the College, I wish to express my appreciation to the LAPIS Project for this assistance.

SIGNED :



P.Q. Cweba
P.Q. Cweba, Principal,
Lesotho Agricultural College

DATE :

22-04-92

24-Apr-92

REGISTER OF NON-EXPENSE ITEMS EXCEEDING \$500 PER LAFIS CONTRACT REQUIREMENTS

EDUCATION COMPONENT

ASSET NUMBER	DESCRIPTION	QTY	ASSIGNED TO/ PRESENT LOCATION	SERIAL NUMBER COMMENTS
	SPRINKLER IRR. MANUALS	99	LAC	
	RABBIT SHED	1	LAC/SEP	
	UPS	1	S. GOERTZ	
	WATER TANKS	3	LAC	
	GREENHOUSE HEATERS	1	LAC GREENHOUSE	
	MOTHER BOARDS/DISK DRIVES	1	M. HISHER-COMPUTER RO	
	ORCHARD FENCING	1	LAC ORCHARD	
	ISOLATOR/TRANSFORMER	1	GREENHOUSE	
CH008/01	ALBION CHICKS	1	BASIC UNIT	SEP
CH009/01	ALBION CHICKS	2	1200 CHICK BROODERS	SEP
CH010/01	REUNION METAL INDUS.	6	10 HOLE NEST BOXES	SEP
CE006/01	MIN. OF WORKS	1	EXT/ACTIVITIES HALL	LAC
CE015/01	J. C. LAI	1	CHICKEN FENCING	SEP
CE016/01	J. MORHANOI	1	WALLS FOR DAIRY UNIT	SEP
PI018/01	SWEC	3	TRAILER W/WHEELS&RAM	IRR SYSTEM
PI020/01	SWEC	3	ENGINE-BATZ E79	IRR SYSTEM

SIGNED 

**VEHICLES PURCHASED BY LAPIS AND
VEHICLE STATUS AS OF MAY 31, 1992**

512

REGISTER OF LAPIS PROJECT VEHICLES

ASSET NUMBER	COMP	DESCRIPTION	ENGINE NO./CHASSIS NO.	COMMENTS
Y 0379	LAC	Toyota Dyna 30 Seat Bus	MED11095A0361339/ CWU95RMDTH30001887	HANDED OVER TO MoA - 28/9/90
Y 8918	LAC	Toyota Dyna 4T truck	MA010965A031011M/ 0WU900002085	HANDED OVER TO MoA - 28/9/90
Y 8919	ARC	Toyota Dyna 4T truck	MA010965A031045M/ 0WU900002250	HANDED OVER/ARD 30/10/91
Y 6686	RLEPU	Toyota Dyna 3T truck		HANDED OVER TO MoA - 21/8/90
Y 1319	PIC	Toyota Dyna 4T truck	010065A050249T/	HANDED OVER TO MoA - 01/05/92
Y 1319	PIC	Trailer hitch	YEU491-0000113	
Y 0352	LAC	Toyota HiAce 16 Seat	4Y011996J/YH63R9000689	HANDED OVER TO MoA - 28/9/90
Y 0399	ADM	Toyota HiAce 10 Seat	4Y9002152/YH53R9001009	HANDED OVER/MOA 01/05/92
	ADM	Alarm/Immobiliser		
Y 0056	ARC	Toyota L/Cruiser P/U		HANDED OVER/ARD 30/10/91
	ARC	Alarm/Immobiliser		
7 0057	PIC	Toyota L/Cruiser P/U		USED FOR PARTS >100,000 km.
Y 0353	RLEPU	Toyota L/Cruiser P/U	3F0133416/FJ75R0045960	HANDED OVER TO MoA - 1/10/90
Y 0353	RLEPU	Tow bar/bush bar/roll bar		HANDED OVER TO MoA - 1/10/90
Y 0381	RLEPU	Toyota L/Cruiser P/U	3F0133058/FJ75R0046049	HANDED OVER TO MoA - 08/06/92
Y 6971	RLEPU	Toyota L/Cruiser P/U		HANDED OVER/DLS - 01/05/92
Y 0164	RLEPU	Toyota L/Cruiser P/U		HANDED OVER TO MoA - 21/8/90
Y 8654	RLEPU	Toyota L/Cruiser P/U		HANDED OVER TO MoA - 21/8/90
Y 1358	RLEPU	Toyota L/Cruiser P/U	3F-0222358/FJ75-0075546	STOLEN 4th FEB. 1991
	RLEPU	Alarm/Immobiliser		
Y 1359	RLEPU	Toyota L/Cruiser P/U	3F-0222519/FJ75-0075691	
Y 1251	RLEPU	Toyota L/Cruiser P/U	2F-0206270/FJ75-0071423	HANDED OVER/DLS - 01/05/92
	RLEPU	Alarm/Immobiliser		
Y 0747	RLEPU	Toyota L/Cruiser S/W	3F-0168777/FJ62R-080841	STOLEN 4th FEB. 1991
	RLEPU	Alarm/Immobiliser		INSURANCE CLAIM
Y 8679	ARC	Toyota L/Cruiser S/W		HANDED OVER TO MoA -
Y 8642	ARC	Toyota L/Cruiser S/W		HANDED OVER TO MoA -
Y 0099	MoA	Toyota L/Cruiser S/W	3F0104312/FJ62R060364	HANDED OVER TO MoA - 26/9/90
Y 0098	ARC	Toyota L/Cruiser S/W	3F0102615/FJ62R058499	USED FOR PARTS >100,000 km.
Y 0096	LAC	Toyota L/Cruiser S/W	3F0104244/FJ62R060345	STOLEN - Insurance claim
Y 0093	ARC	Toyota L/Cruiser S/W	3F0104081/FJ62R060277	HANDED OVER/ARD 30/10/91
	ADM	Alarm/Immobiliser		

SP

REGISTER OF LAPIS PROJECT VEHICLES

ASSET NUMBER	COMP	DESCRIPTION	ENGINE NO./CHASSIS NO.	COMMENTS
Y 0090	PIC AEM	Toyota L/Cruiser S/W Alarm/Immobiliser	3F01022757/FJ62R059584	WRECKED-INSURANCE CLAIM
Y 8765	RLZU	Toyota L/Cruiser S/W		HANDED OVER TO MoA - 21/8/90
Y 6773	RLZU	Toyota L/Cruiser S/W		HANDED OVER TO MoA - 21/8/90
Y 3745	RLZU	Toyota L/Cruiser S/W		HANDED OVER TO MoA - 21/8/90
Y 1344	AAC	Toyota L/Cruiser S/W	3F216765/FJ623102509	STOLEN - Insurance claim
Y 5946	PIC	Toyota 4 x 4 Dbl Cab Alarm/Immobiliser	4Y0045829/YN67R0006406	HANDED OVER/CROPS 01/05/92
Y 8948	PIC	Toyota 4 x 4 Dbl Cab	4Y0045645/YN67R0006395	HANDED OVER/CROPS 01/05/92
Y 8948	PIC	Bull bar/Roll bar Alarm/Immobiliser		
Y 0413	PIC	Toyota 4 x 4 Dbl Cab Alarm/Immobiliser	4Y0128114/'0011763	
Y 0414	PIC	Toyota 4 x 4 Dbl Cab Alarm/Immobiliser	4Y0127377/'0011764	HGSP
Y 1320	RLZU	Toyota 4 x 4 Dbl Cab Alarm/Immobiliser	4Y-9021519/YN67-0021376	HANDED OVER/RANGE 07/02/92
Y 1279	AAC RLZU	Toyota 4 x 4 Dbl Cab Alarm/Immobiliser	4Y-9020832/YN67-0021212	HANDED OVER/ARD - 01/05/92
Y 1250	RLZU	Toyota 4 x 4 Dbl Cab	4Y-9020195/YN67-0020915	STOLEN - Insurance claim
Y 8950	PIC	Toyota 4 x 4 P/U incl tow-bar	4Y0044366/YN67R9000679	HANDED OVER/DLS 01/05/92
Y 8947	LAC	Toyota 4 x 4 P/U	4Y0044836/YN67R9000654	HANDED OVER/LAC 17/04/91
Y 8945	PIC	Toyota 4 x 4 P/U incl tow-bar	4Y0044653/YN67R9000697	HANDED OVER/LAC 14 JUNE 1991
Y 1249	RLZU	Toyota 4 x 4 P/U	4Y-9019817/YN67-0020812	WRECKED -Insurance - M29750
Y 1249	RLZU	Roll bar/Tow bar		
Y 8922	PIC	Toyota 2 x 4 P/U	1Y9017977/0052882	HANDED OVER/CROPS 30/10/91
Y 8923	AAC	Toyota 2 x 4 P/U	1Y9017962/0052891	HANDED OVER/ARD 30/10/91
Y 8924	LAC	Toyota 2 x 4 P/U	1Y9017944/0052878	HANDED OVER/LAC 14 JUNE 1991
Y 0354	PIC	Toyota 2 x 4 P/U	2Y9005320/YN56R0004149	HGSP
Y 0355	LAC	Toyota 2 x 4 P/U	2Y9005275/YN56R0004146	HANDED OVER TO MoA - 28/9/90
Y 0380	PIC	Toyota 2 x 4 P/U	2Y9005810/YN56R0004268	HANDED OVER/MKT 30/10/91
Y 0400	PIC	Toyota 2 x 4 P/U	2Y9005807/YN56R0004277	HANDED OVER TO MoA - 28/9/90

