

PD-1151-10-

97137

**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)**

TABLE OF CONTENTS

	PAGE
Introduction	1
Background of LAC	1
Results and Discussion	2
Budget	2
Unique Inputs	4
Change Propensity	4
Human Capital	6
Physical Capital	9
Leadership	11
Internal Structure	12
Doctrine	14
Linkages	15
Technology Acquisition	16
Resource Mobilization	19
Current Services	20
Summary and Conclusions	24
Progress Through the Term	25
Project Impact	25
Immediate and Future Needs	26
Appendix One, AEC Publication List	
Appendix Two, AEC A-V Equipment and Materials List	

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 STAFF	DEPARTMENT HEADS STAFF		DEPT HEAD STAFF	FARM MANAGER STAFF	ADMIN 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 cafe/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 LAC/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 RSTTP, 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.

APPENDIX ONE

PUBLICATIONS AND REPORTS
PRODUCED BY THEE AEC TEAM

JUNE 1986 to MARCH 1991

28

PUBLICATIONS

The LAPIS AEC was directly responsible for or supported the following publications:

A. LAC/AEC ADMINISTRATIVE MATERIALS

- 1) LAC Information Outline, 1987-88, 1988-1989
- 2) LAC Staff Handbook. 1987
- 3) LAC Catalogue. 1987-88, 1988-89, 1989-90, 1990-91.
- 4) Computer Procedures for Student Information & Grades Records. M. Nishek

B. LECTURE NOTES

- 1) Computer Appreciation - J. Rusk
- 2) Irrigation & Water Resources - G. Johnson & W. Nishek
- 3) Basic Plant Biology - S. Goertz
- 4) Rural Sociology & Development - M. Phokojo
- 5) Student Enterprise Project Computer Forms Explanation - M. Nishek
- 6) Fruit Tree Growing in Lesotho - P.Sarig (S.Goertz Editor)
- 7) Conservation Measures to Control Surface Wash on Farmland - F. Rooyani
- 8) Poultry Husbandry in Lesotho (Egg & Broiler) - A. King
- 9) Extension Education - C.B. Tyson
- 10) Animal Nutrition - S. Martin
- 11) Vegetable Production Notes for Lesotho - S. Goertz
- 12) Ecology Lecture Notes - R. Washington Allen
- 13) Gravity Fed Sprinkler Irrigation Systems for Lesotho - C. Logan

- 14) Biochemistry for Home Economics Students - K. Kahimbaara
- 15) Animal Health in Lesotho - J. Walusimbi
- 16) Malnutrition - Dept. of Home Economics
- 17) Student Enterprise Project Manual - P. Forrest
- 18) Basic Nutrition - Dept. of Home Economics

C. REPORTS

- 1) The feasibility of merging the LAC Library and ARD Library of the MOA - C. Bergquist. 1986.
- 2) Results of the initial investigation and proposal for the installation of irrigation water wells at the Agriculture College, Maseru, Lesotho - Knight Dames & Moore. 1986.
- 3) AIS Assessment - Consultancy Report. R.B. MacMachin - 1986 and 1987.
- 4) A Blueprint - Establishment of Faculty of Agriculture in Lesotho submitted to MOA & NUL - I.M. Mathaha & F. Rooyani. 1988.
- 5) Consultant's Report on Formation of Faculty of Agriculture.- T. Box, D. Dwyer, and J. Jacobs . 1988.
- 6) A review and Evaluation of the SEP Program at LAC. A Christensen . 1989.
- 7) Report on Carrying & Grazing at LAC, Leribe Campus - R. Washington - Allen. 1989.
- 8) Incorporating Practical Agriculture and Entrepreneurial Skills Into College and University Curricula - A Southern African Symposium Proceedings - F. Bobbitt. 1989.
- 9) Perceptions of Farmer Crop Production Problems by Farmers, Extension & Headquarter Staff - C.B. Tyson. 1990.
- 10) FTC LAPIS Project Program Termination Report - AEC. 1990.
- 11) AIS LAPIS Project Program Assessment & Termination Report - C.B. Tyson. 1990.
- 12) Assessment of AIS Services and Favored Sources of Information by Farmers and Extension Agents - C.B. Tyson. 1991.

- 13) AIS Assessment-Consultancy Report - A.B. MacMahin. 1986 and 1987.
- 14) Programs Assessment and Termination Report of the Agricultural Education Component of LAPIS - C.B. Tyson. 1991.
- 15) End of Tour Reports (completed & expected): -
 - J. Rusk 1988
 - P. Forrest 1989
 - F. Bobbitt 1990
 - W. Nishek 1990
 - C.B. Tyson 1991
 - A. King 1991

D. CIRCULARS BY AEC/LAPIS TAs

- 1) Choice and Use of Centrifugal Pumps - J.H. Eckard/G. Johnson
- 2) Vegetable Nursery Beds and Transplanting - S. Goertz/M. Woods
- 3) Grow Holes - S. Goertz
- 4) Harvesting and Storing Vegetables - S. Goertz/M. Khalane
- 5) How to Mix and Measure Pesticides. LAPIS/MOA.
- 6) Off Season Care and Storage of Irrigation Equipment - W. Nishek
- 7) Instruction Book for Hatz Diesel Engine Maintenance
Bukana ea Tataiso Thlokomelong ea Liengine - W. Nishek/G. Johnson
- 8) Crop Water Requirements - J. Sunta
- 9) How to Measure Spring Flow Rates - J. Sunta
- 10) An Operational Guide for Pump - Driven Irrigation Systems - J. Sunta
- 11) Disease & Insect Management for Apples & Peaches - S. Goertz/S. Sekoli
- 12) Selection of Deciduous Fruit Tree Species - S. Goertz/S. Sekoli
- 13) Thinning Tree Fruit - S. Goertz/S. Sekoli
- 14) Student Enterprise Projects at Lesotho Agricultural College. (brochure)
- 15) Student Enterprise Program (pamphlet) - S. Goertz

