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EVALUATION  
OF THE  
TRANSFORMATION AND INTEGRATION OF THE  
PROVINCIAL AGRICULTURAL NETWORK

(No. 391-0488)

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(Outline)

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  - b. Project Officer(s): Maurice Fleming
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## ACRONYMS AND ABBREVIATIONS

A/E	Architectural/Engineering
AO	Agricultural Officers
AU	Agricultural University
BIFAD	Board for International Food and Agricultural Development
BPS	Basic Pay Scale (Grade)
BSc	Bachelor of Science (Honors)
CAM	Collaborative Assistance Mode
CDSS	Country Development Strategy Statement
CIDA	Canadian International Development Agency
FA	Field Assistants
FLG	Faculty Liaison Group
FTE	Full Time Equivalent
FVDB	Fruit and Vegetable Development Board
GDP	Gross Domestic Product
GONWFP	Government of North West Frontier Province
GOP	Government of Pakistan
ha.	Hectare
HYV	High Yielding Varieties
IARC	International Agricultural Research Center
IRRI	International Rice Research Institute
LT-TA	Long-term Technical Assistance (Assistant)
MART	Management of Agricultural Research and Technology
NARC	National Agricultural Research Centre
NIFA	Nuclear Institute for Food and Agriculture
NWFP	North West Frontier Province
NWFP-AU	North West Frontier Province Agricultural University
PARC	Pakistan Agricultural Research Centre
PFI	Pakistan Forestry Institute
PP	Project Paper
PTBRF	Pakistan Tobacco Board Research Farm
SIU	Southern Illinois University (at Carbondale)
SNE	Scheduled New Expenditures
SOM	Skidmore, Owens and Merrill (Architects)
ST-TA	Short-term Technical Assistance (Assistant)
TA	Technical Assistance (Assistant)
TAT	Technical Assistance Team
TDY	Temporary Duty
TIPAN	Transformation and Integration of the Provincial Agricultural Network
TOEFL	Test of English as a Foreign Language
UI	University of Illinois (at Urbana)

UNICEF	United Nations Children's Fund
U.S.	United States
USAID	United States Agency for International Development
VRI	Veterinary Research Institute
WID	Women in Development

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## EXECUTIVE SUMMARY

### A. Overview of Project and Evaluation

The purpose of the TIPAN Project is to integrate agricultural research in the NWFP with agricultural education at the University level, improve the quality of education offered and research undertaken by the University, and strengthen linkages with agricultural extension through a problem solving, farmer-oriented outreach program at the University. Achievement of this purpose is intended to support the goals of: increased NWFP agricultural yields, production, farm income and rural employment, and transformation of the agricultural technology transfer network in the NWFP.

The TIPAN project was designed to address a variety of constraints. In the teaching area, these derive from: a weak program at the graduate and undergraduate levels at the NWFP Agricultural University (AU); the undifferentiated program for different career paths; inadequate curriculum, library and textbook availabilities; and lack of student incentives to learn or ability of faculty to assess student progress due to excessive reliance on external examinations. In research at AU, there was a lack of programmatic focus in the work being done solely by MSc candidates working with inadequate library resources, equipment, transport and funding. While research done by the provincial Department of Agriculture in the crops area included some good work, it lacked sufficient depth to produce results useful to farmers. The animal research program also included useful attacks on some specific problem areas but was severely resource-constrained and lacked personnel and incentives for quality output.

TIPAN was designed to address the problems both by restructuring to integrate the NWFP Department of Agriculture research programs into the AU and to build strong linkages among teaching, research and outreach with adequate funding, trained personnel and other resources to ensure significant impact for improvement of farm output and incomes in the NWFP and in Pakistan. This directly addresses the needs of Pakistan for a steady growth of farm output, reduced food import requirements and better living conditions for rural people.

The TIPAN Project was launched by an agreement among the Government of Pakistan (GOP), the Government of Northwest Frontier Province (GONWFP), Northwest Frontier Province Agricultural University (NWFP-AU), and the United States Agency for International Development (USAID). The agreement, reached in 1984, provides for expenditures of US \$35.5 million by USAID and of US \$29 million by Pakistan over the three phases, or 11 years (1984-1995) projected as the project life. The Project has technical assistance, training, commodities and a construction program as components.

The Project design required an external evaluation during the Phase I period 1984-1988. This report presents the findings, conclusions and recommendations of the evaluation, which was performed during the period September 1 to 30, 1987. Assessments according to the requirements of the evaluation scope of work are in Chapter III, conclusions and recommendations based on the assessments are in Chapter IV.

## B. Findings

The major findings of the evaluation may be summarized as follows:

- o A satisfactory administrative structure has been created with the potential for teaching, research and outreach addressing farmer needs in a practical way. The foundations have been laid for the integration of all agricultural research for the NWFP at AU. Some weaknesses persist in regard to the practicality of production economics research, excessive focus on discipline-based research, the absence of integration of research on crops and livestock, undue rigidity in the application of project targets, and structural problems in departmental functions;
- o Progress is on schedule in the reformulation of syllabi, curricula and course content for teaching at the BSc level but will need to be a continuing process. At the MSc level, progress is much more limited. The semester system is in place and is widely embraced. The women's program is lagging. Equipment is not yet being effectively used. Practical research work is inadequately supervised and the split appointment concept for faculty and internal examination processes are not adequately understood;
- o The structure for all NWFP agricultural research has been established within AU, major appointments made, funding increased and a solid basis created for future practical farmer-related work to be carried out and coordinated with extension and national research. Funds, however, remain inadequate and further structural, organization, policy and management development will be required;
- o On-farm adaptive research and verification trials have produced more agricultural technology as a result of the new outreach policy, but substantially more attention is needed to focus on results appropriate for farmers. Continued progress is dependent on a sharper focus on responsibilities of key players in the process, their training abroad and on the job and their selection solely on merit as now planned;

- o The Learning Resources Center is a sound concept but is not yet making a major contribution due to the lack of experienced staff and equipment. Library linkage and consolidation is needed to improve performance and reduce costs. The computer center is functional and well used but delays in construction of learning center facilities are a constraint;
- o Commodity procurement is proceeding satisfactorily but its maintenance and training for use are problematic;
- o Participant training is lagging to a moderate degree, has emphasized PhD level training unduly and is not based on adequate criteria for selection. Some negative impact on project progress is foreseen;
- o Short-term TA has been underutilized and inadequately planned;
- o Host country support has been generally adequate but falls short of expectations in regard to funding releases, counterparts for short-term TA and contracting for construction, which is behind schedule; and
- o Relations between the various participants in TIPAN have been generally good, especially between the TAT and AU, but earlier there were problems in the relationships of USAID with UI and with the TAT, which at times were perceived as confrontational. These have now become positive.

Among major assumptions which have proven somewhat optimistic are the following:

- o Adequate budgetary resources will be available for agricultural education and research;
- o Adequate numbers of qualified local staff are recruited and hired; and
- o Merged research staff respond positively to initiatives by AU's outreach program.

None of these assumptions was wholly unjustified but each has proven to be more difficult to realize than was expected at design. In major part, this is due to an underestimation of the degree of complexity and the extent of demand on available resources of this comprehensive restructuring program.

### C. Conclusions and Recommendations

There are four principal conclusions each resulting in a recommendation.

1. TIPAN is successfully launched and should be continued into Phase II.

TIPAN is already having an important impact on the quality of teaching, research and outreach programs of the NWFP-AU. An esprit de corps has been developed among the administration, faculty, research/outreach station staffs and students in support of activities to strengthen the three areas of University responsibility. Aspirations for improvement, excellence and enthusiasm for the now increased responsibilities of the University have been stimulated dramatically.

It is recommended that TIPAN be continued without interruption into Phase II to ensure maintenance of the momentum now evident at AU and for the ultimate success of the Project.

2. Given the complexity of TIPAN, the performance of the implementation of TIPAN has been satisfactory and UI/SIU should be maintained as the contractor for Phase II.

There have been some inadequacies in timeliness of fielding the Technical Assistance Team (TAT) personnel, in the early execution of commodity acquisitions, and in delivery of scheduled reports. On the other hand, performance of other tasks has been adequate or better. Notable items include the execution of the training programs for AU staff in the US; resolution of commodity acquisition problems; achievement of the now excellent relations between the TAT and AU officials and staff; and most important, a vital contribution to the dramatic turnaround in attitudes at the University and at the research/outreach stations from complacency to keen interest and enthusiasm for the TIPAN goal. It is therefore recommended that the Illinois Consortium be continued as the contracting entity for the execution of Phase II of the Project.

3. TIPAN implementation has and will entail an intense and systematic effort to achieve fundamental changes in the attitudes, standards, capabilities and goals of NWFP-AU.

The objective is to increase the indigenous institutional capability of the University to develop and transmit improved agricultural practices suited and acceptable to farmers thereby increasing farm-level agricultural production to meet the rapidly increasing food and economic needs of Pakistan. If achieved, those advances will benefit the agricultural sector of Pakistan enormously and contribute to an improved quality of life for most citizens. It will take time to attain and consolidate the great potentials of TIPAN's effect on NWFP-AU, certainly more than the projected 11 years. External support for fourth and fifth phases will be essential. These phases will probably require a different mix of support for TA, training, and commodities supplied by TIPAN. The Evaluation Team believes that without such an extension of TIPAN the current gains and

emerging achievements of the Project are likely to be lost soon after the termination of support, as has so often happened in similar efforts to improve agricultural universities in developing countries.

Given the complexity of the project goal and purpose, it is recommended that the actors in the project--the AU staff, the Contractor, the Government of NWFP, the relevant GOP agencies and USAID--exercise the utmost flexibility in implementing the project. Specifically, this will entail:

- o AU Administration hiring new personnel expeditiously, and providing incentives in the form of grants, promotions, study tours to professors and researchers whose work contributes significantly to the achievement of TIPAN goals;
- o The TA Contractor responding quickly to needs for short-term and long-term technical assistance, and presentation of two or more nominations to AU and USAID for all vacancies which are to be filled soon; and
- o A flexible approach by AU, TAT and USAID on the purchase of appropriate commodities. Considerations should include making purchases from local suppliers when appropriate, giving attention to training and maintenance needs, and not adhering rigidly to the project list provided in the project design paper.

