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AGRICULTURAL RESEARCH

AND

PRODUCTION

NEPAL

FINAL REPORT

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1.0 INTRODUCTION

In the past, USAID has provided support to the Government of Nepal agricultural development programs. The Integrated Cereals Project has assisted the GON develop commodity research programs, a cropping systems research program, and a cropping systems-based production program methodology. The Seed Production and Input Storage Project has provided support to seed production programs and has assisted the GON establish a seed supply system in the hills. Both projects end in 1984.

Recent evaluations of these projects credit them with considerable success, but also point out the need for continued assistance to the GON in agriculture. USAID/N is preparing a Project Paper for an "Agricultural Research and Production Project". This project will continue support to programs currently being assisted by the IC and SPIS projects and address other problems of the research, extension, and seed supply system. Major focus of the project is to be in the hill region.

In order to complete the technical, administrative and institutional analysis required for the aforementioned Project Paper, USAID/N contracted with Resources Development Associates, Inc. under an existing IQC to provide professional technical assistance. Resources Development Associates, Inc. sent a team of 2 individuals to Nepal for four weeks to prepare these portions of the PP.

1.1 Scope of Work

The contractor personnel were to prepare analyses which included the following details:

- A. Prepare an Institutional Analysis for the PP which shall include:**
 - 1. Review of the current administrative arrangements for (a) agricultural research, with special emphasis on the cropping systems program, (b) agricultural extension, with emphasis on current production programs, and (c) hill seed production programs;**
 - 2. Analysis of changes necessary to expedite project implementation;**
 - 3. Analysis of annual Ministry of Agriculture budgeting procedures for proposed project activities;**
 - 4. Analysis of adequacy of staffing of the Ministry of Agriculture (MOA) agencies involved in project implementation;**
 - 5. Evaluation of proposed relationships between various MOA agencies involved in project implementation;**
 - 6. Identification of inputs needed to improve administrative functions of MOA implementing agencies;**
 - 7. Analysis of methods of increasing linkages between forestry, soil conservation, and agronomic research; and**
 - 8. Indepth review of arrangements for a National Seed Development Board and the Farming Systems Research Program.**

B. Prepare a Technical Analysis for the PP which shall include:

1. Review of current and proposed research, extension, and seed production activities;
2. Evaluation of adequacy of current research station facilities;
3. Evaluation of current production program methodology for the terai and proposed methodology for the hills;
4. Evaluation of current seed production, processing, and testing facilities;
5. Analysis of research priorities contemplated by the PP; and
6. Evaluation of the adequacy of currently available technologies to support planned production programs.

This report includes two complete Annexes to the PP. Section 2.0 contains "Annex C - Technical Analysis" and Section 3.0 contains "Annex D - Administrative and Institutional Analysis". In addition, Appendices A and B to this report contain End-of Tour reports for both consultants, Dr. David W. James and Mr. Anderson N. Renshaw.

2.0 ANNEX C - ADMINISTRATIVE AND INSTITUTIONAL ANALYSIS

The ARP project will extend the successful approaches of the ICP and SPIS projects with some modifications adapted to the hill problem. It will expand these activities in certain selected hill areas of the country. The activities, policies and coordination of agency responsibilities defined in the PP will afford a reasonable and institutionally sound base for realization of project objectives. While the project forces several difficult challenges in developing inter-agency linkages, the proposed relationships are workable and program relevance can be expected as the institutional arrangements are established.

In the long term, it will provide a sound base for future, more far-reaching institutional re-organizations. By the end of the project the methodologies, technical information and working relationships of agencies involved should provide the GON with the necessary institutions and technologies to continue and further expand the programs. A follow-up program will probably be needed to assist with this effort.

An analysis of present MOA effectiveness reveals a serious weakness in its ability to affect production at the farm level. Research often is done without knowledge of farm problems and needs, extension activities are confined primarily to the introduction of new varieties because other technology does not exist or is not farm tested and the availability of quality inputs is uncertain or unavailable in the hills. Long term institutional development and reorganization is necessary to address these problems. The project as designed addresses these constraints.

2.1 National Research Coordination Committee

According to estimates contained in the FAO report, Nepal is spending approximately \$ _____, million per year on agricultural research. While this amount should be increased, it is doubtful whether the GON is getting optimal return for the investment. Better management of research activities is essential and will be obtained through work of the National Research Coordination Committee.

Communications with CIMMYT, IRRI and CIP have been excellent and the relationships will be cemented in place. The ARP budget provides for expanded interchanges; more Nepali FS group workers going to the IARC's for training and more IARC experts coming to Nepal for technical assistance. Other IARC's especially ICRISAT, CIAT and ILCA, have had limited impacts in Nepal. Channels of communications will be established with all IARC's that are able to contribute to the ARP goals and objectives.

2.2 Extension Program

At the national level administrative backstopping is not yet adequate to support extension efforts. Because of the difficulty of implementing field programs the GON has rightfully assigned priority to organizing extension efforts on the basis of intensive area specific production campaigns.

For implementation of production campaigns in hill districts the organization will provide for Extension linkages with Research that will assure the dissemination of Farming Systems technology of a sound and practical nature. While to some extent need for these linkages have been recognized, no activities have attempted to make them viable. By housing Extension Specialists in the same office as their Research Counterparts on a common project, the two will have an organizational arrangement and motivating force that has not existed before.

In addition, the Extension Directorate will administer the RDO, ADO and other extension staff at the District level. Herefore, they have been under the DG. The proposed organization will lessen the load of the DG allowing him to concentrate on the DDG programs and at the same time put all Extension activities together in one division.