E. CIRCULARES FROM SHORT-TERM TRAINING

- 1) Mekhoa ea ho Kopanya le ho Metha Meriana ea Likokoanyana tse Senyang Lijalo. LAC
- 2) Phepo ea Ngoana - Nutrition Division
- 3) Tlhokomelo le Paballo ea Likhuts'oane, N. Mopeli, J. Teletsi, M. Machongo, S. Nonyana
- 4) Theko le Thekiso ea Liphoofole Lesotho - E.K. Lekhotsa, K. Mokobori, T.P. Mosola, K. Matamane
- 5) Theko le Thekiso ea tse Behoang ke Liphoofole - T.P. Mosola, K. Matamane, K. Lekgotso.
- 6) Phepo ea Liphoofole le Ts'ilo ea Lijo ka Maleng - M.E. Xingwana, G.L. Lethetsa, P. Adoro, T. Mohapi
- 7) Preseaving Food for Future Use - M.N. Mpetla, Makosholo
- 8) Food Safety and Hygiene - M. Shumari
- 9) Low Bulk High Energy Cereal Weaning Foods - P.M. Matete
- 10) Protein - Energy Malnutrition and Other Associated Nutritional Deficiency Diseases - Dr. M.M. Mofeefee
- 11) The ABC's of Vitamins and Minerals - N.C. Mothibe
- 12) Vitamins - T.V. Gugushe
- 13) Vegetable Preparations - A.D. Ts'iame
- 14) Nutrition and Feeding of Beef Cattle - M.C. Matete
- 15) Management and Husbandry of Small Stock - Thulo Mafisa
- 16) Common Diseases of Sheep in Lesotho - Dr. Lerotholi
- 17) Disease of Cattle - Dr. Messiah
- 18) Stall and Supplemental Feeding of Cattle and Sheep - M.C. Matete
- 19) Nutrients and Their Sources - Nutrition Division

F. TRAINING WORKSHOP PROCEEDINGS

- 1) Irrigation Cropping and Marketing - Extension Staff January, 1987
- 2) Irrigated Cropping and Marketing - Extension staff and Farmers June, 1987
- 3) Nutrition Agent Workshop - August, 1987
- 4) Home Garden Workshop - January, 1988
- 5) Livestock Production and Marketing - Extension Staff January, 1988
- 6) Agriculture Teaching Methodology Workshop - January, 1988
- 7) Irrigated Vegetable Crop Production - May, 1988
- 8) Nutrition Agent Workshop - July, 1988
- 9) Livestock Production and Marketing Workshop for Extension Staff and Farmers - August, 1988
- 10) Post - Harvest Handling and Marketing - October, 1988
- 11) Home Garden Workshop - November, 1988
- 12) ARD Conference - December, 1989
- 13) Fruit Production and Extension - January, 1989
- 14) Student/Participant Education Workshop - January, 1989
- 15) Post Harvest and Storage
Irrigated Vegetable Production - April, 1989
- 16) Irrigation Resource Planning Training - October, 1989
- 17) Incorporating Practical Entrepreneurial Skills into College Curricula - November, 1989
- 18) Preparing, Teaching, and Evaluating Practical Instruction - January, 1990
- 19) MAMC Management Workshops (3) - January, 1990
- 20) Agriculture Marketing & Production Economics Course - February, 1990
- 21) Teaching Methodology Workshop - January, 1991
- 22) Extension Training/Communication Coordination Workshop - January, 1991

G. TRAINING WORKSHOP MANUALS

- 1) Thupelo ea Lihoai ka Lithuso Tse Tsoang LAPIS Project - 1987
- 2) Farmer Training Course Sponsored by LAPIS Project - 1987
- 3) Vegetable Growing for Home Consumption & Cash - 1987
- 4) Proceedings of Livestock Production and Marketing Workshop - 1988
- 5) Bukana E Holim'a Thupelo ea Ts'oaro, le Poloko ea Lijalo ka Mor'a Kotulo - 1989
- 6) LAPIS Marketing Training (Thupelo ea Li 'Maraka)
- 7) Bukana E Holim'a Thupelo ea Poloko ea Lijalo
- 8) Resource Planner Workshop Materials - 1989
 - a) Sprinkler Irrigation
 - b) Furrow Irrigation
 - c) Irrigation Principles & Practices
 - d) Irrigation Pumping Plants
 - e) Engineering Field Manual
 - f) Knott's Handbook for Vegetable Growers

VIDEO/SLIDES

- 1) Irrigated Vegetable Crop production, Extension Agent Training (Video) - B. Tyson. 1987
- 2) Irrigated Vegetable Crop Production Farmer Training (Video) - B. Tyson. 1987
- 3) Livestock Production Ext. Agent & Farmer Training (Video) - B. Tyson. 1988
- 4) LAPIS Project Support to LAC (Video) - B. Tyson. 1989
- 5) The Student Enterprise Program at LAC. (Slide Set) - S. Goertz. 1991

APPENDIX TWO

**AUDIO-VISUAL EQUIPMENT AND MATERIALS
PROCURRED AND PRODUCED FOR LAC**

JUNE 1986 to MARCH 1991

OVERHEAD PROJECTORS

1. MODEL 3016 SERIAL NO. 7262089
2. " " " " "
3. " " " " "
4. " " " " "
5. MODELL SHUEL SH-8F
6. ETA NO. 23160 - LAPIS
7. TEACH MASTER - LAPIS