Host country commitment to and support for TIPAN have been good. The merger, and the changes within AU, have involved fundamental traditions that directly affect many TIPAN participants. The fact that so many people have agreed, and even welcomed these changes is impressive. It is indicative of the deep commitment of AU to TIPAN that traditions have been broken to implement the Project. Support for the University by GONWFP in AU's research/outreach system's recurring and development budgets and from GOP through the Universities Grants Commission has been increasing. It is recommended that an appreciation of the complexity of TIPAN and its pioneering nature be shared by all of the actors involved--USAID, the Illinois Consortium, NWFP-AU, GONWFP and GOP--as their understanding and support will be needed to permit and achieve the continual adjustments in TIPAN which will surely be needed because of unforeseen developments and hazards.

4. The reductions in the Long-Term Technical Assistance team (LT-TA) below the number foreseen in the Project Paper (PP) are having an adverse effect and thus the long-term TAT should be raised to the seven members originally planned.

The absorptive capacity of the University is now able to utilize effectively at least seven LT-TAs. Although the TAT has had difficulties in fielding the full complement of five LT-TA, AU and the Evaluation Team believe that the level of five should be raised to seven. The following additional specialists are required: counterparts for the Directors of Research and Outreach; an agricultural production economist, an animal production/forage crops specialist; and an animal tractor/small tools and machinery expert. Without such TA, present momentum and needed balance in programs will

become more serious. With the merger now complete, and TIPAN activities moving to a new emphasis on research/outreach, these additional TAs will be highly useful. Further, the return of TIPAN participants, fresh from their research training in the US and eager to get to work at AU, offers TA team members the opportunity to work with ideal counterparts. Far from resenting the expenditure of TIPAN funds on expensive expatriate salaries, the AU administration is anxious to benefit from the maximum expertise available. The University/Merged Research System is on the move, and AU is anxious to start achieving outputs as quickly as possible. It is recommended that at least seven LT-TAs at any given time be authorized during the remaining Phase I period to 1990.

The Evaluation Team has gone beyond simple specific evaluations of its Scope of Work (Annex 1). In the introductory sections of this evaluation and in Annex 2, the diversity and challenge of the agro-ecological and agriculture of NWFP are characterized. The complexities are an order of magnitude greater than those prevailing in the Punjab region of India and Pakistan. To meet those challenges and Pakistan's burgeoning need for increases in agricultural production in the decades ahead, NWFP will need agricultural graduates and leaders of excellent capabilities. Stable government policies favorable to agriculture will be equally essential if Pakistan's needs for increases in agricultural production are to be met.

Other specific conclusions and recommendations of the Evaluation Team are presented in Chapter IV.

#### D. Lessons learned

The principal lessons learned from evaluation of TIPAN at the mid-point of Phase I are as follows:

- a. Regarding design
  - o Comprehensive integration and restructuring of the agricultural network (education, research and outreach/extension) for a major provincial-based agricultural university system is a complex and very long-term task whose accomplishment involves difficult social, cultural, fiscal, policy and administrative adjustments. The complexity of the changes required and the time and resources needed to effect them is easily underestimated;
  - o Projects undertaken in the "collaborative mode" (e.g., under Title XII) require a careful delineation of the respective roles and responsibilities of AID and the contractor to avoid misunderstandings, shortfalls and/or confrontation between the parties and implementation difficulties; and
  - o It is counterproductive to include in the assumptions for project outputs, factors which are primarily or largely dependent on the achievement of project outputs (in this case, that technologies developed by the project will be appropriate and acceptable to farmers).

- b. Regarding broad action applications
- o Institutional reforms of the type most critical to sustainability, e.g., achieving meaningful impact to increase productivity, output and incomes are among the slower and most difficult to achieve. They must be rigorously pursued with patience and tenacity over an extended period of years; and
  - o Projects with a mix of TA and facilities construction are likely to be inhibited by delays in the development of the new facilities. Since developing countries have endemic difficulties in providing adequate resources to meet project construction funding commitments, a careful and realistic balance of projected progress between institutional reform and construction is required to avoid waste and frustration where the facilities are critical to successful restructuring.

## PURPOSE, SCOPE AND PROCEDURE OF THE EVALUATION

### A. Purpose

The TIPAN project plan and contract include provision for external reviews at various stages of the project. In August 1987, USAID contracted with Devres, Inc. of Washington, DC to arrange for the conduct of the first external review at the mid-point of Phase I of the TIPAN project. Devres engaged a team of three consultants to execute the review during September 1987. USAID/Islamabad arranged for a staff member who has long been familiar with TIPAN to accompany the review team on a part-time basis.

### B. Scope

In general terms, the Scope of Work for the review listed several activities which may be briefly summarized as follows. The review team was asked to:

- o Determine progress in the implementation of TIPAN;
- o Assess the extent to which project objectives are being met;
- o Recommend whether or not to continue the project as foreseen in the project plan;
- o Assess the performance of the contractor in execution of the contract as a basis for deciding whether the same contractor should be continued into Phase II of TIPAN; and
- o Appraise the nature and extent of the commitment to and support of TIPAN by the host country.

On the basis of the foregoing, the review team was also asked to make a recommendation as to whether the TIPAN project should be continued beyond the current Phase I. Finally, the report of the review team is intended to assist USAID in making decisions regarding adjustments, shape and directions of TIPAN if the project is to be continued beyond the period covered by the present contract.

### C. Procedure

The methodology employed in carrying out the evaluation included:

- o An intensive visit with interviews at all levels of the staff and administration on the home campus at the University of Illinois to gain as full an appreciation as possible of the support provided and the concepts applied in the execution of the contract by the UI/SIU consortium;
- o Interviews (structured and informal) in the field with people at all levels involved in the project including:

- USAID executives and staff, particularly the TIPAN project manager;
  - The UI/SIU long-term Technical Assistance Team;
  - Agricultural University senior administration, staff, academic faculty, technical personnel and students at the under-graduate and graduate level; and
  - NWFP Agricultural Department extension leadership and field personnel as well as farmers;
- o Visits to all facilities at AU engaged in teaching, research, outreach, etc., both on and off campus as well as extension field day programs;
  - o Review of all documents pertaining to the project and key materials relating to USAID program strategy and agricultural development generally in the NWFP and Pakistan;
  - o Collection of historical and current data from secondary sources, direct observation and questions or requests for data from faculty and administration of AU;
  - o Analysis of program, organizational and policy progress in relation to plans and targets established for the TIPAN project; and
  - o Preparation of preliminary and final draft analytical reports responsive to issues raised, each of which was discussed with and comments received from USAID, AU and TAT personnel as the basis for the final report including findings, conclusions, recommendations and lessons learned.

## I. BACKGROUND ON THE TIPAN PROJECT

### A. Concept and Design

The TIPAN project was undertaken to strengthen the teaching and research capabilities of the Northwest Frontier Province Agricultural University (NWFP-AU) through merger with the provincial research services and to build linkages with the provincial extension services. TIPAN was designed and is being implemented under USAID procedures known as the Collaborative Assistance Mode (CAM). Preparation of the project design for TIPAN was an unusually large and detailed activity. The Government of Pakistan (GOP) and USAID jointly selected the design team which was provided under an AID/CAM contract with the University of Illinois/Southern Illinois University (UI/SIU) consortium. The initial field work for the project design was undertaken from May through July 1983. Later, in October, an additional design effort was conducted for the merger of the NWFP agricultural research network with the University. A large number of the NWFP-AU staff, other Pakistani professionals, and 26 US specialists were involved in this effort. Simultaneously, the US firm of Skidmore, Owings and Merrill (SOM) was selected to develop the master plan for physical improvements of the AU.

### B. Country Setting

Pakistan is a nation of great diversity. Its natural resources and agro-climatic variability are reflected in the highly diverse patterns of economic activity and agricultural systems. The population is composed of six major ethnic and language groups which affect both economic integration and socio-political interactions of the nation. The economy of Pakistan is essentially agricultural, employing 50 percent of the work force, generating 50 percent of the exports, and contributing 30 percent to the Gross Domestic Product (GDP).

The introduction in the mid-1960s of high yield varieties of wheat and rice, along with improved cultural and irrigation practices, resulted in a widely acclaimed self-sufficiency in cereals. Within a few years Pakistan became a net exporter of cereal grains. The impact of this dramatic increase in agricultural productivity was a major stimulant to the national economy.

However, continued economic growth, led by the agriculture sector, may be constrained by the fact that land may be lost at an estimated rate of 40 000 ha annually because of waterlogging and salinity. A further constraint is the depletion of rainfed lands through environmental degradation, soil erosion, nutrient depletion and inadequate cultural practices. Thus, little increased output can be expected from expanding the area farmed. Most of the required increase in agricultural production must come from an increased rate of introduction of new output-increasing technologies into agriculture.

The general situation in Pakistan applies equally to the Northwest Frontier Province (NWFP). In most aspects, however, the difficulties of introducing technologies into NWFP agriculture are more severe, because of its greater diversity of soils, topography, ethnic groups, small land holdings, and the difficulty of access due to limited infrastructure.

Since new technologies are crucial in increasing national and provincial output, the agricultural teaching, research, and extension capabilities must be greatly increased. The Agricultural University (AU) and the TIPAN Project thus become the key factors in expanding agricultural output in the Northwest Frontier Province.

#### C. Scope of Institutional Strengthening by the TIPAN Project

The intent of TIPAN is to strengthen NWFP-AU in its teaching and research capabilities through merger with the provincial research services and to build effective linkages to the provincial extension services.

The history of the antecedent institutions prior to initiation of TIPAN has a great bearing on the time required to achieve a sufficient level of institutional capability.

Agricultural education was first introduced into the curriculum of Islamia College in 1933. After the establishment of Peshawar University in 1950, a College of Agriculture was founded in 1957. During the period 1954-65, USAID provided limited technical assistance to Peshawar University through Colorado State University. A relatively small part of this assistance was designated for the College of Agriculture. The College of Agriculture achieved the status of a Faculty of Agriculture of the University of Peshawar in 1974. In 1981, the Faculty of Agriculture was raised to the semi-autonomous status as the NWFP Agricultural University. This institution has produced virtually all of the professional talent in the provincial agricultural ministries and related agricultural agencies. A considerable inbreeding has occurred, as there is limited scope for professionals moving to employment in other provinces and to the private sector.

The assessment in the project paper found that AU was a relatively weak institution, in terms of the skill levels achieved by its students, and the relevancy of its research. Its links to provincial research and extension agencies were almost non-existent.

