

MID-TERM EVALUATION REPORT
AGRICULTURAL RESEARCH
AND
PRODUCTION PROJECT
(AID PROJECT NO. 367-0149)

Prepared for
USAID / Nepal

JANUARY 8, 1988



NO-FRILLS CONSULTANTS (N. F. C.)
Rural & Agricultural Development Specialists

P.O. Box 3445, Kathmandu, Nepal Telephone: 522782 Office: 522067 Res

AND

WPI Inc.

P.O. BOX 2077
CAMBRIDGE, MA 02238

(617) 864-2042



Telex: 940536 Bostelex
Attn: WPI
Cable Address: WPINC

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Prepared for:

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Kathmandu, Nepal

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By:

Mr. Peter G. Rood, WPI Associate/ Team Leader
Dr. R.K. Patel, WPI Associate
Dr. Badri N. Kayastha, No Frills Consultants
Dr. Ramesh Munankami, No Frills Consultants
Mr. Narayan Regmi, HMG-Department of Agriculture
Mr. Ben Stoner, ARD Office/USAID-Nepal
Mrs. Tish Butler, Evaluation Office/USAID-Washington D.C.

WU P'I, Inc.
P.O. Box 2077
Cambridge, Massachusetts

and

No-Frills Consultants
Man Bhawan, Lalitpur
Kathmandu, Nepal

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List of Acronyms

ADB	-	Asian Development Bank
ADO	-	District Agriculture Development Officer
AERP	-	Agricultural Extension and Research Project
AI	-	Artificial Inssemination
AIC	-	Agricultural Inputs Corporation
ARPP	-	Agricultural Research & Production Project
CLDC	-	Central Livestock Development Center
CSP	-	Cropping Systems Research Program
DDC	-	Dairy Development Corporation
DFAMS	-	Department of Food & Agricultural Marketing Services
DLDAH	-	Department of Livestock Development and Animal Health
DLO	-	District Livestock Development Officer
DOA	-	Department of Agriculture
DOF	-	Department of Forest
FAO	-	Food & Agriculture Organisation
FFT	-	Farmers Field Trail
FS	-	Farming Systems
FSR	-	Farming Systems Research
FSRDD	-	Farming Systems Research & Development Division
GLIP	-	Grain Legume Improvement Program
ha.	-	Hectare
HCIP	-	Hill Crop Improvement Program
HFPP	-	Hill Food Production Project
HMG	-	His Majesty's Government of Nepal
HQ	-	Head Quarter
IAAS	-	Institute of Agriculture & Animal Science
IARC	-	International Agricultural Research Center
ICP	-	Integrated Cereal Project
IDRC	-	International Development Research Center
IRD	-	Integrated Rural Development
IOF	-	Institute of Forestry
JT	-	Junior Technician
JTA	-	Junior Technical Assistant
LAC	-	Lumle Agricultural Center
MIS	-	Management Information System
MOA	-	Ministry of Agriculture
MOF	-	Ministry of Forest
MSH	-	Mini Seed House
MT	-	Metric Ton
NARSC	-	National Agricultural Research Service Center
NFY	-	Nepal Fiscal Year
NSB	-	National Seed Board
NWDP	-	National Wheat Development Program
ODA	-	Overseas Development Agency British
PCV	-	Peace Corps Volunteer
PP	-	Project Paper
PPVT	-	Pre-production Verification Trials
RCC/NARCC	-	Research Coordination Committee
RD	-	Regional Director
SERED	-	Socio-economic Research & Extension Division

SMS - Subject Matter Specialist
SPIS - Seed Production & Input Storage
STIP - Seed Technology and Improvement Program
TA - Technical Assistance
USAID - United States Agency for International
Development Nepal
WI - Winrock International

II-EXECUTIVE SUMMARY

a. Introduction

The Evaluation Team having reviewed the activities of the ARP Project during the first half of the Project period, share a common opinion with many in the Ministry of Agriculture that the ARP Project is making a valuable contribution to the strengthening and institutionalization of the Agricultural Research System in Nepal. Many of the problems and difficulties associated with the implementation of the Project during the past two and a half years were inevitable, being the natural outcome of developing new institutions and programs.

In many respects, the process of developing these new institutions has proceeded faster and with greater scope than anticipated. The possibility of creating an effective, coordinated agricultural research system in Nepal is greater now than ever before. With continued input from the ARP Project it is expected that Nepal will begin to bridge the gulf that has so long existed between Research and Extension.

The most immediate beneficiary of this new relationship will be the people of Nepal. The activities of the ARP Project to build and strengthen the agricultural research capability to produce relevant, practical and viable technologies for the farming systems of the various regions will be quickly taken up by the Extension Programs in line with the philosophy of the Basic Needs Program.

ARPP's contribution to the development of the Agricultural Research System is therefore seen by the Team as an important step to the betterment of the people of Nepal.

b. Country Context

For the last several decades, Nepal has been receiving assistance from many donor countries and international organizations to develop its agricultural sector. Agriculture in Nepal is the mainstay of the economy. It provides income and employment to over 90% of the population and accounts for two thirds of the GDP. Farming in Nepal

remains largely traditional and subsistence oriented. Nepalese farming systems are a mixture of several enterprises including grains, livestock, fruits and vegetables. Paddy, Maize and wheat are the major crops in the Terai while maize and finger millets are the most dominant crops in the hill regions. Production of cereal grains has increased during the past few years but mostly as a result of an expansion in cultivated land. Yields have fluctuated largely as a result of the limited irrigation facilities and erratic fertilizer supplies.

Despite the immense development efforts of HMG and other donors, progress has come slowly. The Terai areas have received the majority of attention in the past years because of their similar conditions with India and the ready availability of technology which can be adapted. Many reasons exist for the slow growth in agricultural development and a full discussion is beyond the scope of this evaluation report.

USAID's commitment to the development of the agricultural sector has been substantial in the past thirty-five years. Through a number of projects designed to develop the agricultural research system, AID has concentrated on the development of well qualified agricultural research scientists and a strong infrastructure. The need to link research with extension has always been in the forefront of AID's work. Technology development by itself has little value unless and until it is extended to the farmers through a viable system.

AID's Food Grain Technology Project in the late 60's emphasized the development of strong linkages between research and extension via adaptive research programs. It also emphasized the need for a strong commodity based research program to test and develop technologies appropriate for Nepal. This was followed by the Integrated Cereals Project (ICP) in 1976. ICP continued to strengthen the wheat, maize and rice commodity programs through intensive training and infrastructure development activities. At the same time, ICP introduced the concept of Cropping Systems Research and demonstrated the importance of Socio-Economics in the transfer and adoption of technology by farmers. In joint cooperation with ICP, the Seed Production and Inputs Storage Project (SPIS) was working with developing appropriate systems for multiplying and distributing the seeds of the new varieties coming out of the commodity programs. Given the severe physical and

ecological conditions in Nepal and the lack of a well developed communication and transportation infrastructure, this project in particular had to be innovative. No models existed which could be easily transferred to the conditions found in Nepal. Through these projects and the activities of many other donors, progress has been made in several fronts however, what has been lacking is the bridge to link the research and extension activities firmly together.

The ARP Project was designed in a way to continue the past work of the ICP and SPIS project but at the same time trying to resolve, through institution building, many of the constraints which plagued these former projects. The development of the Farming Systems Research Division and the Socio-Economics Research and Extension Division are a step in the right direction.

c. Project Focus

The ARP Project was designed to strengthen the capability of the national agricultural research system to develop appropriate technologies especially for the resource-poor hill farmers of Nepal. It was also planned that the Project would develop and demonstrate the methods for extending these new technologies to farmers through a program of on-farm testing at Farming Systems Sites and eventually into block production programs concentrated in four hill districts as well as a seed program.

To strengthen the agricultural research system and to increase its effectiveness the ARP Project introduced changes within the existing organization of the research system. The creation of four new bodies, the Research Coordination Committee, the National Agricultural Research Services Center, the Farming Systems Division and the Socio-Economics Division were part of the institution building process. The development of these institutions by HMG has proceeded to a greater degree than what was envisioned in the Project Paper. In many respects, this indicates the commitment that HMG is making towards the restructuring and strengthening of the agricultural research system.

However, in the creation of these new institutions there has been a degree of "natural" confusion within the agricultural system. The increased responsibility of NARSC to incorporate all agricultural research programs including the research farms/stations previously under the Department

of Agriculture and NARSCs transfer to the MOA has clouded the linkages with and within the Department of Agriculture and the Department of Livestock and Animal Health. While these linkages need to be re-defined and re-established and indeed are being re-established, the Project and the Contractor have tended to concentrate their efforts in the more production oriented hill and seed programs. Again, this was a natural course of events.

The Evaluation Team now feels that the new institutions which have been created are ready to be made functional and need to assume the roles and responsibilities which have been mandated to them. Much effort has gone into the planning and organization of these new bodies by HMG/MOA and ARPP. To make them functional and effective needs to be the primary objective of the Project. Therefore, the Team feels that a redirection and refocussing of Project assistance and financial support needs to be effected. This new focus should concentrate on supporting NARSC and the RCC along with the other newly created Divisions to help integrate the organizations into an effective agricultural research system. ARPP can assist in this process by helping to build a strong research management, planning, implementation and monitoring capability within NARSC and the RCC. Only when the research system is effectively functioning will the technologies, beneficial to the farmers of the hills and other areas of Nepal, be developed.

d. Summary of Conclusions and Recommendations

Throughout the period of the Evaluation, the team was impressed with the importance and concern that has been accorded this project as expressed by the many officials in HMG/MOA, USAID, other donors and the contractors own technical assistance team. A great deal of consideration was given to the views of the many participants involved with the Project as to how best utilize the remaining Project resources.

The process employed to review the original draft evaluation report involving all concerned parties within the Project via the Project Coordination Meeting (comments from this meeting are included as Appendix-A of this report) was extremely helpful to the Evaluation Team Members. The Team has reconsidered the recommendations in light of this discussion and believe that this final version will be a valuable tool for the redirection of the Project activities which have been agreed upon.

Given the remaining time in the Project the following conclusions and recommendations are designed to provide HMG with the greatest possible benefits from the ARP Project. While it is recognized that the proposed changes in the direction of some Project activities will affect other components it is hoped that USAID and HMG will seriously consider additional projects to follow and build upon the work initiated under this Project.

Conclusion A

In light of the recent approval by the Cabinet and the Palace of the RCC and NARSC inclusive of the necessary authorities and appointments to implement these bodies, the Evaluation team feels that the main Project emphasis needs to be on making these bodies functional and effective. Decisive action is now required to establish these bodies as the core of the agricultural research system. They need to be supported by the Project to develop effective management plans for the facilities now under their control as well as manpower utilization and long term operational plans.

Major Recommendation No. 1

(Main Report Recommendations 1-7)

Since the RCC and NARSC have been elevated to the MOA, the Project Director should be transferred to the Chief of NARSC and the Project Coordinator should be appointed from a staff member within the MOA preferably with a research background. Likewise, WI should provide research management assistance in the form of a number of short-term consultants, the terms of reference to be decided by joint consultations. All Project assistance should be routed through NARSC. To assist in the management of the facilities of the farms/stations under the control of NARSC, the farm-station inventories need to be completed as soon as possible. This information will provide NARSC/ARPP with the basic information for deciding upon what support requirements will be required during the remainder of the Project period.

Conclusion B

The second major purpose of the Project was to assist the research system in the development of appropriate technologies for the conditions of Nepal, especially the Hill areas which have not received sufficient attention in

the past. Building upon the work of the ICP and SPIS projects the ARP Project is continuing to strengthen the systems approach via the use of the farming systems methodology and the input of socio-economists into the research process. This approach is seen by the Evaluation Team to be both practical and viable for the testing and development of suitable technologies for Nepal. The use of the farming system perspective needs to be made a fundamental part of the entire agricultural research process. This has been planned to be achieved by linking the FSR activities with the NARSC Outreach Program to be implemented at all NARSC facilities. The Project needs to provide continued support to strengthen and integrate these newly institutionalized programs into the mainstream of the research activities.

Major Recommendation No. 2
(Main Report Recommendations 8-12)

Both the FSRDD and SERED need to be made permanent within the HMG system. In addition, permanent staff should be provided to ensure that the activities planned by these divisions can be implemented effectively. Operational and logistic support from ARPP should be supportive in helping to establish linkages between these divisions and the other research programs/offices. FSRDD and SERED's roles in the Outreach Program activities need to be developed so that they are complementary and work to close the gap between research and extension.

Conclusion C

The Project activities in the Hill Production Program to date have not had any appreciable impact nor is it likely that any impact from this program can be achieved in the remaining project period. The existence of a separate "ARPP" program within the districts own production program raises questions of sustainability and viability. Progress to date in the program has not moved to a point where a production program as described in the Project Paper, could be launched. Rather, the project activities have concentrated on the testing of various technologies in several selected areas within each district while ignoring the information that has been obtained from similar tests already conducted in these areas.

The second objective of the production program was to develop appropriate extension methodologies for the hill areas. No work as yet has been done in this area.

Major Recommendation No. 3
(Main Report Recommendations 21-23)

The technology testing program in the four hill districts should become a part of the Outreach Programs of the Lumle Agriculture Center and the Lamepatan Livestock Farm. It is anticipated that an agreement will be signed between the MOA and LAC which would allow LAC to assume the prime responsibility for research activities in this region. This would include the development and testing of appropriate technologies and the technical assistance required to transfer these to the extension based production programs through the ADO's offices. WI Technical Assistance would not be required to assist the production program activities and could be withdrawn. Work on the development of appropriate extension methodologies should be undertaken by SERED in a major assessment of the various extension methodologies currently being used/developed by different programs/donors in the country.

Conclusion D

The present Seed Production Program has developed through a series of changes and alterations based on implementation experience started in the SPIS project. The present form of this program now appears to be a very effective method for promoting the multiplication and distribution of improved seed varieties in remote areas. The involvement of private producer/sellers within the process and the utilization of the farmer-to-farmer seed distribution system appear to be the key successful attributes of this program. The activities of this program need to be continued and expanded.

The establishment of the National Seed Board and its effective functioning will support and assist the further development and strengthening of seed programs both in the farmers' fields and in the research stations. The technical committees that have been developed will assure the adequate supplies of appropriate, high quality breeder and foundation seeds required to implement farm level seed programs.

Major Recommendation No. 4
(Main Report Recommendations No. 24-26)

The Project should continue both financial and technical assistance support to the Seed Program to expand it to other districts and to create a "packaged" program

Inclusive of organization plans, training materials, etc., which could be easily implemented by other projects and donors in other parts of the country. Additional work needs to be done on the incorporation of the Mini-Seed Houses into the private producer/seller seed program once the MOA makes a policy decision regarding their ownership and use. ARPP support to the National Seed Board needs to be provided through increased logistical and technical support.

Conclusion E

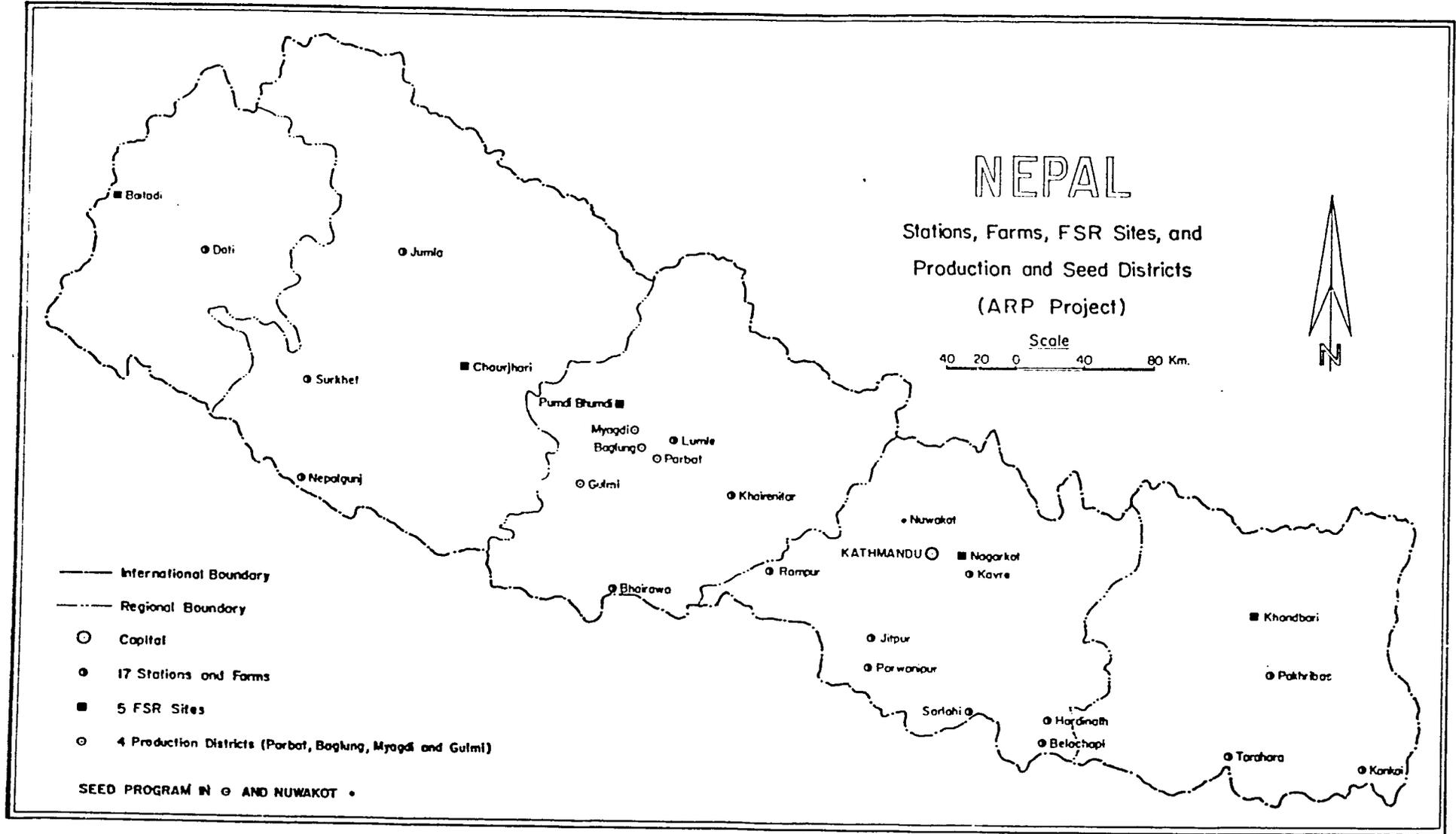
Project coordination, monitoring and reporting have been major weak areas within the project. Project monitoring plans have been created which describe the process but not the method. Monitoring plans which provide methods of indicating 'research success' in terms of achievements need to be developed. Baseline surveys have been implemented in some selected areas for some programs but will not be capable of providing an overall evaluation of Project Impact. Project reporting has been a divided responsibility. No single report incorporating all Project activities is prepared. The Coordinator prepares a report of HMG activities while the contractor prepares a similar report for their activities. A unified reporting system would help all parties involved in the implementation of the ARP Project better plan and coordinate the various components activities and programs. Likewise, Project Coordination has been limited by the lack of defined roles and responsibilities for the Coordinator and insufficient staff to carry out his duties.