2.3 FS Coordinating Committee

This committee will be chaired by a Farming Systems Coordinator under the DG. It will be the duty of the committee to insure that research addresses the needs of the farmers and that practical production packages emerge from the research. The Committee will also evaluate and develop the Extension effort in such a way as to insure that the approved production package recommendations are extended and made available to the farmers of the PVT area and beyond to the entire project area. The Committee will consist of: FS Coordinator, DDG Research, DDG Extension, Division Chiefs, Regional Officers, DDG Evaluation & Planning, Representative Ministry of Forestry, Representative Ministry of Irrigation, DDG Livestock.

2.4 FSE Group

This group will act as Extension Specialists. They should have earned at lease a B.S. degree. They will be assigned to the Extension Directorate to work directly within the Research organization. Their primary duty will be to develop FS information and recommendations in conjunction with their research counterparts. They will assist the researchers in establishing PVT's and in the training of the farmers and JT's involved. Beyond the PVT, these specialists will be responsible to further train the District ADO's and subject matter specialists already assigned and other JT's and farmers outside the influence of the PVT and assist them to expand the program into other areas.

2.5 FSR Group

This group will consist of two parts. One part will be commodity and discipline researchers who will put together a "production package" for each commodity. The other group will research and develop within these packages, rotations, cropping patterns, farming systems, etc., and will evaluate them in terms of applicability to the various ecological areas, and economic practicability. They will refer problems back to the commodity and discipline researchers for modification or other solutions to develop compatibility within "FS mixes".

They will then establish PVT's with the assistance of their FSE group counterparts and evaluate and improve them as necessary.

2.6 Seed Program

AIC will continue to be the primary supplier of agriculture inputs as it is now. Seed is produced on private farms and under the project other aspects of distribution may be channeled through the private sector as conditions and opportunities exist. Local production of improved seed in the hill area itself, thus reducing transport problems and expenses, is a sound strategy.

The multiplication of quality seed of high performance varieties is imperative to the success of agricultural development programs. Institutionalization of this capability must be developed so that management, administration and distribution of quality seed can be done in the hill areas themselves with some AIC participation. Three years of continued support to this activity should be sufficient to institutionalize the system.

Seed quality control will be improved by institutionalizing improved seed testing procedures. Seed testing, now the sole responsibility of the Botany division, is slow which leads often to seed deterioration while awaiting its return. The new proposals for improving quality seed are given in Annex D. No new organization arrangements will be necessary, but policy changes and determination of organizational responsibilities will be needed. This will be developed within a National Seed Board.

2.7 National Seed Board

One of the more significant constraints to the production program is that of an assured supply of quality seed. A number of policy decisions, coordination procedures and responsibility assignments are needed to this end. Some of these are discussed in this Annex.

In order to deal with these issues and as a means of continuing the timely availability of quality seed, a National Seed Board should be established as a policy body. Its members would be: Secretary of Agriculture; General Manager, AIC; Chief, STIP; Chief, Seed division, AIC; General Manager, ADB; National Commodity Research Coordinators; Chief, Marketing Division; Division General, DOA; DDG Crops, DOA; DDG Ext. DOA; DDG Pastures, DOL.

2.8 Other Considerations

2.8.1. Program Monitoring and Evaluation:

The whole GON agriculture development system needs improvement in this area. The organizational arrangements suggested in Annex D should materially improve and provide better opportunities for the ARP implementation requirements in these respects. Toward this end the consultants have developed several job descriptions for key personnel and special addenda.

2.8.2. Grants-in-aid

The MOA recognizes that it is not a self-regenerating system in the sense that the Ministry must look beyond itself when considering staff expansion and replacement. The main source of skilled technical man power is the university system. To assist the teachers in advanced education to become better teachers in terms of skill and subject matter, a system of grants-in-aid will be administered by the DDG.

Grants-in-aid will be advertised on specific topics, to backstop FSR/E information needs that are not being met elsewhere. Grants will be awarded on a competitive basis. Grants will include provision for the editing and publishing of research results.

2.8.3. Logistical Support

Because of the remoteness of some hill areas, special efforts are needed to facilitate communication with the research centers and in the conduct of educational programs. Toward this end ARP will be provided two-way radios.

2.8.4. GON Personnel Requirements

Table I shows the current GON staff involved in the collaborative program. Some increases in personnel will be necessary but this should not be significant. The primary need will be to designate certain on-board personnel as researchers and others as production (extension) specialists in the same discipline. For example there are 9 researchers at Khumaltar in the entomology division. They are each now doing research, extension and service work on a need basis. Some 2 or 3 could be designated full time extension specialists and the rest as researchers. Their duties and organizational assignments will be clearer and complementary. Their offices would still be together. Only some orientation training and job description development would be needed.

It is anticipated that with reassignments and delineation of duties and possibly in some instances, increasing these numbers will permit efficient implementation and will provide greatly increased research and extension capability and output.

There has been no concentrated research effort on livestock production management research. This area of activity will be integrated in the hill areas establishing grass, forage, and tree forage production programs together with animal health and breed improvement. The ARP will provide TA and commodities in support of these activities.

2.9 National Research Coordinating Committee

The National Research Coordinating Committee will consist of the Joint Secretary/Research MOA and equivalent authorities in the MOL, MOF, and MOH. This committee will meet annually to exchange information on research programs pertinent to the rural sector that are being performed in each Ministry. The NRCC will provide for cross-linkages and communications among researchers that have similar target groups or target areas.

3.0 ANNEX D - TECHNICAL ANALYSIS

3.1 Farming System Research and Extension

The ICP program, to be terminated in May 1985, has successfully demonstrated the utility of CSR/E methodology. Specifically, it is possible to comprehend and minimize or eliminate small farm production constraints by conducting research and extension programs directly on small farms in close collaboration with the farmers.