Agricultural research in NWFP dates back to 1908 when the Agricultural Research Institute was established at Tarnab. Limited staffing by the colonial administration permitted only a small effort in the selection of several cercal varieties and work on some fruit plants. After independence, the research station was expanded to include nine separate sections. Again these were under-funded and understaffed. A reorganization in 1967 brought more commodity-specific emphasis to programming, i.e., cereals, vegetables, sugar beets, and

tobacco. The reorganization in 1980 provided for 10 research stations grouped within five Research Institutes. This expansion in number of provincial research stations continued to be handicapped, as with predecessor stations, by lack of qualified staff and by lack of financial support for operations, travel, etc. More important, the research effort had little orientation to farmer problems.

Before 1962, all extension activity in the Province was provided by the national government. A limited extension component was associated with the establishment of the National Agricultural Development Corporation. The main effort was in providing seeds, fertilizers, etc., rather than in extending knowledge to upgrade farmer skills. This program was extended from irrigated to rainfed areas in 1974. The Benor T and V extension approach was introduced in several areas of the province with mixed results<sup>1</sup>. It was not until 1982 that a formal provincial structure for extension was established. Staffing was increased rapidly. By June 1985, 142 agricultural officers, 620 field assistants and 943 field workers were employed in the NWFP Extension Directorate (Khan, p. 34).

At the time of the initiation of the TIPAN Project, the extension service had limited capability to extend technology to farmers because of extremely low levels of professional skills and little financial support for operations. The extension service was also hampered by lack of suitable technologies from research, which further reduced its effectiveness.

The brief sketch above clearly suggests the nature and complexity of the TIPAN project. Bringing about a rapid strengthening of the professional cadre itself would be difficult. Much more challenging would be the task of obtaining a clearer focus of three separate institutions and of obtaining linkages and collaboration required to effectively serve the farmers of the province.

#### D. Some Disquieting Factors Affecting the Project's Implementation

##### 1. High population growth rates

Population growth rates in Pakistan are among the highest in Asia. In order to meet the growing food needs of the nation, the flow of technologies into food production systems must be accelerated. The institutional capability of NWFP-AU therefore must be increased much more rapidly than would be the case with slower rates of population growth.

At present rates of growth, approximately 3.1 million persons are added annually to the population. If the annual per capita food output

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<sup>1</sup>This is an approach involving structured training and supervision for field level extension workers, developed by Benor and others at the World Bank.

exceeds the 3.1 percent population growth rate, then improvement in food supplies and potentials for export can be maintained. If the rate of food output fails to match population growth, the shortfall between food requirements and availability would widen and thus could increase hunger, and reduce potential for export earnings and for investment in development. If present population growth rates continue to 1992, the annual increase in cereal grain output needed to maintain present consumption levels will be approximately 5.0 million metric tons.

The challenge to NWFP-AU and the TIPAN project must be seen in the context of achieving needed sustained increases in agricultural output.

## 2. Impact of unsettling conditions

The war in Afghanistan has been and, until resolved, will continue to be a factor in the development of the TIPAN project. The large inflow of migrants has resulted in economic, environmental and social stress and contributed to student unrest in many universities in Pakistan. Fortunately thus far, student unrest at NWFP-AU has not resulted in violence, but has impacted student achievements during the winter semester of 1987, a direct result of the closing of the University in March. However, MSc and BSc students continued to work on their thesis projects at the research centers. Contrary to the usual practice during University closures, the AU faculty continued to advise MSc students, participated in training activities, and also were involved in a highly accelerated program of committee work stimulated by TIPAN. The University appears to have undertaken measures to reduce further student unrest by increasing participation in the work experience program, adopting a semester system, and counselling the various factions. The construction of a US \$1.8 million wall around the four University campuses in Peshawar may serve as a symbol of the intent of the administration and the GONWF, to deal more effectively with future student unrest. Funding for the construction of the wall came from COP sources.

## E. Context of the Evaluation of the TIPAN Project

The evaluation of the progress of NWFP-AU through the TIPAN project obviously must be seen in the context of a maturing nation with highly diverse agro-climatic zones superimposed on a farm population with diverse cultural and language variations. An evaluation centered solely on the achievements of contractual targets would greatly undervalue institutional capacity achievements. The Evaluation Team believed that it should do more than provide a checklist of analysis of performance. The more difficult task is that of determining whether or not progress has been made toward achieving indigenous institutional capacity within the first two years. Simple measurement techniques for evaluating institutional progress are not available nor feasible. Institutional capacity building in the NWFP must initially begin with an understanding of the nature of the total environment in which the institution is expected to serve, and finally to survive.

Certain expected outcomes can be measured, i.e., numbers of persons trained, research reports produced and number of farmer contacts made. However these intermediate outputs, by themselves, are insufficient to measure effectiveness in terms of the overall objective of NWFP-AU to increase farmer productivity. A conceptual framework was prepared by the Team, and is presented in Annex II. It is intended to help in making realistic and objective judgments at this time. Ultimately, the measure of the effectiveness of TIPAN must be in terms of its contribution to increasing productivity of the agricultural sector of the NWFP.

Finally, from the vantage point of hindsight, it is believed that those preparing the Design and the Project Papers did not acknowledge fully the challenges that would be faced in the implementation and management of the TIPAN Project.

## II. OVERVIEW OF TIPAN: A PROJECT TO MODERNIZE AND IMPROVE THE AGRICULTURAL UNIVERSITY OF NWFP AT PESHAWAR, PAKISTAN

The UI/SIU consortium designed an excellent and comprehensive project with the intent of integrating the roles of teaching and research and creating mechanisms for the effective diffusion of agricultural technology to the farm families of the NWFP. The successful implementation of this complex project within the proposed time frame depends on a high degree of timely sequencing of inputs and close collaboration between the GOP, USAID and the contractor. This section sketches the principal features of the project.

### A. Nature, Scope, Objective and Phasing of TIPAN

The TIPAN Project is a long-term, complex, and comprehensive program of changes and improvements in the curriculum, teaching, research and outreach activities that will completely revise the mission, organizational structure and activities of NWFP-AU. Institutional improvements will be complemented by a program to increase and upgrade the physical facilities and plant of the University.

The objective of the TIPAN project is to create at NWFP-AU a dynamic, outward-looking, problem-solving, farmer-oriented university where teaching, research and outreach are linked together to increase agricultural yields, and to improve agricultural production, farm income and rural employment in NWFP to the benefit of rural people and of Pakistan.

The TIPAN project, as designed, is scheduled to be carried out in three phases over an 11 year period. The design provides for periodic reviews of the institutional reform aspects, the results of which may lead to some adjustments in the project as it proceeds.

### B. TIPAN Implementation Plan and Changes Foreseen

As noted earlier, plans for the two inter-related TIPAN components--institutional reform and construction--were prepared by separate contractors and will be independently implemented. The UI/SIU consortium is the contractor for institutional reform and Skidmore, Owen and Merrill is the contractor for design of the physical facilities to be constructed.

This evaluation focuses almost exclusively on the institutional reform aspect of TIPAN, and on the performance of the UI/SIU contracting entity.

1. Academic and policy changes under TIPAN

One purpose of the TIPAN project was to change dramatically the traditional roles and responsibilities of faculty members at NWFP-AU. Four major types of changes were envisioned in the design.

a. Curriculum

The entire curricula for both undergraduate and graduate programs were to be completely revised and modernized. Courses were to be revised or changed and a common core of courses was to be required during the first two years. The semester system was to be adopted and a letter grading system was to be used. Examination procedures were to be changed. The admissions policy was to be revised.

b. Teaching

Traditionally, teaching was the principal, indeed frequently the only, activity of many faculty members. Under TIPAN, faculty members were to have research and/or outreach responsibilities in addition to their teaching duties. Teaching methods, techniques and qualifications were to be upgraded. Graduate education for the MSc degree was to be increased and improved greatly through development of a new curriculum by the end of Phase I.

c. Research

Crop and livestock research programs of the NWFP Department of Agriculture were to be merged and improved in quality and quantity with emphasis on applied problem-solving projects. These are projected to be of a multidisciplinary nature in many instances. The planning and coordination of research was to be supported by new and enhanced laboratory and experimental farm facilities. University academic staff were to spend one-third of their time on research. Provincial research programs were to be coordinated and lead by AU in collaboration with other programs in Pakistan and abroad.

d. Outreach

The restructured outreach activity, in which few faculty members had previously engaged, would require 25 percent personnel and other resources of the University. Most would establish strong operational linkages with the provincial agricultural extension department through the creation of a problem-solving, farmer-oriented outreach program with the capability to provide in-service training for provincial extension workers and subject matter specialists to support the extension services. The goal was to produce and disseminate practical and acceptable technological packages or practices for farmers and other groups in NWFP.

e. Administrative structures and support services

Administrative structures and support services would be revised to enable more efficient operations while retaining desirable administrative and financial management controls.

2. Mechanisms planned for attainment of TIPAN goals

The TIPAN Project Paper specified the following inputs.

a. Training

One hundred forty AU staff members who qualify would study for MSc or PhD degrees in the United States or third countries. PhD candidates would be encouraged to select theses topics for which the research could be done in NWFP. Many AU staff members would receive short-term non-degree training ranging from a few weeks to a few months overseas. Additionally, a variety of specialists from abroad would conduct short-term training programs at AU.

b. Technical assistance

Both short- and long-term specialists would interact with the AU faculty in teaching, research and outreach activities.

c. A modern learning center

A Learning Resources Center was to be developed to include a good library, a computer laboratory, and a language laboratory with appropriate audio-visual resources. The language laboratory was to contribute to improved teaching of English.

d. A communications center

A communications center would assist faculty to develop and revise their teaching materials, would provide editorial and production services for research and outreach activities and publications, and would support activities of the Continuing Education Center.

e. A Continuing Education Center

The Continuing Education Center, with ancillary residential facilities, was intended to serve the outreach and research programs. Conferences, in-service training courses for extension personnel and farmers, and similar activities would serve off-campus groups in a variety of ways. This Center was intended to be a major link between the University, farmers, rural households and agro-industries of NWFP.

f. Commodities (equipment, supplies, tools and machinery)

Audio-visual equipment would be provided to improve teaching and outreach activities. Laboratory devices and equipment were to be supplied for both teaching and research. Farm machinery would be provided for experimental farm operations, off-station research and experiments.

g. Improved research and operating funding

Improved research and operating funding was allocated to support significant increases in research activity, off-station experimentation, and maintenance of physical facilities, equipment and machinery.

h. Leadership, coordination and collaboration

Leadership, coordination and collaboration with provincial and national agricultural research programs and agencies would be provided by AU. Involved institutions would include the Pakistan Agricultural Research Council (PARC), the National Agricultural Research Center (NARC), the Veterinary Research Institute (VRI), the Nuclear Institute for Food and Agriculture (NIFA), the Pakistan Tobacco Board Research Farm (PTBRF), the Fruit and Vegetable Development Board (FVDB), and the Pakistan Forest Institute (PFI).

i. Physical plant improvement

Physical plant refers to the maintenance and operations unit, warehouse and storage facility, and expendable supplies stores. In the TIPAN Plan, it was recognized that the increasing size of the AU and its activities, together with the planned program of construction under TIPAN, necessitates improvements and additions to the physical plant which are to be a responsibility of Pakistan.