Major Recommendation No. 5

(Main Report Recommendations 29-31)

A new monitoring and evaluation plan needs to be developed by ARPP/WI to reflect 1) the changes in the project as a result of the proposed restructuring and 2) to develop adequate indicators for measuring project impact. The Project Coordinator needs to be given a defined role and his position should be elevated to a level where he has overall responsibility for everyday Project management. The WI Chief of Party should report to and work with the Coordinator as a counterpart. The Coordinator's Office should also be responsible for the coordination of the Peace Corps staff assigned to the Project.

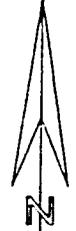
Additional recommendations for other elements of the ARP Project are found in the main text which follows.



NEPAL

Stations, Farms, FSR Sites, and
Production and Seed Districts
(ARP Project)

Scale
40 20 0 40 80 Km.



- International Boundary
- - - Regional Boundary
- Capital
- 17 Stations and Farms
- 5 FSR Sites
- ⊙ 4 Production Districts (Parbat, Baglung, Myagdi and Gulmi)

SEED PROGRAM IN ○ AND NUWAKOT •

A. Assessment of Project Activities

This section examines the three main areas in which the Project activities are directed. These areas are: 1) Support to the Research System; 2) the Hill Production Program; and 3) the Hill Seed Program. The format used for the evaluation examines the activities as proposed in the Project Paper, the present implementation status of these activities, followed by the Evaluation Team's recommendations for the future development and implementation of these programs.

1. Research Systems Support

The Project Paper envisaged supporting the Nepal Agricultural Research System in two distinct ways. The first was to provide assistance to improve the administration and management of the overall agricultural research system to better coordinate and integrate research programs and activities. This assistance was to be directed at the central level organizations newly created within the Ministry of Agriculture by HMG especially for this purpose.

The second manner in which support was to be provided was to individual components within the research system. Previous support to the agricultural research system had created imbalances in both commodity and geographic focus as well as a lack of attention on the 'whole farming system' and the need for socio-economic research. Identified programs were therefore to be strengthened with increased operational support and technical assistance.

1.1 Improved Administration and Management

1.1.1 Research Coordination Committee (RCC)

a. Project Plan

The Project plan was to assist the Ministry of Agriculture (MOA) to activate the RCC chaired by the Secretary of Agriculture to provide overall policy guidance and direction for research activities and to review the research activities proposed by the research panels and technical committees.

Project assistance was also to support the establishment of a Secretariat for the RCC in the MOA. This Secretariat would be headed by a senior agricultural scientist of Joint-Secretary level. The Joint-Secretary would act as Member-Secretary of the RCC.

b. Implementation Status

The RCC has been reactivated in the MOA under the chairmanship of the Secretary of Agriculture. A senior agricultural researcher of Joint-Secretary level has been appointed as the Member-Secretary of the RCC. A Secretariat has been created to carry out the policy and programs of the RCC.

The RCC has been activated to prepare and formulate operational policy guidelines for the overall agricultural research program specifically as it relates to technology generation, verification, packaging, and dissemination.

The Committee is presently developing systems to establish priorities for research programs and to allocate available resources to strengthen the research capability and to institutionalize the agricultural research system. This will bring research programs more in line with farmers' needs for increased productivity.

The Evaluation Team feels that as the major purpose of the Project is to strengthen the institutional capability of the Agricultural Research Sector, a redirection of present Project activities and an increased emphasis on research management needs to be effected in line with this purpose. To achieve this, the following changes are recommended.

c. Recommendation No. 1

Viewing the overall responsibility of the Project Director and the recent changes within the MOA/DOA as they relate to the RCC and NARSC, it is recommended that the Project Directorship be transferred to the Chief of NARSC.

Recommendation No. 2

In line with the above and with particular reference to the proposed changes within the Project components, it is recommended that the Project Coordinator's position be filled by an appropriate staff member of the MOA. It would be desirable however, if this staff member had considerable working experience in the research system. (Additional suggestions for the role of the Project Coordinator are found in Section 3.1, recommendation no. 30.)

Recommendation No. 3

To strengthen the research planning, management, monitoring and evaluation capacity of the RCC and NARSC, WI should provide the services of short-term specialists according to the requirements and terms of references developed by the RCC and NARSC. WI should provide these services on an 'as needed' basis.

Suggestions for Implementation

3a. The short-term research management specialists should be located within NARSC and work directly with the RCC Member-Secretary and the NARSC Chief.

3b. ARPP should shift additional funds to support and strengthen the capability of the RCC Secretariat. This should include logistic support as well as training for Secretariat staff.

1.1.2 National Agricultural Research Services Center

a. Project Plan

The Project plan was to assist the DOA to establish a National Agricultural Research Service Center (NARSC) at Khumaltar to coordinate crop research.

b. Implementation Status

NARSC was created in 1985 under the DOA. It has since been moved to the MOA and given increased responsibility for looking at all agricultural research to generate more

productive and appropriate technologies for farmers. Presently NARSC operates under the policy guidance of the RCC and is developing organizational plans to integrate the different divisions, commodity programs, and farms/stations under its direction.

NARSC has prepared research programs for NFY 2044/45 in two broad categories: 1) commodity research, and 2) disciplinary research. A system has been developed to facilitate this process. It includes the use of working groups meetings; and discipline based technical panels.

NARSC has prepared guideline papers for monitoring agricultural research and for the implementation of outreach activities (mandatory) at each farm/station under its jurisdiction. Presently, NARSC is developing organizational plans which include documentation, publication and biometric services. No operational plans have so far been developed; for individual farms/stations; for implementing the outreach program; nor for research monitoring. ARPP's involvement in helping to make NARSC functional by supporting these activities is essential at this crucial stage.

c. Recommendation No. 4

As a result of the changes in the Project focus NARSC should become the focal point for the ARP Project activities. All technical assistance and financial support should be directed through NARSC and emphasis placed on the development of appropriate systems to facilitate its effective organization and functioning. A longer-term goal should be to look at the possibility of NARSC becoming an autonomous research council. (Refer to Section C. for further details.)

Suggestions for Implementation

4a. Additional support to the NARSC Secretariat should be provided to strengthen its financial and administrative capacity as well as to provide additional logistic support.

4b. ARPP should support and assist the RCC and NARSC in the organization of meetings, seminars and workshops as well as the development of publications describing the organizational structure and operation of NARSC to acquaint all

agricultural researchers with the NARSC system, policies, and guidelines. This should be given high priority as the degree of confusion that is currently prevailing in the research system will hinder the effective functioning of NARSC.

4c. The incorporation of the different programs under NARSC especially those receiving ARPP assistance, should be monitored closely. The Project should assist NARSC in the development of an effective monitoring and evaluation system. (See Section 3.1 for further details.)

4d. ARPP should take a lead role in helping NARSC to begin standardization of research equipment and tools. Efforts should be made to build upon the partially completed farm/station inventory and to coordinate with other programs/donors in the supply of equipment.

1.1.3 Farm and Station Management

a. Project Plan

The Project paper detailed a process for improving the administration and management of the 17 proposed farms/stations that were to be under the control of NARSC. This process included the assistance of a WI/TA Farm Management Specialist who would assist in the development and implementation of farm/station inventories. These inventories were to take stock of the physical facilities, equipment and to assess their condition, as well as to present the manpower and staffing of the farms/stations. These inventories would then be used to develop detailed operational plans and long-term development plans for the individual farms/stations.

b. Implementation Status

Presently, inventories have been completed for the 17 farms/stations and the results published in report form. However, since the Project started the number of farms/stations under the control of NARSC has been increased to 33. These additional facilities have not yet been inventoried completely. No operational plans or long-term development plans have been developed. The terms of

reference for the Farm Management Specialist also included working with the Bio-Fertilizer Program and this has occupied a considerable amount of his time.

c. Recommendation No. 5

The completion of the farm/station inventory and the publication of the results is seen by the Team to be a critical activity and pre-requisite to the development of the operational and long-term plans for each facility presently under NARSC. The WI technical assistance specialist should concentrate his activities on the completion of these tasks according to a schedule agreed upon by NARSC and WI. In particular, the completion of the plans for the Khumaltar complex, Lamapatan Livestock Farm and the Parwanipur Agricultural Station are seen as a high priority and should be completed within the next three months.

Suggestions for implementation

5a. To complete the inventories by the agreed upon completion dates, local consultants should be hired by WI to expedite the collection of the necessary information.

5b. The operational and long-term development plans should be developed by NARSC in consultation with the WI technical advisor as well as with the individual farm/station chiefs and managers.

5c. Upon completion of the operational plans, training programs should be developed by NARSC and the ARP Project to assist in the development of appropriate research programs.

Recommendation No. 6

Particular attention should be given by the WI/TA advisor and NARSC/RCC officials to the problem of adequate maintenance and repair budgets for facilities under NARSC. This has been seen by the Evaluation Team as a major hindrance to the effective functioning of the research system. A priority list of necessary repairs and maintenance to the physical infrastructure of the farms/stations as well as for equipment should

be developed by NARSC and the WI/TA Team within one month of the completion of the inventory process. This priority listing should be used to seek support from ARPP and other donors/projects to assist the upgrading of the physical facilities to improve the overall research capacity.

Suggestions for implementation

6a. ARPP should continue to provide support to NARSC facilities however, HMG should endeavour to increase its level of funding to the 33 farms/stations within NARSC to facilitate the rehabilitation and development of the appropriate infrastructure necessary to carry out effective research programs. The continued funding through the DOA of other farms/stations should be rationalized in line with the World Bank Structural Adjustment Program. Any funds which may be freed up from farms/stations which are closed should be used to increase support for NARSC research facilities.

1.1.4 Research Support Grants

a. Project Plan

The objective of the research support grants was to fund independent research to address priority problems and constraints to increasing agricultural production. The grants were to be used to create a linkage between the MOA and Tribhuvan University. The research grants were intended to be awarded to teachers to fund projects to resolve current problems in agriculture. The grants were to be administered by the TA Contractor under the direction of the Farming Systems Research Group which was envisioned to act as the Secretariat for the RCC.

Funding for the grant program totaled \$100,000 which was to finance approximately 25 projects. Priority was given to three areas for funding:

1. Agro-Forestry:

Research on forage and fodder and multi-tree species.

2. Socio-economic studies on:

Technology adoption
Soil fertility maintenance
Biological sources of nutrients

3. Nutritional research on livestock production.

b. Implementation Status

To date, no funds have been released through the Research Grant Program. Administration of the funds, the method of selecting research proposals for funding, and the intentions of the program have been an issue since the structure that has evolved is different from that proposed in the PP. Consequently, as the funds had not been utilized, WI applied for a Project Grant Amendment (June 5, 1986) to have the funds transferred to the program support allocation so they could be utilized in other areas. As of August 1987, the funds have remained unspent.

The Evaluation Team feels that the original intention of the research grant scheme remains valid and is a viable link to further the integration of Tribhuvan University, especially the Institutes of Forestry and of Agriculture and Animal Science, into the mainstream of the agricultural research activities of RCC and NARSC. In addition, the research grant scheme should be broadened to include the funding of ongoing or planned research programs within the research system of the MOA. This would help further the integration of the various Disciplines and Programs. Emphasis should be given to the funding of research programs which are multidisciplinary in nature.

c. Recommendation No. 7

Funds originally allocated for the Research Grant Program should be reinstated specifically for the grant program. In addition to the original priority research areas, research in site specific cash crop development and marketing should be included for consideration.

Suggestions for Implementation

7a. WI should act as the administrator of the funds.

7b. The RCC should advertise and select research proposals for funding after screening by a sub-committee established specifically for this purpose.

1.2 Research Program Support

1.2.1 Farming Systems Research and Development Division

a. Project Plan

Building upon the success achieved under the Cropping Systems Research Program (CSP) supported by the Integrated Cereals Project (ICP), Farming Systems Research (FSR) (including crops, horticulture, vegetables, livestock, agro-forestry and minor crops) was considered as a logical further step in generating, developing, and packaging appropriate and low cost technology for the small and resource-poor farmers in the hills. Expected outputs of the Project regarding FSR were as follows:

1. FSRDD was proposed to be established as a Disciplinary Division in the Khumaltar Complex at Kathmandu. The core staff of this Division was envisaged to be drawn on deputation from the parent Disciplinary Divisions, Commodity Programs, DLDAH, and the Forest Research and Survey Office of the Department of Forests.
2. The Farming Systems sites were to be reorganized to allow them to be supported and backstopped by the research personnel at HMG research farms/stations.
3. FSR Sites were proposed to be established at three elevations in the Central, Western and Mid-Western Development Regions and at one location each in the Eastern and Far-Western Development Regions. The British Overseas Development Agency (ODA) supported Agricultural Centers at Lumle and Pakhribas were envisaged as operating under the new FSR Division.
4. FSRDD would plan and monitor research conducted at farming systems sites throughout the country and pay increasing attention to i) high hill crops, ii) forages and fuel, iii) pulses and oilseeds, iv) agro-forestry, and

v) horticulture. Close cooperation was proposed to be established between the FSRDD and the Soil Science Division to identify and promote biological sources of plant nutrients. An agro-forestry component of FSRDD proposed to coordinate field research activities with the ODA supported Forest Research and Information Center. This work was to focus on i) revegetation of denuded land, ii) on-farm production of green manure, fodder and fuelwood from trees, iii) production of fruit and coffee, and iv) intercropping trees with other food crops.

5. A Farming Systems Coordination Committee would guide FSR activities and a Farming Systems Working Group would implement the FSR work and prepare annual plans based on technical discussions of results, for approval by NARSC (through the FS Coordination Committee).

6. The Project would fund training for staff members at regional short courses and monitoring tours, and staff in-country training programs.

7. Field surveys and socio-economic studies would be carried out at FSR sites.

b. Implementation Status

Formation of the FSRDD Division

The FSRDD was formed within the DOA in September 1985. Until 1987, all personnel in the Division were basically agronomists, deputed from the Agronomy Division, with the Chief of the FSRDD being deputed from the National Wheat Development Program (NWDP). Till today, no staff have been drawn from Forestry, Horticulture, Vegetable or Livestock Divisions. The FSRDD requires both a core of back-up staff at Khumaltar and outreach staff based at the FSR sites. The FSRDD had asked for 13 new gazetted officer positions at the Khumaltar HQ, and 10 (temporary) officer posts at the FSR sites. Against this, present manpower provided in the Division includes 7 officers at Khumaltar and 9 officers at FSR sites, all in a temporary capacity.

Since the staff working at present for FSRDD have been drawn only from a limited number of disciplines, it may be a difficult task to gain a good understanding of the multidisciplinary and multi-commodity perspective of hill

farming systems. Delay in the creation of permanent posts and in appointment of personnel to the existing temporary posts is preventing FSRDD from working at its full capacity. Temporary staff only stay until they can become permanent somewhere else thus a lot of Project effort in training such staff becomes a futile exercise. The morale of the staff in the Division is low as FSRDD is not considered permanent by many until it contains permanent posts. Directives have not been issued to depute staff from other Divisions, Commodity Programs, Departments or Ministries. Neither have directives been issued to include FSR type activities in the workplans of other units. It would, therefore, appear that institutionalizing FSR activities in a disciplinary division has not been as efficient as planned in promoting an understanding of FSR as a collaborative research strategy.

Farming Systems Coordination Committee and Working Group

The Farming System Coordination Committee has yet to play an effective role. There appears to be little enthusiasm for direct involvement by Division/Commodity Program personnel in FSR work due to limitations of manpower, resources, and lack of understanding of the FSR perspective and concept itself.

The Farming System Working Group has met twice. The main thrust of these meetings was to review the FSR work in Nepal by different agencies and to exchange technical information. It has been proposed to hold working group meetings twice a year, with one of these meetings consisting mainly of technical sessions and field trips to FSR sites, the other oriented towards budget planning and program formulation.

Progress at FSR Sites

During the first six months of 1986, the status and scope of on-going cropping systems sites established under the previous ICP Project were reviewed. The FSRDD staff completed a survey in the Mustang area of the Western Development Region, representing a high hill situation, and a survey of Rasuwa District has also been completed. During the later half of 1986, work continued at five sites, (Ratna Nagar, Bahuwari, Pundi Bhumdi, Khandbari and Chaurjahari) and a new site was opened at Naldung Village Panchayat in Kavre District.

During the period January-June 1987, an additional site was opened in Baitadi District of the Far Western Region. Due to problems of adequate staffing levels, especially in terms of the technical back stopping necessary to design, implement and analyse innovative research activities, it was felt that FSRDD could not maintain high standards of research at more than 5 FSR sites. It was, therefore, decided to close research activities at Ratna Nagar and Bahuwari in view of the 'model farm' activities of the FSRDD at two research stations in the Tarai and Inner Tarai (Belachapi and Rampur) and the major emphasis of the Project on hill agricultural systems. The FSRDD presently operates 5 sites in the middle mountain physiographic region, one in each development region.