CORDS

1. (2) EXTENSION CORDS
2. (1) MULTI-PLUG CORD
3. (3) PROJECTOR CORDS

FILM PROJECTORS

1. GALLO-FOX SERIAL NO. 7042068 AND REEL
2. TELEX. INSTALDARD/XL - LAPIS

SOUND BOX

1. EIKI SOUND
2. SPEAKE (ONE)
- 3.

PHOTOGRAPHIC CHEMICALS

1. THREE BOXES OF PHOTOGRAPHIC CHEMICAL
2. PHOTOGRAPHIC PAPER (TWO)
3. PHOTOGRAPHIC DEVELOPER
4. NEGATIVE DEVELOPER
5. 35MM DEVELOPER TANK

2/.....

24

ASSORTED EQUIPMENT

1. REELS (TWO)
2. PORTABLE SCREEN' - LAPIS
3. GENERATOR - LAPIS
4. OLYMPUS OM20 75MM F3.5 FIELD LENS
5. OPEMUS 4 ENLARGER - 742420

1. VHS CAMERA (PHILLIPS) - LAPIS
2. BLAUPUNKT TV. - LAPIS
3. VCR VIDEO PLAYER (SHARP) - LAPIS
4. TRIPOD - LAPIS
5. THREE CAMERA BATTERIES - LAPIS
6. FIVE (5) VHS CASSETTES - LAPIS
7. PORTABLE SCREEN - LAPIS
8. FLIP CHART - LAPIS
9. PORTABLE TABLE (FOLDING) - LAPIS

16MM PROJECTOR FILMS

1. THE NINE (9) SPOKES OF THE WHEEL PART 1
2. THE NINE (9) SPOKES OF THE WHEEL PART 2
3. THE NINE (9) SPOKES OF THE WHEEL PART 3
4. HOW THE MOTOR CAR WORKS PART IV (5) LUBRICATION OF THE ENGINE
5. SCREEN ETA - LAPIS

A.V. EQUIPMENT

FILMSTRIP PROJECTORS

1. TLEX INSTA-LOAD 35 - LAPIS
2. AB WATERS MEKANISKA - LAPIS
3. AB WATERS MEKANISKA - LAPIS
4. VIEWEX NO. 201160 (not working 16.09.88)

SLIDE PROJECTORS

1. TELEX GARMATE 3200 - LAPIS
2. KODAK CAROUSAL S-AV 2000 - LAPIS
3. KODAK CAROUSAL S-AV2000
4. PRADOVIT (not working 16.09.88)
5. PERKED S-150
6. SLIDE PROJECTOR STAND - LAPIS