C. Conditions Precedent and Covenants of TIPAN

In the agreement between GOP, NWFP-AU and USAID, the following conditions precedent and covenants were included:

1. Merger of research

The NWFP agricultural research system was to be merged with the AU. That merger was to specifically include the Directorate of Agricultural Research (crops research) and the Livestock Production Units (Animal Production Division of the Veterinary Research Institute and the Livestock Experiment Station, Jaba) of the provincial Department of Agriculture.

2. Conditions of merger

The following conditions were to apply to the merger of provincial agricultural research with the AU:

- o The provincial research systems revenue and Annual Development Program budgets were to be transferred to the AU;
- o All of the provincial research systems professional support staff were to be assigned to the AU; and
- o All physical facilities controlled or used by the provincial research system were to be transferred to the University.

3. Agreement regarding extension

An operating agreement was to be entered into between the NWFP Directorate of Extension and the NWFP-AU which would clearly delineate the areas of responsibility for each organization. The agreement would cover staffing, demonstration activities, training for field extension personnel, the participation of field extension personnel in identification and selection of priority research topics, and the development of information regarding technological packages and improved practices.

4. Covenant for Phase I TIPAN funding

GOP would agree to budget, in its Annual Development Programs for Pakistan (fiscal years 1984/85 through 1990/91 or the life of TIPAN Phase I, whichever was longer), for sufficient funds to cover all projected costs for Phase I of TIPAN.

5. Covenant regarding operations and maintenance costs

GOP would agree to provide budgetary allocations required to cover the operating and maintenance costs of all on-going activities, and those initiated under TIPAN, in the areas of research, teaching and outreach at NWFP-AU, and for maintenance of all physical facilities constructed or rehabilitated in whole or in part under the project, and all commodities and equipment procured under TIPAN.

### III. FINDINGS FROM THE ASSESSMENT OF TIPAN IMPLEMENTATION

#### A. Introduction

This Section assesses progress in the various aspects of TIPAN listed in the Scope of Work for review by the Evaluation Team. Included in the sub-sections are comments and suggestions, not explicitly required by the scope of the evaluation, which the Team considered to be important if TIPAN is to achieve fully the potential of strengthening the NWFPA Agricultural University. To facilitate reference to Chapter IV (Conclusions and Recommendations) of this report, the sub-sections in this section correspond to those in Chapter IV.

#### B. Reorganized University Administrative Structure, Staffing and Responsibilities

##### 1. Administrative structure

The merger of the provincial agricultural research system with the University required changes in the AU administrative structure. As a consequence of TIPAN, the academic organization of the University has also been changed. Its features are outlined in Figure 1.

The new positions and structure are substantial improvements and accommodate the enlarged responsibility of the AU. A tendency towards proliferation of departments within the faculties has been forestalled. The organization has not yet fully begun to work as planned but is progressing. Some appointments are still to be made and various Centers and Offices remain to be established when facilities are completed. Undoubtedly, further adjustments in the organization will be needed over time but desirable changes now have been made.

##### 2. General policy and administrative changes

###### a. Research programs

Off-campus staff members (i.e., at research stations) will be expected to spend an average of 65 percent of their time working on research and the remaining 35 percent on outreach and other related activities, including teaching at the University or at institutions located near research/outreach sites. This is a desirable action as it brings staff members at research stations into active participation in the other activities of the University. It will enrich teaching as newly developed indigenous research findings can be incorporated in course content.



The Director of Research has been appointed and is in place. He is responsible for leadership in the development of the merged and reorganized NWFPA Agricultural University research system. This will permit coordination of on- and off-campus research by the now merged personnel and will provide an integrated research program, rather than one based solely on MSc theses.

The Associate Director of Research will have special responsibilities for integrating research conducted at the institutes and stations. He will also lead in coordinating animal production research with crops research. This will foster multidisciplinary and coordinated research between two former provincial research programs.

The Deans of the Faculties and the Directors of Research, Teaching and Outreach are linked with the office of the Vice Chancellor for administrative purposes. This new structure is a great improvement as it establishes logical administrative channels, an improved span of control, and strengthens the base of leadership within the institution.

The 15 off-campus research stations now have both research and outreach responsibilities. They are organized on a location/multidisciplinary basis to serve the needs of the areas where they are located. This effectively ends the isolation of research station personnel in narrow research niches, and encourages their coming into more intimate contact with the problems of the farmer.

Every academic/research person, whether on- or off-campus, is expected to have an affiliation with a subject-matter academic unit and a multidisciplinary field station or project. This improvement confirms that University staff members now have important responsibilities besides teaching, from which they will gain improved insights on the nature of the problems of increasing farmer productivity.

Since February 1987, no research projects are to be undertaken without preparation of a detailed project outline which must be approved by a review committee. Records of research productivity are to be kept. This advance forces researchers to prepare organized research proposals and will lead to improvement in quality and relevance of research.

Procedures have been established regarding research contracts, grants and gifts, encouraging and assisting staff members in seeking research grants, and thus enlarging the capacity of AU to conduct research.

b. Teaching programs

The position of Director of Teaching has been established to assist and encourage high quality in teaching. A continuing program of faculty training in improved instruction and demonstration practices will improve student comprehension of subject matter offered in their course work.

The "internship" program requires students to gain some familiarity with research station(s) during the summer recess at the university. Student response is enthusiastic. This is a highly desirable first step undertaken in the Spring of 1987 in the program to ensure that students obtain some meaningful hands-on experience.

The introduction of peer review procedures and the early appointment of two officers at research stations to the rank of associate professors (even though they will continue their work at their respective research stations) are exceedingly important milestones in university policies. They indicate that AU intends that merit will be recognized and rewarded in meaningful ways.

All teaching faculty members are expected to devote some of their time to research and/or outreach. The Evaluation Team did not learn of any overt resistance to this radical new policy. It is a milestone in seeking to make AU a more effective institution, actively seeking to find ways and means to increase agricultural production and efficiency in the NWFP.

Increasingly, MSc students are expected to do at least part of their thesis research at research stations or in association with them. This advance will increase the practicability of the research that graduate students undertake for their theses.

Campus based faculty members have also increased their research station interactions since the adoption of the research program review process in February 1987. This trend is expected to continue and expand. As faculty members have the opportunity to get out of the classrooms, they will understand the real problems of agriculture.

TIPAN provided library acquisitions and teaching support equipment now being used intensively. Students are making increased use of the library, a key factor in producing better qualified graduates.

3. General observations

Discussions revealed a very serious deficiency in applied agricultural production economics/farm management. If the AU program of farmer-oriented applied research is to be acceptable to farmers it must be validated by careful high-quality economic studies done at the farm level as an integral component of the multidisciplinary research.

The Evaluation Team commends the AU for the initial improved support for the NWFP livestock sector. However, up to now there has been inadequate recognition of the importance of integrated applied crops and livestock services. AU should accord higher priority to the potential of livestock contributions to farm output. Forage crops should receive special attention because of the predominance of ruminants in Pakistan.

The TIPAN Project Paper includes some specific details on the percentages of time AU personnel should spend on teaching, research and outreach. The Team endorses the concept that almost all university staff should have some involvement in teaching, research and/or outreach. However, there is a tendency in AU documents to apply unrealistically rigid percentages of time allocations to individual staff members.

Another instance of specific details in the TIPAN Project Paper is the statement that 70 persons are to be trained at the MSc level and 70 are to be trained at the PhD level. Since training is scheduled to take place over many years and will involve people not even employed by the university when the TIPAN Project Paper was written, a rigid application of the 70/70 formula is undesirable.

The Team advocates avoidance of rigid interpretation of specifications in the TIPAN Project Paper during the balance of Phase I.

The TIPAN Project Paper states that the output of the AU research is to be "packages of technology" for transmission to farmers. The Team suggests that the terminology "packages of technology" is neither realistic nor desirable. Even when there are "packages of technology" farmers seldom adopt them in their entirety. Perhaps they lack credit, the recommended seeder, or do not use the specified pesticide(s), or cannot obtain the designated fertilizer. (See also C.8 below.)

It is suggested that the terminology "packages of technology" or "technology packages" be largely replaced by wording somewhat like "improved methods, materials or practices". Such terminology is more realistic in relation to what farmers are able and willing to adopt.

Reconsideration of the disciplinary components in the Faculty of Engineering Applications and Food Technology is suggested because it appears to be an illogical association. Agronomy and soils have more common interests with Agricultural Engineering than human nutrition and microbiology, i.e., agricultural engineering might have a larger impact in association with the agronomy and soils at this time.

The procedures for selection of individuals for training need adjustment at this point in TIPAN implementation. Selections should not be determined solely by TOEFL scores but with greater emphasis on the need to fill important gaps (such as now exist in production economics/farm management), on the academic merits of individuals, and on consideration of the age profiles within the University and individual departments.

A visibly and literally farmer-oriented research strategy for the AU is advocated. In general, Pakistan can ill afford the very high costs and long time periods usually necessary for the original research to discover and initially develop important new materials, methods or technologies for agricultural production. The great ranges in agro-ecological conditions and soils in Pakistan and the large number of agricultural crops make it unrealistic to embark on original research intended to develop new knowledge as a potential basis for green revolution-like production increases in the many components of Pakistan's highly complex agriculture. However, the adaptive research and on-farm validations essential to develop effective farmer-acceptable production practices must be carried out in Pakistan to achieve needed agricultural production gains.

Many other developing countries are in similar positions. This has been recognized by the international donor community, which has developed the International Agricultural Research Centres (IARCs) such as CIMMYT and IRRI specifically to discover and develop new methods, technologies and materials with the potential to meet cereal food needs of many developing countries. Such new improved methods, materials and technologies are freely available for principal crops of many countries. However, in most cases, individual countries must still do the adaptive research and validations essential to enable their farmers to exploit new methods.