The ARP program will build upon the success of ICP. CSR/E will be expanded into a full scale FSR/E thrust by including livestock, socio-economics, horticulture, agro-forestry and minor crops as well as the major grain crops. FSR/E will concentrate on the hill farmers and will continue CSR activities in the Tirai.

In addition to the subject matter and geographic expansion associated with FSR/E within Nepal, ARP will focus on persistent research and extension deficiencies. CSR/E has profited immeasurably from close association with the IARCs. But, by and large, the IARC inputs have been related to crop variety improvement - breeding lines and variety testing. While the number of improved varieties has expanded, research and extension on other factors (soil fertility and plant nutrition; on farm water management, and insect, disease and weed control) of crop productivity have not kept pace. As an example, the basic DOA document upon which current fertilizer recommendations are based was written in 1976. ARP will therefore draw all pertinent disciplines into the mainstream of FSR/E by channeling TA and financial resources into existing research and extension divisions of DOA and DOL.

FSR activities will be planned and implemented by an interdisciplinary group of scientists on deputation from other research units. They will necessarily depend on other units for basic research and technology innovation.

FS Group field activities will be cited in 3 regions and 6 locations, namely Kabre, Durrche and Pumdí Bhumdi with satellite FSR/E sites to each of these stations plus Bharaiwa, Chitwan and Parsa FSR/E only in the lower elevation areas.

Whereas the focus of ARP work will be in the hills, very little is known about important elements of hill agriculture in Nepal. Therefore, ARP activity will initially be largely exploratory and designed to establish benchmarks of the soil-plant-animal management systems currently in use by hill farmers. As experience and information accumulate the scope will broaden and efforts will become more focused. A suggested chronology of field research and extension detailed in Section J would provide first for pasture forage (including tree forage) work coupled with animal nutrition activities, followed by cattle and buffalo improvement through introduced crosses, vegetable and fruit crops and other specialty crops and small animal husbandry, i.e., sheep, goats, and chickens. Ultimately pest management in crops and livestock and plant and animal pathology control measures would become involved. Agro-forestry and livestock are not part of the DOA and therefore ARP will direct its early efforts to integrate these disciplines into the FSR/E program.

Diversification of the major grain crops have received much attention in Nepal under the ICP program. Progress attained under ICP will be exploited and the CSR/E efforts diversified to provide more R/E on non-genetic factors. Moreover, FSR/E will intensify the "system" analysis of the major crops grown in tandem with each other and with oils, pulses and minor crops as the farm situation may demand.

Pulses are an important component of the Nepalese diet. Soybeans are grown in the mid and low hills. Pigeon pea, lentil, chick pea, garden pea, black gram and green gram are grown mainly in the Terai and Inner Terai. These are known locally as "minor crops".

3.1.1 Pastures and Forages

The FSR/E keystone in the higher elevations of Nepal is forage production and utilization. This includes agronomic species (legumes, grasses) and trees. ARP will concentrate initially on identifying and collecting plant types currently utilized by farmers.

The program will move rapidly to introduce new forage types and improved strains and will evaluate their performance together with indigenous types in terms of rapidity of field establishment, and yield and quality (protein, crude fiber, etc.). Forage preservation for use during the dry season will also be studied.

3.1.2 Fertilizers and Fertilizer Alternatives

Soil fertility enrichment and conservation are innately associated with forage production and animal husbandry: legumes for N-fixation; green manure crops; collection; preservation and utilization of animal manures. Studies will be designed to maximize the efficiency of on-farm soil fertility resources. This will include projects on standardizing the art of composting, and segregating fact and folklore, so as to achieve higher resource use efficiency.

This effort will require access to an efficient soils diagnostic laboratory. The role of forages in soil erosion control will be demonstrated. More research is needed on questions related to fertilizer kind (nitrogen, phosphorus, potassium, sulphur, etc.) required for most economic crop performance. This is a largely virgin research territory in Nepal. Also, chemical fertilizer alternatives are frequently mistreated. For example, nitrogen in compost heaps is lost by volatilization and leaching. Sometimes, green manure crops are incorporated into the soil too late to allow for decomposition before seeding the next crop. Poor timing here leads to crop loss or failure at seedling establishment because some of the immediate organic decomposition products are toxic to plants.

3.1.3 Minor Crops

Minor crops like finger millet, buckwheat, barley, amaranthus, etc., play an important role in the hill agriculture. So far these crops have been neglected. It is recommended that the Kabre farm be designated as a commodity station for the above crops.

3.2 Agricultural Economics and Rural Sociology

ARP will assist HMG to expand its research and extension capacity in the area of socio-economics. The purpose will be two-fold: (a) to help establish pertinent agricultural research objectives and methodologies in the technical disciplines and (b) to evaluate cost/benefit relations and, where applicable, help organize extension programs that effectively teach and demonstrate the developed technology.

Specific socio-economic disciplinary research projects will be developed on the following general lines: Socio-economic surveys of agro-ecological areas; farm management, natural resource evaluation and development; marketing research and development for "comparative advantage" opportunities in Nepali agriculture.

3.3 Livestock Research

Practically speaking, GON capacity for research on livestock production management is very limited. ARP will assist DOL to initiate a hill livestock research program. This will involve pasture and forage management as a prelude to animal nutrition studies. Support will be provided through TA and training to assess the extent and intensity of animal diseases including methods for their control. Since livestock represents the capital resources of many farm families, socio-economic inputs will be provided by ARP to evaluate ways and means to reduce the total number of stock while replacing them with higher producing cross breeds.