Research work at the farming systems sites continues to emphasize production of important cereal crops. Little attention so far has been paid to minor grain crops, pulses, oilseeds, roots, forages, livestock feed production, horticulture or agro-forestry, except at one or two sites. At the Naldung site, good cooperation has been obtained with the Forest Research Project and the Fruit and Vegetable Divisions. Forestry and livestock activities at other sites are mainly being supported by WI personnel. SERED has provided good support at all sites, as well as at planning meetings, workshops, etc.

Model Farms

Due to interest within the MOA, activities towards establishing two 'model farms' have been initiated in collaboration with Rampur and Belachapi Research Stations. However, it must be realized that it is very difficult to emulate the conditions of resource-constrained small farmers especially when the modeling is done on government farms. This type of activity needs to be given additional thought in terms of methodology and implementation if it is to be a useful tool for FSR/Outreach activities.

Development of Methodological Approach

The following approaches have been developed by FSRDD:

1. Defining the characteristics of an area, production constraints, and research priorities (the Samuhik Bhraman).

2. Conducting trials in farmers' fields that yield statistically valid information.
3. Increasing farmer participation in trial design and evaluation (farmer group meetings and short evaluation surveys).
4. Designing a new set of field data recording forms for improving trial planning, monitoring, data collection and evaluation.

Such methodological development, together with experience gained at the in-country FSR training courses in 1987, is considered a firm foundation for planning and executing outreach activities in farmers' fields by farms/stations.

The following sections bring into sharper focus several problems and issues which need to be considered by HMG/WI/ARPP in the further development of an appropriate methodology if FSRDD activities are to fall in line with the original Project objectives.

i) Delay in the creating of permanent posts and in the appointment of personnel in the existing temporary posts is preventing FSRDD to plan research and training on a long-term basis and to work at full capacity. No officers from horticulture, agro-forestry and livestock are on the core staff of the FSRDD. The division is still not considered permanent.

ii) Highly interdependent farming systems in the hills demand a multidisciplinary approach to agricultural research. However, many component technologies have a poor research base for hill agriculture and there is a lack of technologies that are technically feasible, economically viable, and socially acceptable.

iii) Little progress has been made so far in eliciting support for FSRDD from Disciplinary Divisions, Commodity Programs and research personnel assigned to HMG research farms/stations. The concept of FSR is very new and many of the disciplinary divisions are dubious about the objectives and role of a new FSR Division. Therefore, for bringing together component research, researchers and FSR,

clearcut directives from the central level seem urgent for effective promotion of an FSR system.

iv) Financial support to FSR sites is vital. The proportion of funds allocated to research operations is much too low, furthermore, the delayed release of budgets has created problems in the smooth operation of work at the FSR sites.

v) Regional training programs have been difficult to implement because of delays in nomination and clearance for travel.

vi) Information on land classification and land use systems is lacking for an effective selection of FSR sites.

vii) Although the "Samuhik Bhraman" provides an ideal environment for interdisciplinary discussion on the identification of priority problems and component technology, there has been little participation in the activity by the researchers from Disciplinary Divisions and Commodity Programs. This has defeated the very purpose of this innovative activity.

viii) Both PAC and LAC have collaborated very closely through FSR workshops, annual working group meetings, site visits, planning sessions and many methodological issues have been shared. Given the present situation regarding the funding status of PAC and LAC, it is neither feasible nor perhaps desirable for them to come under direct FSRDD control.

With the creation of NARSC, the situation appears to be more positive, in that interest in linking the present FSRDD activities with farm/station outreach programs and commodity programs has been expressed. Under NARSC, the proposed "Outreach Research Guidelines" provide that all HIG research farms/stations will conduct outreach programs including on-farm research activities, with technical backstopping from the Commodity Programs and the Disciplinary Divisions, and methodological backstopping from the FSRDD and SERED.

The Evaluation Team feels that FSR as a methodology is most appropriate for the development of technologies for the

various agro-ecological and socio-economic environments in Nepal.

c Recommendation No 8

The attempt to date to base FSR activities in a Disciplinary Division has not been as effective or efficient as hoped in promoting an understanding of FSR as a collaborative research strategy. If FSRDD is to be efficiently institutionalized it needs to be 1) made permanent, 2) provided with an adequate amount of permanent interdisciplinary staff, 3) given adequate operational support and 4) NARSC needs to oversee the development of effective linkages with other programs/divisions to ensure that the FSR perspective is indeed a collaborative approach.

Suggestions for Implementation

8a. The FSRDD should be comprised of the following staff Chief/Agronomist Class I (experienced in 'on-farm' and FSR work), Class II officers from each of the following - Agronomy, Livestock (including forage and pasture), Horticulture, Fisheries and Economics. These center-based staff will supervise, coordinate and monitor FSR activities of the FSR sites and the farms/stations Outreach Programs

8b. The WI/TA Farming Systems Advisor should be phased out.

Recommendation No 9

The existing FSR Sites of the FSRDD should be incorporated into the existing farms/stations outreach programs under NARSC.

Suggestions for Implementation

9a. The following action is recommended to be taken prior to the end of the NFY 2044/45:

i) Khandbari Site: To be turned over to the Pakhribas Agricultural Centre (PAC). Future

decisions as to the continuation of this site becomes the responsibility of PAC.

ii) Naldung Site: Site activities would be directly handled by the FSRDD with additional technical backstopping from the Khumaltar Outreach Program.

iii) Pumdi Bhumdi: This site should be closed by the end of NFY 2044/45 as it is no longer representative of the region in which it is located. However, it is suggested that the Agriculture and Livestock Regional Directors ensure that support for on-going programs such as the vegetable seed production program and milk production program be continued.

a. SERED should develop and initiate a post program study to try to understand why technology uptake at this site was limited.

b. The LAC FSR program should take the lead in this region and the decision to open any additional sites should rest with them.

iv. Kotjhhahari: To continue as presently organised and supervised directly by the Center based FSRDD staff.

v. Baitadi: To be relocated at a site within the outreach command area of the Doti Agricultural Farm.

Recommendation No. 10

Six additional FSR programs on a smaller scale should be initiated within a representative village/site of the outreach command areas of six (6) multi-purpose agricultural research stations. These should be phased in during the remaining project time period.

Suggestions for Implementation

10a. To coordinate the FSR program with existing outreach programs funded by other donors the following sites are proposed for NARSC/FSRDD consideration:

1. Tarahara*
2. Sarlahi Horticulture Station*
3. Parwanipur Station*
4. Rampur Station/IAAS/GLIP**
5. Bhairahawa*
6. Nepalgunj*

* Support for FSR activity to be sought from AERP III.

** Support to be provided by ARPP

Recommendation No. 11

Attempts to emulate a typical Nepalese Farm are very difficult given the wide diversity within the agro-ecological environment of Nepal. Therefore, it is recommended that careful consideration be given to the development and planning of a 'model farm' program prior to any implementation activity.

Suggestions for Implementation

11a. The 'model farm' must include a farm family which is representative of the area in which the model farm is located. Demonstration of component technologies on a research station by researchers will not convince farmers of its suitability, viability or appropriateness. However, the use of a farm family will add creditability to the program and in turn the farm family will be the primary motivator of other area farmers to adopt similar technologies.

11b. Ideally, a representative farm family from an area surrounding a main research station should be

selected. Alternatively, a portion of land within a research station representative of a small farm in that area should be provided to a selected farm family to operate as their own. All inputs should be provided at market prices. Farming system component technologies and technical advice will need to be closely monitored and supervised by a group of dedicated researchers.

11c. Provision for the compensation of the farm family will have to be provided for in the case of a failure in any part of the program. If the program is done well it can be a very effective demonstration tool for the promotion of new FS based technologies. If done haphazardly, it will set back the FS/technology extension program and emphasize the skepticism which many farmers have for new technology.

Other Suggestions

a. The Working Group for FSR should continue to provide the necessary coordination between the numerous agencies/donors involved in the program. The present arrangement appears satisfactory for this purpose.

b. The FSR Working Group should attempt to prepare a technical bulletin giving details of low cost technologies available for different disciplines and commodities in different agro-climatic, socio-economic regions. The technologies included in this publication should be economically viable, technologically feasible, and socially acceptable to Nepalese conditions. This bulletin should be revised each year after the technical session of the FSR Working Group. This information should be distributed to all Outreach Programmes, FSR sites and ADO's offices.

c. The Farming Systems Coordination Committee needs to be made an effective, functioning body. The NARSC Chief should see that the heads of the various divisions and programs actively participate in the planning, implementation and review of FSR programs. The lack of a strong commitment from other programs and divisions will defeat the purpose for which the FSR Division was created.

d. ARP Project should continue to provide funding for FSR training at the Center level and at the FSR sites. They should also promote throughout the research system vis-a-vis meetings, seminars, and publications, the role and importance of an FSR perspective in agricultural research in Nepal.

e. NARSC/ARPP/Peace Corps should work to provide Peace Corps Volunteers with suitable background and expertise at some of the FSR sites/programs. These Volunteers should work with and be responsible to the staff of the Farm/Station responsible for the FSR site.

1.2.2 Socio-Economic Research and Extension Division

a. Project Plan

The DOA established the Socio-Economic Research and Extension Division (SERED) in 1985. The Division, concentrating on farm level socio-economic problems, was to provide backstop training and planning support for extension programs, conduct socio-economic research on agricultural technology development and adoption, perform economic analysis of agricultural research, and assist other units with the design and preparation of extension materials and analysis of research results. It was planned that SERED would be staffed with 16 personnel including agricultural economists, rural sociologists, statisticians, and other support staff. In addition to office furniture and equipment, technical assistance and training was to be provided by the Project.

The specific activities of the Division laid down in the workplan were to: participate in multidisciplinary site surveys and the formulation of site research activities in collaboration with the FSRDD; use economic criteria to evaluate agronomic trials in farmers' fields; study constraints to adoption by farmers of different production package components; evaluate the impact of production programs; research the various economic and management problems of the mini-seed houses and other seed enterprises in the hills; assess the role of the mini-kit program as an important seed dissemination tool; and evaluate the relative value of different extension methodologies used in Nepal.

Three types of activities of SERED were scheduled to be undertaken in 1986 and 1987. These were: a) support of the Hill Production Program in Myagdi, Parbat and Baglung districts; b) support to FSRDD; and c) general support for the MOA (DOA and DLDAH) and MOF.

a
The major activities to be undertaken in support of the Hill Production Program were to: design and conduct baseline surveys in the Project districts to identify areas for production programs; participate in the design process of trial/production programs; assist in PPVT monitoring; and conduct topic specific follow up (to baseline) surveys. An additional activity was to be an impact survey of SPIS Project sites to assess the economic impact of metal bins and mini-seed houses in hill districts.

b
SERED planned to support FSRDD in site selection through baseline and reconnaissance surveys; in the planning process by participating in FSR methodology development; and in field implementation and follow up surveys of FSR sites. SERED was also to assist in FFT/minikit/PPVT monitoring.

c
For general support of the MOA and MOF there were six activities scheduled. These were to: a) conduct research on the effectiveness of various extension methods currently being used/developed in Nepal; b) study the impact of selected agricultural farms and research stations; c) assist the DOA/DLDAH/DOF with economic analysis; d) assist in training of ADOs, JT-JTAs and PCVs; e) assist with the SPIS impact assessment study; and f) liaison with DFAMS.

In addition to these scheduled activities, SERED was expected to support, assist and strengthen the LAC Planning Unit and support FSR methodology developed at Lumle. SERED was also to interact with, and exchange methodologies and ideas with the French Technical Assistance Program in the Western Region of Nepal, and draw upon relevant socio-economic experiences from PAC and International Agricultural Research Centers (IARCs). All this was for the purpose of using and building upon the socio-economic methodology inherited from the ICP. SERED was made responsible for the synthesis of various data and experiences to identify appropriate research-extension methodology linkages.

b. Project Implementation Status

During 1985, SERED activities had not "gained momentum" as the newly formed Division lacked a full time leader and required personnel. The following year, 1986, SERED activities were initiated with the deputation of a full time chief, a socio-economist advisor from WI and other staff. SERED's staff presently consists of six officers (including the Chief and three officers provided by WI local hire), two assistants, two enumerators (from WI local hire), and six support staffs. Two officers posts and one assistants post which have been approved by HMG are still vacant. Four PCVs have also been assigned to SERED. Early in 1987, all the Division technical staff participated in a training on 'micro-computer assisted survey design and analysis'. To date, SERED has published nine reports, hosted a training with FSRDD on FSR skills and methodology development, and held two workshops.

SERED is still a temporary Division with temporary or deputed staff. As socio-economic research is as important a discipline as any other within the agricultural research system, the issue of filling the vacuum that will be created after the WI funded staff depart should be seriously considered. Indeed, the staffing situation is a major concern for meeting SERED's portion of the Project's targets and objectives. HMG has approved fewer positions than proposed in the Project Paper and several approved positions have been left vacant.

In support of the Hill Production Program, SERED has completed the baseline surveys for selected panchayats of Baglung, Parbat and Myagdi districts, and a similar survey is on-going in Gulmi district to identify areas for launching production programs.

The FSRDD related activities of SERED have been limited to site selection studies in Mustang, Rasuwa, Sankhuwasabha and Kavre districts; a study of farmers' participation in FSR; and participation in a farm level monitoring workshop at Lumle. In addition, SERED staff have worked with the FSRDD; to conduct key informant surveys in the FSR sites of Nagarkot, Kothjaari, Khandbari and Baitadi; to organize a workshop on trial design for on-farm research; and to participate in Samuhik Bhramans. SERED has also cooperated with the Agronomy Division to undertake modified key informant surveys in five districts in and around the Kathmandu Valley.

The general support activities to the MOA and MOF have so far involved: an impact study of Jumla, Surkhet, Kavre and Parwanipur farms/research stations; the organization of a two-day workshop on labor issues; providing training to JT/JTAs and PCVs on field survey methods and to ADOs and SMSs on socio-economic research methodology.

The Division has also documented the socio-economic and agricultural extension research activities in Nepal; prepared a study on women's participation in agricultural extension in Baglung, Parbat and Myagdi districts; and completed a study in collaboration with a local consulting firm to measure the impact of mini-seed houses and to determine if they can be run by farmers.

The Project envisioned that SERED would play a crucial catalytic role in supporting all Project components. SERED can successfully play this role only by establishing very close and well coordinated working relationships with other components. So far SERED has been able to maintain a close relationship with FSRDD, but not with other divisions/programs. No specific mechanism has been developed by SERED or by the Project to maintain the close coordination needed between SERED and other component activities. Within SERED, productive relationships and linkages, especially with PCVs', have not been established. As a result, SERED staff in Kathmandu are not adequately aware of what field staff are doing or planning to do. Consequently, the SERED Central Office has been unable to properly guide and support field staff. Similarly, SERED has been unable to guide and support the field staff of other Project components.

c. Recommendation No. 12

SERED should be given permanent status by establishing it as a disciplinary division under NARSC. HMG should resolve the staffing problems by providing permanent posts and reducing the dependence of the Division on WI local hire staff. WI should continue to provide operational and logistical support to strengthen SERED. NARSC should see that SERED's activities and programs are coordinated with all other economic research units under NARSC especially the existing DFAMS Marketing Research function already transferred to NARSC. Subsequent to these actions,

WI/technical assistance to this division could be phased out.

Suggestions for Implementation

12a. Vacant posts within SERED should be filled as soon as possible to provide the full complement of skills required and planned in the Project. This will lead to less dependence upon WI/locally hired technical staff.

12b. Salaries and benefits currently being provided to the WI/ARPP locally hired technical staff should be brought into line with the current HMG rates of the SERED staff. This would make for a better working atmosphere within SERED until it is capable of operating with its own permanent staff.

12c. Mechanisms for increasing the coordination between SERED and other divisions/programs need to be developed to ensure that two-way communication flows between programs are effective.

12d. SERED staff should increase the amount of time that is spent in the field. This would assist in the development of closer relations with the field staff of other components/programs and promote a better understanding of the role and importance of SERED in agricultural research systems.

1.2.3 Agricultural Research Library

a. Project Plan

The Project was to assist the MOA to establish a central library to support agriculture and livestock research. The library was to combine library collections of various divisions and departments and develop a master catalog of agricultural reports and reference materials available in Nepal. The Project would fund the construction of a library building at the Khumaltar complex. In addition, the Project was to provide training in Library Science for three staff, as well as a small quantity of

library equipment. To support the development of an effective information system, the Project was to provide grants to assist in the publication of various seminar reports, workshop proceedings, research papers and the Nepalese Journal of Agriculture.

b. Implementation Status

Construction of the central library is underway and it is expected to be completed in mid 1988. The Central Library is part of the Central Agricultural Research Building which also includes office space for NARSC, SERED and FSRDD. Training of staff in Library Science has yet to be provided, staff are yet to be recruited. Equipment requirements for the library are yet to be finalized, equipment procurement is scheduled for 1988.

c. Recommendation No. 13

The original provision that the library was to contract with local printers for publishing NARSC research materials is an inadequate arrangement. Consideration should be given to providing the Central Library with adequate facilities to internally produce and disseminate the reports that will be required to support NARSC and the research system.

Suggestions for Implementation

13a. Linkages with the South Asian Association for Regional Cooperation (SAARC) Regional Agricultural Library and Documentation Center should be established. The central library should be considered as the agricultural information contact center for Nepal. This would also facilitate the cooperation with other libraries within Nepal such as the IAAS and IOF libraries as well as afford the research scientists of Nepal an opportunity to have a center for exchange with other scientists in the region.