The Team suggests that the AU administration and staff consider placing major emphasis, by all parts of the now enlarged university system, on adaptive research and on-farm validations including that resulting from world-wide agricultural research. AU must now forge much stronger linkages with the IARCs. This approach would be highly cost effective.

This strategy will require a sustained, determined, and applied work ethic, as well as efforts and support by all the actors involved, to fulfill the AU mission and the TIPAN goals.

4. Summary of findings

With respect to the administrative structure, staffing and responsibilities, the team's findings are as follows:

- o A new administrative structure has been created for the University which provides a sound basis for continued progress in integrated research, improved teaching at and outreach from the University and a learning process closely related to real problems of NWFP farmers;
- o The organizational, administrative and policy foundations for integrated agricultural research are in the process of being laid down. They are substantially on schedule and will support the development of an integrated research system with outreach linkages through the extension system to NWFP farmers if progress along present lines is sustained;
- o The policies, administrative structures and incentives developed for the teaching program at AU are in place on a basis consistent with scheduled achievement of TIPAN objectives; and
- o At the mid-point of Phase I, some weaknesses in administration and policy have shown up in regard to:
  - the practicality of applied agricultural production economics/farm management research;
  - the lack of integration of crops/livestock programs to reflect the actual nature of farming in the NWFP;
  - undue rigidity in the interpretation and application project targets;
  - structural problems with respect to departmental functions and relationships;
  - an excessive focus on English competency as opposed to program needs in the selection of participants for training; and
  - a carryover of the past focus of highly focused disciplinary research of a basic nature as opposed to dependency on the work of the IARCs for primary research and concentration of AU resources on local adaptive trials to develop practices directly relevant to local conditions and acceptable to farmers.

## C. The Teaching Program

### 1. BSc program

By the end of this academic year, NWFP-AU will have completed on schedule the adoption of a revised thoroughly-planned four-year BSc curriculum arranged in a semester mode. The curriculum consists of core (common) courses during the first two years, core and specialization courses in the third year and all specialized courses in the fourth year. Included are eight new courses designed to strengthen and balance the core program. A cursory examination of course descriptions, outlines and syllabi prompts the suggestion that content revision will be a continual process.

One indication of rising levels of ability among incoming students is the fact that in 1986 "the last student admitted had a merit rating of 32 points higher than that of the last student admitted in 1985". As the academic preparation of incoming students improves, the better is the prospect that AU graduates will be of a higher caliber. Therefore, AU would further its own ends if it would raise the entry standards of incoming students.

### 2. The MSc program

Up to now, the content of the MSc degree program has been improved only from the spill-over impact of the introduction of the semester system, improved content of undergraduate level courses, and the student experience program. MSc students, however, are now required to select a thesis topic in support of approved research projects. To the extent possible, while extensive discussions on the content of the MSc program have been undertaken, AU administrators and professionals suggested that a major, much needed revision of the content will have to wait until the return of the 43 staff professionals from study abroad. The three professionals who had just returned from study in the US agreed that the revision of the MSc program will become a high priority effort.

### 3. Semester system

The previous heavy dependence on external examinations was replaced by more motivating periodic quizzes, mid-term examinations, weekly laboratory reports, final examinations and similar features of a semester system. Faculty members and students alike reacted favorably to this new approach implemented on schedule, preferring it over the conventional year-long system, with a single examination at the end of the year.

#### 4. Teaching methodology

Audio-visual equipment for teaching, vehicles for field trips, laboratory/teaching equipment, updated textbooks, references and journals have been obtained as scheduled through the TIPAN Project. These have added a noticeable sparkle to the teaching and learning process. However, a number of faculty members expressed the need for more training in the use of sophisticated laboratory equipment that they had received. Also expressed was the need for more training in the use of audio-visual equipment and aids and also in test construction, lesson planning, grade assignment, etc. The Team learned that some equipment purchased through the TIPAN Project was well used and some not. Two reasons were given for the lack of use. First, qualified personnel were not available. For example, some equipment had been purchased for staff members currently away on study leave, or the then present staff did not feel confident in the use of the new equipment. Second, the equipment could not be installed in the absence of proper facilities.

Last year, off-campus study tours were approved for every class and are expected to become routine in the future. This new practice added much to the relevance of the education that students received.

#### 5. Women's program

Prior to TIPAN, no female students had been admitted to AU. Since then, ten seats per year have been reserved for women. While a GOP-financed dormitory for women awaits construction, these students are housed in hostels for women elsewhere on the campus. A Dean of Women is scheduled to be employed in 1988. Plans are to add two more female professors to the one now on the faculty. Mixed feelings about the wisdom of the women's program were encountered. Some felt that the program was a violation of Pakistani cultural norms and that trained women agriculturalists would pose a threat to the men seeking employment. Others felt that the program was an affirmative step in the liberation of women so they can contribute to the economic development of their country.

#### 6. Student body enrollment

The student body had increased from about 600 in 1984 to 786 in 1986-87, the latter being divided into 168, 111, 112 and 70 in the first to the last undergraduate years, and 140 and 185 in the first and second years of the MSc program. Practically all students received financial support from the Government. Enrollment in departmental specializations is shown in Annex III. AU has a policy of seeking applications from various regions of the province and country, with special concern for those from tribal areas, foreign countries (including Afghanistan) and Baluchistan, since the latter province does not have its own agricultural university. Eight Baluchis were admitted last year under a quota of ten.

The number of graduates is presented in Table 1, which shows that 174, 260 and 163 students graduated in the last three years. The number of annual drop-outs (for scholastic and other reasons) was about ten, a figure that seemed low to the Evaluation Team. The low observed drop-out probably indicates that the required level of quality of the curriculum has not been achieved thus far.

Virtually all who complete the BSc program are allowed to continue for the MSc. Five MSc students interviewed by the Team were uniformly pessimistic about their future job opportunities. They contended that currently about 450 agriculture graduates are registered with the Government seeking employment. Faculty members appeared less concerned about this matter and suggested that the unemployed will find jobs after one or two years of searching. Absent were data to indicate what jobs graduates at AU obtained upon graduation.

Graduates, faced with unemployment, preferred to continue their studies and to receive the MSc stipend. The Team was concerned that this will have three unfortunate results: (a) the value of the BSc degree as a qualification for employment will be debased, (b) the quality of the MSc program will decline, and (c) the real purpose of a graduate program (to train a small number of suitably qualified students to undertake agricultural research and/or acquire teaching and outreach skills) will be debased.

#### 7. Student experience program

An innovation of the new curriculum is that students are now required to undertake summer, non-paid internships for much needed practical experience, usually on a provincial research station. Internships were mostly taken during the vacation following the sophomore year, but may take place at other times. Students were engaged in assisting in research activities (laying out trial plots, administering treatments, caring for crops or animals, recording data, etc.), but also were engaged in routine farm work. The latter not only provided practical experience in working with farmers but also helped to develop favorable attitudes and work habits. A written report by the internee or his farm supervisor was not required, from which was inferred that the experience was not formally evaluated, as were class and laboratory sessions. The major leadership responsibility for implementing this worthwhile internship program now falls on the shoulders of the Director of Teaching, although he received assistance by a number of faculty members. The internship could be better integrated into the student's overall learning experience if departments were more directly involved and responsible for this activity. Students alleged that some instructors lacked the skills of being effective demonstrators.

Table 1: Number of Graduates, NWFP-AU, 1982-87

Year	Graduates	Post-graduates	Total
1982-83	72	58	130
1983-84	49	67	116
1984-85	146	28	174
1985-86	84	176	260
1986-87	55	108	163
Total	406	437	843

Source: Provided by AU officials.

#### 8. Split appointment

AU's largest single expenditure consists of payment for the salaries and fringe benefits of its staff. This expensive manpower resource needs to be judiciously allocated to the conventional function of teaching, and the new AU functions of research and outreach. At the time of the TIPAN mid-term evaluation, AU was in the midst of doing this. The allocation was to be made on the basis of Full-Time Equivalents (FTE), a management tool which quickly depicts the comparative importance the administration places on the University's trilogy of functions. Each faculty member has a "split appointment" (or "split assignment") dividing his/her FTE among two or three functions. For example, a versatile member's split might be 50 percent teaching, 30 percent research and 20 percent outreach. The Evaluation Team felt that the faculty does not fully understand this new concept. Exemplifying this misunderstanding was the case of instructors of equal rank and experience teaching courses with widely differing student contact hours ranging from 6-22 hours per week while all were indicating they devoted 50-60 percent of their time to teaching.

#### 9. Teaching evaluation

The Committee on University Goals, Policies and Statutes has been working since May 1987 on plans for the quantitative and qualitative evaluation of all major programs. Individuals will also be evaluated in accordance with policies and procedures being currently discussed. It was envisaged that AU would institute a procedure for evaluating teaching performance. Toward this end, the administering of a student questionnaire at the end of each course scheduled for adoption last year. This course evaluation was aborted when AU was forced to close due to student unrest.

#### 10. Summary

A new four-year curriculum, including core and specialized courses taught in the semester mode, was adopted on schedule. Student enrollment targets were reasonably met. Women students were admitted for the first time. The quality of teaching was improving as teachers became more familiar with new techniques of teaching. Teachers still require a great deal of additional skills training. No evidence that the academic quality of students had improved was obtainable, but keen interest in raising the quality of graduates was shown by AU administrators. No student unrest was anticipated in the immediate future.

## 11. Summary of findings

With respect to the teaching program, the team's findings are as follows:

- o The restructuring of the AU teaching program at the BSc level has followed the plan for the TIPAN project in formulating the first new set of curricula, syllabi and course content descriptions. Continuing revision will be a normal requirement. Admission standards have been raised significantly, giving a prospect of higher caliber graduates;
- o Only limited progress has been made to date in the restructuring of the MSc program mainly as a result of the spill-over effect of BSc program changes. Further progress will have to await the return of staff now abroad for training;
- o The semester system has been introduced effectively with good results and favorable reactions from students and faculty;
- o Mixed progress is being made in putting new equipment and methods into use. Faculty feel the need for more support and training for effective use of unfamiliar equipment and methodologies;
- o Progress in introducing and implementing the women's program is lagging and encountering some resistance;
- o There is an apparent excess supply of graduates (at the BSc and/or MSc levels) relative to demand, which raises a serious issue of the value and viability of the program and threatens to debase the quality of the program especially at the graduate level as virtually all undergraduates go on to the masters level;
- o Practical experience in research-related tasks as well as routine farm work is being gained by students assigned to research stations but its value is diminished because of the inadequacy of supervision and the lack of evaluation of student performance in such work; and
- o The concept of split appointment (among teaching, research and outreach functions) is not well understood by the faculty and as yet is not applied effectively. The internal evaluation system for programs and individual teaching performance is likewise at a very early stage. There is real interest, however, among administrators in raising the quality of graduates.