Farm animal types currently in use will be classified and benchmark data collected on growth rate, yield of milk (including methods of milk processing and product quality), yield of animal fiber; and in the case of bullocks and buffalo, draft efficiency.

The program will move rapidly into cattle and buffalo nutrition as related to the forage program outlined above. Nutrition will include energy requirements protein and mineral needs for growth, maintenance and production.

3.4 Information Storage, Retrieval and Dissemination

A limited number of books, journals and articles are now housed in respective subject matter divisions at Khumaltar. In no instance are the library materials adequate. Under ARP a central library will be constructed and all current resources will be housed and cataloged. In addition, resources will be made available for expansion of the centralized library to include all pertinent journals, books, bulletins, and papers of both national and international origin that are needed by the agricultural scientific community of Nepal.

Library expansion will provide also for micro-film and microfiche readers and storage-retrieval systems for micro-processed information. Past and present editions of some international journals are now available in micro-reduced form which is the most economical way to achieve an updated library.

An editorial and publication service will be established as a separate section of the library. Authors will submit articles for publication that have been reviewed and approved for technical content by their subject matter division. The library staff will then edit the articles for language and format and contract printing through private firms.

3.5 Research Station Facilities

Three currently established hill research stations will be equipped by ARP to expedite the FSR/E hill program. The three stations are: Kabhre, Dolakha district; Dhunche, Rashuwa district; and Doti, Baitadi district. The designated research stations are subject to change if it is determined that any one of them cannot be altered to support the major elements of FSR/E, i.e., forages and livestock as well as crops.

Facilities at the stations to be expanded under ARP include living quarters for the technicians; an office/laboratory building, and storage. Since no electricity is available at any of the designated sites the laboratories will consist of work benches and storage cabinets. Equipment will consist of balances, glassware, microscopes, etc., for diagnoses of insect/disease problems and for specimen collection and preservation. Appropriate veterinary equipment and supplies will be included also. This includes holding pens and shelters for livestock.

Major diagnostic tests for soils, plant nutrition and feed quality will be provided for all research stations by the central service laboratories at Khumaltar.

Khumaltar laboratories are fairly well equipped to service the research needs of the hill stations. These laboratories will be reinforced as necessary with reagents, equipment, and especially with trained personnel to be able to respond in a timely manner with analytical results on samples and specimens.

The GON has a limited installed capacity for doing research in the hill regions. The ARP will augment the available facilities, especially housing facilities for technicians in the remote stations. Limited laboratory facilities and field research equipment and supplies will also be provided. Extension will be strengthened under ARP through the provision of transport, communication and teaching equipment.

3.6 Research Support

TA will be provided to the on-going Terai research. This will consist of agronomy, pest control (entomology or pathology) and soil fertility. These positions will also be involved in the design and analysis of hill crops and soils programs. Three additional research positions are outlined for full-time hill activity; one each in socio-economics, livestock management and agro-forestry.

3.7 Extension Program

Extension will originate with the FS/R function. It will capitalize on the demonstrated utility of the present cropping pattern program and production blocks.

Organizational arrangements described in Annex D permit technically sound practices to be demonstrated as a means of obtaining more rapid changes and adaptation and utilization of improved practices by farmers. These arrangements will emphasize better opportunities for researchers and extension personnel to coordinate their efforts and to communicate by assigning both to a FS Group.

Extension activities will focus initially on a continuation and refinement of the present field programs in developing production program methodology for hill areas. Subsequent extension programs will be expanded in these areas to include other crops, integration of livestock and forage enterprises and other commodities as research recommendations make them available.

Since production program potential with current technology is directly related to input accessibility, availability of irrigation and soil erosion, these factors are important criteria for the selection of production areas. Other considerations should be to select contiguous lands, uniform ecological areas, cooperative and progressive farmers and where some cropping patterns are already being utilized by farmers. The present or potential livestock, forestry and horticultural improvement or introduction should be evaluated in selecting sites also. The selected districts for the production program are appropriate because they have the characteristics described above.

The selected areas within each district will be known as production blocks and will form the basis of the program at the village level. Each will be staffed by a Production Officer who will supervise 2 or 3 JT's (JTA's) who in turn will work with farmer leader (PLA) selected by the farmers, some of these latter will be women, since they do most of

the farm work and have a major influence on the farming operation. Women JT's (JTA's) will work with the farm women through the women PLA's.

Farmer demonstrations, meetings and training courses will be conducted at the sector "Service Center" and in the farmer's fields. It is recommended that these "centers" be a recognized vehicle for implementing the program though the agencies involved may be physically separate.

FSR/E results will be introduced by the PPVCT approach which will serve as both a verification of research recommendations and as an extension tool for farmer education, demonstration and motivation. From the PPVt's extension workers at the District level and below will extend the improved practices to other farmers and other areas.

3.8 Seed Production

The project will continue support to "mini-seedhouses: which have been developed in hill areas. The project will expand this system be developing seed producing farmers around the small seed plants. These local seed producers will spread improved seed through local barter, as they traditionally do. The small seed plant will be used to supply outlying farmers under a steel bin storage arrangement outside the block.

AIC will initially have to be responsible for the operation of the small seed house. Ultimately the ideal would be for the seed houses to be in the private sector. The mini-seedhouse should contract maize seed production with farmers having contiguous fields, if possible, to minimize cross pollination and loss of yield potential. Mini seed houses and producers receiving foundation seed should not require new seed every year. Foundation Seed will be required for maize only every 3 years and rice and wheat every 5 years. Foundation seed needs should be calculated and distributed to assure continuance of high performing varieties.