1.2.4 Commodity Research Programs

I. Grain Legume Improvement Program (GLIP)

a. Project Plan

The Project had planned to assist the establishment of a National Pulse Development Program by expanding the facilities at one of the existing research stations to serve as a sub-center. Six months of technical assistance by a Minor Crops Agronomist was to be provided by the technical assistance contractor to initiate and activate a pulse research program.

The construction component was to be the main Project input into the development of the Pulse Program. The Project was to provide for staff housing (4 units), a maintenance garage, small office/lab and a threshing floor. Equipment including a utility vehicle, motorcycle, and office furniture was also to be provided. Under a joint agreement between the International Development Research Center (IDRC) and HMG, the IDRC is to provide the bulk of the technical support to the primary and sub-centers.

b. Implementation Status

The site chosen for the Pulse Development Program (Grain Legume Improvement Program) was the Rampur Maize Station. The construction of the facilities as proposed in the Project Paper were delayed as a result of the time required to choose a suitable site. Construction is now underway and is expected to be completed in 1988. This delay in the construction start has affected the timing of the IDRC assistance to the program which is dependent to a large extent upon the completion of the basic facilities.

WI has provided a total of 3 months technical assistance to the program. There is currently no expatriate minor crops advisor with the WI team, however, WI has hired a local technical assistant with a minor crops background.

In addition, WI is planning to improve the irrigation facilities within the GLIP station as well as a new deep tube well and pump set. These improvements have been funded out of the WI Contract and have been approved by the NARSC Chief.

c. Recommendation No. 14

The ARP Project should consider the need for additional technical assistance for the GLIP. This could be provided on a short-term basis. Additional inputs either into the development of facilities or equipment should be in consultation with NARSC and IDRC.

II. Hill Crops Improvement Program

a. Project Plan

Assistance to the Hill Crops Improvement Program (HCIP) was to be limited to construction of facilities at a hill research station. The IDRC is to provide the major technical support for the program. The strengthening of a program designed to look specifically at the role and importance of crops such as buckwheat, amaranthus, finger millet and barley was to assist the FSRDD in developing and packaging appropriate technologies for hill farmers.

b. Implementation Status

Construction has been approved for the HCIP program at the Kavre Farm. Designs for the construction have been approved and USAID is preparing to contract for the construction.

A delay in the signing of the agreement between HMG and the IDRC resulted in the ARP Project providing funds through the HMG budget for support of the program. This support is for two years (NFY 2043/44 - 2044/45) after which it will be supported by IDRC.

The Project has also provided technical assistance through a WI/locally hired - minor crops agronomist.

The HCIP program is working closely with the FSR sites and the production districts both in the distribution and testing of technologies.

c. Recommendation No. 15

ARP Project assistance to the HCIP should continue as planned to the end of the NFY 2044/45. At that time it is anticipated that the agreement between HMG and IDRC will be in effect.

III Livestock and Agro-Forestry

Livestock Component

a. Project Plan

Allocation of agricultural research resources to livestock sub-sector have not been commensurate with its importance in the national economy of Nepal. Research on livestock is under-invested, under-staffed and therefore, the output of the research system has so far been sub-optimal. To strengthen the research capability and production base, the ARP Project planned to provide technical and financial assistance through the Department of Livestock Development and Animal Health (DLDAH) in the following components:

1. Provide assistance to the DLDAH in the design of livestock research and production programs at the Central Livestock Development Center (CLDC-Khumaltar) and DLDAH livestock farms.
2. Assist the Farming Systems Research and Development Division (FSRDD) in the design and execution of a livestock research component at the FSR sites.
3. Assist NARSC in the development of a livestock research program at the NARSC livestock stations.

b. Implementation Status

Central Livestock Development Center-Khumaltar

1) Rehabilitation of Animal Nutrition Laboratory: The ARP Project is providing budget and technical support to the CLDC for the rehabilitation of the Animal Nutrition Laboratory. New laboratory equipment and

chemicals have been procured to allow forage and feed analysis on a cost sharing basis between the ARPP, the FAO High Altitude Pasture Research Network Project, and the Asian Development Bank Livestock II Project. A nutrition laboratory consultant has been provided by WI for a four month period during which time she will train staff in forage analytical techniques and oversee the installation of the equipment

2) Installation of a micro-computer and training of staff: A micro-computer has been purchased with ARP Project funds and installed at the CLDC. Six staff members have been trained. The computer is now being used to collect, collate and analyze production records from the livestock farms and for word processing at the center.

3) Analysis of dairy cattle data at the CLDC: The 15 year data of the crossbreeding experiment (Nepali X European breeds) conducted at the Khumaltar dairy unit is being analysed on the micro-computer installed at the center. This is part of an effort to train staff on the use of computers and to assist the CLDC in designing improved management and experimental programs for the dairy unit.

Most Khumaltar CLDC staff feel that they were not involved in the planning of the livestock component of ARPP. The majority of staff besides technical assistance, see a greater need of funds for farm equipment, imported livestock, irrigation systems, provision of drinking water, and construction of laboratory buildings and quarters for the technical staff at Khumaltar.

The Livestock Research Farm at Lamepatan has the expertise in the production and development of buffalo, poultry, pigs and sheep. The ARP Project should explore the possibilities of funding the research activities and developing the logistics and infrastructure at this farm. This station with its present manpower, does promise for an increased and more effective research and extension output in the near future.

c. Recommendation No. 16

The ARP Project should increase the level of funding to the CLDC-Khumaltar to increase its capacity to conduct appropriate research and to improve the management of the current programs. Infrastructure development should also be considered by the Project as a priority item for ARPP support.

Suggestions for Implementation

16a. The forage analysis laboratory located at CLDC should be made fully operational. Emphasis should be placed on training the Nepalese technicians in analysis work as well as the operation and maintenance of the equipment. Once the equipment is fully operational a high priority should be placed on the testing of industrial by-products for use as animal feed.

16b. Assistance from ARPP is needed to ensure that the micro-computer provided by the Project is fully exploited in the analysis of research data from the Khumaltar Dairy Unit and production records from other livestock farms. The assistance should be in the development of appropriate computer programs to manage dairy herds at Khumaltar and for MIS for the CLDC. (The possibility of buying in such programs should be investigated by ARP Project technical advisors.)

16c. The livestock research station at Lampathan deserves increased research attention and funding commensurate with its potential to have a significant impact on livestock production in Nepal.

Farming Systems Sites

A livestock research component is being developed at two FSR sites: Khandbari and Naldung. At both these sites PCV's are stationed. The progress at Khandbari is slow. However, at Naldung small 'fodder banks' have been started on the farms of 10 cooperating farmers and monitoring of milk production, and reproduction has been initiated. Milk samples are being tested at the Dairy Development Corporation's Cheese plant near the FSR office. In 1988 it

is planned to establish a small fodder tree nursery for distribution of saplings to participating farmers. As the Khumaltar Animal Nutrition Laboratory comes into full operation, intensive testing of the quality of forage and fodder being fed to buffaloes and goats will be initiated.

In the hill farming systems the role of the livestock component is important because they provide major sources of cash income, fertilizer, power and protein. Whereas ARPP has initiated a pasture and fodder improvement program at the FSR sites to start with, research is also needed on an integrated program of livestock breed improvement, health cover, management practices, and organized marketing of livestock products.

c. Recommendation No. 17

Though FSR incorporates an integrated approach to technology development, given the limited capacity of the livestock program to fully participate in all FSR sites it is recommended that livestock research activities be concentrated at the Naldung and Khandbari FSR sites. The Khumaltar CLDC staff should backstop the activities and programs at the Naldung site in cooperation with the FSRDD. Pakhribas should backstop the livestock activities at the Khandbari FSR site in accordance with the memorandum of understanding to be signed between the MOA and PAC/LAC.

Suggestions for Implementation

17a. The livestock component at the FSR sites should take an integrated approach emphasising breed improvement, balanced nutrition, effective health cover and marketing arrangements. Forage combinations should be tested with the objective of developing year-round supplies of animal feeds. Rice and wheat straws should be treated for the enrichment of their quality and palatability. Milk yield, growth and reproductivity indices should be monitored.

17b. Wherever possible, PCV's with the necessary background and training should be assigned to farms/stations to help supervise livestock research activities.

Support to NARSC

A survey instrument has been designed to inventory physical and personnel resources on the DLDAH livestock farms. To date, only the livestock farms scheduled to be included under NARSC administration have been surveyed. The remaining livestock farms should also be surveyed according to an agreed upon time schedule between NARSC and WI. The inventory of livestock farms is, however, not an end itself. It should be analysed expeditiously for reviewing the on-going DLDAH research program and developing a comprehensive livestock research program for the DLDAH.

In order to stimulate discussion among livestock technicians the ARP Project Livestock Research Specialist produced a discussion paper on a proposed long-term program of livestock research to be carried out under NARSC management. NARSC, DLDAH and ARPP should attempt at the earliest to develop an overall plan for livestock research in Nepal.

c. Recommendation No. 18

The WI/technical assistance Livestock Advisor should work through NARSC to assist in the development of a prioritized research program for the NARSC Livestock Stations. He should assist the WI/Farm Management Advisor in developing short and long-term infrastructure development plans as well as operational plans for the livestock stations and their outreach programs.

Suggestions for Implementation

18a. The ARP Project should consider funding a workshop for livestock specialists from DLDAH, IAAS-Rampur, Lumle and Pakhribas Agricultural Centers and other donor agencies. The purpose of this workshop would be to prioritize a livestock research program for NARSC. The ARPP livestock advisor should prepare a discussion paper to be circulated in advance to the participants. The outcome of this workshop would serve useful guidelines to the NARSC Technical Panel on Livestock Research in screening research proposals for livestock farms.

18b. To ensure an effective NARSC livestock research and production program, collaboration with the DLDAH veterinary division/Central Veterinary Laboratory-Tripureswor must be developed.

18c. A computerised national data base should be developed on production characteristics of native and introduced breeds of dairy cattle, buffalo, goats, sheep and swine.

18d. WI should consider the possibility of providing short-term consultants in the following areas:

- a. Low cost feed formulation including use of industrial by-products in animal feed.
- b. Freezing of buffalo semen for AI, post-partum reproductive management, and treatment of sub-fertile animals.
- c. Livestock economics.
- d. Epidemiology of major infectious diseases of buffaloes and dairy cattle.

Agro-Forestry Component

a. Project Plan

The ARP Project Agro-Forestry Program is based on the premise that in the hill farming systems in Nepal, interdependent linkages exist between crops, livestock and forests. The agro-forestry component of ARPP is involved in farming systems research in the mid-hills. In conjunction with the FSRDD, the ARP Project proposes to examine the interactions between trees and agricultural crops for developing sustainable land use systems for adoption by small farmers in the hills. Technical and production support is also envisaged for the Pasture and Forage section of the CLDC-Khumaltar.

b. Implementation Status

Farming Systems Sites

The ARP Project Agro-Forestry Research Specialist participated in the "Samuhik Brahamans" at Kotjaari, Khandbari and Naldung FSR sites and visited twice the FSR site at Pumdi Bhumdi. Several types of trials have been designed for the FSR sites:

At Naldung, three species of fodder trees: Kutmiro, Dudilo and Gogan have been planted at three different spacings to determine at which density unacceptable negative impact on crop production occurs. Another trial at the same site is a silvipastoral trial, with fuelwood/timber overstory and forage (herbaceous) understory. Four species of herbaceous forage will be monitored for quality and quantity of forage production in the understory. A social forestry process in Ward 1 of Naldung is proposed to be monitored with 6000 seedlings planted on communal land.

At Kotjaari, Khandbari and Pumdi Bhumdi a survival/growth rate/productivity trial has been installed with a number of exotic and native tree species.

At each site a 'fodder tree survey' is also being monitored.

An agro-forestry research technician has been hired by WI to work as a Project employed assistant to the expatriate agro-forester to improve technical backup to the FSRDD program.

CLDC-Khumaltar

Agro forestry is not a program within the Departments of the DOA and DLDAH and a agro-forestry trained counterpart is not available within DLDAH where the ARPP agro-forestry specialist is located. The Project has no direct relationship with the Ministry of Forestry. The present counterpart has training in pasture work which has created problems of institutional linkages. Another constraint is the general lack of emphasis on research in agro-forestry in the DLDAH. The specialists at the CLDC-Khumaltar feel that the needs of the Pasture and Fodder Section were not addressed, during the design of the ARP Project.

c. Recommendation No. 19

Since agro-forestry is a minor component of the Fodder and Forage Crops Division of NARSC, and there are currently no agro-foresters in the DLDAH, the chance that the agro-forestry component may be institutionalized during the life time of the Project does not appear to be a feasible expectation. Thus, ARPP should minimize its support for this program.

Suggestions for Implementation

19a. The DLDAH is presently being supported in grassland and pasture management programs by the ADB and FAO. The full time assistance of the WI/technical assistance advisor for the agro-forestry component is not required given the limited scope of the ARP Project activities in this area.

19b. ARPP should provide necessary technical assistance to develop a 'forage and fodder' research program within NARSC.

19c. ARPP should consider the possibility of providing short-term assistance in the following areas:

- i) Temperate forage seed production.
- ii) Processing of pasture seeds.

19d. The ARP Project seed program advisor should provide necessary assistance in locating mini-seed processing units at the Pasture Trial and Seed Multiplication Farm - Janakpur and the Animal Feed Research and Production Center at Ranjitpur. This would enhance their ability to produce mini-kits for low to mid-hill farmers and to provide better seed supplies to other DLDAH stations/farms.

19e. Current ARPP funding of the Pasture and Fodder Section-Khumaltar should flow through NARSC for the purpose of developing an agro-forestry research program.

1.2.4 Bio-Fertilizer Program

a. Project Plan

The Project had planned that the Farming Systems Research Program would cooperate closely with the new Biological Fertilizer Program in the Soil Science Division. This program was designed for the "identification, utilization and promotion of biological sources of plant nutrients". The FSR program was to assist in field trials for this program at the FSR sites. No direct budgetary support was provided for in the Project Paper.

b. Implementation Status

Financial support to the Bio-Fertilizer program within the Soil Science Division, is being provided by the ARP Project as an 'added on' program. The budgetary support has been primarily for staff salaries. To date the additional staff envisioned by the Project to work with the Bio-Fertilizer program have not been provided. As a result, only a small percentage (19%) of the funds provided to this program have been utilized in the preceeding year. WI technical assistance has been provided through the expertise of the Farm Management Specialist which has in some ways resulted in delays to the completion of the farms/station inventories as well as the development of operational and development plans.

There has been little cooperation between the Bio-Fertilizer program and the FSRDD. Only a few trials have been implemented by the FSRDD using technology from the Bio-Fertilizer Program and these have concentrated mainly on using Dhaincha as a green manure crop. Likewise, the production districts have not been fully involved in the testing program of the Bio-Fertilizer Program. Little benefit to the FSR sites or to the production districts has resulted from the funding of this program.

c. Recommendation No. 20

ARPP support to the Bio-Fertilizer Program should be used to redirect and reinforce the use and expansion of available bio-fertilizer technology on a mas. scale. The part time assistance of the WI/Technical advisor is not required in this effort and should concentrate his activities on the improved administration and management of the farms/stations.

Suggestions for Implementation

20a. ARPP production and FSR sites should be the major testing areas for the Bio-Fertilizer Program.

20b. HMG/MOA should ensure that adequate staffing is provided to the Bio-Fertilizer Program to make it functional as per the national need.

20c. ARPP/USAID should monitor the use of Project provided funds to ensure that the program is operating as planned.

2. Production Program

To develop research-extension linkages, the Project planned production programs in four hill districts. The programs would utilize technology currently available and that which was planned to come from the research program/FSR sites. The production programs were to be based on a "block" approach, implemented by the ADOs offices and involve crops, livestock and horticulture.

The second type of production program planned was the hill seed production program. Building upon the work of the SPIS project, the mini-seed house concept was to be expanded to include satellite seed producers. These private producer/sellers were to be provided training and metal seed storage bins to improve the flow of improved seeds to the hill farmers of Nepal.

2.1 Hill Production Program

a. Project Plan

The Hill Production Program was planned to start the first year of the Project with the purpose of developing methodologies for conducting comprehensive production programs in the hills. To achieve this purpose, the Project planned three types of activities and related outputs. These were: 1) intensive production campaigns in four hill districts; 2) extension training and assistance with planning and mini-kit support for integrated rural development projects (IRDs) and hill production programs in

other districts; and, 3) pilot production programs around the FSR sites supported by the Project.

The intensive production campaigns were planned in four hill districts where technology testing (Pre-Production Verification Trials-PPVTs) was underway (Baglung, Myagdi, Parbat and Syangja). These campaigns were to use existing technology appropriate for the area, drawing on the work at the Lumle Agricultural Center (LAC) and the Pumdi Bhumdi Cropping Systems Research site. The plan was to start with irrigated sites then gradually expand into rainfed areas. The implementation of this program was to be under the District Agriculture Development Officers (ADOs) who would have 2 production officers, 1 administrative officer, and 9 junior technicians (JTs) in agriculture service centers for Project implementation. Women were also to be trained as extension agents in order to expand the impact of the program.

The Production Program was to use a production block approach and to be supported by a sequenced training program starting with the ADO staff, and working down to Panchayat Level Assistants and farmer production leaders. After three years of assistance at a site it was anticipated that extension efforts could be shifted to a new area. The provision of fertilizer, credit and other inputs to support the programs was to be assured through a District Implementation Committee which would work as a production team for coordinating inputs and marketing.

The Socio-Economic Research and Extension Division (SERED) was to provide technical supervision and support for the program. A management information system was planned that would include baseline surveys and follow-up surveys after three and six years to monitor production impact.

The Project also planned to provide technical assistance and training to personnel working in other IRD and hill agricultural development projects with production components. This activity was to include: 1) in-country training and seminars related to hill area extension; and 2) support costs for mini-kit programs for defined area production programs in other hill areas of the country. The activity was to cover approximately 15 districts by the end of the Project.

The third activity was to be Pilot Production Programs at the Farming Systems Research (FSR) sites of the Project. It was anticipated that these would start in the fourth year, using tested improved agronomic, livestock, and agro-forestry technologies. By the end of the Project this activity would cover an average of 500 ha. around each of eight hill farming systems research sites.