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REGISTER OF LAPIS PROJECT VEHICLES

ASSET NUMBER	COMP	DESCRIPTION	ENGINE NO./CHASSIS NO.	COMMENTS
Y 0401	PIC	Toyota 2 x 4 P/U	2Y9004869/YH56R0004269	WRECKED-Insur.Proceeds M12460
Y 1189	LAC	Toyota 2 x 4 P/U **	2Y9021663/0009549	HANDED OVER/LAC 01/05/92
Y 1217	ARC	Toyota 2 x 4 P/U	2Y902227/YH51-0014030	HANDED OVER/ARD 30/10/91
Y 1213	ADM	Toyota 2 x 4 P/U	2Y902257/YH51-0014021	STOLEN - APRIL 1991
Y 9920	PIC	Toyota Sedan	2Y9001546/9501110	HANDED OVER/CROPS 01/05/92
Y 3921	ADM	Toyota Sedan	2Y9001527/9501119	
Y 3949	LAC	Toyota Sedan	2Y9001523/YX70R9501118	HANDED OVER/LAC 01/05/92
Y 0356	ARC	Toyota Sedan	2Y9005130/YX70R9502862	HANDED OVER/ARD 01/05/92
Y 9993	RLEPU	Toyota Corolla S/W	4A-1238331/AE71-9904486	HANDED OVER TO MoA - 21/8/90
W 3698	ARC	Massey Ferguson Tractor	CE820015A002396M/005608	HANDED OVER/ARD 1/05/91
W 3689	ARC	Massey Ferguson Tractor	CE820015A002406M/005605	HANDED OVER/ARD 1/05/91
W 3778	LAC	Massey Ferguson Tractor	006883JJ/CE821065A03393	HANDED OVER/LAC 17/04/91
Y 1880	BGNP	Toyota 4x4 Dbl Cab	4Y-9057867/YN67R0031331	
Y 1881	RLEPU	Toyota 4x4 Dbl Cab	4Y-9057879/YN67R0031326	HANDED OVER/USAID 7/05/92
Y 2041	RLEPU	Toyota 4x4 Dbl Cab	3L-2706945/LN1060058593	HANDED OVER/DLS - 01/05/92
Y 2042	RLEPU	Toyota 4x4 Dbl Cab	3L-2713626/LN1060058967	HANDED OVER/USAID 7/05/92

VEHICLE HANDOVERS

UNITED STATES A.I.D. MISSION TO "LESOTHO"

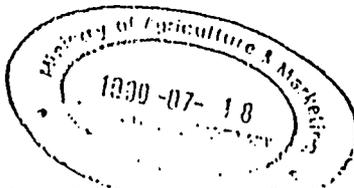
Pr 1/8

AMERICAN EMBASSY
P.O. BOX 333
MASERU 100
LESOTHO

Telephone 313954
Telex 4600 USAID LO

July 16, 1990

Mr. Roid Ntokoane
Principal Secretary
Ministry of Agriculture, Cooperatives
and Marketing
Maseru, Lesotho



RE: Vehicles Purchased by USAID under LCRD Project

Dear Mr. Ntokoane:

As discussed in previous meetings and approved in the PNC meeting held 21 May, 1990, the process of turning over certain vehicles to the HOA Departments or Divisions is to begin effective 15 June 1990. The purpose of this letter is to turn over certain vehicles purchased under the LCRD project, but which have been controlled by LAPIS since the completion of LCRD.

At the PNC meeting it was agreed that the vehicles would remain in the particular Department or Division for which the vehicles were purchased, to promote maintainability of activities initiated under the LCRD Project. The Departments/Divisions will therefore undertake complete supervision of the vehicle and assume all operation and maintenance costs on the relevant effective date.

It is planned that over a period of time vehicles purchased under the auspices of the LAPIS Project will also be handed over to the relevant HOA Departments/Divisions so that operation and maintenance costs can be budgeted and absorbed on a gradual basis, reducing the budgetary impact to the HOA. This hand over of LCRD purchased vehicles is the first step in that process.

Per your request during conversation with the LAPIS T.A. team, the keys and log books will be handed over to the Division/Department Heads along with a receiving report letter. This letter, when signed by the Department/Division Head, will document the transfer.

LAPIS - Copy

517

Hr. Reid Ntokonne

Page Two

The following listing shows the first vehicles in this program and the effective dates for the transfer:

RLPU/RANGE MANAGEMENT DIVISION - Effective 1 August 1990

Y 0164	Toyota Landcruiser P/U
Y 6773	Toyota Landcruiser S/W P/U
Y 0993	Toyota Corolla B/W
Y 0765	Toyota Landcruiser B/W
Y 6606	Toyota Dyna 3 Ton Truck - Schlabathobe
Y 0654	Toyota Landcruiser P/U
Y 0745	Toyota Landcruiser S/W

Please sign and return a copy of this letter below to acknowledge receipt and agreement.

Thank you.

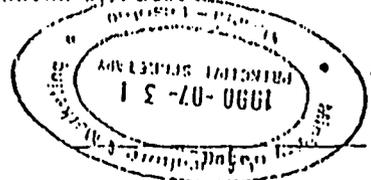
Sincerely,

Barbara P. Sandoval
Acting Division Director

RECEIVED:

Reid Ntokonne, Principal Secretary
Ministry of Agriculture, Coops & Marketing

cc: AAI Management, LAFIS Project



AMERICAN AG INTERNATIONAL



333 • Maseru 100 • Lesotho • Tel 311932 • Telex 4510 LO

August 21, 1990

Mr. B. Motsamai
Chief Range Management Officer
Ministry of Agriculture
P.O. Box 24
Maseru 100

Dear Mr. Motsamai:

Referring to the letter written by Barbara P. Sandoval, Acting Director, USAID, to Mr. Reid Ntokoane, Principal Secretary, MOA, dated July 16, 1990.

Please accept keys for the following vehicles:

RLPU/RANGE MANAGEMENT DIVISION - Effective 1 August 1990

Y 0164	Toyota Landcruiser P/U
Y 6773	Toyota Landcruiser P/U
Y 0993	Toyota Corolla S/W
Y 8765	Toyota Landcruiser S/W
Y 6686	Toyota Dyna 3 Ton Truck - Sehlalathebe
Y 8654	Toyota Landcruiser P/U
Y 8745	Toyota Landcruiser S/W

Sincerely,

W.C. Arnold.
Administrative Manager.
LAPIS Project.

RECEIVED:

Mr. B. Motsamai.
Chief Range Management Officer.
Ministry of Agriculture.