TAPE RECORDERS

1. ONDEX LMC 410 (not working 16.08.88)
2. " " "
3. " " "
4. TANDBERG EDUCATIONAL PLAYER/RECORDER - LAPIS

assist

Record#	NO	TITLE	CASSETTE	SLIDES	FILM	S	VIDEO	SCRIPT	SESOTHO
1			.F.	.F.	.F.	.F.	.F.	.F.	
12			.F.	.F.	.F.	.F.	.F.	.F.	
204			.F.	.F.	.F.	.F.	.F.	.F.	
139	53	A CLEAN HOME MAKES A HEALTHY FAMILY	.F.	.F.	.T.	.F.	.T.	.F.	
98	17	A SMALL EARTH DAM	.T.	.F.	.T.	.F.	.T.	.F.	
55	39	ALL ABOUT ACIDS & BASES	.T.	.T.	.F.	.F.	.F.	.F.	
136	50	ALL ABOUT ACIDS AND BASES, pH: WHAT MAKES A BASE	.T.	.F.	.T.	.F.	.T.	.F.	
135	49	ALL ABOUT ACIDS AND BASES, pH: ACIDS OR BASE	.T.	.F.	.T.	.F.	.T.	.F.	
117	34A	ALL ABOUT WATER: COMPOUNDS: A SPECIAL	.T.	.F.	.T.	.F.	.T.	.F.	
119	35A	ALL ABOUT WATER: COMPOUNDS: A SPECIAL	.T.	.F.	.T.	.F.	.T.	.F.	
120	35B	ALL ABOUT WATER: COMPOUNDS: COMBINATION	.T.	.F.	.T.	.F.	.T.	.F.	
118	34B	ALL ABOUT: COMPOUNDS: COMBINATION	.T.	.F.	.T.	.F.	.T.	.F.	
123	30	AN ENERGY HAPPENING	.T.	.F.	.T.	.F.	.F.	.F.	
95	14	ANATOMY OF THE FOWL	.T.	.F.	.T.	.F.	.T.	.F.	
2	1	ARC WELDING	.T.	.T.	.F.	.F.	.T.	.F.	
160	19D	ARTIFICIAL INSEMINATION OF CATTLE	.F.	.F.	.T.	.F.	.T.	.F.	
97	16	BASIC BEEF CATTLE NUTRITION	.T.	.F.	.T.	.F.	.T.	.F.	
91	10	BEDDING PLANTS	.T.	.F.	.T.	.F.	.F.	.F.	
89	B	BEEF CATTLE CASTRATION	.T.	.F.	.T.	.F.	.T.	.F.	
93	12	BEEF FEEDLOT FATTENING	.T.	.F.	.T.	.F.	.T.	.F.	
109	26	BIOGAS IN CHINA	.T.	.F.	.T.	.F.	.T.	.F.	
134	40	BLANK	.F.	.F.	.F.	.F.	.F.	.F.	
56	40A	BLUE BOX, THE CHEMISTRY OF CARBOHYDRATES & LIPIDS	.T.	.T.	.F.	.F.	.T.	.F.	
57	40B	BLUE BOX, THE CHEMISTRY OF LIFE	.T.	.T.	.F.	.F.	.T.	.F.	
58	40C	BLUE BOX, THE CHEMISTRY OF PROTEINS	.T.	.T.	.F.	.F.	.T.	.F.	
66	46	BREEDS OF SWINE	.T.	.T.	.F.	.F.	.F.	.F.	
83	2	BROAD, SOW & LITTER	.T.	.F.	.T.	.F.	.T.	.F.	
129	41/43	BUDDING AND CRAFTING	.T.	.F.	.T.	.F.	.T.	.F.	
49	36B	BUILDING AND BUILDING SITES, FOLIO 1	.F.	.F.	.F.	.F.	.T.	.F.	
50	36C	BUILDING AND BUILDING SITES, FOLIO 2	.F.	.T.	.F.	.F.	.F.	.F.	