The Hill Production Program was to be supported by technical assistance, Peace Corps assistance, training, commodities and financial support to HMG district agriculture offices. Technical assistance was to be provided for extension and production program organization through a long-term production agronomist, consultants, FSR site linkages, and SERED technical support. Peace Corps assistance was to be for the development of women extension workers, agricultural training, socio-economic studies, and hill seed production. The training program included ADO and farmer training in the production districts as well as ten seminars for other hill production projects. Commodities were to include a pick-up truck, audio visual equipment, agriculture and office equipment, and imported seed. Operating support through ADOs was expected to total approximately \$1,351,000 for the Project, with USAID contributing half of this.

b. Implementation Status

After two and a half years of implementation, the Hill Production Program is struggling. The purpose of the program remains valid, but there is a major schism in how best to direct activities towards "developing methodologies for conducting comprehensive production programs in the hills". HMG is pursuing district production programs, while the contractor is setting up new sites to test production technologies.

The intensive production campaigns, which were to start in the first year, have never really started. There was no budget and no program for district agricultural programs the first year (NFY 2042/43) of the Project. In the second year (NFY 2043/44) a program was started with the Agriculture Development Offices (ADOs) and the District Livestock Offices (DLO's) under the supervision of the respective Regional Directors (RDs). The program is not unified (ADO and DLO programs are separate) and is not focused (production block areas are not specified). The linkages envisioned between the LAC and the Pumdi Bhumdi FSR site

have not been established. (There is a proposed agreement for a Lumle linkage but this has not been executed.) Furthermore, district staff have not been placed as planned, adequate district and agricultural service center staff exist only in Mayagdi district, and district implementation committees are not operational.

Technical assistance from WI for the hill production program started mid-way through the second year of the Project. However, rather than focusing on ways to improve extension methodology and organization to assist the production program that was already underway, the contract team started by establishing new sites and approaches for testing technologies. Although there was no mention of such a change in the Project Workplan prepared by the contractor in early 1986, the Hill Production Program orientation was quietly changed from an extension methodology development activity, as presented by the Project Paper, into a technology testing and pilot outreach program around new cropping systems sites. This has meant starting anew, particularly since the existing PPVT sites under the ADO program were ignored and new sites were established.

The division of the Hill Production Program into two components continues. The ADOs and DLOs are pursuing production programs using the local currency program which is under their control. The output targets, the staff and other resources for this program are only partially planned, monitored and supported by the central ARPP office of the Project Coordinator and of the Project Contractor. The Project Contractor, WI, on the other hand, is pursuing a different program (referred to as the "ARPP program" in the production districts). This program includes: new field sites with Farmers Field Trials (FFT's) and PPVT's; frequent visits by long-term advisors for production agronomy, for livestock, and for agro-forestry; PCV's; special training; seed, fertilizer, equipment, and other commodities directly from WI; and rented office (contact centers) for the JT/JTA staff at the trial sites. The concept (although not stated) seems to be to establish pilot production programs around three or four cropping systems sites in each district. This is what was planned for each of the FSR sites, but has not yet occurred.

Technical support for the production program has similarly been divided. The ADO and DLO programs are supervised and supported technically by the Regional Directors and by the respective extension divisions of the

DOA and the DLDAH. On the other hand, the new technology testing sites are supported by SERED, primarily through WI advisors and PCV's. Thus, the production district baseline studies prepared by SERED are not baselines for intensive district production campaigns (there is no ARPP data on district production nor on production potential for guiding such a program and for measuring its impact), but they are baselines for the pocket areas around each of the new cropping systems sites that have been established since the arrival of WI advisors.

The second activity, technical assistance and training to personnel working on other IRD and hill agricultural development projects has not gotten underway. In-country training that has so far been given for the production program has been for ADO staff and farmers in the production districts. Indeed, with the change in orientation of the production program and the start of new sites and trials, there is not yet anything to be shared with other projects.

The third activity, pilot production programs at the FSR sites of the Project has also not started. This was not intended to start until year four. However, as mentioned above, WI appears to be using this concept as the model for the technology testing program that it has developed in the production districts.

As described in above, the implementation of the Hill Production Program has not followed the planned program. The actual program is oriented towards establishing pilot production programs based on the testing of farming systems technologies, and is not oriented towards testing and applying improved extension methodologies for the hills.

Recommendation No. 21

FSR Technology testing in production districts should be transferred to the NARSC research outreach program. In the event of an agreement between the MOA and LAC, LAC should be designated as the lead research center for this region and given the responsibility of backstopping the production programs.

Suggestions for Implementation

21a. An agreement (Memorandum of Understanding or other appropriate document) should be executed between LAC and the MOA. This agreement would authorize Lumle to manage the technology testing outreach program of the Project in Parbat, Myagdi and Baglung Districts. (Gulmi does not fit into the geographical outreach area of LAC and thus would not be included in the agreement.) This agreement should use the Memorandum of Understanding extended between Lumle and the Hill Food Production Project (HFPP) as a model. A working relationship similar to that between LAC and HFPP, (which is presently organized in the HFPP districts of Lamjung, Gorkha, Tanahun and Syangja) should be established in the ARP Project production districts of Parbat, Myadgi, Gulmi and Baglung.

21b The ARP Project should provide budget and other support to NARSC and to the DOA and DLDAH to support the research outreach program, as required by the LAC-MOA agreement to be negotiated. This assistance should be along the line of the HFPP (Research Outreach Officers at LAC and Subject Matter Specialists in the ADO and DLO offices) to facilitate the incorporation of these districts into the World Bank financed AERF III, as discussed below.

21c. WI long-term technical assistance for the production program districts (production agronomist and agro-forestry) should be withdrawn and consideration given to different assistance, as appropriate following the LAC-MOA agreement.

Recommendation No 22

Extension methodology development should not be pursued in the hill production districts, but instead the ARP Project should concentrate on the analysis and synthesis of experience in ongoing programs in different parts of the country.

Suggestions for Implementation

22a. The ARP Project should withdraw from the hill production districts as extension methodology

sites. The Project has not yet started extension methodology work in these districts, while relevant work is already ongoing in other projects.

This withdrawal would include ending local currency support for the DOA and DLDAH programs in Gulmi after this fiscal year (NFY2044/45) and in Parbat, Mygadi and Baglung Districts after one more year (NFY 2045/46). It is recommended that work in Parbat, Mygadi and Baglung Districts be continued by the Third Agricultural Extension and Research Project (AERP III) starting in July 1989 (NFY 2046/47). AERP III would thus provide extension support and research-extension linkages in all the districts in the geographical outreach area of LAC.

22b. ARPP should provide support (local currency and short-term technical assistance) for extension methodology analysis within the MOA. Ideally this would be combined with the strengthening of the DOA Extension and Training Division and its transfer to the MOA, which is currently under discussion.

2.2 Livestock and Agro-Forestry Program

a. Project Plan

The Project Paper did not mention a livestock and agro-forestry production program. However, the Grant Agreement included the possibility of this component by stating that the Project would begin to support livestock extension as livestock technologies were identified. The livestock and agro-forestry programs were introduced with the Project Workplan prepared by WI in May 1986 and funding began with the NFY 2043/44 budget (in July of 1986). The program was to provide assistance for district forage and fodder production programs to the DLOs through the Regional Director.

b. Implementation Status

As stated under section 2.1. above, the hill production program for livestock, like that for crops, is still

struggling to get started. The most significant program has been the establishment of "Livestock Resource Centers" at Kusma (Parbat), Gatan (Myagdi), and Malika (Baglung). (A site has not yet been determined for the Gulmi resource center.) At the resource centers, forage grass and fodder tree species appropriate to the area are being planted. Seeds and cuttings from these plantings will be made available to district livestock producers. The plan is that these centers will also be utilized as sites for training and demonstration. Once fully established the sites could also be used as breeding and distribution centers for improved livestock species.

The activities of the district livestock production program are being focused in "pockets". Three principal types of pockets are being organized in each district. These are: milk production from buffalo and cattle; meat production from goats, pigs and chickens (also eggs); and meat and wool from sheep. The designated pocket areas are to receive intensive extension and training. These pocket areas have been chosen based on their current and potential importance in supplying animal products to district centers and major markets. The program is still in a start-up phase. There is a less than satisfactory supply of inputs and services for the program, and little training has taken place.

Coordination for the program has been taken up by the Livestock Regional Director, who in May 1987 organized an ARPP Livestock Program Coordination Committee under his direction to oversee the district programs.

Technical support for the program has also been provided by two long-term advisors from WI, a livestock advisor and an agro-forestry advisor, and by PCV's in the three production districts. The WI advisors have been assisting the program for almost one year, and the PCVs have been in the field for only about six months. Similar to the crop program, this assistance has not been fully integrated into the HMG program of the DLDAH.

As described above, the livestock and agro-forestry production program developed beyond what was originally planned by the Project. The program is oriented towards establishing local sources for forage and fodder plants and distributing improved animals.

c. Recommendation No. 23

. The livestock and agro-forestry program in Parbat, Myagdi, and Baglung should be supported technically by the NARSC Research Outreach Program and backstopped by the Lamapatan Livestock Station.

Suggestions for Implementation

23a. The agreement between LAC and the MOA for a Research Outreach Program in Parbat, Myagdi and Baglung districts should also cover the livestock and agro-forestry program. The ARP Project should provide budget and other support to NARSC and to the DLDAH to support the Research Outreach Program, as required by the LAC-MOA agreement to be negotiated.

23b. WI long-term technical assistance for livestock and agro-forestry in the production program districts should be withdrawn and consideration given to different assistance, as appropriate following the LAC-MOA agreement.

23c. As with the crop program, ARPP should gradually end its support for the hill livestock and agro-forestry program. Local currency support for the DLDAH in Gulmi should be ended after this fiscal year (NFY 2044/45) and in Parbat, Myagdi, and Baglung after one more year (NFY 2045/46). It is recommended that work in Parbat, Myagdi, and Baglung be continued by the Third Agricultural Extension and Research Project (AERP III). AERP III would thus provide agriculture and livestock extension support and research-extension linkages in all the districts in the geographical outreach area of LAC.

23d. ARPP should provide support (local currency and short-term technical assistance) for livestock extension methodology analysis within the MOA. Ideally this would be combined with the strengthening of the work of the DLDAH in this area, and its transfer to the MOA which is currently under discussion.

23e. As a general principle for livestock production programs, baseline surveys of existing production capacity, and of market potential should be completed before a program starts. This would help guide the program and to better establish criteria for the selection of production pockets. The possibility of an intensive effort to look at possible farmer cooperative - collaborative marketing schemes in intensive livestock production areas should be studied.

23f. To make the resource centers fully operational the land ownership dispute between the DLDAH and the Department of Forests needs to be resolved. It is understood that this is awaiting a Cabinet decision. Irrigation facilities are required at the resource centers if they are to be effective sites.

3. Seed Program

The Project support to the seed program was directed at two areas: 1) support to the development of a National Seed Board within the Ministry of Agriculture and 2) continued support and development of the SPIS Project initiated hill seed production program.

3.1 National Seed Board (NSB)

a. Project Plan

The establishment of a functioning National Seed Board within the MOA by the end of the Project was a major activity of the ARP Project. The Secretary of Agriculture was to be the Chariman of the NSB and the Chief of the STIP was to be the Member-Secretary with the STIP acting as the Secretariat for the NSB. The Project was to assist STIP to function as the coordinating office for various seed development programs.

b. Implementation Status

The NSB has been formally established within the MOA with the Secretary of Agriculture as Chairman and the Chief of the STIP as the Member-Secretary.

Three technical committees have been created within the NSB to look after 1) seed program planning and monitoring, 2) seed quality standards and control, 3) varietal release and registration. Thus, many of the essential components of the NSB now exist to move seed products to the farmers of Nepal. These components need to be strengthened and made functional. Figure 1 shows the components of the present seed program. Figure 2 shows the suggested operation and service components with the units responsible to oversee their functioning.

Crop research and varietal development is carried out by the NARSC through its National Commodity Programs. These Programs are also responsible for the production and maintenance of breeder and foundation seed supplies for the major crops. The present program of installing small seed cleaners at the Commodity Programs and the Khumaltar Agronomy Farm by ARPP is necessary and desirable. This activity has resulted in a noticeable improvement in breeder and foundation seed handling, cleaning and quality. ARPP's plan to provide more support via additional seed cleaners, metal bins, seed testing equipment and seed drying units, are well conceived and should continue to be implemented.

The potential for increasing foundation seed production needs to be examined. Seed production programs at Government farms such as Jhumka, Hardinath and Tikapur should be reviewed for possible expansion. Foundation seed production by private seed growers should also be considered in areas where experienced seed producing farmers exist. The lack of adequate foundation seed supplies for popular crop varieties has been a major constraint in the seed multiplication program. At present, all foundation seed supplies with the exception of the STIP/ARPP assisted private producer-seller program, moves through AIC. If the traditional private seed producer's program is to be expanded and the quality of their seed improved, additional foundation seed will be required. Increasing the number of foundation seed users will require greater coordination by STIP in planning the production programs.

Figure 1. Component of Present Seed Programs

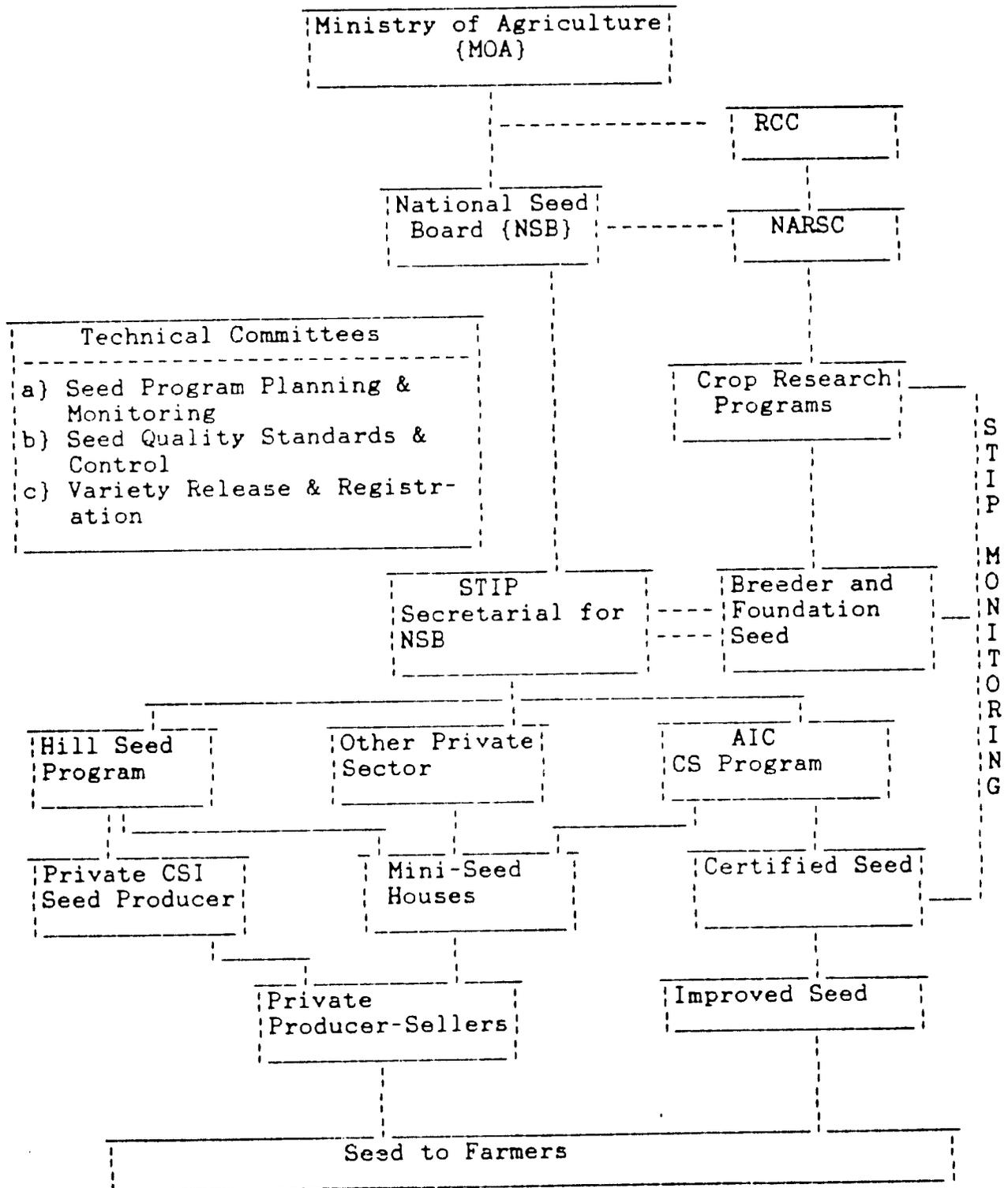


Figure 2: Suggested Operational/Service Components of the National Seed Program plus the Responsible Units.

Operational Service Components	Responsible Units
1. Crop Research -variety research -varietal maintenance	NARSC Commodity Programs
2. Variety Release and Registration	NSB Vareity Release and Registration Technical committee
3. Seed Program Planning and Monitoring	NSB, Seed Program Planning and Monitoring tech. committee
4. Initial Seed Multiplication -Breeders Seed -Foundation Seed -Commercial Seed	NARSC (Commodity Program, Farms/ Stations and Agric. Botany)
5. Foundation Seed Production and Distribution to AIC and Private Sector	NSB STIP,FS Coordinator
6a. Hill Seed Program	NSB/STIP/ARPP/ADO
6b. Mini-Seed Houses	AIC/ADO, Private Sector
6c. Private Producer-Sellers	STIP/ADO/DLO Private Sector
7. Quality Control	NSB/STIP/Regional Laboratories
8. Training and Improvement Services	NSB/STIP/ARPP/ADO
9. Demand Forecasting	ADO/DLO
10. Seed Extension	DOA/RD/ADO/DLO/STIP AIC/Private Sector

c. Recommendations No. 24

The NSB and its three technical committees need to be made operational. Their effective functioning will provide a solid foundation for the progress that has already been made by the ARP Project Seed Program and would assist in the further development of a viable and sustainable seed production program especially for the Hills.