UNITED STATES A.I.D. MISSION TO LESOTHO

AMERICAN EMBASSY
P.O. BOX 333
MASERU 100
LESOTHO

Telephone 313954
Telex 4506 USAID LO

August 23, 1990

Mr Reid L. Ntokoane
Principal Secretary
Ministry of Agriculture, Cooperatives
and Marketing
P.O. Box 24
Maseru 100, Lesotho

RE: Vehicles Purchased by USAID for LAPIS/MOA

Dear Mr. Ntokoane:

Following our letter dated July 16, 1990 this is the second turn-over of vehicles in the phase down process of the LAPIS Project. It is planned that over a period of time all vehicles purchased under the auspices of the LAPIS Project will be handed over to the relevant MOA Department/Division such that operation and maintenance costs can be budgeted and absorbed on a gradual basis, reducing the impact to the MOA rather than a once only turn-over of all the vehicles at the end of the Project.

As was the case for the previous handover, the keys and log books will be handed over to the Division/Department Heads with a receiving report letter. This letter when signed by the Department/Division Head will document the transfer.

The following listing shows the second group of vehicles in this program and the effective date for the transfer:

RLPU/RANGE MANAGEMENT DIVISION - Effective 1 September 1990
Y 0353 Toyota Landcruiser P/U

DEPARTMENT OF FIELD SERVICES - Effective 1 September 1990
Y 0099 Toyota Landcruiser S/W

AEC/LESOTHO AGRICULTURAL COLLEGE - Effective 1 September 1990
Y 0379 Toyota Dyna 30 seat bus
Y 8918 Toyota Dyna 4 ton truck
Y 0355 Toyota 2 x 4 Pick-up
Y 0352 Toyota 16 seat Hi-Ace Van

FIC/CROPS DIVISION - Effective 1 September 1990
Y 0400 Toyota 2 x 4 Pick-up

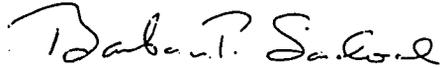
500

Mr. Reid Ntokoane
Page two

Please sign and return a copy of this letter below to acknowledge receipt and agreement.

Thank you.

Sincerely,



Barbara P. Sandoval
Acting Mission Director

RECEIVED:




Reid Ntokoane, Principal Secretary
Ministry of Agriculture, Coop & Marketing

cc: AAI Management, LAPIS Project

LESOTHO AGRICULTURAL PRODUCTION AND
INSTITUTIONAL SUPPORT PROJECT (LAPIS)

AMERICAN AG INTERNATIONAL

P.O. Box 333 • Maseru 100 • Lesotho • Tel 311932 • Telex 4510 LD



MEMORANDUM

TO: Mr. Lehloba, DLS/MOA
FROM: Administrative Manager/LAPIS
REF: LAPIS/V/J-23
SIGN: W. C. Arnold
NAME: W. C. Arnold
DATE: 24 September 1990

VEHICLE RECEIVING REPORT

Following correspondence from USAID to the PS/MOA of August 23, 1990, and the letter from the COP/LAPIS to yourself of 20 September 1990, please indicate receipt of the keys and logbooks for the following vehicle:

Y 0353 Toyota Landcruiser Pick-up

Your signature below will document the formal handing over of the described vehicle.

Thank you for your cooperation.

RECEIVED

DATE

Lehloba
Mr. Lehloba, DLS/MOA

01.10.90

CC: COP/LAPIS
ADO/USAID
Vehicle file

3/22

LESOTHO AGRICULTURAL PRODUCTION AND
INSTITUTIONAL SUPPORT PROJECT (LAPIS)

AMERICAN AG INTERNATIONAL

P.O. Box 333 • Maseru 100 • Lesotho • Tel 311932 • Telex 4510 LD

MEMORANDUM

TO: N. Peshoane, DFS/MOA
FROM: Administrative Manager/LAPIS
REF: LAPIS/V/3-20
SIGN: W. C. Arnold
NAME: W. C. Arnold
DATE: 24 September 1990

VEHICLE RECEIVING REPORT

Following correspondence from USAID to the PS/MOA of August 23, 1990, and the letter from the COP/LAPIS to yourself of 20 September 1990, please indicate receipt of the keys and logbook for the following vehicle:

Y 0099 Toyota Landcruiser S/W

Your signature below will document the formal handing over of the described vehicle.

Thank you for your cooperation.

RECEIVED

DATE

W. C. Arnold
N. Peshoane, DFS/MOA

26/9/90

CC: COP/LAPIS
ADO/USAID
Vehicle file

LESOTHO AGRICULTURAL PRODUCTION AND
INSTITUTIONAL SUPPORT PROJECT (LAPIS)

AMERICAN AG INTERNATIONAL



P.O. Box 333 • Maseru 100 • Lesotho • Tel: 3119312 • Telex 451010

M E M O R A N D U M

TO: Mr. Cweba, Principal LAC
FROM: Administrative Manager/LAPIS
REF: LAPIS/V/3-22
SIGN: W.C. Arnold
NAME: W. C. Arnold
DATE: 24 September 1990

VEHICLE RECEIVING REPORT

Following correspondence from USAID to the PS/MOA of August 23, 1990, and the letter from the COP/LAPIS to yourself of 20 September 1990, please indicate receipt of the keys and logbooks for the following vehicles:

Y 0379	Toyota Dyna 30 seat bus
Y 8918	Toyota Dyna 4 ton truck
Y 0355	Toyota 2 x 4 pick-up truck
Y 0352	Toyota 16 seat Hi-Ace Van

Your signature below will document the formal handing over of the described vehicles.

Thank you for your cooperation.

RECEIVED

DATE

Mr. Cweba, Principal LAC

28/09/90

CC: COP/LAPIS
ADO/USAID
Vehicle file

524

UNITED STATES A.I.D. MISSION TO LESOTHO

AMERICAN EMBASSY
P.O. BOX 333
MASERU 100
LESOTHO

Telephone 313954
Telex 4608 USAID LO

August 20, 1991

318
PM/8

The Principal Secretary
Mr. R.L. Ntokoane
Ministry of Agriculture, Cooperatives
and Marketing
P.O. Box 24
Maseru 100

Subject: Turnover of USAID-Purchased LAPIS Vehicles to MOA/LAC
Re: USAID Acting Director's Letter of August 23rd, 1990 to Mr.
Ntokoane

Dear Mr. Ntokoane:

The purpose of this letter is to let you know that the vehicles listed below have just recently been turned over to the Agricultural College as part of the on-going phase down of the LAPIS Project. This is in accordance with the GOL contribution section of the Project Grant Agreement which states that: "The GOL contribution includes funds for vehicle operation and maintenance on an increasing basis as the project nears completion...". The two vehicles are:

1986 Toyota (4x4 Pick-up) Y8945
1986 Toyota (2x4 Pick-up) Y8924

Under the Project Grant Standard Provision, Section B.3.(a) Utilization of Goods and Services, states that: "Any resources financed under the Grant will, unless otherwise agreed in writing by AID, be devoted to the Project until the completion of the Project and thereafter will be used so as to further the objectives sought in carrying out the Project."

These vehicles and their keys and log books were received and signed for by the Principal of LAC on June 14th, 1991. Together with the four vehicles previously handed-over to the College in the letter referred to above, this brings the total number of vehicles turned over to the College to six (6).

52

Mr. R.L. Ntokoane
Page Two

To acknowledge this letter and your agreement, please sign below and return a copy of this letter.

Sincerely,

F. Gary Towery
F. Gary Towery
Mission Director

RECEIVED:

R.L.
R.L. Ntokoane, Principal Secretary
Ministry of Agriculture, Cooperatives and Marketing

cc: The Principal LAC
LAPIS Chief of Party



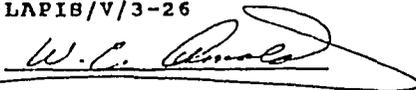
LESOTHO AGRICULTURAL PRODUCTION AND
INSTITUTIONAL SUPPORT PROJECT (LAPIS)

AMERICAN AG INTERNATIONAL



P.O. Box 333 • Maseru 1111 • Lesotho • Tel 311932 • Telex 4510 LO

MEMORANDUM

TO: Ms. C. McIntyre, ADO/USAID
FROM: Administrative Manager/LAPIS
REF: LAPIS/V/3-26
SIGN: 
NAME: W. C. Arnold
DATE: 12 August, 1991

VEHICLES PURCHASED BY USAID FOR LAPIS/MOA

In the on-going phase down process of the LAPIS Project, this is the third turn-over of certain vehicles to the Ministry of Agriculture, Cooperatives and Marketing. The following two vehicles are being turned over to the Lesotho Agriculture College:

1986	Toyota (4 x 4 Pick-up)	Y8945
1986	Toyota (2 x 4 Pick-up)	Y8924

Please find attached a receiving document, signed by the Principal of LAC, indicating that the college is prepared to provide operation and maintenance support for these vehicles with immediate effect. Also, find attached a copy of the second turn-over from USAID to the MOA for your reference.