Outlying farmers who receive certified seed from the mini-seedhouse can produce seed for their area outside the production block or beyond the reach of the mini-seedhouse. The use of metal bins coupled with technical packages and farmers know-how can provide sufficient good, improved seed in the metal bin areas for farmer-to-farmer exchange.

A mini-kit program should be continued by the commodity programs through the small seed houses. Preference should be given to owners of metal bins to ensure good cleaning, storage and fumigation for further distribution of the F1 generation.

Supply of foundation seed to the hill seed program should be sufficient to produce the seed requirement of the surrounding areas and for owners of metal bins. This foundation seed will be multiplied by farmers for the mini-seedhouse, neighbors and metal bin owners. This will require timely supplies of seed foundation but will relieve AIC of the need to supply production seed to hill areas.

3.9 Project Inputs

Technical Assistance: Technical Assistance will be provided through (1) USAID contract for long-term and short-term expatriates; (2) Peace Corps Volunteers counterparted to key personnel in the hills at the District, Production block, Research and Input supply levels; and (3) Nepalese consultants.

This assistance will be in the form of technical assistance for such things as seed technology, irrigation, extension training and information and farming systems implementation.

Reliable and competent local consultants in agriculture and library science are available in Nepal. The project should try to utilize this locally available expertise which will be more relevant to Nepalese conditions.

3.10 Commodity Procurement

It is proposed that project vehicles (jeeps, trucks and motorcycles) be purchased from Japan. The cost savings in purchase and transport of vehicles plus acquisition of spare parts will be 25 to 30%. In addition, the vehicles can be obtained much more rapidly because of the closer proximity of Japanese suppliers to Nepal.

Electric power will not be available at the hill stations so a modest amount of equipment and supplies will be purchased to assist the seed production, pest control and veterinary activities there. Major laboratory support will be provided at Khumaltar. Here a modest amount of equipment and expendable supplies will be provided under ARP as needed to backstop the field research.

Other commodities will support the central MJA library to be constructed at Khumaltar. These include photocopy equipment, readers for micro-reduced documents, and scientific journal subscriptions.

3.11 Training

Training will be provided under ARP to cover a broad range of research, extension, and support activities. This includes overseas degree and short course programs. In-country training will be provided by the IARC;s in support of the commodity and livestock research activities. In addition, training will be provided for research directors at the national and local levels on monitoring and evaluation of research project. Management training will be given to experiment station manager and staffs.

In-country training and third country training (India) will be conducted for field extension personnel at the implementation levels.

3.12 Construction

Research and extension support facilities under ARP will include: a new centralized library at Khumaltar; staff living quarters at the hill station; and office, laboratory, storage, and animal shelters at the hill station.

APPENDIX A

SHORT TERM CONSULTANCY

END OF TOUR REPORT

D.W. JAMES

Period of Service: August 1 to September 2, 1984

Purpose: To help USAID/Nepal write Annex C, "Administrative and Institutional Analysis" and Annex D, "Technical Analysis" for the Project Paper "Agricultural Resource and Production".

ACKNOWLEDGEMENT

The logistical and general support provided by USAID/Nepal in connection with this short term consultancy was excellent. We were provided with many documents and were introduced to many people and places in a very short time. The local Nepali members of the review team were outstanding in terms of both capability and enthusiasm. This was especially true in regard to my research review counterpart, Dr. Fanindra Neapane. It was quite remarkable to me how frequently Dr. Neapane and I agreed as to the reality of current conditions and actual research needs in the MDA. I would like to express appreciation to USAID/Nepal for the opportunity to serve in this capacity and for the overall support given to our efforts.

I would like also to express appreciation for the privilege of working with Mr. Anderson Renshaw. It was truly gratifying to me that we, who had been total strangers previously, had so many common observations and recommendations concerning the agricultural research and extension needs in Nepal. We also shared essentially identical points of view on the complementary roles of agriculture research and extension and how these professions ought to be mobilized, coordinated, monitored, and evaluated.

GENERAL OBSERVATIONS

During the four week period spent in Nepal we met many people, traveled to many sites and studied many documents pertinent to the goals and objectives of the Project Paper. Before concluding our work we produced four drafts of the Annexes. USAID did extensive editing and re-writing of each draft, however this is their prerogative, but we wondered about the primary need to bring a consulting team together to do a job that was already conceptually complete and in which there is no room left for suggestion. The basic area of disagreement revolved around agricultural extension, what it is and what it does. Within the PP, research and extension are badly confused. This is true in terms of methodologies, agencies, and monitoring-evaluation procedures. The PP assigned major extension-related work to researchers, including simple service roles. The PP also bypassed the established extension system except at the field level where in-place extensionists were preempted to do extension work under the direction of research personnel.

The highlight of the trip occurred on Wednesday, August 29th at 10:00, the day before our scheduled departure from Nepal. This was the meeting with the Ministry of Agriculture, Department of Agriculture (DOA) officials, in which we were to report the results of our analyses and recommendations. The appropriate officials received the draft version of the previous Friday. The meeting had been scheduled for Sunday, August 26th but unexpected official holidays occurred on the 26th and 27th. DOA could not reschedule the meeting until Wednesday the 29th.