Suggestions for Implementation

24a. Additional support to STIP through its regular budget should be provided by ARPP to assist in the development of a strong secretariat to support the NSB and the Technical Committees.

24b. In supporting the development of the National Seed Program, ARPP should assist in organizing meetings, seminars and training workshops within and between agencies involved in the seed program to ensure their active participation.

24c. The practice of farms/stations handing over loose foundation seed to AIC without packaging has not been conducive to quality maintenance. Therefore, it is suggested that the farms/stations which produce foundation seed and have packaging facilities complete processing and packaging before distribution. While allocating the available foundation seed, top priority should also be given to the Hill Seed Program and to other private seed producers in addition to AIC.

24d. The assistance of the WI/technical assistance Seed Advisor should be extended till the end of the Project. His TOR should be modified to include organizational and management support to the NSB in addition to the inclusion of forage and fodder seed production program development.

3.2 Hill Seed Program

a. Project Plan

ARPP planned to continue support for the Hill Seed Production Program which was based on the mini-seed plants established with the assistance of the USAID funded Seed Production and Inputs Storage Project (SPISP). The ARP Project had planned to provide equipment and training to support the establishment of ten additional mini-seed plants in the hills. Seed production was planned to be done exclusively by private growers and, to the extent possible, this seed was to be marketed by private dealers.

To increase the impact of the small seed plants a network of satellite seed growers and retailers was planned. These satellite seed producers were to receive training, subsidized seed storage bins, improved seed from the mini-seed plants, and recognition as growers of 'improved seed'.

The Project envisaged 25 to 30 small seed plants functioning in the hills with 12 to 15 under private sector management. The seed production target of these small seed plants and their satellite growers using metal bins was 8,000 metric tons annually. This quantity of seed was to meet the needs of 108,000 farm families.

b. Implementation Status

The AIC-managed Hill Seed Programs with ARPP assistance continued in nine districts during the first year of the Project (NFY 2042/43). In the second year, the number of AIC district seed programs receiving assistance from ARPP was reduced to five. Seed houses in these districts received comprehensive support from ARPP for source seed multiplication, training, and equipment repair and replacement. In NFY 2044/45, ARPP support to the AIC-managed system stopped. The AIC-managed seed program has not had the necessary processes or systems developed to make it functional.

Also during the first year of the Project, the STIP began assisting and developing seed multiplication programs in eight districts. These were also sites which had programs established by the SPIS Project. After the first

year, STIP reviewed its experience and performance carefully and limited the next years activities to only four districts. In these four districts (Baglung, Gulmi, Parbat and Myagdi), STIP worked with ARPP and established pilot seed production programs

Attempts to integrate the Hill Seed Program with the Mini Seed House Program have not been promising. A policy decision is required to resolve the ownership and use of the seed houses and their equipment to allow their private operation.

The progress of private seed producer-sellers to achieve seed sufficiency in the four hill districts under the ARP Project has been very encouraging and has potential for expansion into other areas. Experience to date with this program reinforces the idea that improving farmer-to-farmer seed dissemination system is the quickest and most efficient method of disseminating improved seed in the remote hilly areas. With the full cooperation and participation of the ADO's offices the seed program has been decentralized and is well integrated into the agricultural extension program. This has also created a good linkage between research and extension.

The STIP/ARPP private seed producer-sellers program is recognized as an effective mechanism for a) improving hill farmers access to good seed; b) promoting seed production and marketing in the private sector; c) utilizing traditional farmer-to-farmer seed dissemination systems to disseminate new varieties; d) maintaining seed prices at the local level; and e) increasing hill farmers' incomes and reducing dependency on Tarai produced seed. The seed program has focussed on skill development for individual farmers to become efficient seed producer-sellers for their own income generation and off season employment. This program has helped to maintain the quality of seed made available to the hill farmers through a) source seed renewal; b) production supervision; c) provision of metal seed bins for storage; and d) simple technologies for seed cleaning, testing, and treating. Private producer-sellers using simple technologies have successfully managed the seed multiplication, cleaning, storage and selling activities. Such small scale seed enterprises have been easily handled by women farmers who view it as an income generating and service oriented activity.

However, each season, a small quantity of foundation seed of the popular varieties has to be carried to each of the hill districts. This needs to be further multiplied in the districts to make source seed available to the small producer-sellers on a regular basis. A permanent foundation seed supply network should be established to keep the producer-sellers self-sustained.

c. Recommendation No. 25

Project assistance through the technical assistance contract and the HMG budget should be continued to develop the seed program. Strengthening the existing program so that it is sustainable by HMG/STIP should be a priority area. The STIP with ARPP assistance should concentrate on the development of a seed program "package" which could be extended to other areas/projects.

Suggestions for Implementation

25a. The regular supply of foundation seed to the Hill Seed Program should be developed. The utilization of farms/stations or selected sites with experienced seed growers within their outreach program should be exploited to provide foundation seeds through an established foundation seed supply network.

25b. Better utilisation of the existing AIC infrastructure and seed supply network should be investigated.

25c. Training for private seed producers in varietal maintenance and isolation should receive more attention as the program will eventually encompass a greater number of crops and varieties of crops.

Recommendation No. 26

A policy decision regarding the ownership and use of the mini-seed houses (MSH) should be made at the MCA level. Depending upon the decision, the MSH's should be incorporated into the ARP Project private producer program; via AIC, via privately managed system; or via

a combination of these approaches. The recently completed study on the mini seed house program should be used as a guide in the development of an appropriate program.

B. Implementation Issues

1. Project Inputs

1.1 Technical Assistance

a. Project Plan

To assist HMG to establish new institutional entities and to develop and implement innovative research, extension and seed production programs the Project has planned for long and short-term expatriate technical assistance, visits of specialists from IARCs, and the hiring of local technical services. These plans are detailed in the following table.

b. Implementation Status

1. Long-Term Technical Assistance

WI has provided expatriate technical assistance as provided for in the Project Paper. To date approximately 165 person months out of a total of 329 person months planned for the Project have been provided by WI (this includes the 30 person months under the VSU sub-contract). However, the timing of the arrival of the agro-forestry and the livestock advisors was moved ahead one year. The late recruitment of the production agronomist has resulted in a delayed start to the initiation of the district production programs.

2. Short-Term Technical Assistance

The Contractor has modified the short-term advisor requirements from what the Project Paper had envisioned. These changes have been in a response to particular problems that required a technical assistance input but not planned in the original Project Paper. To date a total of 14 person months has been used out of a total 20 planned person months. The implications of the changes in the short-term advisors need to be considered in light of the Project's future requirements.

TECHNICAL ASSISTANCE

TECHNICAL ASSISTANCE PLANNED	TOTAL P/M	USED TO DATE	BALANCE /1 P/M
A. Long Term Technical Assistance			
	323	165	158
Minor Crop Agronomist	36	3	33
Research Station Mng. Specialist	30	22	8
Socio-Economist	36	17	19
Farming Systems Research Specialist	36	22	14
Agro-forestry Research Specialist	36	15	21
Livestock Research Specialist	36	11	25
Seed Production Specialist	30	27	3
Production Agronomist	32	12	20
Research Mng. Specialist-COP	51	18	33
B. Short-Term Technical Assistance			
	20	14	6
C. Local Technical Assistance			
	300	142.5	157.5

/1 By December 31, 1987

The IARC exchange of scientists that was planned in the Project has not been initiated.

3. Local Technical Services

To date approximately 142.5 person months have been used against a total planned 300 person months. Changes from what was planned in the Project Paper have been in line with the implementation of the Project.

c. Recommendation No. 27

In line with the proposed changes in the Project focus, modifications and reductions in the technical assistance plan should be considered. The Evaluation Team's requirements for technical assistance to implement the Project indicate a savings of 53 person months. These savings could provide additional resources to be re-programed to support areas which have been identified for increased Project emphasis. This would be in line with the redefined Project focus.

Suggestions for Implementation

27a. Long-term technical assistance requirements for the Project should be reappraised once the agreement with LAC for providing technical assistance to the production districts is obtained. This will reduce the Project provided technical assistance for agro-forestry, livestock and production agronomy. These position will be phased out as LAC begins to assume the technical assistance role.

27b. The WI advisor to SERED could also be phased out after the Marketing Research Function and other socio-economic research functions within the MOA are brought within NARSC. These changes are anticipated during NFY 2045/46. The FSR advisor should also be phased out as and when FSRDD is made permanent.

27c. With the proposed extension of the Seed Specialist position to the end of the Project it is anticipated that as part of the change in his terms of reference he will take on more of the responsibilities for Project administration. This

is suggested to allow the Research Management Specialist to work closely with the RCC and NARSC.

27d. Short-term assistance requirements will need to be re-examined. The proposed changes in the Project focus will in some areas require specific short-term assistance.

27e. The exchange of scientists from other IARCs is recognized by the Team to be an important source of support and information for the Nepal Research System. This program should be initiated as soon as possible to promote mutual understanding between programs and should ultimately lead to signed agreements for continued close cooperation between NARSC and the IARCs.

1.2 Construction

a. Project Plan

The Project planned to fund the construction of a central library and a farming systems research building at Khumaltar, and of office space, staff housing, and storage facilities on five research stations - Kavre, Doti, Marpha, Dhunche, and a new pulse station. The proposed budget for construction was \$965,000 including 15% design and supervision costs.

b. Implementation Status

The Central Agricultural Research Building to house the Central Agricultural Research Library, FSRDD, SERED, and NARSC was contracted on 15 October, 1986 with an estimated cost of \$474,136. To date the construction work is progressing as planned and is expected to be completed on schedule.

The construction of staff housing, office space and warehouse/field laboratory at the Rampur Grain Legume Station is progressing as planned. The construction contract was awarded with an estimated cost of \$270,930. The construction is expected to be completed by June 1988.

The construction plan for additional facilities at five hill research stations to support the FSR program has been amended and construction at Kavre Farm, the site of the Hill Crops Improvement Program, is progressing as planned. US \$50,000 has been earmarked for this activity. The construction of irrigation facilities at Khumaltar is almost completed at a cost of \$39,204.

c. Recommendation No. 28

Funds remaining in the construction budget after the completion of the above planned facilities, should be used to develop, rennovate and maintain the basic infrastructure of NARSC farms/stations through NARSC. NARSC should prepare a priority list based on the information obtained from the farm/station inventory, for such construction that may be available for funding under the ARP Project.

1.3 Training

a. Project Paper Plan/Implementation Status

1.3.1. Out-of Country Training

Two types of out-of-country training were planned a) degree training to develop research capabilities and b) short courses, study tours and participation in regional seminars and workshops.

Degree Training

A total of 13 degree training programs were scheduled (1986-1988) under the Project. To date only three candidates have been sent for study out of a target of ten. The Work Plan has made changes in the courses for three degree trainings: MA/MS degree training in rural sociology, agricultural economics and hill crop agronomy have been replaced by MA/MS programs in livestock economics, agronomy/plant breeding and one Ph.D. in agronomy/plant breeding (pulses).

Short Courses

A total of 56 short courses were scheduled. However, there are vast differences between the Project Paper and the

Project Work Plan regarding the programs and their number. The three training courses related to research management have been increased to 6 in the Work Plan, and all six have been completed. The 20 FSR related, short courses and training for 10 FSR site coordinators have been reduced to 17. Five of the short courses have been completed. Short courses in socio-economic research have been increased from five to six yet only one has been completed.

The Project Paper has scheduled 16 programs for research and extension personnel to attend short courses and workshops at IARCs on topics relevant to their current work program. The Work Plan has scheduled training in different fields: two in seed technology, 18 in commodity research, one study tour to an embryo transfer center and four for the hill production program. So far one course in seed technology and two courses in livestock related subjects have been completed. Two short courses in project implementation have also been completed. The two trainings on library science are waiting staff recruitment and completion of the library building.

1.3.2 In Country Training

This training program was taken as an important input for all the Project components. Accordingly, the Project Paper had planned for trainings in different fields:

Management Training

The Project Paper included management training for farm/station managers. However, the Work Plan has planned a management training for HMG and WI staff which was to be provided by outside consultants. One management training was conducted in 1986 (not by outside consultants) and one was planned for 1987. Three persons have been provided with research management training (senior level staff) in 1986 which was not planned in the Work Plan. The management training for the farm/station managers mentioned in the Project Paper has not yet taken place.

Support Staff Training

A total of 280 administrative support staff e.g. secretaries and accountants, and technical support staff e.g. lab technicians, mechanics and computer operators, were to be trained.

Training has been provided to (12-25) accountants. In the case of technical staff, seven persons have been trained in liquid nitrogen plant maintenance, however, the plant is still non-operational. A large number of staff (approximately 48) have been trained in the operation of computers as against the target of 10.

Research Method Training

A total of 280 staffs were to be trained in research methodology practices. The Project has provided such training to 21 officer level staff.

Farming Systems Related Training

One coordination committee meeting, one planning and review session with field staff, and two FSR related seminar/workshops have been conducted as against the Work Plan target of 4, 3 and 2 respectively each year.

Production Program Training

The Project Paper and Work Plan planned to conduct 10 trainings for officer level staff and 30 trainings for field staff. In addition 10 seminars/workshops were to be conducted according to the Project Paper which have not been included in the Work Plan. Progress reports indicate that 32 officers (against the target of 32 persons/year) and 55 field staffs (against the target of 450 persons) have been provided this training. Apart from these, the progress reports also indicate that training has been provided to six persons in livestock production and 35 women Agricultural Assistants (AAs).

Seed Program Training

Trainings for the seed program were not specified (number or persons) in the Project Paper except for twice a year program review meetings, 3 trainings per year at 25 seed plant sites for 35 farmers, 2-3 trainings/year for 25 seed plant managers and 5-10 PCV working with the mini-seed plants. The Work Plan has included these components and has specified the number of trainings in different fields which were to be done in the PP.

A large number of personnel have been provided training under the seed program e.g. 25-38 field personnel, 14 breeder/foundation seed producers, 14 persons in seed quality and marketing technology, 25 persons in seed handling and storage, 15 technicians and 13 others have participated in a seed improvement workshop. Three program review meetings have been held.

As against the target of training 1750 farmers at the different seed plant locations a total of 634 farmers in different districts where ARPP, STIP and AIC have launched their seed program, have been trained. More than 28 percent of the participants were women.

Apart from these, two training programs not included in the Project Paper - an observation tour in India for producer-sellers and a monitoring tour for hill farmers - have been envisaged in the Work Plan for 1988 and 1989.

Agro-Forestry Training

A total of 14 persons were provided agro-forestry training in 1987. This component was neither assigned in the Project Paper nor in the Work Plan.

Conclusions

A. The lack of permanent personnel at the respective Divisions (especially in FSRDD and SERED) has been one of the main reasons for the unfulfilled targets of the degree training program. Unless HMG recruits and/or deputs permanent personnel in these divisions the training slots will most likely go unutilized. Changes have also been made regarding the courses for degree training as well as the number of trainings assigned to different Divisions and Departments.

B. Achievements (against the targeted number) in the short course, out-of-country training program are encouraging; twenty of the 56 targeted trainings have already been completed although the Work Plan has a target of 30 short courses by the end of 1987.

C. Many changes from the Project Paper have been made in the Work Plan regarding the short course training

program; several new subjects/fields have been incorporated, and the number of training courses specified in all fields/subjects have been changed. Although the changes made are limited within the activities supported by the Project the Team is concerned over the shift in emphasis that is inherent in the re-adjusted short course training program.

D. In-country training programs for the seed and production program components of the Project have progressed satisfactorily. However, many programs remain to be implemented during the remaining Project period.

Suggestions

1. A detailed in-country as well as out-of-country training Work Plan should be reformulated by NARSC, ARPP and WI jointly for the remaining Project period. It should take into account the organizational changes that have occurred in the MOA and the research organizations now under NARSC.
2. Additional effort should be devoted to institutionalize the training activity by developing and documenting training courses and materials.
3. The Project should emphasize the training of trainers so that training activities could be decentralized and run after the termination of the Project.
4. The training emphasis of the Project towards personnel directly involved in research implementation should be increased, however, without overlooking the training needs of the supportive personnel.
5. Training should be provided for the purpose of skill development and manpower building rather than as an incentive or reward to staff.

1.4 Commodities

a. Project Plan

The Project Paper indicated that the Project would require commodities worth \$695,000. Of this amount, \$595,000 was to be provided through the USAID Grant, the remaining \$100,000 to be provided by HMG. The Contractor was to procure both local and imported commodities. Commodities to be procured included vehicles to support the research and production programs as well as office furniture and equipment for the Central Library, FSRDD, SERED, NARSC and RCC. Equipment to support the Seed Program was also planned for. Equipment purchases were to be phased according to the implementation activities of the Project.

b. Implementation Status

Commodity procurement has been suffering from procedural and approval difficulties. The commodity procurement procedures being used by WI appear to be time consuming and have resulted in long delays in ordering, receiving and handing over of equipment to the concerned programs/offices. As a result, "ad hoc" methods have been used to fill in the gaps. These delays have resulted in some programs being unable to implement their planned activities.