51	36D	BUILDING AND BUILDING SITES, FOLIO 3	.F.	.T.	.F.	.F.	.F.	.F.	
52	36E	BUILDING AND BUILDING SITES, FOLIO 4	.F.	.T.	.F.	.F.	.F.	.F.	
94	13	CALVING MANAGEMENT	.T.	.F.	.T.	.F.	.T.	.F.	
116	33	CHEMICAL REACTION: THE BALANCED EQUATION	.T.	.F.	.T.	.F.	.T.	.F.	
3	1A	CLASS OF CATTLE	.F.	.T.	.F.	.F.	.T.	.F.	
188	25	CLASSES OF CATTLE	.T.	.F.	.F.	.F.	.T.	.T.	
101	20	COMPOST	.T.	.F.	.T.	.F.	.T.	.F.	
168	5	CONSERVATION DIVERSION	.T.	.F.	.F.	.F.	.F.	.T.	
177	14	CONSERVATION DIVISION	.T.	.F.	.F.	.F.	.F.	.T.	
132	46	CONSTRUCTION AND MAINTENING TERRACES	.F.	.F.	.T.	.F.	.F.	.F.	
108	25	CONTOUR BUNDS	.T.	.F.	.T.	.F.	.T.	.F.	
4	2	CONTROL OF DONGAS	.F.	.T.	.F.	.F.	.T.	.F.	
175	12	CONTROL OF DONGAS	.T.	.F.	.F.	.F.	.F.	.T.	
197	34	CONTROL OF MASTITIS IN DAIRY CATTLE 4" VIDEO	.T.	.F.	.F.	.F.	.T.	.F.	
46	34	CONTROL OF MASTITIS IN DAIRY CATTLE	.F.	.T.	.F.	.F.	.T.	.F.	
5	2A	CONTROL OF SHEEP SCAB	.T.	.T.	.F.	.F.	.T.	.F.	
182	19	CONTROL OF SHEEP SCAB, THE	.T.	.F.	.F.	.F.	.T.	.T.	
99	18	COW-CALF PRODUCTION	.T.	.F.	.T.	.F.	.T.	.F.	
32	23	CULTIVATION OF BEETROOT, THE	.T.	.T.	.F.	.F.	.T.	.F.	
33	24	CULTIVATION OF CABBAGE & CAULIFLOWER, THE	.T.	.T.	.F.	.F.	.T.	.F.	
34	25	CULTIVATION OF CARROTS, THE	.T.	.T.	.F.	.F.	.T.	.F.	
35	26	CULTIVATION OF POTATOES, THE	.T.	.T.	.F.	.F.	.T.	.F.	
36	27	CULTIVATION OF VEGETABLES, THE	.T.	.T.	.F.	.F.	.T.	.F.	
126	42	DAILY MAINTENANCE OF THE WHEELED TRACTOR	.F.	.F.	.T.	.F.	.T.	.F.	
103	22	DEHIRNING BEEF CATTLE	.T.	.F.	.T.	.F.	.T.	.F.	
90	9	DIPS FOR SHEEP	.T.	.F.	.T.	.F.	.T.	.F.	
6	3	DIVERSIONS	.T.	.T.	.F.	.F.	.T.	.F.	
165	2	DIVERSIONS	.T.	.F.	.F.	.F.	.F.	.T.	
106	24A	ECOLOGICAL THEORY FOR PLANNERS	.T.	.F.	.T.	.F.	.F.	.F.	
107	24B	ECOLOGICAL THEORY FOR PLANNERS 2	.T.	.F.	.T.	.F.	.F.	.F.	
121	36	ELEMENTS: THE SKELETON OF MATERY	.T.	.F.	.T.	.F.	.F.	.F.	
7	4	ESSENTIAL PLANT NUTRIENTS	.T.	.T.	.F.	.F.	.T.	.F.	
166	10	ESTABLISHING A ENERGY EFFICIENT	.F.	.F.	.F.	.F.	.F.	.F.	