D. Research

1. Policy and physical changes

a. Merger

A major component of the TIPAN project was the condition precedent requiring that the agricultural research system of NWFP be merged with the AU. This was to entail transfer to the University of the Directorate of Agricultural Research and the Livestock Production Research Units of the NWFP Department of Agriculture. The revenues, the Annual Development Program budgets, all of the professional support staff, and all physical facilities of the provincial research system were to be transferred to the University.

This massive transfer of resources and personnel proceeded reasonably well. Many merged activities started well before the final activation of the merger on 15 May 1987. As far as the Evaluation Team could ascertain, the merger of the provincial agricultural research system, although delayed for various reasons, seems to be technically completed and in compliance with the TIPAN project agreement.

b. Policies and upgrading plans for the AU farm and the research stations

The end-of-tour report of Marion (1987), a University of Illinois Research Station Development and Management Specialist who spent two years at AU ending 31 July 1987, provides a summary overview of activities, developments, constraints and problems of the AU Farm and the research stations. The following are highlights of the Marion report:

- o A policy guide for the AU Farm, incorporating many inputs from relevant departments, has been drafted and should be completed in the fall of 1987. The policy will ensure there will be active use of the farm for teaching purposes: it should not be a strictly research farm;
- o A policy guide for the operation of the Research/ Outreach Stations was finalized in June 1986 after review and revision by the station directors;
- o Plans for improvements in the layout and irrigation systems of the AU Farm were completed;
- o Inventories were completed for all 15 stations merged with AU: areas, crops, available equipment, equipment repair and/or replacement needs, new equipment needs, workshop and tool requirements, book and journal requests, building repairs, renovations and additions, manpower requirements (office staff, managerial and maintenance personnel), and training requirements have been listed;

- o Plans to develop some in-service training programs for farm support personnel were prepared, although to date implementation has been slow;
- o Many refinements to the A/E contractor plans for the Farm Center and relocation of the Livestock Center were made and most have been incorporated in the final SOM plans; and
- o Improved practices for production and conditioning of quality seeds being increased by all plant breeders were established and promoted.

c. Constraints to upgrading the AU farm and research stations

Marion's report also records significant constraints and problems, some of which were:

- o Lack of competence in English is a handicap to the use of machines at research stations because instruction manuals in English are not understood. Mechanics and machinery operators benefit little from explanations of instructions in English. English language classes below the TOEFL level for this category of staff are advocated; and
- o Difficulties associated with acquisition, shipping and delivery of TIPAN commodities were irritations.

The Marion report indicates that the upgrading of the physical resources and training for the research station personnel are well underway, although both efforts will likely be rather costly and require several years to accomplish.

2. Operational developments related to research

The merger of NWFP research under the jurisdiction of AU has resulted in various changes and developments related to research operations, procedures and budgets.

a. Research structure

In accordance with the TIPAN agreement, a Director of Research with overall responsibility for research leadership and coordination has been appointed. There is also a new position of Associate Director of Research with duties that include promotion of interactions and cooperation between the research stations and with other provincial and national agricultural research agencies. A research priorities committee consisting of representatives of the Director and Associate Director of Research, the faculties and departments of the AU, the Directors of the research stations, representatives of other designated agricultural research agencies and

of the NWFP Directorate of Extension has been established. The inclusion of the Extension directorate on the Committee as specified in the TIPAN project description is significant in relation to AU's future outreach activities. A proforma has been developed for obtaining approval for individual research topics, which is being used by University Staff members engaged in research.

b. Research funding

Before the merger, research station budgets from the GONWFP had two components: one for salaries and benefits and another for other items. The Evaluation Team was unable to identify clearly either sources or amounts regularly allocated for research. There was an unconfirmed verbal mention that, pre-TIPAN, perhaps on average about Rs. 500 per year (\$30) was allocated to individual departments, which could have been used for "research". It was suggested that under TIPAN this amount may have been increased to about Rs. 5,000 (\$300), still a negligible amount for research support.

Before the merger, productive AU faculty member researchers were able to obtain limited research grants from PARC and other external sources. Several staff members expect external grant support for research to increase because TIPAN will result in a much improved competitive position of AU.

3. Summary of findings

With respect to research, the Evaluation Team's findings are as follows:

- o The Marion end of tour report praised the development of policy guides for the AU Farm and Research/Outreach Stations, and took note of plans completed for irrigation systems at the AU Farm, and extensive inventories taken for all research stations. Implementation of articulated plans to develop in-service training for farm support personnel has been slow to materialize;
- o Lack of competence in English on the part of technicians is a hindrance to the use of machinery at research stations. The Evaluation Team advocates English language classes below the TOEFL level for this staff;
- o Efforts to upgrade physical resources and training for research station personnel have begun but will be costly and time-consuming;

- o The new research structure of NWFP-AU, including appointments of the Director and Associate Director of Research, and the establishment of a formal research priorities committee, will result in increased interaction and coordination between research stations and provincial and national research and extension agencies; and
- o Although funding for research under TIPAN has increased tenfold, current levels of funding (approximately Rs. 5,000) are still very low. It is anticipated that TIPAN will improve the ability of AU staff to compete for external research grant support.

E. The Outreach Program

1. New outreach policy

Before TIPAN, NWFP-AU was not mandated to discharge an agricultural outreach function. AU has signed agreements (Annexes IV and V) with the NWFP Department of Agriculture linking AU and its merged research capability with the Province's agricultural extension service. These agreements provide for AU's assumption of responsibility to (1) develop mass media technological information packages in cooperation with the Extension Directorate, (2) provide in-service and refresher training to extension officers, (3) interface with the Extension Directorate in the development of improved packages of crops, animals and farming system technologies, (4) assist extension personnel in the identification and prioritization of research topics, and (5) nominate an Outreach Liaison Officer to work with an Extension Service counterpart in coordinating activities with which AU and the Extension Directorate are mutually concerned. A Continuing Education Center, planned to facilitate this program, has not yet been built. The University plans eventually to establish a department of extension, education and communications.

In 1984, AU agreed with the Provincial Extension Directorate that the undertaking of on-farm adaptive research and verification trials would be a responsibility of the outreach program. As a consequence of this agreement, AU's Outreach Directorate has been devoting significant time and effort to this particular phase of agricultural technology development with useful inputs from many station researchers. The Evaluation Team commends this worthwhile activity which is more widely practiced in Pakistan than in many other developing countries.

AU's agreement with the Extension Directorate was negotiated under the pressure of it being a condition precedent to USAID disbursement of construction funds. One short-term TA from UI and the USAID Project Officer submitted the original draft to the Vice Chancellor and the Extension Director.

In its study of the agreement, the Team noted a few anomalies. AU agreed to undertake "on-farm demonstration" while the Extension Directorate agreed to establish demonstration farms, which appeared to be an overlap. AU's role in the identification and prioritization of research topics was not made explicit, but could be inferred from Extension's willingness "to assist" AU in this activity. Finally, Extension is to "organize field days" but no mention is made of AU's responsibility in this activity, although to date AU had made a significant effort in organizing field days.

The recent appointment of a new Director General of the Extension Directorate and an AU Director of Outreach and the three years of experience gained since the agreement was promulgated in 1984 suggest that the time may be propitious for both parties to clarify their agencies extension and outreach responsibilities. This clarification is considered essential, if significant progress in the outreach program is to be made. A special study or review undertaken within the TIPAN project should be undertaken by the TAT team, with assistance from the outside.

## 2. Administrative changes accomplished

The Project Paper called for the following 13 outreach administrative posts: a director, an associate director, four on-campus program leaders, four regional and one women/families outreach program leaders, a director for the Continuing Education Center, and an information officer. In addition, selected on- and off-campus research staff would be designated as subject matter specialists to devote full-time to their new function. Split appointments were to be applied to all AU personnel to focus attention on all three of the University's functions.

Tremendous effort by TAT had gone into informing the AU administrative officers and faculty about the meaning and significance of the new outreach mandate and the extensive operational changes necessary for its proper discharge. A prodigious number of draft policy statements had been prepared and thoroughly discussed at many meetings. Some examples of papers include: "Organization and Operation of the NWFP Agricultural University Outreach Program", "Outreach Specialist Designation", "Split Appointments", and "A Plan to Develop 35mm Competencies to Support the Teaching, Outreach and Research Program of NWFP Agricultural University". All University staff, both on and off campus, were involved in this process, acquiring new understandings and modifying old attitudes. Not neglected in this complicated process was the urgent necessity of working with the Extension Directorate toward the end that their members join those of AU in accepting a new relationship destined to be mutually satisfying.

The AU administration had wisely decided to defer filling the four<sup>7</sup> on-campus program leader positions recommended in the UI/SIU-designed Project Paper. Such appointments would have resulted in an unnecessarily top-heavy outreach leadership structure at the present time. Active recruitment is underway for the 13 positions at the research stations. The vacancy announcement for these positions contained this interesting statement: "These are not routine positions. Selection will be entirely on merit. Any approach to members of the selection board will disqualify the candidate. Fitness for continuation in service will be measured by concrete achievements only." This pronouncement attests to the seriousness with which the AU administration was pursuing the implementation of a vigorous outreach program.

At the time of this review, the recently-hired Director of Outreach was attending a seven-week training program in the US on the organization and management of agricultural extension systems. In addition, seven research/outreach station directors received short-term training in the US this year, including a study of how to improve management of their stations. The training undertaken by those seven men should increase the rate at which AU implements the new outreach program.