The essence of the DOA discussions was that the Project Paper did not address top priority issues of the GON. We were informed that any agricultural development work must conform with the 7th five-year plan now being finalized within GON, which plan is to be published within two months. In order for the PP to reflect GON priorities and DOA perceptions, the PP will need to be rewritten in terms of goals, objectives and methods. Following are some of the conditions that will need to be satisfied to be in accord with the GON priorities (statements in parenthesis are my observations):

1. The PP title should be changed to exclude "production" to reflect the true emphasis of the program because production has a very small part (about 9%) of the proposed budget.
2. The proposed research coordinating committee and its hierarchical level were not agreeable to DOA.
3. The 7th Five-year Plan provides for much greater emphasis on agricultural extension; the PP essentially ignores extension except at the farmer contact level where in-place extension workers are pre-empted to serve PP needs. (Extension in its present form is barely rudimentary and efforts to upgrade it are fully justified.)
4. DOA does not want oilseeds in the program because this commodity area is now being supported by the World Bank. They want pulses developed as a separate commodity group for research and extension purposes.

5. The DOA has lost direct contact with the international research centers, e.g. CIMMYT, IRRI. DOA intends to reclaim this area of responsibility. IARC coordination under the proposed PP would therefore be nullified. (They evidently lost this initiative when the current USAID-fostered Integrated Crop Production program took over several years ago.)

6. They said enough technology already exists for transfer to hill areas (a statement that I could not agree with entirely); they badly need increased extension capability to help the hill farmers.

7. Plant nutrient availability is a severe constraint in the hill areas. Under the 7th Plan the DOA Division of Soils is mandated to identify nutrient deficiencies and to promote the utilization of chemical and organic fertilizers. The PP treats this as a minor issue. DOA has assigned more people to work in this area and would ask for more support of soil fertility objectives. (This statement overall is not consistent with the assertion made in #6 above. In addition, the Soils Division is poorly prepared in terms of facilities and expertise to perform the needed research. The DOA seems to be oblivious to this fact.)

8. The 7th Plan will build up Nepal's plant protection capability. They wondered if the PP could help more in this area? (It should, but the political facts of life emanating from AID/W on the use of pesticides in developmental work probably will not permit any serious effort in this direction!)

9. The PP as outlined is very complex and difficult to manage; there are too many elements and the geographical target area too broad. (I agree entirely with this observation.)

10. The DOA wants minor hill crops, e.g. finger millet, put at a higher priority.
11. Research people should be doing research, not fulfilling extension and other services as outlined in the PP (and incidentally as is now being done under the USAID-supported ICP program).
12. The DOA strongly objects to the large proportion, ca. 50% of the program resources being earmarked for expatriate technical assistance; the DOA would ask for more resources to be made available for training Nepalese in situ. (This is always a very delicate problem. GON officials need to be drawn into the program development phase to properly deal with the issues. On the other hand, their request for help in manpower development is fully justified.)
13. There are many international public and private donor programs working in the target area. The PP does not take cognizance of these, makes no attempt to avoid duplication, nor to provide coordination. (In general, USAID rarely actively seeks out or tries to expedite inter-agency collaboration. This is an unfortunate fact of developmental life.)
14. The PP livestock program is very shallow; livestock is the most important agricultural activity to the farmers in the hills; livestock priorities increase with higher elevation. (USAID over the past 10-12 years has carefully omitted the role of livestock in developmental activities and the present PP only pays lip service to livestock problems while at the same time it boasts of fostering the "Farming Systems" approach).

15. If USAID insists on maintaining proposed level of research then change the title to reflect the true emphasis and do research only.

CONCLUSIONS

1. With a few exceptions, GON officials impressed me as being very articulate, intelligent and hard working people. They show a high level of patience and tolerance of having donors move in and fix GON priorities and run GON programs.

2. USAID/N is very poorly informed on GON plans and priorities. USAID planning seems to have occurred in a vacuum resulting in a project that diverges widely from GON goals and expectations for the ensuing five years.

RECOMMENDATIONS

1. USAID/N should take no further action on the proposed ARP until the 7th five-year plan is published. The ARP should be modified to reflect the priorities of GON in regard to agricultural research and extension. Any other approach will lead to indifference, lack of support and therefore, lack of institutionalization. The first stated goal of the PF is to institutionalize (something) in Nepal!!

2. In regard to Extension, if institution building is deemed a worthy cause, and I am convinced there is a genuine need for this in Nepal, then the ARP could be modified easily because it emphasizes cropping systems - farming systems methodology and these already are 50% to 75% extension-type activities. Just change the title from Research to Extension, i.e., ARP to AEP, and automatically fortify GON extension-building plans.

3. DOA officials left the door open to do research, free from extension or any other intertwined activities, if USAID insists on pursuing this theme. I would advise against this. I don't think general USAID temperament would permit the necessary commitments required to generate the needed bona fide research on pressing production problems in Nepal. On the other hand, if USAID wanted to make the commitment, it could do a great service to Nepali research capability. At the present time, researchers are totally undirected, unevaluated, and unpromoted as it regards scientific performance and professional growth. Nepal would profit greatly from an effort to literally institutionalize the scientific method.

ITINERARY - D.W. JAMES

USAID/NEPAL TRIP DURING 01 AUGUST - 02 SEPTEMBER 1984

01 August - 8:00, Leave Logan for Salt Lake, Sacramento, Diamond Springs.

Arrive 3:30.

02 August - 8:00, Leave Diamond Springs for Sacramento, San Francisco. San Francisco fogged in, so circled north bay area for 2.5 hours including stop for fuel at Concord. Arrived just in time to slip into PA 006 as door was closing.

03 August - 7:15, Arrived Hong Kong. Arrived Khatmandu 10:45.

06 - 09 August - Khatmandu.

10 - 14 August - Traveling to experiment stations and field sites.

Returned Khatmandu 6:30.

15 - 30 August - Khatmandu. Was to have left on the 30th but flight cancelled for mechanical troubles in B727.

31 August - 11:45, leave Khatmandu for Bangkok. Arrived 3:30.

Reservations had not been forwarded by Royal Nepal; no seats available to Hong Kong, so stayed overnight.