1
34

8 5	EXCLOSURES	.I.	.I.	.F.	.F.	.I.	.F.
186 23	EXCLOSURES	.I.	.F.	.F.	.F.	.F.	.I.
96 15	FERTILIZERS AND THEIR USE	.I.	.F.	.I.	.F.	.I.	.F.
10 6	FLOOD IRRIGATION	.I.	.I.	.F.	.F.	.I.	.F.
9 5A	FOODER CROPS	.I.	.I.	.F.	.F.	.I.	.I.
174 11	FOODER CROPS	.I.	.F.	.F.	.F.	.I.	.I.
195 32	FORD TRACTOR DRIVER OPERATOR COURSE 2	.I.	.F.	.F.	.F.	.F.	.F.
194 31	FORD TRACTOR DRIVER OPERATOR COURSE 4	.I.	.F.	.F.	.F.	.F.	.F.
193 30	FORD TRACTOR DRIVER OPERATOR COURSE LESSON 3	.I.	.F.	.F.	.F.	.F.	.F.
48 36A	FX10 BOX SLIDES ONLY	.F.	.F.	.I.	.F.	.I.	.F.
105 24	GOOD FOOD WINS THE GAME	.I.	.F.	.I.	.F.	.I.	.F.
11 7	GRASS WATERWAY	.F.	.I.	.F.	.F.	.I.	.I.
167 4	GRASS WATERWAY	.I.	.F.	.F.	.F.	.F.	.I.
87 6	GREENHOUSE MAINTANANCE	.I.	.F.	.I.	.F.	.I.	.F.
152 110	GROWING THE FUEL WE NEED	.F.	.F.	.I.	.F.	.I.	.F.
128 43B	GROWTH AND CHANGE	.F.	.F.	.I.	.F.	.F.	.F.
163 220	HAY MAKING	.F.	.F.	.I.	.F.	.I.	.F.
13 8	HORIZONTAL WELL DRILLING	.F.	.I.	.F.	.F.	.I.	.F.
14 9	HORIZONTAL WELL DRILLING	.F.	.I.	.F.	.F.	.I.	.I.
171 8	HORIZONTAL WELL DRILLING	.I.	.F.	.F.	.F.	.F.	.F.
190 27	HORIZONTAL WELL DRILLING	.I.	.F.	.F.	.F.	.F.	.I.
15 9A	HOW MARKET PRICES FOR CATTLE ARE DETERMINED	.F.	.I.	.F.	.F.	.I.	.F.
172 9	HOW MARKET PRICES FOR CATTLE ARE DETERMINED	.I.	.F.	.F.	.F.	.I.	.I.
102 21	HOW TO FEED YOUR BABY	.I.	.F.	.I.	.F.	.I.	.F.
151 100	HOW TO STOP GULLY EROSION	.F.	.F.	.I.	.F.	.I.	.F.
16 10	HOW WATER MOVES IN THE SOIL	.F.	.I.	.F.	.F.	.I.	.F.
179 16	HOW WATER MOVES IN THE SOIL	.I.	.F.	.F.	.F.	.F.	.F.
137 51	HYGIENE IN THE STABLE	.F.	.F.	.I.	.F.	.I.	.F.
201 38A	I LAPIS LIVESTOCK TRAINING 1988	.I.	.F.	.F.	.F.	.F.	.F.
85 4	IF THE LAND DIES	.I.	.F.	.I.	.F.	.F.	.F.
133 47	IF THE LAND DIES	.I.	.F.	.I.	.F.	.I.	.F.
156 150	INDUCATED LEGUMES AND INCREASE YIELDS	.F.	.F.	.I.	.F.	.I.	.F.
140 54	INTERMEDIATE BIOLOGY	.I.	.F.	.F.	.F.	.I.	.F.
100 19	INTRODUCTION TO SWINE	.I.	.F.	.I.	.F.	.I.	.F.
110 27	IRRIGATION WATER MANAGEMENT	.I.	.F.	.I.	.F.	.F.	.F.
113 30	IRRIGATION; CENTER PIVOT AND LATERAL MOVE SYSTEM	.I.	.F.	.I.	.F.	.F.	.F.
112 29	IRRIGATION; PUMPING PLANTS	.I.	.F.	.I.	.F.	.F.	.F.
166 3	L.C.R.D. PROJECT	.I.	.F.	.F.	.F.	.F.	.I.
202 380	LAPIS SUPPORT TO LAC, 1988/89 - II	.I.	.F.	.F.	.F.	.F.	.F.
199 36	LAPIS TRAINING I x II PALL	.I.	.F.	.F.	.F.	.F.	.F.
43 32	LATHE WORK	.I.	.I.	.F.	.F.	.I.	.F.
131 45	LES TOMATES	.F.	.F.	.I.	.F.	.F.	.F.
76 56	LIVESTOCK FEEDLOT PRODUCTION - BOX B	.I.	.I.	.F.	.F.	.I.	.F.
79 9	LIVESTOCK FITTING & SHOWING BEEF CATTLE - BOX C	.I.	.I.	.F.	.F.	.I.	.F.
80 80	LIVESTOCK MAINTENANCE OF IRRIGATION PUMPS - BOX C	.I.	.I.	.F.	.F.	.I.	.F.
71 51	LIVESTOCK, BASIC BEEF CATTLE NUTRITION - BOX A	.I.	.I.	.F.	.F.	.I.	.F.
73 53	LIVESTOCK, BEEF CATTLE CASTRATION - BOX A	.I.	.I.	.F.	.F.	.I.	.F.
70 50	LIVESTOCK, BEEF CATTLE IDENTIFICATION - BOX A	.I.	.I.	.F.	.F.	.I.	.F.
77 57	LIVESTOCK, BREEDING CATTLE SELECTION - BOX C	.I.	.I.	.F.	.F.	.I.	.F.
68 48	LIVESTOCK, CALVING MANAGEMENT - BOX A	.I.	.I.	.F.	.F.	.I.	.F.
75 55	LIVESTOCK, COW/CALF PRODUCTION - BOX B	.I.	.I.	.F.	.F.	.I.	.F.
72 52	LIVESTOCK, DEWORMING BEEF CATTLE - BOX A	.I.	.I.	.F.	.F.	.I.	.F.
67 47	LIVESTOCK, HANDLING EQUIPMENT AND FACILITIES-BOX A	.I.	.I.	.F.	.F.	.I.	.F.
78 58	LIVESTOCK, MARKET AND FEEDER CATTLE SELECT - BOX C	.I.	.I.	.F.	.F.	.I.	.F.
69 49	LIVESTOCK, PREVENTING HEALTH CARE - BOX A	.I.	.I.	.F.	.F.	.I.	.F.
74 54	LIVESTOCK, PUREBRED OPERATION - BOX B	.I.	.I.	.F.	.F.	.I.	.F.
154 130	LOWER COSTS HIGHER YIELDS	.F.	.F.	.I.	.F.	.I.	.F.
192 29	MACCAFERRI GARTONS	.I.	.F.	.F.	.F.	.F.	.F.
86 5	MAINTENANCE OF IRRIGATION PUMPS	.I.	.F.	.I.	.F.	.I.	.F.
203 39	MICRO TEACHING LAC	.I.	.F.	.F.	.F.	.F.	.F.
17 11	MICRO-IRRIGATION	.I.	.I.	.F.	.F.	.I.	.F.
159 100	MILKING	.F.	.F.	.I.	.F.	.I.	.F.
18 12	NO-TILL FARMING	.F.	.I.	.F.	.F.	.I.	.F.
19 13	ONION PRODUCTION	.I.	.I.	.F.	.F.	.I.	.F.