Changes in the number of vehicles and motorcycles to be utilized in the Project have been made and approved by the Project Director (through the Work Plan) and by USAID. However, the MOF has not yet approved the importation of these additional vehicles as there is a general restriction on the importation of vehicles at the present time.

c. Suggestions

1. HMG should initiate action to clear the importation of vehicles already approved by the MOF.
2. The Evaluation Team has reviewed the 'future vehicle requirement plan' prepared by the Project in light of the proposed changes in the Project Focus and activities. The Team concurs with the Project's view that an additional 9 vehicles and 16 motorcycles will be required to provide the necessary support to the RCC, NARSC and the other programs. The Team also concurs with the distribution plan for the use of the additional vehicles:

Vehicles will be assigned to the following offices -

WI/TA team	1
RCC	1
DOA/DLDAH	1
NARSC	4
FSRDD	1
HCIP	1
Total	<u>9</u>

Motorcycles will be assigned to the following offices -

WI/TA team	3
RCC	1
NARSC (Khumaltar	4
NARSC (Out Reach)	6
HCIP	1
FSRDD	1
Total	<u>16</u>

3. WI should review the procurement procedures with USAID to see if they can be made more efficient and effective.

4. Due attention should be given to the handing over of equipment and materials upon receipt to the concerned program/office for registration in the HMG inventory. Proper training in the use and operation of any equipment provided should be a major element of the WI technical assistance team.

5. WI should assist the MOA/NARSC staff in developing to the extent possible, a "Standardization Policy" for equipment needs. This would reduce and simplify the repair and maintenance problems of imported equipment. USAID and other donors support should be actively sought by HMG/MOA to support this policy.

2. Project Administration

2.1 Local Currency Funding

Local currency funding on a diminishing percentage basis, has been provided to the various programs/offices receiving assistance from the ARP Project. These funds are to strengthen the operational support components of the various programs targeted for ARPP activities. The Project Grant Agreement allocated approximately \$1.155 million for this activity.

The Evaluation Team feels that this assistance is desirable and effective in promoting increased attention to the Project activities and for continued/increased HMG support for these activities. However, the Team feels that 1) given the limited funds that remain for funding this program and 2) the reduced reimbursement percentage factors for the remaining Project time period, a more effective utilization of the funds could be achieved if the funds were focussed/directed at specific project assisted activities rather than as general budget support. This would enable better monitoring of the use of the funds as well as increase the utilization factors which are presently running at less than 60% in most cases. The MOA/USAID and WI/ARPP should consider this alteration to the present system during the budget planning process for the coming NFY.

2.2 Manpower

Specific manpower issues have been dealt with in the individual program/office descriptions in this report. However, in general the Evaluation Team feels that the issues regarding the permanent staffing of offices/programs and the filling of vacant posts are critical to the successful implementation of Project activities. The commitment of HMG and the MOA to redress these issues is necessary if the Project is to be effective in its purpose and goals.

The ramifications of the staffing problem affect all components of the Project especially the Training component. Only three of ten degree candidates have been sent for higher education mostly as a result of the shortage of permanent staff positions within the offices scheduled to receive training assistance. In some situations it has led to the local hire of technical assistants by WI as an

emergency measure to implement Project programs and/or to provide counterpart staff to the expatriate advisors. This, in the long-term will not prove to be beneficial to the ARP Project or to the MOA

The Evaluation Team therefore would urge all participants in the Project to review the manpower situation as now required for the remaining Project period and to act as quickly as possible in filling the agreed upon posts.

2.3 Counterparts

The provision of counterparts from MOA/ARPP for the expatriate advisors is seen by the Evaluation Team as critical to the success of the Project and to the effectiveness of the individual advisors. Advisors can best be used in a collaborative setting with local MOA/ARPP staff. This type of working relationship will prove more beneficial to the Project than if advisors are working on their own or with Contractor hired assistants. The NARSC Chief and the WI Chief of Party, should endeavour to seek suitable counterparts for the advisors and to ensure that the working relationship is one which benefits all parties involved. Counterpart arrangements should be reviewed periodically to monitor their effectiveness and compatibility.

2.4 Travel and Daily Allowances

TA/DA has been a problem not only with this project but with other projects in Nepal. The Evaluation Team understands that a viable solution to this problem is difficult and perhaps still a long way off. However, the fact that TA/DA remains a bottleneck in the implementation of Project activities needs to be considered when programs/activities are planned. WI/ARPP funding needs to be used judiciously in augmenting TA/DA for persons directly involved in ARPP activities. The Evaluation Team would suggest that all concerned parties, USAID/WI/ARPP/MOA staff, sit and discuss the possibility of alternatives which may be more suitable to the present arrangements. At the same time, HMG is requested to continue its review of the issue for a more comprehensive solution.

3. Project Coordination

3.1. Planning/Monitoring/Reporting

a. Project Plan

The Project Paper provided a "Project Monitoring Plan" which divided activities into two categories: routine project implementation monitoring, and impact monitoring.

Routine project implementation monitoring was to include regular site visits, meetings among USAID and HMG counterparts and technical assistance personnel, meetings of the HMG/USAID Project Implementation Committee, preparation of annual HMG budgets and work plans, technical assistance contractor reports, and HMG Project reports.

Project impact monitoring was similarly summarized in the Project Paper and was broken out into the three major Project components: agricultural research; production program; and, seed program. Quantitative indicators of impact for each of these three components were identified, but without clearly identifying how or when they would be reported, nor by whom.

The Project plan presented the following impact indicators:

1) For the agricultural research component, the Research Planning Specialist, during his first visit in year one, was to quantify HMG research activities, to develop quantitative indicators for research relevance and quality, and to establish targets for improvement. The Project was to aim for a five percent annual increase in the number of research activities and for two new varieties of cereals, pulse, forage and tree crops to be released each year.

2) For the production program, the impact indicator was to be the number of hectares under the production program and the percentage of production increase resulting from Project participation. There was planned to be a hectareage increase from 60 to 1,430 ha. by year 3, and a 10% annual production increase for participating farmers.

3) For the seed program, the impact indicators were to be the production of improved seed at small seed plants and metal bin sites, and the percentage of farmers using improved varieties of rice, wheat and maize. The Project

planned to increase seed production from an estimated 400 MT. to 1,250 MT by year 3, and to increase the area under improved rice and maize by fifty percent and improved wheat by ten percent.

The Project Paper plan assigned some responsibility for monitoring to USAID, some to various HMG agencies, and some to the technical assistance contractor. The various elements to be included were listed, but a plan of how this monitoring would be done, by whom and when, was not included. Furthermore, the management structure for the Project was dispersed and vaguely defined. Under the primary responsibility of the Project Officer, several USAID offices were assigned responsibility. (Project construction is handled directly by the USAID Engineering Office, independent of other Project activities.) Similarly, HMG was to have a Project Director (the Director General of DOA) and a DOA staff member was to be Project Coordinator. The role and authority of the Project Coordinator was never defined, and he has not been given adequate staff to support much real coordinating, planning, nor monitoring. Indeed, even the Project Director has not been very much involved in Project management, especially after NARSC was established as a new ministerial body, separate from the DOA.

b. Implementation Status

Reviewing Project planning, monitoring and reporting at midterm, two and a half years after the Project started, the Evaluation Team has found that routine reporting within USAID, by HMG, and by WI, has proceeded as described by the Project Plan. However, the Team could find no evidence of any specific reporting on impact achievement under the Project, nor any indication that the Project Paper Plan was ever adjusted or used.

For agricultural research monitoring, a report entitled "Suggested Guidelines for Research Monitoring and Evaluation," was prepared by the Planning, Monitoring and Evaluation (PME) Unit of NARSC. This report was reviewed by WI Senior Associate Wayne Freeman and has been printed in ARPP Consultancy Report No. 10. The research monitoring report gives emphasis to the system of reporting and to the flow of information within NARSC, not to measures of research success. The report is very useful for conceptualizing the organizational structure of information flows within NARSC, but it is only a first step toward the articulation of NARSC's program objectives, expected

achievements, and targets for improvement that would be needed for a genuine impact monitoring system. The Evaluation Team could not find any evidence that this report has been used, nor that any further work on the development of a research monitoring system has taken place.

For production program monitoring, baseline surveys were prepared by SERED. However, as discussed in Section A.2., the purpose of the program was changed from extension methodology development to technology development based on FSR production sites. In line with this, the baseline surveys were undertaken to establish indicators to measure the impacts of production technology testing at a few FSR sites in each of the production districts. Thus, there is no way to measure broad production impacts of the program, as planned by the Project Paper.

For the seed program, the many changes in the program and in program sites make seed production and farmer participation monitoring very difficult. The Project seems to have helped develop a sound model for farmer-managed seed production. A proper baseline and monitoring system remains to be established so that the impact of this model can eventually be determined.

c. Recommendation No. 29

A new Monitoring and Evaluation Plan should be established in line with the restructuring of the Project proposed by this evaluation. The new Project Monitoring Plan should contain explicit quantitative and qualitative indicators for impact monitoring.

Suggestions for Implementation

29a. NARSC plans for monitoring and evaluation need to be advanced from the current stage of "how" to a more normative approach of "what" and "how much". WI should provide assistance to help NARSC develop this system. Development of a good monitoring and evaluation system is an important element of improved research administration. NARSC needs to clearly set national targets and to establish indicators which will reflect qualitative changes in the outputs and purposes of agricultural research.

29b. For the purposes of management of the ARP Project a rigorous, but less extensive and less elaborate plan than that needed for NARSC is required. Such a plan should be established collaboratively by USAID and the HMG Project Coordinator. USAID could achieve this by hiring a consultant to develop something analogous to the Rapti Development Project Monitoring Implementation Plan, or perhaps by including the ARP Project as a case study in the planned Evaluation Workshop.

Recommendation No. 30

The role and authority of the Project Coordinator should be better defined and strengthened in order to consolidate and improve Project management.

Suggestions for Implementation

30a. The Project Coordinator has not been made able to effectively coordinate, plan, nor monitor Project activities. His role and responsibility were never defined, and he has had very few operational responsibilities and a minimal staff. The Evaluation Team recommends that the position of Project Coordinator should be relocated in NARSC and that it be upgraded. He could be called Project Manager/Coordinator or Project Chief, and he should be given a specific job description and clear Project management role.

30b. All major Project documentation concerning Project planning, monitoring and reporting should be routed through the Project Coordinator's Office, and he should be delegated the authority to approve most Project documentation. The WI Chief of Party should report to and work with the Coordinator as a counterpart.

30c. The Project Coordinator should be given the necessary core functional staff in a separate office unit with adequate authority to carry out his prescribed functions.

3.2. Peace Corps Coordination

a. Project Plan

The Project Paper discussed the involvement of Peace Corps Volunteers under the Technical Assistance Plan for the Project. The plan was to have approximately 118 volunteer years of Peace Corps assistance. The PCVs were to be assigned only when HMG counterparts were available and to work on women's extension programs in the hills (40 person-years), research and survey work (16 person-years), appropriate agriculture technology (20 person-years), and hill seed production programs (32 person-years). The Project plan briefly described the elements of each job area, but did not mention anything about how this assistance would be managed and coordinated with other Project activities to assure effective use of this resource.

b. Implementation Status

The first group of ten Peace Corps Volunteers (PCVs) completed their training and started work in Nepal in June 1986, and a second group of 12 PCVs started working in May of 1987. A third group is now being recruited to start work in early summer of 1988. In addition, four PCVs who had been working under the SPIS Project continued to work for one year under ARPP in the seed production program. Of the 22 PCVs posted under the Project, 12 have been posted to NARSC or its divisions, and 8 have been posted to District Agriculture and Livestock Offices for the hill production program. While the first group of PCVs were all recruited and posted under the DOA, PCVs are now being recruited and posted under: DOA, DLDAH, and NARSC (FSRDD, SERED and HCIP).

In general, the work of the Peace Corps Volunteers has gone well. However, several operational problems have arisen, which seem to be mainly due to the structure and changing nature of the Project. First, the role of the PCV in an operational sense has not been sufficiently defined and agreed to by all parties involved. PCVs seem to have been recruited in broad categories and then assigned to specified Project activities and offices without the participation of those offices, and without the preparation of a specific job plan for their work in that office. In areas where HMG offices and WI advisors are working together and where the Project is running smoothly, this has not presented major problems. However, in areas where HMG offices and WI advisors have different programs or program objectives, the PCVs are having more difficulty. For

instance, PCVs in the hill production districts have received strong WI support (including some special allowances), are closely involved in activities of the production testing sites, but work only loosely under the administrative and technical direction of the ADOs or DLOs. Similarly, PCVs at new active FSR sites, like Naldung, receive frequent technical support from FSRDD and WI advisors, while other PCVs, at sites like Pumdi Bhumdi, receive very little technical support from either FSRDD or WI advisors.

Second, there is no central point of coordination and management of Peace Corps assistance under the Project. PCVs are under NARSC, DOA, and DLDAH. Their recruitment and field support is handled by each Department separately, and different PCVs receive different levels of technical and financial support (travel, per diem, and other allowances) depending on with whom they are working. (A closer association with WI activities generally means better technical and financial support.)

In conclusion, the broad nature of the Project; the dispersed management structure; the weak planning, coordination, and monitoring functions; and the other implementation issues as discussed above have resulted in variable treatment and variable effectiveness of PCVs in different elements of the Project.

c. Recommendation No.31

The Project Coordinator should be the coordinator for Peace Corps assistance to the Project, and he should be provided a staff person (Peace Corps Liaison Officer) to better plan, coordinate, and monitor PCVs under the Project.

Suggestions for Implementation

31a. The first task of the Peace Corps Liaison Officer should be to develop a management plan for Peace Corps assistance. This plan should provide a clear indication of supervisory, technical direction, administrative management, and reporting relationships of PCVs for each type of assignment. The plan should be reviewed and approved by HMG, Peace Corps, and USAID.

31b. In line with the Peace Corps Management Plan for ARPP, current PCVs would be fully integrated into the relevant HMG office, and new PCVs would be recruited and placed in accordance with the plan. For each volunteer there would be a specific workplan assigned counterpart approved by the Project, HMG, and Peace Corps before the PCV is assigned to a post.

C. Directions for Further Support for Agricultural Research

1. HMG Basic Needs Strategy

The basic needs program of HMG establishes the broad sectoral objectives for agriculture by the year 2000. The production targets of the Basic Needs program will form the basis for the HMG Eighth and Ninth Five-year plans (1990-2000) which will in turn provide more specific guidelines for agricultural research policies and priorities.

With regard to the HMG Basic needs program, USAID assistance to Nepal emphasizes a strategy for agriculture and rural income generation that will be targeted on directly productive activities. Second, the USAID strategy stresses activities that are needed to change the structure of the rural economy towards an integrated, more market-oriented economy. Third, in addition to strengthening national-level institutional performance, the USAID strategy is to help HMG pursue more intensively the development of increased local institutional capacity and greater local participation as a means to accelerate and sustain development. Finally, the USAID strategy puts greater emphasis on identified policy reforms that are needed to establish the framework and environment for agricultural development.

These strategy elements were reviewed by AID/Washington and USAID/N staff in November 1987 and some clarifications and further elaboration of the Nepal growth model were prepared. These include:

- The unusually wide diversity of growing conditions presents an opportunity for Nepal to both increase domestic food production as well as to expand more temperate cash crop exports, especially for selected

markets in India, as well as to substitute for some cash commodities presently imported from India.

- Tarai foodgrain production will continue to supply food deficit hill areas and some opportunities to export certain cash crops will remain important in at least the medium term, but neither Tarai foodgrain nor Tarai cash crops, as a general category, would appear to enjoy strong long-term comparative advantages vis-a-vis the Indian market.

- Significant expansion of high-value, lower-volume hill cash commodities (e.g. vegetable seed, ghee, medicinal herbs, spices, fruit products) as well as out-of-season fruits and vegetables, appears to offer major growth prospects, particularly in specialized Indian markets.

- The articulation of marketing systems (domestic and Indian) with the hill production systems and consumption centers, is increasingly occurring in strategic market towns along the Tarai and lower hills, generating further employment. The potential for further market development, which would generate additional employment and value-added products appears high, as market volumes expand and channels improve.

2. Research Administration

The January 1987 Country Development Strategy Statement presented the first USAID agricultural sub-objective as the strengthening of HMG adaptive research capability and performance. The ARP Project is directly addressing this issue with institutional development, research management support, and policy dialogue through the RCC and NARSC. The effective operation of these research policy and research management organizations is a necessary first step for further improvements in research throughout the system. The achievements, issues and recommendations in this area are presented above in Section 1.1. This is an area which will need to be closely monitored by the Project and by USAID.

Improvements in research administration will be extremely important in providing the structure and the management necessary to obtain resources that are necessary for operation of an effective research system in Nepal. The RCC will need to provide clear policy leadership and NARSC will need to provide good management of domestic resources as well as good coordination of assistance from donors,

IARCs and other sources. USAID can and should provide continued assistance to help HMG improve the structure and management of research. With this improved structure and management, RCC and NARSC will provide for the solicitation, coordination, and management of further assistance that donors or IARCs may provide to specific programs, stations, and commodities.

If ARPP is able to obtain its objective of improving research administration, the main issue for future support will be the evolution of Nepal's research system toward an independent Research Council. The research council model is now being used by most of Nepal's neighbours and probably offers the best model for further improvements of research administration in Nepal. Furthermore, Nepal has indicated a desire to establish a Research Council during the Eighth Five-Year Plan period (1990-95). USAID assistance for improved research administration should keep this longer term consideration in mind.

3. Systems Approach for Agriculture Research

The Evaluation has concluded that farming systems research (FSR) as a methodology is appropriate for the development of technologies for the various agro-ecological and socio-economic environments in Nepal. FSR activities should be directed at strengthening research-extension linkages through the NARSC outreach programs in major multidisciplinary and multi-commodity research stations.

The Evaluation Team feels that the prospects for strengthening and institutionalizing FSR through station outreach programs are bright. This is an approach that will receive support from other donors such as ODA (LAC and PAC stations) and World Bank (HFP and AER Projects) as well as from ARPP.

Future ARPP or other project activities should consider how to build upon the FSR and outreach program sites to move toward even broader systems work on additional crops (fruits, vegetables, and other cash crops), on input supply concerns, and on post harvest concerns of processing, storage and marketing. The programs should also strive for greater farmer participation in their research and for a stronger market analysis to guide research efforts.