Please initiate the necessary paperwork to officially finalize this process.

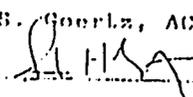
Thank you,

With Kind Regards

cc: COP/LAPIS
P. Q. Cweba/LAC
S. Goertz/LAPIS
File

4/8/91

527

TO: P.Q. Gwebu, LAC Principal
FROM: S. Goertz, ACD Specialist/LAC
SIGN: 
DATE: 14 June, 1991
RE: Turning Over Two LAPIS Vehicles to LAC

As we have discussed, in keeping with the objectives of handing over activities to LAC that were formerly supported by LAPIS we wish to document the handing over of the following two vehicles to LAC:

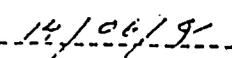
Y8946 (Toyota 4-wheel drive)
Y8924 (Toyota 2-wheel drive)

Before being turned over, these vehicles would receive all necessary servicing to assure that they are in good condition, and subsequently after the hand over they would be maintained by LAC. Remaining LAPIS vehicles will be turned over at a later date. Note that this is a revision of a memo to you dated 17-1-91 on vehicle handover.

Please concur and indicate receipt of the above with your signature.



P.Q. Gwebu
LAC Principal



Date

UNITED STATES A.I.D. MISSION TO LESOTHO

AMERICAN EMBASSY
P.O. BOX 333
MASERU 100
LESOTHO

Telephone 313954
Telex 4506 USAID LO
Fax No. 310284

632-0221-34.1

November 20, 1991

Mr. Reid L. Ntokoane
Principal Secretary
Ministry of Agriculture
Maseru, Lesotho

Dear Mr. Ntokoane:

The purpose of this letter is to let you know that the vehicles listed below have just recently been turned over to some of the Ministry departments/divisions as part of the ongoing phase-down of the LAPIS Project. This is the fourth handing-over of project vehicles and it is in accordance with the GOL contribution section of the Project Grant Agreement which states that: "The GOL contribution includes funds for vehicle operation and maintenance on an increasing basis as the project nears completion ..."

On October 23, a 1986 Toyota 2 x 4 pick-up (Y8922) was transferred to the Department of Crop Services while on October 24, the following vehicles were handed over to the Research Division.

<u>Vehicle Description</u>	<u>Registration Number</u>
1986 Toyota (2 x 4 pick-up)	Y8923
1988 Toyota (2 x 4 pick-up)	Y1217
1986 Toyota (Land Cruiser, Station Wagon)	Y0093
1986 Toyota (Land Cruiser, pick-up)	Y0056
1986 Toyota (Dyna 4-Ton Truck)	Y8919

Also, on November 1, a 1987 Toyota 2 x 4 pick-up (Y0380) was handed over to the Department of Economics and Marketing. All the vehicles were received and signed for by the appropriate Division Heads.

Under the Project Grant Standard Provision, Section B.3.(a) Utilization of Goods and Services, states that: "Any resources financed under the Grant will, unless otherwise agreed in writing by AID, be devoted to the Project until the completion of the Project and thereafter will be used so as to further the objectives sought in carrying out the Project."

P.S.

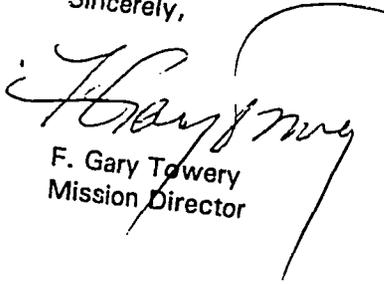
529

Mr. Reid L. Ntokoane
Page Two

Please also note that per AID Handbook 15, "AID-Financed Commodities", the Ministry is expected to maintain, for a period of at least three years, a system of records documenting the arrival and disposition of all commodities financed by AID that we have so far handed over.

To acknowledge this letter and your agreement, please sign below and return a copy of this letter.

Sincerely,



F. Gary Towery
Mission Director

Received:



Reid L.
Reid L. Ntokoane, Principal Secretary
Ministry of Agriculture, Coops., & Marketing

AMERICAN AG INTERNATIONAL



P.O. Box 333 • Maseru 100 • Lesotho • Tel 311932 • Telex 4510 LO

MEMORANDUM

TO: Mr. C. Reintsma, ADO/USAID
FROM: Administrative Manager/LAPIS
REF: LAPIS/V/3-29
SIGN: W. C. Arnold
NAME: W. C. Arnold
DATE: 30 October 1991

Vehicles Purchased by USAID for LAPIS/MOA

In the on-going phase down process of the LAPIS Project, this is the fourth handing-over of certain vehicles to the Ministry of Agriculture, Cooperatives and Marketing. The following vehicles are being handed over to the designated Department/Division as follows:

Vehicle Description	Reg.	Dept./Division
1986 Toyota (2 x 4 Pick-up)	Y8922	Crop Services
1986 Toyota (2 x 4 Pick-up)	Y8923	Research
1988 Toyota (2 x 4 Pick-up)	Y1217	Research
1986 Toyota (L/C S/W)	Y0093	Research
1986 Toyota (L/C Pick-up)	Y0056	Research
1986 Toyota (Dyna 4T Truck)	Y8919	Research
1987 Toyota (2 x 4 Pick-up)	Y0380	Marketing

Please find attached receiving documentation, signed by the appropriate Department and/or Division Head, indicating that government is prepared to provide operation and maintenance support for these vehicles with immediate effect.

Please initiate the necessary paperwork to officially finalize this process.

Thank You,

With Kind Regards,

CC: COF/LAPIS
M. Matli/ARD
E. Loomis/LAPIS
A. M. Gughshe/DCS
J. Mokotjo/Marketing
P. Mowbray/LAPIS
File

M E M O R A N D U M

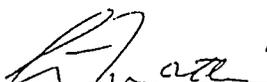
TO: Dr. M. Matli, DAR
FROM: E. L. Loomis, RM/SHS/LAPIS
REF: ARC/141/21
DATE: 23 October 1991
SUBJECT: Turn Over of five LAPIS Vehicles to ARD

As part of the continuing process of phasing out the LAPIS Project, we will be turning over all commodities and activities to the ARD by May 31, 1992. This memo is to confirm the handing over of the following vehicles to the ARD.

Y 8919 Toyota Dyna 4T truck
Y 0056 Toyota Land Cruiser truck
Y 0093 Toyota Land Cruiser station wagon
Y 8923 Toyota 2X4 Pick-up
Y 1217 Toyota 2X4 Pick-up

Before these vehicles are turned over, they will receive all necessary servicing to ensure that they are in good condition. Following the handing over of these vehicles, they will be maintained by ARD.

Please concur and indicate receipt of the above listed vehicles with your signature.



Dr. M. Matli, DAR

24 / 10 / 91
Date

AMERICAN AG INTERNATIONAL

P.O. Box 333 • Maseru 100 • Lesotho • Tel 311932 • Telex 4510 LO

TO: Mr. A.M. Gugushe, Director of Crop Services (DCS)
FROM: Phillip Mowbray, Sr. Horticulturist, PIC
SIGN: Phillip Mowbray
Date: October 23, 1991
RE: Transfer of vehicle Y-8922 to the Department of Crop Services.

In keeping with the phasing out of the LAPIS Project and subsequent handing over of activities to the Department of Crop Services (DCS) that were supported by LAPIS, we are handing over the vehicle cited above. The handing over will be effective at the time this document is signed by both parties.