01 September - 9:00, Leave Bangkok, arrive Hong Kong 1:30.

02 September - 12:45, Leave Hong Kong, arrive San Francisco 10:30; arrive Salt Lake City 3:30; arrive Logan 6:00. What a relief!!

DOCUMENTATION

The following items were requested by USAID/N to be included with the annex on documentation. There was not sufficient time to prepare this as some of the important items included were only available the last two or three days of our consultancy. This is not an exhaustive list of items we studied. USAID provided us with most of the documents we perused and they will already have these in the annex.

Panday, Kk. 1982. Fodder trees and tree fodder in Nepal. Swiss Development Corp., Swiss Federal Institute of Forestry, Berne.

Workshop Seminar on Livestock Development in the Hills of Nepal, 25 - 27 January, 1984. Lumle Agriculture Center, Pkhara, Kaski, Nepal.

Combs, Weslie. Short term Consultant Report. 9 January to 28 February, 1982. A proposed prospectus for development of the department of animal science at IAAS, Rampur.

Ruttan, Vernon W. 1983. Agricultural Research Policy Issues. Hort. Sci. 18(6). December.

Humphreys, L. R. 1982. Perspectives on the adaptation of pasture legumes to tropical farming systems. Outlook on Agric. 11(4).

Bergeret, P. 1984. Farming Systems/Agrarian Systems - a Comparison between two systems. Franco-Nepalese Cooperative Programme. APROSC. Kathmandu.

Judd, M. Ann, James K. Boyce, and Robert E. Evenson. 1983. Investing in agriculture supply. Economic Growth Center, Yale University. Discussion paper No. 442.

APPENDIX B

13

SHORT TERM CONSULTANCY

END OF TOUR REPORT

A. N. RENSHAW

Period of service: August 1 to September 2, 1984.

Purpose: To help USAID/Nepal write Annex C, "Administrative and Institutional Analysis" and Annex D, "Technical Analysis" for the Project Paper "Agricultural Research and Production".

I arrived in Kathmandu on August 5th. The first several days were spent in discussions with USAID/Agriculture, Director Dennis Brennan and other donors, as well as some of the GON agency chiefs involved in the project. The initial meeting with GON Ministry of Agriculture (MOA) was in a meeting with the Joint Secretary and department heads. Thereafter we visited with most of the Directors and Deputy Directors individually.

I made field trips for five days to various agriculture research and extension stations and sites as well as to ICP production blocks and SPIS activities. A list of the institutions and sites which I visited is appended.

The major part of the time was spent with USAID-supplied Nepalese Ministry of Agriculture and Tribuvan University counterparts. These three officers were very knowledgeable about the ARP proposal, Nepalese agriculture, officials and personnel, and policies of the Ministry of Agriculture. They were very competent for this job they were indispensable in assisting us. Both they and USAID are to be commended for their high caliber of assistance. The Mission support was excellent. We had no problems of transport, housekeeping details, etc., and the hospitality we enjoyed is highly appreciated.

My co-worker, Dr. David James of Utah State Agriculture College, was a joy to work with. His wide experience and his sincere and conscientious approach to the assignment made a difficult situation much more tolerable. We agreed on every major point and formed a consensus that is well founded and consistent with the project aim.

I have noted in this report several topics and issues which I feel are relevant to the optimum functioning of the ARP project. I hope that these will be considered by USAID as the mechanics and institutionalization of the project evolve.

Annexes "C" and "D" of the project proposal were our assignment; namely "Project Technical Analysis" and "Project Institutional and Administrative Analysis." All of the Annexes were to be mutually supporting and consistent. Since the Project Paper had been approved already and the other Annexes were already written, our assignment became superfluous. Annexes "C" and "D" contain some compromises with USAID and over-rulings by USAID of our recommendations. While I will support these compromises in the USAID presentation to GON, I feel that my preferred position should be noted in the eventuality that USAID and GON wish to again consider some of these issues. The over-rulings I cannot support. The documents as they stand (Annexes "C" and "D") should not be presented as my work unless it is indicated that substantive portions of them have been edited by USAID to conform with the subsequent Annexes (already written before our arrival) which are to support Annexes "C" and "D". Our assignment turned out to be one of justifying subsequent annexes as evidenced by the fact that we made four rewrites. The last contains much of the wording inserted by USAID. Because of the large amount of editing and cut-and-paste by USAID, several portions which appeared in earlier versions are not addressed now.

Below are some items of concern which are not addressed in the final version:

1. Quality Seed - Production Recommendations. Many instances came to our attention of the distribution of poor quality seed by AIC. Part of this is due to negligence and poor storage conditions. A large part of it, however, appears to be in the seed testing procedures and requirements which impede the rapid procurement, processing and storage of seed.

I suggest that MOA policy should indicate the following as a part of the technical annex:

a. Allow the AIC to develop its own quality control under scrutiny of STIP. AIC should be required to send ten percent of all the tested samples and their results to STIP. In this way STIP will have a spot check on AIC testing accuracy.

b. STIP should also randomly sample seed at the retail outlets and other facilities of AIC on an unannounced basis to insure AIC compliance with seed laws, labeling and accuracy of testing.

c. STIP should be a quality-enforcement agency, not a service agency. The seed testing will be done more expeditiously by the trade itself. Seed quality will also improve by immediate sampling before purchase, and timely processing and storage.

d. AIC should retest seed prior to delivery to retail and wholesale outlets to insure that quality has been maintained in storage. As of now they have neither the equipment, expertise nor authority to do this. This recommendation was deleted, though we feel it is an unequivocal requirement.