200	37	PAL/LAC SHORT VERSION W/PRINCIPAL/U/PRINCIPAL	.I.	.F.	.F.	.F.	.F.	.F.
148	70	PEOPLE WHO NEED FUELWOOD	.F.	.F.	.I.	.F.	.I.	.F.
142	20	PEOPLE WHO PARTICIPATE	.F.	.F.	.I.	.F.	.I.	.F.
122	37	PHYSICAL OR CHEMICAL: WHAT KIND OF CHANGE	.I.	.F.	.I.	.F.	.F.	.F.
127	43A	PLANTS THROUGH THE SEASONS: STRUCTURE	.F.	.F.	.I.	.F.	.I.	.F.
60	41B	PLASTIC HOLDER, GROCERY BOTANY	.F.	.I.	.F.	.F.	.I.	.F.
61	41C	PLASTIC HOLDER, PLANT ANATOMY	.F.	.I.	.F.	.F.	.I.	.F.
59	41A	PLASTIC HOLDER, PLANT KINGDOM	.F.	.I.	.F.	.F.	.I.	.F.
21	15	PRINCIPLES OF PLANTS GROWTH	.F.	.I.	.F.	.F.	.I.	.F.
45	33A	PROFITABLE DAIRY FARMING	.F.	.I.	.F.	.F.	.I.	.F.
196	33	PROFITABLE DAIRY FARMING 4*VIDEO	.I.	.F.	.F.	.F.	.I.	.F.
150	9D	PROJECT AND PRODUCE	.F.	.F.	.I.	.F.	.I.	.F.
22	16	PROPER PLOUGHING ON A TERRACE	.F.	.I.	.F.	.F.	.I.	.F.
181	18	PROPER PLOUGHING ON A TERRACE	.I.	.F.	.F.	.F.	.F.	.I.
23	16A	PROTECTING THE SOIL IN LESOTHO RANGELANDS	.F.	.I.	.F.	.F.	.I.	.F.
170	7	PROTECTING THE SOIL IN LESOTHO'S RANGELANDS	.I.	.F.	.F.	.F.	.F.	.I.
162	21D	RAISING CALVES	.F.	.F.	.I.	.F.	.I.	.F.
81	0	RAISING SHEEP	.I.	.F.	.I.	.F.	.I.	.F.
157	16D	RAISING SHEEP	.F.	.F.	.I.	.F.	.I.	.F.
144	4D	REGION OF CHINA	.F.	.F.	.I.	.F.	.I.	.F.
53	37	RURAL EXTENSION TECHNIQUES	.I.	.I.	.F.	.F.	.I.	.F.
130	44	SAFETY WITH FARM TRACTORS	.I.	.F.	.I.	.F.	.I.	.F.
54	3B	SCHOOL SDS 210	.F.	.F.	.F.	.F.	.F.	.F.
178	15	SEHLABATHEBE	.I.	.F.	.F.	.F.	.F.	.I.
24	17	SEHLABATHEBE NATIONAL PARK	.F.	.I.	.F.	.F.	.I.	.I.
25	18	SEHLABATHEBE NATIONAL PARK	.F.	.I.	.F.	.F.	.I.	.F.
176	13	SEHLABATHEBE NATIONAL PARK	.I.	.F.	.F.	.F.	.F.	.I.
187	24	SEHLABATHEBE NATIONAL PARK	.I.	.F.	.F.	.F.	.F.	.F.
183	20	SEHLABATHEBE RMA	.I.	.F.	.F.	.F.	.F.	.F.
27	10B	SELECTION OF BULLS	.F.	.I.	.F.	.F.	.I.	.F.
189	26	SELECTION OF BULLS, THE	.I.	.F.	.F.	.F.	.F.	.I.
63	43	SELECTION OF CATTLE	.F.	.I.	.F.	.F.	.I.	.F.
185	22	SELECTION OF CATTLE	.I.	.F.	.F.	.F.	.I.	.I.
26	18A	SELECTION OF COW	.F.	.I.	.F.	.F.	.I.	.I.
164	1	SELECTION OF COWS, THE	.I.	.F.	.F.	.F.	.F.	.I.
161	20D	SILAGE	.F.	.F.	.I.	.F.	.I.	.F.
65	45	SLIDES IN METAL CASE 151-300 P.R.	.F.	.I.	.F.	.F.	.F.	.F.
64	44	SLIDES METAL CASE 1-15 UR	.F.	.I.	.F.	.F.	.F.	.F.
88	7	SMALL FLOCK BROODING TECHNIQUES	.I.	.F.	.I.	.F.	.I.	.F.
143	3D	SOIL AND WATER CONSERVATION IN THE LOES	.F.	.F.	.F.	.F.	.F.	.F.
173	10	SOIL OF LESOTHO	.I.	.F.	.F.	.F.	.F.	.I.
180	17	SOIL OF LESOTHO	.I.	.F.	.F.	.F.	.F.	.I.
111	28	SOIL, WATER AND PLANT RELATIONSHIP	.I.	.F.	.I.	.F.	.F.	.F.
28	19	SOILS OF LESOTHO	.F.	.I.	.F.	.F.	.I.	.I.
41	31	SOLDERING AND BRAZING	.I.	.I.	.F.	.F.	.I.	.F.
40	30	SORGHUM DISEASE	.F.	.I.	.F.	.F.	.I.	.F.
146	5D	SPRINELESS CACTUS	.F.	.F.	.I.	.F.	.I.	.F.
124	39	SPRINKLER IRRIGATION	.F.	.F.	.I.	.F.	.F.	.I.
29	20	SPRINKLE IRRIGATION	.F.	.I.	.F.	.F.	.I.	.F.
84	3	SPRINKLE IRRIGATION	.I.	.F.	.I.	.F.	.I.	.F.
114	31	SPRINKLER SYSTEM	.I.	.F.	.I.	.F.	.F.	.F.
92	11	SUCCESS WITH RABBITS	.I.	.F.	.I.	.F.	.I.	.F.
115	32	SURFACE IRRIGATION	.I.	.F.	.I.	.F.	.F.	.F.
44	33	SWINE BREED	.F.	.I.	.F.	.F.	.I.	.F.
30	21	TERRACES	.F.	.I.	.F.	.F.	.I.	.I.
191	28	TERRACES	.I.	.F.	.F.	.F.	.F.	.I.
145	04	THE A-FRAME	.F.	.F.	.I.	.F.	.I.	.F.
31	22	THE CONSERVATION DIVISION	.F.	.I.	.F.	.F.	.I.	.F.
147	6D	THE DESERT STOPS HERE	.F.	.F.	.I.	.F.	.I.	.F.
149	8D	THE EXTENSION AGENT	.F.	.F.	.I.	.F.	.I.	.F.
38	28A	THE PRUNING OF PEACH TREES ACCORDING TO THE OPEN V	.F.	.I.	.F.	.F.	.I.	.F.
37	28	THE RANGE MANAGEMENT DIVISION	.F.	.I.	.F.	.F.	.I.	.F.
138	52	THE TRACTOR DAILY MAINTENANCE	.F.	.F.	.I.	.F.	.F.	.F.
62	42	THUTO 'A KHONOLEHO EA HOBU	.F.	.I.	.F.	.F.	.I.	.I.
158	17(2)	TRANSPORT	.F.	.F.	.I.	.F.	.F.	.F.
39	29	TRFFS	.F.	.I.	.I.	.F.	.I.	.F.