As we discussed earlier this year there will be additional vehicles that will be turned over to the DCS prior the end of the LAPIS Project on May 31, 1992. The details of the future turnover activity will be finalized with you well in advance.

Please concur and indicate receipt of Y-8922 with your signature below.

A.M. Gugushe

A.M.Gugushe, Director of Crop Services

Date 23/10/91

AMERICAN AG INTERNATIONAL

P.O. Box 333 • Maseru 100 • Lesotho • Tel 311932 • Telex 4510 LO



TO: Mr. T.J. Ramatsoari, Director of Economics and Marketing

FROM: Phillip Mowbray, Sr. Horticulture Specialist, MOA/ LAPIS

SIGN: Phillip Mowbray

Date: October 22, 1991

RE: Transfer of vehicle Y-0380 to the Department of Economics's, Marketing Division.

In keeping with the phasing out of the LAPIS Project and subsequent handing over of activities to the Department of Economics and Marketing (DEM) that were supported by LAPIS, we are handing over the vehicle cited above. The handing over will be effective at the time this document is signed by both parties.

As we discussed earlier this year, there will be additional vehicles that will be turned over to the DEM prior the end of the LAPIS Project on May 31, 1992. The details of any future turnover activities will be finalized with you well in advance.

Please concur and indicate receipt of Y-0380 with your signature below.

Phillip Mowbray

T.J. Ramatsoari, Director of Economics and Marketing

Date 1 / November / 1991

AMERICAN AG INTERNATIONAL



P.O. Box 333 • Maseru 100 • Lesotho • Tel 311932 • Telex 4510 LO

MEMORANDUM

TO: Mr. C. Reintsma, ADO/USAID

FROM: COP LAPIS

REF.: LAPIS/A/1-479

SIGN:

L. Chris Weaver

NAME: L. Chris Weaver

DATE: 26 June, 1992

Vehicles Purchased by USAID for LAPIS/MQA

In the on-going phase down process of the LAPIS Project, this is the sixth handing-over of certain vehicles to the Ministry of Agriculture, Cooperatives and Marketing. The following vehicles were handed over to the designated Department/Division effective on 1 May 1992 as follows:

<u>Vehicle Description</u>	<u>Reg.</u>	<u>Dept./Division</u>
1989 Toyota Dyna 4T Truck	Y1319	Research Division
1989 Toyota 4x4 Dbl Cab P/U	Y1279	Research Division
1987 Toyota Sedan	Y0356	Research Division
1989 Toyota L/C P/U	Y1251	Department Livestock Services
1991 Toyota 4x4 Dbl Cab P/U	Y2041	Department Livestock Services
1986 Toyota 4x4 Dbl Cab P/U	Y8946	Department Crop Services
1986 Toyota 4x4 Dbl Cab P/U	Y8948	Department Crop Services
1986 Toyota Sedan	Y8920	Department Crop Services
1986 Toyota HiAce 10 seat Van	Y0399	Agric Headquarters
1988 Toyota 2x4 P/U	Y1189	Lesotho Agric College
1986 Toyota Sedan	Y8949	Lesotho Agric College

In addition to the above vehicles, I am requesting that the following vehicles also be handed over by USAID (receiving reports have been signed by the appropriate Departments, but for some reason, the transfer of these vehicles was not officially completed by USAID):

<u>Vehicle Description</u>	<u>Reg.</u>	<u>Dept./Division</u>
1988 Toyota 2x4 P/U	Y1189	Lesotho Agric College
1986 Toyota 2x4 P/U	Y8924	Lesotho Agric College
1988 Massey Ferguson Tractor	W3778	Lesotho Agric College
1986 Toyota 4x4 P/U	Y8947	Lesotho Agric College
1989 Toyota 4x4 Dbl Cab P/U	Y1320	Range Division

Finally, I am requesting that the following vehicle be transferred to the Department of Livestock Services, effective June 30, 1992:

1987 Toyota 4x4 L/C P/U	Y0381	Animal Prod. Division
-------------------------	-------	-----------------------

535

Please find attached receiving documentation, signed by the appropriate Department and/or Division Head, indicating that government is prepared to provide operation and maintenance support for this vehicle on the effective date of the transfer.

As LAPIS is rapidly closing down, I would be most grateful if USAID could complete the official transfer of these vehicles as soon as possible.

With Kind Regards,

CC: R. Ntokoane/PS
T. Namane/ARD
L. Lehlobo/DLS
M. Gugusho/DCS
P. Cweba/LAC
COP/LAPIS
File



P.O. Box 333 • Maseru 100 • Lesotho • Tel 311932 • Telex 4510 LO

TO: Director, Agriculture Research Division
FROM: Administrative Manager/LAPIS
REF:
SIGN: 
NAME: W. C. Arnold
DATE: 1 April 1992

VEHICLE RECEIVING REPORT

A PMC meeting was held on 26 March, 1992, and the closing down of many of the activities of the LAPIS Project was announced. Part of this process is the handing over of Project vehicles, and the effective date of the transfer to your Division is covered in this memorandum. The LAPIS Project will fund a service on the vehicle(s) prior to the effective date of the official hand over. In the interests of time we are requesting that you please indicate receipt of the vehicle(s) at this time:

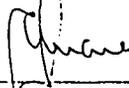
Effective 1 May 1992

Y 1319	1989 Toyota Dyna 4T Truck
Y 1279	1989 Toyota 4x4 Dbl Cab P/U
Y 0356	1987 Toyota Sedan

Your signature below will document the formal handing over of the described vehicle.

Thank you for your cooperation.

RECEIVED



T. Namane, Director ARD (Acting)

DATE

03/04/92

CC: COP/LAPIS
ADO/USAID
Vehicle file

AMERICAN AG INTERNATIONAL

P.O. Box 333 • Maseru 100 • Lesotho • Tel 311932 • Telex 4510 LO

MEMORANDUM

TO: Director, Department Livestock Services
FROM: Chief of Party, LAPIS
SIGN: L. Chris Weaver
NAME: L. Chris Weaver
DATE: 1 April 1992

VEHICLE RECEIVING REPORT

A PMC meeting was held on 26 March, 1992, and the closing down of many of the activities of the LAPIS Project was announced. Part of this process is the handing over of Project vehicles, and the effective date of the transfer to your Division is covered in this memorandum. The LAPIS Project will fund a service on the vehicle(s) prior to the effective date of the official hand over. In the interests of time we are requesting that you please indicate receipt of the vehicle(s) at this time:

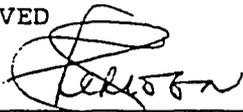
Effective 1 May 1992

Y 1251	1989 Toyota L/C P/U
Y 2041	1991 Toyota 4x4 Dbl Cab P/U.

Your signature below will document the formal handing over of the described vehicle.

Thank you for your cooperation.

RECEIVED



L. Lehloba, Director/DLS

DATE

29/06/92

CC: ADO/USAID
Vehicle file

AMERICAN AG INTERNATIONAL



P.O. Box 333 • Maseru 100 • Lesotho • Tel 311932 • Telex 4510 LO

TO: Director, Department of Crop Services
FROM: Administrative Manager/LAPIS
REF:
SIGN: W. C. Arnold
NAME: W. C. Arnold
DATE: 1 April 1992

VEHICLE RECEIVING REPORT

A PMC meeting was held on 26 March, 1992, and the closing down of many of the activities of the LAPIS Project was announced. Part of this process is the handing over of Project vehicles, and the effective date of the transfer to your Division is covered in this memorandum. The LAPIS Project will fund a service on the vehicle(s) prior to the effective date of the official hand over. In the interests of time we are requesting that you please indicate receipt of the vehicle(s) at this time:

Effective 1 May 1992

Y 8946	1986 Toyota 4x4 Dbl Cab P/U
Y 8948	1986 Toyota 4x4 Dbl Cab P/U
Y 8920	1986 Toyota Sedan

Your signature below will document the formal handing over of the described vehicle.

Thank you for your cooperation.