2. Project Administration and Coordination Channels (Organization)

I strongly believe that the two agriculture functions of research and extension must be coordinated and simultaneously strengthened. The project includes both research and extension (production) in name and concept. Extension should have the primary function at the farmer levels for expansion in areas beyond the PVT. We disagree with the Mission which insisted that the Extension Specialists be assigned to the Research Division (rather than their present parent organization). We suggested, however, that they be officed with the Research Division counterparts for closer working relationships. Even so, the place of the Directorate of Extension in the project is not addressed. The project is essentially a Research Project carried to the farmers by the research staff. "Extension" is to be done by research people.

USAID proposes to use field extension workers from the District level to the farmer, but the above division of authority would require extension workers of the District to function under the direction of the Director of Research. Extension and research are two different professions requiring different skills and expertise. The project as it is proposed in the Annexes gives both functions to the research group and strips the Extension Service of all of its technical personnel by transferring them into the research group.

Our proposed solution allowed for an effective Extension organization to function in any donor arrangement and GON's own programs, as well as this project. The project as proposed by USAID, organizationally speaking, will dilute the resources of the MOA research and extension efforts. This organizational arrangement will by-pass traditional, through admittedly ineffective, agencies. I suggest that we should re-orient and train them to become efficient, not ignore them. Nepal cannot afford that luxury. The project concept is excellent; let us provide both extension and research the organizational arrangement to make the most of it.

The Annexes as written do not address the needs of the project beyond the pre-validation trials. Expansion and gaining farmer acceptance and adaptation of practices in the hills beyond the immediate trial areas will require an effective extension effort not provided for.

3. To office the Farming Systems Research and Extension groups at Khumaltar removes them geographically far from the action; namely the research stations from where the FS will be developed and from the Districts where they will be implemented.

4. Office construction work should be done, (a) in order to set up additional office space for the Farming Systems Extension Specialists with their respective research counterparts at the research stations (b) in the Districts as Agricultural Service Centers and/or mini seed-houses as a means of enhancing MOA coordination at the implementation level and providing for quality inputs (especially seed) for farmers.

Khumaltar has a number of buildings equipped for disciplinary research. These were originally built as a research complex by USAID. Another building is not needed.

Unfortunately, we did not get to meet with MOA staff until the afternoon before our departure. This was not the fault of anyone, as an unexpected holiday was declared on the day previously set.

The meeting turned out to be a shocker. It was obviously very early in the three-hour meeting that the MOA had had not previous understanding of what the project was designed to do or what kinds of commitments would be involved. In my opinion, no one discussed the kind of relationships that would be necessary within the Ministry. For example, the Director of Livestock had no idea of how his Directorate would be expected to function, since livestock has only been referred to as a necessary part of a Farming Systems Project.

We never got around to presenting the production portions of the project. The MOA had received copies of the Annexes on Friday before the meeting and they had done their homework. USAID had not. The USAID project proposal appeared to be largely a unilateral one. We had suspected this, and MOA proved it to be so.

The following are the major MOA responses:

1. The role of Extension had not been addressed though the name of the project incorporates farmer production. Extension is the farmer contact.
2. No Joint Secretary for Research is needed.
3. Budget allocations are not consistent with the stated purposes of the project: 50% is for TA and only \$.5 million of \$2.4 million is proposed for production.
4. Since this is primarily a research project, delete "Production" from the title.
5. The training proposals are not realistic to needs.

6. Livestock and minor crops as parts of a FS approach are mentioned, but not ever discussed with the personnel concerned. Leave minor crops out of the project.

7. Areas proposed for project implementation are not entirely agreeable.

8. Reduce the TA proposed.

9. Rejected formation of a Research Coordination Committee.

10. Rejected the proposed position of Deputy Director of Research.

I would disagree with the Ministry responses in some cases. Their responses revealed a glaring negligence on someone's part in that the project details and purposes had not been explained, negotiated and understood by the Ministry people. For instance, they suggested that minor crops should not be included in the project. One of the primary purposes of the project is to develop and introduce improved cropping patterns to hill farmers. Minor crops are a vital element in these cropping patterns. Another case of which MOA had not been made aware is that the Farming Systems introductions will involve Forestry (a different Ministry) and Livestock (a different Directorate). A Joint Secretary and/or a Research Coordinating Committee will be needed. MOA rejected this.

After the meeting with MOA, it was obvious that USAID should start back at "square one" and develop with MOA the total project purpose, objectives, inputs, organization, coordination, locations, etc. Instead, we were called together that night, with our Nepalese assistants, to modify, change, delete and add to the Annexes as USAID believed the Ministry of Agriculture would agree!! Again MOA was not involved! Their understanding of the project envisioned by USAID was no better. The treatment given that evening was only cosmetic. It was futile -- a stubborn response to project timing constraints.

I strongly recommend that USAID spend whatever time is necessary to start over and sit down with the Ministry of Agriculture personnel involved and "hammer out" and negotiate a project agreement in detail. Then the PP can be finalized.

FIELD TRIP ITENERARY

10 August - Kathmandu - Hetaura

Forest Institute

MSU Seed Quality Control Class

AIC Senior Agriculture Officer

11 August - Ketaura - Rampur

MUCIA Team

IAAS Dean

Production block visit with ICP personnel and farmers

11 August - Rampur - Gorka

National Maize Development Program

Hill Seed Production Program

PPVT

DADO Office

12 August - Gorka - Kathmandu

13 August - Kathmandu - Trisuli - Kathmandu

DADO and staff

Agriculture Service Center and Coordinating Committee
(ADB, Saja, JT, JTA, AIC)

Extension Seed Production Program (Village Seed Bank_

AIC mini seedhouse

Small farmer's project