### 3. In-service training of extension officers

AU and the Extension Directorate have agreed that AU will provide in-service and refresher training to extension officers. The following examples suggest a rather high level of effort in training. The Human Nutrition Department held a training course of 300-400 food/health extension workers, and the Entomology Department, in cooperation with PARC, conducted a workshop on beekeeping for 30-40 extension workers and farmers. Over 75 participants from 12 agencies attended an off-campus PARC/MART-sponsored workshop on farming systems in collaboration with AU. The first outreach-organized training workshop for senior members of extension administration and subject matter specialists was held recently on-campus. A three-day PARC/MART/AU/Extension Service Farming Systems Research Workshop was conducted in Dhodial (Mansehra). The participants at a five-day leadership training workshop included 22 farmers, four field assistants and 1 agricultural officer. A two-day Ground Water Irrigation Project Training Workshop was held at AU for senior extension specialists and subject matter specialists. The Evaluation Team was represented at a well-organized Farming Systems Field Day at Mansehra co-sponsored by AU and the Extension Director and attended by more than 600 farmers. Ten AU research/outreach station personnel served in official capacities as did AU's Vice Chancellor and Director of Research. Two professors, six lecturers and 30 students from the Departments of Soil and Agronomy also attended.

The "1987 Calendar of Events/Activities" of AU's outreach program shows that already held had been two- or three-day in-service training sessions for 8 groups of Field Assistants (FA) and 4 groups of Agricultural Officers (AO). Approximately 80 percent of the trainers at these sessions were from NWFP-AU research/outreach stations.

During the last four years, AU participated in the training of 81 AOs and 1260 FAs as shown in Table 2. The yearly average was about 335 out of about 1200 such personnel on the NWFP payroll, not including the few hundred extension workers connected with a special training and visit program. Practically all of the training sessions were held at AU's research/outreach stations, and staffed by station personnel.

While the above cross-section of outreach activities represented a valiant effort, most on-campus faculty members, who universally gave verbal support for the outreach mandate, only two departments indicated that they had engaged in such activity to date. One possible constraint was the absence of a suitable on-campus training facility, the construction of the University Outreach Center having been delayed. Productivity in the outreach program will undoubtedly increase over time, especially after more and more faculty return from study abroad.

#### 4. Transmission of suitable technology

In concert with officials of AU and the Provincial Extension Service, TIPAN project planners had envisaged the University deliberately collecting and organizing all appropriate technological advances, which could be used by the Extension Service for transmission to farmers.

When measured on the basis of the quantity or volume of technology produced for transmission to the Extension Service, unfortunately, but not surprisingly, the TIPAN Project has not made much progress. There was no systematic transmission of technology to the Extension Service for use with farmers. This is particularly true for the on-campus staff but less so for the off-campus research/ outreach station staff, the latter having been "in the business" for a much longer period than the former.

#### 5. Preparation of mass media materials

To speed the flow of information to farmers, AU was to produce mass media materials for reaching a larger number of its primary clientele, Extension Service personnel, and other members of the agricultural community. The Communications Services Unit has not yet been constituted but preparation of a policy paper entitled, "Implementation Plan for the NWFP-AU Communications Services Unit" has been completed. This unit will be responsible for (a) publishing, printing or duplicating written materials; (b) providing photographic

Table 2: Number of Agricultural Officers and Field Assistants Trained by NWFP-AU, 1983-87

Year	Number Trained	
	AOs	FAs
1983-84	0	227
1984-85	0	413
1985-86	0	311
1986-87	<u>81</u>	<u>309</u>
Total	81	1,260

Source: Provided by TIPAN TAT.

and graphic arts services; (c) producing audio and video tapes, slides, charts and graphs; and (d) training faculty and staff in communications skills. The output of mass media materials up to date was meager. Recruitment for a coordinator of the communications unit is underway.

## 6. Summary

The Team noted above a number of factors which militated against greater progress in sponsoring in-service training courses for extension workers and in the production of both technological information and mass media materials. It appeared that the administration of AU was reluctant to move forward rapidly in outreach activities, having placed most of its effort to first consolidate the research merger.

## 7. Summary of findings

With respect to the Outreach Program, the Evaluation Team's findings are as follows:

- o The new outreach policy of NWFP-AU has resulted in increased agricultural technology development through on-farm adaptive research and verification trials;
- o The AU/Extension Directorate agreement is vague with regard to on-farm demonstration, identification and prioritization of research topics, and organization of field days: it may now be worthwhile for the new Director General of the Extension Directorate and the new AU Director of Outreach to clarify respective extension and outreach responsibilities;
- o AU administration has used wisdom and excellent judgment in interpreting the UI/SIU Project Paper's mandate with regard to outreach: of particular note is the administration's published criteria for selection of research station staff, which is to be based entirely on merit;
- o US training of research/outreach station directors will increase the rate of implementation of the outreach program;
- o In-service training of extension officers is well under way for field assistants and agricultural officers, but participation by AU on-campus faculty has been limited, most likely due to the absence of a suitable on-campus training faculty;
- o TIPAN has made little advance in producing appropriate technology for transmission to farmers by the Extension Service; and

- o The scant output to date of mass media materials for the Extension Service and the agricultural community will probably be improved as soon as the Communications Services Unit is fully operational.

Outreach is a new function for AU and needs to be more thoroughly understood and accepted by all. Three years of TIPAN effort has been too short to show significant results from the rather large restructuring effort undertaken with respect to outreach programs. AU's administrators were involved in more pressing issues, such as coping with issues of the complex merger of research activities. Consequently, the appointment of the Director of Outreach and his subordinate administrators was delayed. Further, the Learning Resources Center had not yet been built and therefore the communications services unit had not yet been created.

#### F. The Learning Resources Center

##### 1. The Library

The Learning Resources Center, as yet un-built, will house the library, the computer laboratory and the communications services unit. TIPAN substantially improved the library, primarily through the acquisition of textbooks, references, and journals. Back numbers of important journals have been acquired, as have badly needed new titles of both national and international editions. However, a computer literature search capability awaits trained personnel, the acquisition of equipment and the completion of the new Learning Resource Center. This capability will benefit from the NARC computerized data bases of all important Pakistani agricultural journals. The AU conventional card catalog system is being computerized to speed its use.

Data on the frequency of student and faculty use of the library were not available, although increased library use was reported. One participant, currently undertaking graduate study in library science at the University of Hawaii, will return to the library in a few months.

A small, functional departmental library was being maintained by the Institute of Development Studies (IDS). The two libraries are well linked. The Evaluation Team was not able to determine the presence or absence of other departmental libraries, but nevertheless could not help but wonder, when construction of the new library is completed, whether it would be wise to consolidate all campus holdings in one location for potential savings in personnel, maintenance and operational costs. Also, hearing that all research stations aspire to have their own libraries with appropriate staffs, the Team suggests establishing much closer linkages between the University Library and all AU's off-campus centers. Technological advances in library linkages could today make available to distant sites practically all the services provided by a central library at considerably less cost than that of maintaining multiple facilities.

## 2. The computer laboratory

The Team was impressed by the fully operational campus-wide computer laboratory, augmented by the smaller but similar facility in IDS. Both laboratories were well-used by undergraduate and graduate students as part of their recently adopted revised curricula. In-service training classes in typing and computer use were continually offered to faculty members to facilitate computerized research analyses and word processing. A number of the larger off-campus research/outreach centers were equipped with at least one computer which was not to be unpacked until trained personnel and a suitable location are available. Computers in departments had been actively used. Early in the TIPAN Project, a number of computers malfunctioned.

## 3. The communications services unit

The coordinator of the communications unit was being recruited. Although a trickle of appropriate equipment had begun to arrive, a much needed language laboratory, primarily for the teaching of English to students and faculty, had not yet been officially established, but some elements of a language laboratory program were incorporated into the teaching of English at AU.

## 4. Summary

Significant progress, as much as could have been expected under existing circumstances, has been made in improving the current library and in establishing a computer laboratory. Progress has been hampered by the delay of planned construction. This is especially so in the case of the communications unit and the language laboratory, the proper function of which requires new facilities.

Achievements by the library and the computer laboratory had not reached planned targets in view of construction delays, but have had only limited negative impacts on the Project. However, the failure to establish a communications center and language laboratory on schedule has impacted negatively on the teaching and outreach programs and on the improvement of the teaching of English to faculty and students.

## 5. Summary of findings

With regard to the Learning Resources Center, the Evaluation Team found that:

- o Once underway, the Learning Resources Center will improve substantially the AU's research capability, although current capability is limited due to lack of experienced staff and equipment;

- o Consolidation of departmental libraries in the new Learning Resources Center could save personnel and operational costs, and creation of library linkages between on- and off-campus libraries could obviate the necessity of maintaining multiple facilities;
- o The computer laboratory is fully operational and well-utilized by both undergraduate and graduate students; and
- o Although delays in construction of the communications service unit and the language laboratory have hindered progress in improving library resources, the Project as a whole has experienced limited negative impact: the most harm from this delay has been on the technology, outreach and English language programs.

#### G. Commodity Acquisitions

##### 1. General observations

The TIPAN plan provides for many kinds of commodities to be supplied under the project. The variety of items called for is very large: laboratory supplies and equipment; cars, trucks and buses; machinery, equipment and supplies for research stations; computers and audio-visual equipment for use throughout the campus; library books and journals; equipment for the communications center; and so on. Initially, complications associated with the unpacking of ocean shipping containers to check their contents in Karachi resulted in numerous problems with the ordering, purchasing, shipment, delivery and distribution of commodities on campus at the AU.

They have been overcome by three actions: the Project Officer investigated the problem and identified sources of difficulty; the current TA Team Leader developed a carefully devised form which now accompanies each item through purchase, shipping and delivery; and unpacking in Karachi was discontinued. The system is now operating smoothly.

Commodity acquisition problems caused some delays and in a few cases there were real irritations. Problems with one set of computers may reflect an unwise selection. However, on the balance, the impact of commodity acquisition problems on progress of the Project has not been significant.

However, two problems continue. Modern sophisticated equipment must be calibrated, maintained and serviced. New users must be trained to use the new apparatus. Many TIPAN commodities (computers, copiers, auto-analyzers, etc.) have American suppliers with branch outlets or franchised dealers in Pakistan. Those companies are able, willing and anxious to install and service new equipment. The Team suggests that, to the extent possible, commodities should be purchased with provisions for installation and maintenance by such Pakistani based companies.

USAID is able to authorize such in-country purchases for commodities and services. It is important that TIPAN utilize fully that provision which would be advantageous to the project while simultaneously giving a boost to development of new capabilities in Pakistan.

## 2. Summary of findings

With regard to commodity acquisitions, the Evaluation Team found that:

- o Initial problems with commodity procurement have been overcome by actions taken by the Project Team, however, maintenance of the sophisticated equipment, and training in its use, are still problematic; and
- o Commodities could be purchased with provisions for installation and maintenance by American suppliers with outlets in Pakistan.