RECEIVED

DATE

M. Gugushe Director/DCS

03/04/92

CC: COP/LAPIS
ADO/USAID
Vehicle file

239

AMERICAN AG INTERNATIONAL

P.O. Box 333 • Maseru 100 • Lesotho • Tel 311932 • Telex 4510 LO

TO: Principal Secretary, MOA
FROM: Administrative Manager/LAPIS
REF:
SIGN: 
NAME: W. C. Arnold
DATE: 1 April 1992

VEHICLE RECEIVING REPORT

A PMC meeting was held on 26 March, 1992, and the closing down of many of the activities of the LAPIS Project was announced. Part of this process is the handing over of Project vehicles, and the effective date of the transfer to your Division is covered in this memorandum. The LAPIS Project will fund a service on the vehicle(s) prior to the effective date of the official hand over. In the interests of time we are requesting that you please indicate receipt of the vehicle(s) at this time:

Effective 1 May 1992

Y 0399 1986 Toyota HiAce 10 seat van

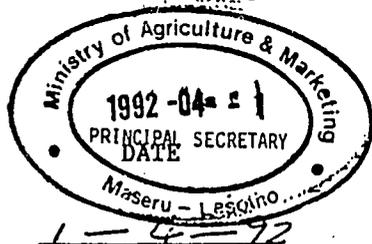
Your signature below will document the formal handing over of the described vehicle.

Thank you for your cooperation.

RECEIVED



Principal Secretary/MOA



CC: COP/LAPIS
ADO/USAID
Vehicle file

5/10

AMERICAN AG INTERNATIONAL



P.O. Box 333 • Maseru 100 • Lesotho • Tel 311932 • Telex 4510 LO

TO: Principal, Lesotho Agriculture College
FROM: Administrative Manager/LAPIS
REF:
SIGN: 
NAME: W. C. Arnold
DATE: 1 April 1992

VEHICLE RECEIVING REPORT

A PMC meeting was held on 26 March, 1992, and the closing down of many of the activities of the LAPIS Project was announced. Part of this process is the handing over of Project vehicles, and the effective date of the transfer to your Division is covered in this memorandum. The LAPIS Project will fund a service on the vehicle(s) prior to the effective date of the official hand over. In the interests of time we are requesting that you please indicate receipt of the vehicle(s) at this time:

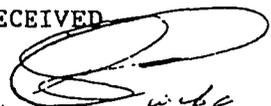
Effective 1 May 1992

Y 1189	1988 Toyota 2x4 P/U
Y 8949	1986 Toyota Sedan

Your signature below will document the formal handing over of the described vehicle.

Thank you for your cooperation.

RECEIVED


P. Cweba, Principal/LAC

DATE

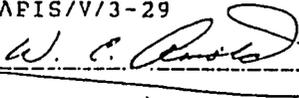
1/04/92

CC: COP/LAPIS
ADO/USAID
Vehicle file

AMERICAN AG INTERNATIONAL

P.O. Box 333 • Maseru 100 • Lesotho • Tel 311937 • Telex 4510 LO

MEMORANDUM

TO: Mr. C. Reintama, ADO/USAID
FROM: Administrative Manager/LAPIS
REF: LAPIS/V/3-29
SIGN: 
NAME: W. C. Arnold
DATE: 7 February 1992

Vehicles Purchased by USAID for LAPIS/MOA

In the on-going phase down process of the LAPIS Project, this is the fifth handing-over of certain vehicles to the Ministry of Agriculture, Cooperatives and Marketing. The following vehicle is being handed over to the designated Department/Division as follows:

<u>Vehicle Description</u>	<u>Reg.</u>	<u>Dept./Division</u>
1989 Toyota (4. x 4 Dbl Cab)	Y1320	Range Division

Please find attached receiving documentation, signed by the appropriate Department and/or Division Head, indicating that government is prepared to provide operation and maintenance support for this vehicle with immediate effect.

Please initiate the necessary paperwork to officially finalize this process.

Thank You,

With Kind Regards,

CC: COP/LAPIS
B. Motamai/CRMO/MOA/Range Division
File

5/2

MEMORANDUM

TO: Bore Molsamal, Chief Range Management Officer
FROM: Clive Drew, Sr. Livestock Advisor
SIGN: Clive Drew
SUBJECT: Handing Over of LAPIS Vehicles to Range Management Division
DATE: 22 October, 1991

As previously discussed, the phased handing over of commodities and activities to RMD that have been supported by LAPIS is a formal requirement.

Our vehicle insurance and O & M costs are skyrocketing. We are also reducing the LAPIS fleet to those vehicles that are directly under the control of LAPIS TA's or used in total support of Project activities.

We wish to document that the following vehicles will be handed over on December 31, 1991 to RMD:

Y1320 (Toyota 4 X 4 Double Cab)

Before being handed over, the vehicle will receive necessary servicing to assure that it is in good working condition, and thereafter it will be maintained by RMD.

Remaining LAPIS vehicles will be handed over at a later date.

Your signature below indicates receipt of the above and your concurrence.

Bore Molsamal

Bore Molsamal
CRMO

24.10.91
Date

513

TO: P.O. Cweba, LAC Principal

FROM: S. Goertz, AEC TL

SIGN: *SHB*

DATE: 17/1/91

RE: Turning Over LAPIS Vehicles to LAC

As we have discussed, in keeping with the objectives of handing over activities to LAC that were formerly supported by LAPIS we wish to document the handing over of the following vehicles:

These vehicles are:

Y1189 (Toyota 2-wheel drive)
Y8947 (Toyota 4-wheel drive)
Y8924 (Toyota 2-wheel drive)
W377R (MF Tractor)

Though these vehicles would be turned over to L.A.C., operation and maintenance on the three small trucks listed here will continue to be supported for some additional months. The duration for Project support of O and M depends on continued availability of LAPIS monies for this purpose.

The two remaining LAPIS vehicles assigned to LAC, Y8949 (Sedan Crossida) and Y8946 (Toyota 4-wheel truck) are expected to be retained by the Project until the last months of the Project.

Please concur and indicate receipt of the above with your signature.



P. Cweba
Principal LAC

18/01/91
DATE

cc: Admin Manager, LAPIS
COP

M E M O R A N D U M

TO: Lefu Lehloba, Director of Livestock Services
FROM: Clive Drew, Sr. Livestock Advisor
SIGN: Clive Drew
SUBJECT: Handing Over of LAPIS Vehicle to Department of Livestock Services
DATE: 08 June, 1992

As previously discussed, the phased handing over of commodities and activities to DLS that have been supported by LAPIS is a formal requirement.

We are reducing the LAPIS fleet to those vehicles that are directly under the control of LAPIS TA's or used in total support of remaining Project activities.

We wish to document that the following vehicle will be handed over on June 30, 1992 to DLS:

Y0381 (Toyota 4 X 4 Landcruiser Bakkie) complete with stock crate, spare tyre, tool kit, anti-theft lock and key sets

Before being handed over the vehicle will receive necessary servicing to assure that it is in good working condition, and thereafter it will be maintained by DLS.

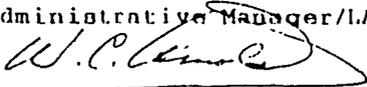
Your signature below indicates receipt of the above and your concurrence.