The Evaluation Team feels that priority should be given to farmer participation in research outreach programs. By better utilizing farmers to conduct simple on-farm research the direct role and cost of government efforts can be reduced. Active local farmers have been employed as Field Assistants by some projects to support field trials and to facilitate communications between farmers and researchers. The ARP Project and any subsequent follow-on project should assist in identifying how farmer participation in research can be further organized and used to effectively extend farm outreach programs.

The possibility of identifying "informal" farmer researchers should be examined as one possible method of better utilizing scarce research resources and increasing farmer involvement in the research process. Experience in this area has already been gained in the outreach programs at LAC and PAC.

4. Linkages between Research and Extension

The Evaluation Team concluded that since extension methodology development has not been achieved in the Hill Production Program as planned and since SERED has not developed any expertise in extension research, extension methodology development should concentrate on the analysis and synthesis of experience in ongoing programs in different parts of the country.

SERED should continue to concentrate on economic and social analysis of technology to assure that it is remunerative and socially feasible to farmers. Nonetheless, research to better determine appropriate extension methodologies for hill production, and to determine how to organize inputs and services for production is also a priority need for Nepal. SERED should take the lead in this area. This is an area in which future USAID assistance might be provided.

5. Role of Private Sector and Marketing Research

Further articulation of marketing systems will require that HMG adopt appropriate and timely policies to support market-lead growth. A first step, to permit this is a reorganization and strengthening of the role of marketing research under NARSC by combining the marketing research function of DFAMS with SERED as is presented in Section

1.2.2. The principal role of ARPP should be to assist this institutional change and the subsequent use of marketing research methodologies by SERED. SERED should: include marketing analysis as part of its socio-economic research; develop and maintain inventories of markets and marketing systems for research outreach sites that it is supporting; and, prioritize and direct marketing research on specific topics directly relevant to work at research outreach sites.

A second area, for future work is the possibility of expanding private or non-governmental research work. The ARP Project has an opportunity to initiate some work in this area through the Research Support Grants as described in Section 1.1.4. However, given that there are many horticulture, spice and other cash crops existing in dispersed geographical areas that have considerable commercial value, and that HMG will unlikely have the resources to effectively undertake the research needed to guide the development of these crops, the better mobilization and use of private resources to undertake research and development of these crops is a priority concern. Movement to a Research Council concept and expansion of the Research Grant Program are two ways to start to address this need for expanded private research. Future USAID assistance might be provided to further develop these as well as other models for this research.

APPENDIX A:
Comments on the Mid-Term Evaluation
Report (Draft) of the ARP Project

Ministry of Agriculture
January 5, 1988

Recommendation No. 1

The Project Directorship would shift to the Chief of NARSC and not to the RCC as recommended.

Recommendation No. 2

The Project Coordinator is appointed as per the HMG/N official process, not necessarily from NARSC. The Project Coordinator will have necessary core functional staff as a separate office unit with adequate authority as per recommendation No. 30.

Recommendation No. 3

RCC and NARSC should develop the management, monitoring and evaluation variables and parameters in relation to the long-term objectives of the research management system keeping in view the research commitment to support the Basic Needs Program. Based on this requirement appropriate short term expatriates on an 'as and when needed' basis should be provided. 3a. and 3b. are agreeable.

Recommendation No. 4

Except the recommendation on an autonomous research body the rest is agreeable. Similarly, suggestions for implementation 4a., 4b., 4c., and 4d. are acceptable.

Recommendation No. 5

This recommendation is agreeable in principle. Taking inventory and preparing development and operational plans of remaining farms and stations should be completed on a time bound basis. However, the WI/TA should complete the inventory and prepare development and operational plans for the Khumal Complex, Lamepatan

Livestock Farm and the Parwanipur Agriculture Station as models in lieu with the Basic Needs Program within the next three months to cover the last two years of the current Seventh Plan.

Suggestions for implementation 5a. and 5c. need to be synchronized on a time bound basis. However, 5b. should be implemented as guided by NARSC.

Recommendation No. 6

This recommendation is O.K. However, implementation should be done strictly on a time bound basis. Regarding 6a., besides the regular funding from HMG resources, until other additional funds are available from other external resources, adequate funding should be provided by ARPP.

Recommendation No. 7

The research grant fund should be diverted to support the ongoing or planned research program within the research system of the MOA rather than through other agencies in view of the critical requirement of resources for the RCC and NARSC. The recommended aspect of research areas can be accommodated within the NARSC research system.

Recommendation No. 8

This is not agreeable. Reasons being:

- a. FSRDD has been included in the modified organizational structure of the research system of the Basic Needs Program.
- b. FSRDD will work for research out reach programs also under NARSC through the insitutionalized networks of research farms/stations and research sites. 8a. and 8b. therefore are redundant.

Recommendation No. 9

O.K. regarding LAC and PAC involvement in FSR and other technical components of program support, it may continue on as it is at the moment. However, their formal participation and commitment would only be

operational when an MOU is signed between the MOA and LAC/PAC.

Recommendation No. 10

This is agreed in principle. However, NARSC should decide on the issues after mutual consultation regarding locations and number of sites but the input required is to be provided by the Project.

Recommendation No. 11

The concept of a model farm is desirable in view of integrating different component technologies into a small and resource-poor farm. Therefore, adequate attention should be given in implementing the model farm program rather than abandoning them.

Recommendation No. 12

SERED has been proposed to have a permanent status. However, the extension and marketing research would be coordinated through NARSC and executed by the respective established agencies. Therefore, shifting one component from one agency to another does not arise. Suggestions for implementation 12a. to 12d. are O.K.

Recommendation No. 13

This becomes redundant.

The suggestions for the implementation of the Agricultural Research Library are O.K. However, printing facilities (printer) should be arranged.

Recommendation No. 14

O.K.

Recommendation No. 15

O.K.

Recommendation No. 16

O.K. However, the phrase "if NARSC approves" should be deleted. The observation of the team on page 26, para 4, first sentence is not acceptable.

(Editors Note: This line read: "Participation of the CLDC counterpart staff in the activities of the ARPP Livestock Research Specialist has not been to the desired extent.")

Recommendation No. 17

O.K. However, the last sentence regarding PAC's involvement should be in line as mentioned in the response to recommendation No. 9.

Recommendation No. 18

O.K. However, the consultant for computer programing is not needed as there is already a provision for that. 18c. and 18d. are O.K., whereas 18b/a should read "Low cost feed formulation including use of industrial by-products in animal feed".

Recommendation No. 19

O.K.

Recommendation No. 20

This program must continue. The Team's observation in this regard is based on insufficient information. But the program should accordingly be redirected and reinforced to the use and expansion of available technology in a mass scale. Help of the technical advisor is not needed in this program.

Recommendation No. 21

There is a firm commitment of the MOA to contribute to the Basic Minimum Needs target from the Project production districts. Therefore, the Project should continue to fully support production programs of each district, accordingly to meet the set target.

Regarding the involvement of LAC, please refer to the response of recommendation No. 9.

21a. and 21b, the fund should be provided by ARPP to NARSC and not to LAC to strengthen the outreach activities to address the need of the four production districts.

Recommendation No. 22

O.K.

Recommendation No. 23

O.K.

Note:

Page 43 - Implementation status - the NSB has been formally established.

Page 44 - Figure 1, Components of present seed program is as provided.

Page 45 - Figure 2, the current set is provided.

Recommendation No. 24

O.K.

Suggestions for 24a., 24b. and 24d. are O.K. Regarding suggestion 24c., the packaging practice should be limited only to farms and stations having packaging facilities.

Recommendation No. 25

O.K.

But the experience achieved through this program should be expanded to other hill districts.

Recommendation No. 26

O.K., The MOA will consider this.

Recommendation No. 27

O.K. in principle. Additionally the balance of the projected period of the FSR specialist needs to be phased out.

Recommendation No. 28

O.K.

1.3 Training - Suggestions on training are agreeable in principle.

Recommendation No. 29

O.K.

Recommendation No. 30

O.K.

The first sentence of 30a., page 62, should read "The Project Coordinator's Office has not been (made /1) able to effectively coordinate, plan, nor monitor Project activities".

/1 this word added

Recommendation No. 31

O.K.

Technical Assistance

- Research Station Management Specialist
- Farming System Research Specialist (to be phased out)
- Livestock Research Specialist
- Seed Production Specialist (New TOR has to be developed)
- Research Management Specialist (New TOR to be developed for short-term consultancy)

- Short-Term Consultancy

- Local Technical Services.

APPENDIX B: PERSONS CONTACTED

HMG/N

Mr. Rana, A.N.	Secretary, MOA
Mr. Sha, Moin	Member-Secretary, RCC
Mr. Gorkhaly, P.P.	Director-General, DOA
Mr. Pradhananga, A.M.	Chief, NARSC
Dr. Singh, Uday	Director-General, DLDAH
Mr. Shrestha, Prachanda	Farming Systems Division
Mr. Uprety, Virendra	Farming Systems Division
Dr. Mathema, Surdarshan	Chief, SERED
Mr. Singh, Rameshwar, B.	Joint-Secretary (Planning) MOA
Dr. Rana, P.S.	Joint-Secretary (Evaluation) MOA
Mr. Upadhyay, Ram Milan	Regional Director DLDAH, Pokhara
Mr. Gautam, Yam P.	Pumdi Bhumdi FS Site Coordinator
Mr. Rajbhandary, Kamlesh	Chief, STIP, Khumaltar
Mr. Gautam, Jagdish	Project Coordinator, ARPP
Dr. Shah, Ranjit	Chief, Soil Chemistry Division
Mr. Bhattarai, A.N.	Chief, Agronomy Division
Dr. Bharati, Bharati	Chief, GLIP
Mr. Vaidya, M.L.	Site Coord., Naldung FSR Site
Mr. Basyal, Narayan P.	Vet., LSD/Baglung
Mr. Shrestha, R.P.	JT/Baglung, Acting ADO
Mr. Sharma, Bal Chandra	LSDO/Myagdi
Mr. Baral, Krishna, P.	ADO, Parbat
Mr. Paudyal, Bishnu	JT, Myagdi
Mrs. Bhattraai, Shanti	Soil Scientist, Khumaltar
Dr. Shrestha, Surendra	Incharge, Farm Management
	Section CLDC Khumaltar
Mr. Sharma, L.P.	Section Chief, Pasture & Fodder
Dr. Basnyat, Tej B.	Chief, CLDC, Khumaltar
Mr. Joshi, N.	Deputy Director General, DLDAH
Mr. Regmi, S.N.	DDG, (Planning) DOA

USAID/N

Mr. Wilson, David	Director
Mr. Rhodes, Stacy	Deputy Director
Dr. Mathema, B.B.	Production/Extension Office
Mr. Lewis, George	Program Officer
Mr. Clary, John	ASH. Program Officer
Mr. Clark, Don	Project Dev. Officer
Dr. Levenson, Burt	ARP Project Officer
Mr. Suwal, Dharma	Project Specialist-Agric.
Mr. Thurston, Robert	Chief, ARD Office
Mr. Gurung, Ashish	Personnel Officer

WI/ARPP

Dr. DeBoer, John	Chief of Party WI/ARPP
Mr. Bal, S.S.	Deputy Team Leader/WI-ARPP
Dr. Harwood, Richard	Program Coord., WI-HQ
Dr. Freeman, Wayne	Research Management Specialist WI-HQ
Dr. Galt, Dan	Socio-Economist Advisor WI/ARPP
Dr. Hawkins, Richard	Farming Systems Advisor WI/ARPP
Mr. Schillinger, Bill	Production Agronomist, WI/ARPP
Mr. Reed, David	Agro-Forestry Advisor, WI/ARPP
Dr. Yazman, Jim	Livestock Advisor, WI/ARPP
Dr. Lacsina, Rene	Farm Management Spec., VSU/ARPP
Mr. Shrestha, Pool, C.	Prod. Ext. Agronomist, WI/ARPP
Mr. K.C., Hari B.	Agric. Specialist, WI/ARPP

PCVs/ARPP

Mr. White, Peyton	FSR Site, Pundi Bhumdi
Mrs. White, Vongdevand	Livestock Farm, Pokhara
Mr. Callewaert, Jon	SERED/Parbat District
Mr. Roberts, John	DLO/Baglung
Miss Lambert, Laurie	FSRDD/Naldung Site
Mr. Colvito, Luke	SERED/Parbat District
Mr. Riehle, Dunlop	DLO/Parbat District

Others

Mr. Hildon, Mike	First Secretary, British Embassy
Mr. Cruikshank, Eric	Economist, World Bank
Mr. Honish, Oskar	World Bank, Agri. Proj. Officer
Mr. Garrod, Graham	Director, LAC
Mr. Boreman, Charles	Director, PAC
Dr. Gibbon, David	Farming Systems Adv., KHARDEP/PAC
Mr. Bagoen, Paul	Socio-Economist, PAC
Mr. Paulson, Larry	Agric. Officer, Peace Corps
Mr. Lehman, Jim	Director, Peace Corps
Mr. Bogate, Bhairap B.	PPVT Participant Farmer/Parbat
Mr. Thapa, Bhupendra	PPVT Participant Farmer/Parbat
Mr. Pradhan, Dharma P.	Vegetable Farmer, Kusma

Publication's List

1. "Agriculture Research and Production" - A Project Paper
Department of State Agency for International Development
Washington, D.C.
2. "Proceedings of the Workshop on Survey and Farm Level
Monitoring Techniques in Nepal" (SERED Report No.5)
Edited by S.B. Mathema and D.L. Galt, Lumle Agri. Centre
Jan. 1987.
3. "Baseline Survey Report of Naldung Village Panchayat Kavre
District " (Central Development Region) (SERED Report No.4)
by R.B. Shrestha, D.L. Galt etc.- MOA, Socio-Economic
Research and Extension Division - Dec.1986.
4. "Report on the Process of the Group Survey and On-Farm Trail
Design Activity Naldung Village Kavre "(Central Development
Region) (SERED Report No.2) - by S.B. Mathema, D.L. Galt etc.
Socio-economic Research and Extension Division Oct. 1986.
5. "Farmer Participation in Farming Systems Research "(SERED
Report No.3) by D.L. Galt and S.B.Mathema, Department of
Agriculture Oct.1986.
6. Report by Mr. Trig Maieed Consultant Liquid Nitrogen Plant
Training course-Philips Liquid Nitrogen Plant Plan 106
At Tribureshore.
7. "Pesticide Use in Nepal" - (ARPP Consultancy Report No.9) by
Dr. William L. Klarman - Department of Livestock Development
and Animal Health MOA, Feb. 1987.
8. "Baseline Survey Report of Baglung District", (SERED
Report No.6) R.B. Shrestha A.R. Sharma & D.L. Galt -
Department of Agriculture March,1987.
9. Papers Presented at the "Workshop on Trial Design For On-Farm
Research in Nepal, March 3-4, 1987 Kathmandu, Department of
Agriculture Farming Systems Research and Development Division
and Socio-Economic Research Extension Division, Nepal, June 1987
10. "Baseline Survey Report of Parbat District"(SERED Report No.8)
- R.B. Shrestha, K.D. Joshi. D.L. Galt Socio-Economic Research
and Extension Division Khumaltar, Nepal May 1987.
11. "Baseline Survey Report for Production Program" (SERED Report
No.8)- Krishna K.C. A.R. Sharma, D.L. Galt Socio-Economic
Research and Extension Division, Lalitpur, March 1987.
12. "Financial and Personnel Management Systems Study "May 1986
Nepal Agricultural Research and Production Project - SGV & CO.
in association with Winrock International Institute for
Agricultural Development.

13. Samuhik Bhraman tatha Anusandhan Ko Lagi Prastabit Karyakram "Kheti Pranali Karyakram Nagarkot Chhetra (Naldung Village Panchayat Kavre District)", Marga 2043. Department of Agriculture (In Nepali Medium Report)
14. Naldung Farming Systems Site "Samuhik Bhraman" & Proposed Research Program Farming Systems Research & Development Division Department of Agriculture, Dec. 1986.
15. "Hill Crops Improvement Program in Nepal" (ARP Consultancy Report No.6) by Kishore Sherchand Tek Bahadur Shrestha and Kenneth O. Rachie Submitted to International Development Research Centre New Delhi and ARPP Nepal June, 1986.
16. Livestock Production in the Mid Hill Region of Nepal "A Suggested Workplan for the Livestock Component of the ARPP, Nepal" (ARPP Consultancy Report No.7) by Jim A. Yazman Animal Scientist Winrock International Institute for Agri. Development Morrilton, Krkansas, USA. Submitted to ARPP Dec. 1986
17. "Observations and Recommendations on Women's Agricultural Extension Programs in the Hill Districts of Myagdi, Baglung and Parbat" by J. Anne Holman Winrock International Institute for Agri. Development Nepal - Submitted to ARPP Dec. 1986.
18. "Irrigation Development Plan for Rampur Agriculture Station" (ARPP Consultancy Report No.11) by Madan Prasad Pariyar (Agricultural Engineer) and Bryan Paul Thoreson (Agricultural Engineer) - Submitted to ARPP, August 1987.
19. "A Proposal for A Production Program in the Mid-Hills of Western Region of Nepal" by L. Dale Haws, Consultant Winrock International Submitted to ARPP Dec. 1985.
20. "Proceedings of the Workshop on Survey and Farm-Level Monitoring Techniques in Nepal" (SERED Report No.5) Edited by S.B. Mathema and D.L. Galt Sponsored by Lumle Agricultural Centre Socio-Economic Section, January 1987.
21. Work Plan for Winrock International Institute for Agricultural Development (With Virginia State University) Support for Implementation of the ARPP Assistance to Department Agriculture Animal Health, Agriculture Inputs Corporation, May, 1986.
22. "Report on the Inventory of Agricultural Research Farms and Stations in Nepal" (NARSC Report No.2) Part II Inventory Database for Agricultural Research Farms and Station in Nepal -NARSC April 1987.
23. Report on the Training Course in Agricultural Research Design and Methods by R.Q. Lacsina, B.R. Adhikary, S.L. Shrestha, B.P. Upadhyay, S.C. Gurung NARSC October 1986.