. assist		CASSETTE SLIDES FILM S VIDEO SCRIPT SESOTHO					
Record#	NO	TITLE					
	1		.F.	.F.	.F.	.F.	.F.
	12		.F.	.F.	.F.	.F.	.F.
	204		.F.	.F.	.F.	.F.	.F.
	139	53 A CLEAN HOME MAKES A HEALTHY FAMILY	.F.	.F.	.I.	.F.	.I.
	98	17 A SMALL EARTH DAM	.I.	.F.	.I.	.F.	.I.
	55	39 ALL ABOUT ACIDS & BASES	.I.	.I.	.F.	.F.	.F.
	136	50 ALL ABOUT ACIDS AND BASES, pH: WHAT MAKES A BASE	.I.	.F.	.I.	.F.	.I.
	135	49 ALL ABOUT ACIDS AND BASES, pH: ACIDS OR BASE	.I.	.F.	.I.	.F.	.I.
	117	34A ALL ABOUT WATER: COMPOUNDS: A SPECIAL	.I.	.F.	.I.	.F.	.I.
	119	35A ALL ABOUT WATER: COMPOUNDS: A SPECIAL	.I.	.F.	.I.	.F.	.I.
	120	35B ALL ABOUT WATER: COMPOUNDS: COMBINATION	.I.	.F.	.I.	.F.	.I.
	118	34B ALL ABOUT: COMPOUNDS: COMBINATION	.I.	.F.	.I.	.F.	.I.
	123	38 AN ENERGY HAPPENING	.I.	.F.	.I.	.F.	.F.
	95	14 ANATOMY OF THE FOWL	.I.	.F.	.I.	.F.	.I.
	2	1 ARC WELDING	.I.	.I.	.F.	.F.	.I.
	160	19D ARTIFICIAL INSEMINATION OF CATTLE	.F.	.F.	.I.	.F.	.I.
	97	16 BASIC BEEF CATTLE NUTRITION	.I.	.F.	.I.	.F.	.I.
	91	10 BEDDING PLANTS	.I.	.F.	.I.	.F.	.F.
	89	8 BEEF CATTLE CASTRATION	.I.	.F.	.I.	.F.	.I.
	93	12 BEEF FEEDLOT FATTENING	.I.	.F.	.I.	.F.	.I.
	109	26 BIOGAS IN CHINA	.I.	.F.	.I.	.F.	.I.
	134	48 BLANK	.F.	.F.	.F.	.F.	.F.
	56	40A BLUE BOX, THE CHEMISTRY OF CARBOHYDRATES & LIPIDS	.I.	.I.	.F.	.F.	.I.
	57	40B BLUE BOX, THE CHEMISTRY OF LIFE	.I.	.I.	.F.	.F.	.I.
	58	40C BLUE BOX, THE CHEMISTRY OF PROTEINS	.I.	.I.	.F.	.F.	.I.
	66	46 BREEDS OF SWINE	.F.	.I.	.F.	.F.	.F.
	83	2 BROAD, SOW & LITTER	.I.	.F.	.I.	.F.	.I.
	129	41/43 BUDDING AND CRAFTING	.I.	.F.	.I.	.F.	.I.
	49	36B BUILDING AND BUILDING SITES, FOLIO 1	.F.	.F.	.F.	.F.	.I.
	50	36C BUILDING AND BUILDING SITES, FOLIO 2	.F.	.I.	.F.	.F.	.F.
	51	36D BUILDING AND BUILDING SITES, FOLIO 3	.F.	.I.	.F.	.F.	.F.
	52	36E BUILDING AND BUILDING SITES, FOLIO 4	.F.	.I.	.F.	.F.	.F.
	94	13 CALVING MANAGEMENT	.I.	.F.	.I.	.F.	.I.
	116	33 CHEMICAL REACTION: THE BALANCED EQUATION	.I.	.F.	.I.	.F.	.I.
	3	1A CLASS OF CATTLE	.F.	.I.	.F.	.F.	.I.
	188	25 CLASSES OF CATTLE	.I.	.F.	.F.	.F.	.I.
	191	20 COMPOST	.I.	.F.	.I.	.F.	.I.
	168	5 CONSERVATION DIVERSION	.I.	.F.	.F.	.F.	.I.
	177	14 CONSERVATION DIVISION	.I.	.F.	.F.	.F.	.I.
	132	46 CONSTRUCTION AND MAINTENING TERRACES	.F.	.F.	.I.	.F.	.F.
	198	25 CONTOUR BUNDS	.I.	.F.	.I.	.F.	.I.
	4	2 CONTROL OF DONGAS	.F.	.I.	.F.	.F.	.I.
	175	12 CONTROL OF DONGAS	.I.	.F.	.F.	.F.	.I.
	197	34 CONTROL OF MASTITIS IN DAIRY CATTLE 4" VIDEO	.I.	.F.	.F.	.F.	.I.
	46	34 CONTROL OF MASTITIS IN DAIRY CATTLE	.F.	.I.	.F.	.F.	.I.
	5	2A CONTROL OF SHEEP SCAB	.I.	.I.	.F.	.F.	.I.
	182	19 CONTROL OF SHEEP SCAB, THE	.I.	.F.	.F.	.F.	.I.
	99	18 COW-CALF PRODUCTION	.I.	.F.	.I.	.F.	.I.
	32	23 CULTIVATION OF BEETROOT, THE	.I.	.I.	.F.	.F.	.I.
	33	24 CULTIVATION OF CABBAGE & CAULIFLOWER, THE	.I.	.I.	.F.	.F.	.I.
	34	25 CULTIVATION OF CARROTS, THE	.I.	.I.	.F.	.F.	.I.
	35	26 CULTIVATION OF POTATOES, THE	.I.	.I.	.F.	.F.	.I.
	36	27 CULTIVATION OF VEGETABLES, THE	.I.	.I.	.F.	.F.	.I.
	126	42 DAILY MAINTENANCE OF THE WHEELED TRACTOR	.F.	.F.	.I.	.F.	.I.
	103	22 DEHIRNING BEEF CATTLE	.I.	.F.	.I.	.F.	.I.
	90	9 DIPS FOR SHEEP	.I.	.F.	.I.	.F.	.I.
	6	3 DIVERSIONS	.I.	.I.	.F.	.F.	.I.
	165	2 DIVERSIONS	.I.	.F.	.F.	.F.	.I.
	106	24A ECOLOGICAL THEORY FOR PLANNERS	.I.	.F.	.I.	.F.	.F.
	107	24B ECOLOGICAL THEORY FOR PLANNERS 2	.I.	.F.	.I.	.F.	.F.
	121	36 ELEMENTS: THE SKELETON OF MATERY	.I.	.F.	.I.	.F.	.F.
	7	4 ESSENTIAL PLANT NUTRIENTS	.I.	.I.	.F.	.F.	.I.
	155	14D ESTABLISHING A FORREST NURSERY	.F.	.F.	.I.	.F.	.I.

42	31A	UNDERSTANDING SOIL EROSION	.I.	.I.	.F.	.F.	.I.	.F.
169	6	UNDERSTANDING SOIL EROSION	.I.	.F.	.F.	.F.	.F.	.I.
02	1	WATER DELIVERY IN IRRIGATION	.I.	.F.	.I.	.F.	.F.	.F.
125	40	WHY THE FORREST MUST BE SAVED	.F.	.F.	.I.	.F.	.I.	.F.
153	12D	WHY THE FORREST MUST BE SAVED	.F.	.F.	.I.	.F.	.I.	.F.
104	23	WHY THE SOIL MUST BE SAVED	.I.	.F.	.I.	.F.	.I.	.F.