Lehloba

Lefu Lehloba, DLS

15/06/92
Date

MEMORANDUM

TO: Mr. C. Reintema, ADO/USAID
FROM: Administrative Manager/LAPIS
SIGN: 
NAME: W. C. Arnold
DATE: 7 May 1992

Vehicles Purchased by USAID for LAPIS/MOA

In the phase out process of the LAPIS Project, and the start-up of the CNRM Project, this is the seventh handing-over of certain vehicles. The following vehicles are being handed back to USAID as requested for future assignment to the CNRM Project. This transfer effective immediately removes these vehicles from the inventory of vehicles under the supervision and control of American Aq International. The vehicles being reassigned to USAID are as follows:

Vehicle Description	Req.	DESTINATION
1991 Toyota 4x4 Dbl Cab P/U Engine # 4Y-9057879 Chassis # YN67R-0031326 Cost M44,638.00	Y1881	USAID
1991 Toyota 4x4 Dbl Cab P/U Engine # 3L-2713626 Chassis # LN 106-0058967 Cost M51,500.00	Y2042	USAID

In addition to the vehicles listed above, it has been requested that AAI/LAPIS hand over computer equipment to USAID for reassignment to the CNRM Project. The following equipment is identified:

Commodities purchased by AAI for LAPIS/MOA

Commodity Description	Serial #	DESTINATION
Computer, Zen Tech 40Mb hhd 1.2 Mb 5.25 dd, 16 Mhz Property # AA044.01	none case is generic	USAID
Monitor, Mercer monochrome	9000726	USAID
Keyboard, Chicony, 101 enhanced	T201010856	USAID
Printer, Epson LQ-1050	22000605	USAID
Powerman	8610070	USAID

Commodity Description	Serial.#	DESTINATION
Computer, Zenith 30Mb hhd 2- 360K 5.25 floppy dd, keyboard built in and came with computer	614DF0654	USAID
Monitor, Zenith monochrome Powerman, PC-4050	12ZW13X 01851370	USAID USAID

Please indicate by your signature, the receipt of these two vehicles and the commodities listed from AAI to officially finalize this process.

RECEIVED:

Curt Reintama, AAO, USAID Date

With Kind Regards,

CC: R. Ntokoano/PS
I. Lehlobo/DLS
COP/LAPIS
File

547

**ANNUAL REPORT OF GOVERNMENT PROPERTY IN
CONTRACTOR'S CUSTODY**

ANNUAL REPORT OF GOVERNMENT PROPERTY
IN CONTRACTOR'S CUSTODY

JUNE 1991 - MAY 1992

CONTRACT NUMBER 632-0221-C-00-6017

AMERICAN AG INTERNATIONAL, LAPIS PROJECT, P. O. BOX 333, MASERU, LESOTHO

	Date	Motor Vehicles	Furniture and furnishings-- Office/Living Quarters	Other non- Expendable Property	Estimated Service Life in Years
A. Value of property as of last report	July 91	M 1,319,597	\$18,569	\$425,586	4
B. Transactions during this reporting period					
1. a. Acquisitions by contractor:					
Kraals Construction	May 92			(\$1,365)	To MOA
Honda Generator EG 3000	May 92			(\$639)	To MOA
Olivetti WP ETS 2010/PR340	May 92			(\$5,421)	To MOA
Zenith P.C. GS 158	May 92			(\$4,193)	To MOA
Powerman Power Pack	May 92			(\$911)	To MOA
Fujitsu Printer DL 2400	May 92			(\$2,029)	To MOA
Micronsoft Word Software	May 92			(\$942)	To MOA
Lotus V2 software	May 92			(\$840)	To MOA
dBaseIII software	May 92			(\$917)	To MOA
Double sheet feeder	May 92			(\$706)	To MOA
DAC Easy, GEM, SPJ software	May 92			(\$1,453)	To MOA
Madison Desk	May 92		(\$846)		To MOA
Madison Desk	May 92		(\$846)		To MOA
Curtains	May 92		(\$593)		To MOA
Sharp EL1607 calculator	May 92			(\$519)	To MOA
Sharp Photocopier SF 8200	May 92			(\$9,195)	To MOA
Madison Desk w/extension	May 92		(\$1,029)		To MOA
Spartan 30 mb P.C.	May 92			(\$1,483)	To MOA
Spartan XT/SD 30 mb mono	May 92			(\$1,891)	To MOA
Guard House (2)	May 92		(\$1,188)		USAID
Tren-Tech P.C. XT	May 92			(\$1,875)	To MOA
Epson Printer FX1000	May 92			(\$1,126)	To MOA
Veg. processing facilities (4)	May 92			(\$11,822)	To MOA
Plastic Bag sealer	May 92			(\$515)	To MOA
Water Tanks 2500 L (4)	May 92			(\$2,172)	To MOA
Storage shelves (4)	May 92			(\$2,191)	To MOA
Spartan PC 640k D/D	May 92			(\$1,503)	To MOA
Tren-Tech X/T DD 30 mb mono	May 92			(\$1,103)	To MOA
Tren-Tech X/T DD 30 mb mono	May 92			(\$1,924)	To MOA
Tren-Tech X/T DD 30 mb color	May 92			(\$2,346)	To MOA
600VA UPS (Model P)	May 92			(\$803)	To MOA
Fujitsu DL2400 colour printer	May 92			(\$2,113)	To MOA
Seed/Vegetable storage facility (2)	May 92			(\$4,452)	To MOA
Kelvinator DA 135 # 10506	May 92		(\$693)		USAID
DEFFY Automaid	May 92		(\$559)		USAID
Guard House	May 92		(\$658)		USAID
Frigidare 145 Fridge	May 92		(\$708)		USAID
Frigidare 5500 wash machine	May 92		(\$541)		USAID
Guard House	May 92		(\$658)		USAID
IBM Compatible computer	May 92			(\$1,685)	To MOA
IBM Compatible computer	May 92			(\$1,685)	To MOA
XT Compatible computer	May 92			(\$1,496)	To MOA
Epson Printer	May 92			(\$942)	To MOA
AT Computer	May 92			(\$1,031)	To MOA
Sendon 350 VA UPS	May 92			(\$542)	To MOA
Zerex 1012 photocopier	May 92			(\$2,577)	To MOA

549

Watt maintainers	May 92	(\$2,266)	To MOA	
Radio batter chargers	May 92	(\$2,570)	To MOA	
Radio Equipment	May 92	(\$4,312)	To MOA	
Fencing materials RMA	May 92	(\$35,750)	To MOA	
Fencing materials RMA	May 92	(\$19,400)	To MOA	
4-burner gas cooker	May 92	(\$567)	To MOA	
Market facilities RMA	May 92	(\$13,126)	To MOA	
Loading chute for aheep	May 92	(\$581)	To MOA	
Kelvinator Elec. Fridge	May 92	(\$564)	USACD	
Guard House	May 92	(\$658)	USACD	
Guard House (2)	May 92	(\$1,646)	USACD	
Tren-Tech XT 30 mb P.C.	May 92	(\$2,102)	To MOA	
Epson Printer FX 1050	May 92	(\$1,371)	To MOA	
Vegetable sorting facilities (2)	May 92	(\$1,273)	To MOA	
Vegetable sorting facilities (2)	May 92	(\$7,287)	To MOA	
Epson FX1050 printer	May 92	(\$1,250)	To MOA	
Powerman UPS	May 92	(\$708)	To MOA	
Tren-Tech XT 30mb D/D	May 92	(\$1,590)	To MOA	
Cut Sheet Feeder	May 92	(\$1,271)	To MOA	
Herald D/P Desk	May 92	(\$824)	To MOA	
1600 Herald D/P Desk	May 92	(\$878)	To MOA	
Telex Machine upgrade	May 92	(\$567)	To MOA	
Developer unit	May 92	(\$676)	To MOA	
Prototype saddle harness	May 92	(\$575)	To MOA	
Laser Jet Printer	May 92	(\$3,187)	To MOA	
XT compatible computer	May 92	(\$1,100)	To MOA	
Curtaining - RMA	May 92	(\$564)	To MOA	
Model X 3 winch-1588 kg	May 92	(\$519)	To MOA	
Yamaha generator	May 92	(\$1,563)	To MOA	
Sadle Harness	May 92	(\$575)	To MOA	
Curtains & rails - RMA	May 92	(\$547)	To MOA	
Fencing Material - RMA	May 92	(\$503)	To MOA	
Fencing Material - RMA	May 92	(\$2,302)	To MOA	
Fencing Material - RMA	May 92	(\$573)	To MOA	
Fencing Material - RMA	May 92	(\$6,607)	To MOA	
Steel fence braces - RMA	May 92	(\$1,309)	To MOA	
Cattle Pens - RMA	May 92	(\$4,904)	To MOA	
Ha Lejone - construction	May 92	(\$3,097)	To MOA	
Tren-Tech P.C. 40 mb	May 92	(\$1,538)	USACD/CBRM	
AEC/LAC Irrigation Scheme	May 92	(\$189,570)	To MOA	
Horse equipment - HGP	May 92	(\$992)	To MOA	
Epson Printer - HGP	May 92	(\$1,163)	To MOA	
Omnita Power Supply	May 92	(\$895)	To MOA	
Fencing Materials - RMA	May 92	(\$12,993)	To MOA	
Statistics graphics program	May 92	(\$1,021)	To MOA	
Epson Printer	May 92	(\$748)	To MOA	
Photocopier - SEH TRN CTR	May 92	\$1,931	To MOA	4
Photocopier - SEH TRN CTR	May 92	(\$1,931)	To MOA	
Slaughter Block, Steel Trays - SEH TRN CTR	May 92	\$870	To MOA	5
Slaughter Block, Steel Trays - SEH TRN CTR	May 92	(\$870)	To MOA	
Solar Heating Unit - SEH Trn Ctr	May 92	\$4,910	To MOA	5
Solar Heating Unit - SEH Trn Ctr	May 92	(\$4,910)	To MOA	
Cabinet, Projector - SEH Trn. Ctr	May 92	\$2,327	To MOA	5
Cabinet, Projector - SEH Trn. Ctr	May 92	(\$2,327)	To MOA	
Epson Printer-FX1050 Nowbray	Apr 91	\$748	To MOA	4
Epson Printer-FX1050 Nowbray	May 92	(\$748)	To MOA	
dBase IV software-Feaster	May 92	\$764	To MOA	2
dBase IV software-Feaster	May 92	(\$764)	To MOA	
Sharp SF7350 Photocopier-Nowbray	May 92	\$2,468	To MOA	3
Sharp SF7350 Photocopier-Nowbray	May 92	(\$2,468)	To MOA	
Leribe/M.Boek Mktg Ctrs	May 92	\$36,544	To MOA	15
Leribe/M.Boek Mktg Ctrs	May 92	(\$36,544)	To MOA	

550

Greenhouse Benches - arc	Jun 91	\$1,127	5
Greenhouse Benches - arc	May 92	(\$1,127)	To MOA
Slasher - ARC	May 92	\$2,332	5
Slasher - ARC	May 92	(\$2,332)	To MOA
Pump - irrigation ARC	May 92	\$655	5
Pump - irrigation ARC	May 92	(\$655)	To MOA
Harvard Graphics software	Apr 91	\$635	3
Harvard Graphics software	May 92	(\$635)	To MOA
Seikosha SL230AI Printer	Jun 91	\$1,041	4
Rabbitt Shed-LAC/SEP	Jun 91	\$3,444	10
Rabbitt Shed-LAC/SEP	Apr 92	(\$3,444)	To MOA
UPS - Goertz	Jan 92	\$1,149	5
UPS - Goertz	Apr 92	(\$1,149)	To MOA
Greenhouse heaters - LAC	Feb 92	\$1,071	5
Greenhouse heaters - LAC	Apr 92	(\$1,071)	To MOA
Mother Boards/Disk drives - LAC	Feb 92	\$2,006	4
Mother Boards/Disk drives - LAC	Apr 92	(\$2,006)	To MOA
Orchard Fencing - LAC	Feb 92	\$909	10
Orchard Fencing - LAC	Apr 92	(\$909)	To MOA
Isolator/Transformer - LAC	Mar 92	\$944	5
Isolator/Transformer - LAC	Apr 92	(\$944)	To MOA

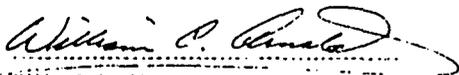
i. b. Transferred from AID	(Maloti)		
Toyota Dyna 30 Seat Bus Y0379	Sep 90	(63,967)	To MOA
Toyota Dyna 4T Truck Y8918	Sep 90	(27,811)	To MOA
Toyota Dyna 4T Truck Y8919	Oct 91	(27,811)	To MOA
Toyota HiAce 16 Seat Y0352	Sep 90	(24,996)	To MOA
Toyota HiAce 10 Seat Y0399	May 92	(22,829)	To MOA
Toyota L/Cruiser P/U Y0056	Oct 91	(32,400)	To MOA
Toyota L/Cruiser P/U Y0353	Oct 90	(29,240)	To MOA
Toyota L/Cruiser P/U Y1251	May 92	(42,985)	To MOA
Toyota L/Cruiser S/W Y0099	Sep 90	(32,400)	To MOA
Toyota L/Cruiser S/W Y0098	Sep 86	(32,400)	To MOA
Toyota L/Cruiser S/W Y0093	Oct 91	(32,400)	To MOA
Toyota L/Cruiser S/W Y0090	Aug 91	(32,400)	To MOA
Toyota 4 x 4 Dbl cab P/U Y8946	May 92	(22,855)	USAID
Toyota 4 x 4 Dbl cab P/U Y8948	May 92	(22,855)	To MOA
Toyota 4 x 4 P/U incl tow bar Y8950	May 92	(17,002)	To MOA
Toyota 4 x 4 P/U Y8947	Apr 91	(16,822)	To MOA
Toyota 4 x 4 P/U incl tow bar Y8945	Jun 91	(17,002)	To MOA
Toyota 2 x 4 P/U Y8922	Oct 91	(11,747)	To MOA
Toyota 2 x 4 P/U Y8923	Oct 91	(11,747)	To MOA
Toyota 2 x 4 P/U Y8924	Jun 91	(11,747)	To MOA
Toyota 2 x 4 P/U Y0355	Sep 90	(17,723)	To MOA
Toyota 2 x 4 P/U Y0380	Oct 91	(13,688)	To MOA
Toyota 2 x 4 P/U Y0400	Sep 90	(13,688)	To MOA
Toyota Sedan Y0356	May 92	(13,535)	To MOA
Toyota Sedan Y8920	May 92	(13,535)	To MOA
Toyota Sedan Y8949	May 92	(13,688)	To MOA
Toyota L/C S/W Y0747	Feb 91	(44,835)	stolen-insurance to USAID
Toyota Dyna 4T truck Y131?	May 92	(53,493)	USAID
Toyota L/C P/U Y1358	Feb 91	(49,673)	stolen-insurance to USAID
Toyota L/C S/W Y1344	Nov 89	(52,550)	USAID
Toyota 4x4 Dbl Cab P/U Y1320	Feb 92	(39,375)	To MOA
Toyota 4x4 Dbl Cab P/U Y1279	May 92	(39,375)	To MOA
Toyota 4x4 Dbl Cab P/U Y1250	May 90	(37,148)	stolen-insurance to USAID
Roll Bar/Tow Bar Y1249	May 92	(1,516)	USAID
Toyota 2x4 P/U Y1189	May 92	(17,867)	To MOA
Toyota 2x4 P/U Y1217	Oct 91	(18,500)	To MOA
Toyota 2x4 P/U Y1218	Apr 91	(18,500)	stolen-insurance to USAID
Toyota Corolla S/W Y0993	Aug 90	(21,200)	USAID
			To MOA

Massey Ferguson Tractor W3778	Apr 91	(33,900)		To MOA
Toyota 4x4 Dbl Cab Y1881	May 92	(44,638)	Transfer to USAID for assignment CNRM	USAID
Toyota 4x4 Dbl Cab Y2041	Jan 92	51,500		1
Toyota 4x4 Dbl Cab Y2041	May 92	(51,500)		To MOA
Toyota 4x4 Dbl Cab Y2042	Jan 92	51,500		1
Toyota 4x4 Dbl Cab Y2042	May 92	(51,500)	Transfer to USAID for assignment CNRM	USAID

C. Value of Property as of reporting date	MALOTI =	227,754	5,680	16,708
	Purchased by USAID			
D. Estimated average age of Contractor held property		1	1	1

PROPERTY INVENTORY VERIFICATION

I attest that (1) physical inventories of Government property are taken not less frequently than annually; (2) the accountability records maintained for Government property in our possession are in agreement with such inventories; and (3) the total of the detailed accountability records maintained agrees with the property value shown opposite line C above, and the estimated average age of each category of property is as cited opposite line D above.



William C. Arnold
Administrative Manager/LAPIS