## H. The Participant Training Program

### 1. Number of degree and non-degree participants trained

Of the TIPAN Project's many component parts, the one which has captured the imagination and stirred the interest of most members of AU's administration and faculty has been the participant training program. The Project Paper authorizes participants for 70 PhD and 70 MSc degrees, 38 students to be drawn from existing AU staff and 102 from newly hired staff or scientists from the merged research system. No more than forty percent of these were to study at the University of Illinois or at Southern Illinois University and at least 60 percent at other American universities (see Table 3).

The design called for most degree candidates to be sent for advanced studies during the first five years of the project with 17 and 39, or 56, to be enrolled in the first and second years of the TIPAN project. In addition, 65 persons were to be provided short-term training encompassing a blend of academic course work and/or on-the-job training. Of these 65, 17 would be drawn from present on-campus personnel, while 48 would be new hires or off-campus research/outreach station staff.

The professional degree and non-degree training requirements scheduled for each of AU's faculty or unit are shown in Table 4. Table 5 shows actual training statistics of 81 participants. Of the 70 PhDs, 70 MScs and 65 non-degree participants expected to receive training, 31, 12 and 38 have done so or were in the process of doing so. AU placed heavy emphases in their nominations for training for the PhD versus MSc, early in TIPAN Phase I. If these emphases were sustained, AU will very soon exceed the quota of PhDs allowed, necessitating substantial readjustments in level of training that can be supported.

Table 3: Estimated Projected Training Requirements, NWFP-AU, Phase I

Facility or Unit	<u>Number of Degree</u>			Number of Non-Degree Participants	Total
	PhD	MSc	Total		
1. General Administration	2	1	3	3	6
2. Plant Sciences	35	21	56	29	85
3. Engineering Applications and Food Technology	6	9	15	6	21
4. Animal Husbandry	11	12	23	12	35
5. Rural Social Sciences	10	15	25	9	34
6. Learning Resources Center	1	9	10	6	16
7. Continuing Education Center	<u>5</u>	<u>3</u>	<u>8</u>	<u>-</u>	<u>8</u>
Total	70	70	140	65	205

Source: Provided by TIPAN TAT.

**Table 4: Number and Classification, by Faculty or Unit, of Non-Degree Participants in Training as of September 1987**

Department or Unit	Campus Staff	Research/ Outreach	New Hires	Total
1. General Administration	2	0	0	2
2. Plant Sciences	11	11	0	22
3. Engineering Application and Food Technology	5	0	0	5
4. Animal Husbandry	4	1	0	5
5. Rural Social Sciences	7	0	0	7
6. Learning Resources Center	2	0	0	2
7. Continuing Education Center	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	31	12	0	43

Source: Compiled from data provided by TIPAN TAT.

Although the goal of 56 degree participants to be enrolled in the first two years was not met, the record to date was rather impressive. See Table 5. Three of them had returned from America with advanced degrees, two with PhDs and one with an MSc. Thirty were enrolled for PhD studies and ten for Master's. Thirteen had been or were at UI, three at SIU and 27 at other universities. Of the total of 43 participants, 31, 12, and 0 were from the campus staff, research/outreach station staff and new hires, respectively. Not shown in Table 5 is the fact that to date only three participants had returned to Pakistan without completing their degree program.

The placement of 43 degree and 38 non-degree participants was not accomplished without great diligence on the part of the Illinois Home Office as it sought admission for candidates at suitable institutions of higher learning in the US and in other countries. By the time of the TIPAN evaluation, those individuals most qualified for degree training had been winnowed out of the potential pool of about 300 current staff. Anticipated are greater difficulties ahead in meeting the desired quotas.

## 2. Criteria for selection

The Evaluation Team thought that AU lacked adequate selection criteria for determining who should receive degree training. Departmental needs appear not to have been taken seriously. The dominant factor was English ability as measured by the TOEFL test. Other factors such as age, scholastic ability and potential for contributing to the goals of the institution received less consideration. The selections were TOEFL driven. The firm but mistaken impression had definitely been formed throughout the University system that anyone who achieves a TOEFL score of 550 will be granted study opportunity in the United States. The Team also received reports of favoritism or discrimination. Some interviewees were concerned that a number of trainees and candidates for training will be nearly 50 years of age upon the completion of their programs, leaving only about ten years for their professional contributions to AU before they must leave at the compulsory retirement age of 60.

## 3. English competency

Meeting acceptable standards of English has undoubtedly been difficult for most staff members, and as younger and younger members are considered, the difficulty will increase. The younger a person is, the fewer opportunities and time he has had to acquire English skills, especially if he had attended a school in which English has been allowed to decline in importance. AU may soon run out of candidates who can meet the TOEFL requirements without difficulty. Low English competency may become a real obstacle. To cope with this problem, AU's administration is to be commended for having instituted special English

Table 5: Number and Classification, by Institution Attended, of Participants for Professional Degrees as of September 1987

Institution/Degrees	Source of Participants			Total
	AU Staff	Research Station Staff	Hires	
1. Number completed PhD				
a. At UI*	1	0	0	1
b. At SIU	0	0	0	0
c. At other universities**	1	0	0	1
2. Number completed MSc**				
a. At UI	0	0	0	0
b. At SIU	0	0	0	0
c. At other universities***	1	0	0	1
3. Number enrolled for PhD				
a. At UI	9	1	0	10
b. at SIU	1	0	0	1
c. At other universities	12	7	0	19
4. Number enrolled for MSc				
a. At UI	1	1	0	2
b. At SIU	1	1	0	2
c. At other universities	<u>4</u>	<u>2</u>	<u>0</u>	<u>6</u>
Total	31	12	0	43

\*In Poultry Science at UI.

\*\*In Plant Pathology at North Carolina State.

\*\*\*In Statistics at Texas A&M.

classes for all who have not yet attained the desired standard TOEFL score of 550 and for its efforts to establish a language laboratory for both faculty and students. However, this laboratory has not yet been built.

#### 4. Length of training

Evidence has been mounting that the anticipated number of man-months set aside for degree training for foreign nationals whose native language is not English, 36 for the PhD and 24 for the MSc degree, is inadequate by a factor of one-quarter to one-third. In the case of those degree candidates returning to Pakistan for thesis research, the deficiency in required man-months may even be larger.

#### 5. In-country thesis research

Many benefits have been ascribed to the practice of having degree students return to their home country to do their thesis research with some on-site supervision provided by their major adviser. Among them are the opportunity to engage in a study relevant to their own country, to do research in a realistic environment with its expected constraints, to contribute directly to AU's research thrusts, and to lay the foundation for long-term research to be continued when participants return to their country. Thus far, five participants have returned to Pakistan to collect thesis data. Two other requests for in-country research were denied. Based on past experience, the members of the Team anticipate that for this aspect of the program to succeed, it will be necessary to develop a greater understanding of its potential benefits among the parties concerned.

#### 6. Achievement to date in relation to the plan

The Plan called for 56 degree participants to be placed in the first two years. However, only 43 had been or were enrolled, not including three returnees who did not complete their programs. This lower than expected placement record may result in a proportionate decrease in the anticipated rate of progress of the TIPAN Project.

Of the planned 1:1 ratio of PhD to MSc participants, the actual ratio found to date was 31 PhDs to 12 MScs which if continued, would result in a ration farther from the planned ratio.

#### 7. Summary of findings

With respect to the Participant Training Program, the Evaluation Team's findings are as follows:

- o The Participant Training Program has resulted in placement of 43 degree and 38 non-degree participants in US Universities. Although the goal to place 56 degree participants was not met, the record to date is good;

- o Placement has been facilitated by the pro-active stance of the Illinois Home Office, which has conscientiously sought admission for candidates in the US and other countries;
- o Too much emphasis has been placed on nominations for training for PhD versus MSc: this may lead to a problem if the AU exceeds the quota of PhDs allowed;
- o Adequate selection criteria for nomination of candidates has been seriously lacking at AU: the heaviest criteria, TOEFL scores, overrode other considerations of age, scholastic ability, and potential for contribution to AU. Favoritism was also cited;
- o AU has attempted to cope with the serious problem of English language competency by instituting special classes for sub-TOEFL-standard candidates, and by planning to build a language laboratory;
- o The number of man-months set aside for degree training may be inadequate, particularly for those degree candidates returning to Pakistan for thesis research;
- o In-country thesis research is beneficial, but has not been encouraged under TIPAN. In order for this to succeed, the benefits of this program must be clearly communicated and understood; and
- o The lower than expected placement of degree candidates during the first two years of TIPAN may result in decreased project progress.

#### I. Technical Assistance (TA)

Technical Assistance is a basic component of TIPAN and is either short-term (ST), of less than a year, or long-term (LT), normally within one to four years in duration.

##### 1. Short-term technical assistance (ST-TA)

The TIPAN plan includes generous provision of short-term technical assistance for periods ranging from a few weeks to nearly a year. There are important potential advantages to that provision which include: availability of individuals of unique qualifications and/or high capability who might not be available for longer periods; the meeting of specific short-term needs at the AU; the teaching of specialized one semester courses at the AU; engagement of consultants for specialized training courses, appraisals or specific problem studies (such as design of an outreach program); enabling of PhD

candidates to work on degrees overseas to have the assistance in Pakistan of their foreign adviser in the design and conduct of their theses research projects in cases where appropriate; and lower cost per person month (or year).

Table 6 summarizes the history of TIPAN technical assistance. It is evident from the table that there has been limited usage of the Project's provision for ST-TA. Nine of 29 months used to date was for administrative purposes. The number of man-months authorized for Phase 1 was 140, for the first two years 75 man-months were authorized. Team enquiries and discussions indicated relatively little interest or enthusiasm resulting from the ST-TA program. Reasons for limited use deemed to have been significant include: lack of a specific, sharply focused purpose for some visits; lack of a specific counterpart/host for the visitor; misunderstanding or lack of understanding by AU personnel regarding the actual or potential role of ST-TA; and inadequate briefing before arrival so that the short-term TA can make the maximum contribution in the short time available for these assignments.

The Evaluation Team believes that the ST-TA provisions of TIPAN are important and have been inadequately utilized. Successful exploitation of the ST-TA potential will depend on:

- o Identification of a specific need or purpose by the AU in consultation with the TIPAN team;
- o Development of a sharply focused program to be followed when the ST-TA is in NWFP. The AU staff member to act as counterpart/host throughout the TA's visit should have a significant role in development of such a program; and
- o A clearly described job/task description should be prepared for recruiting use. If appropriate, a package of background information should accompany the job description.

2. Long-term technical assistance (LT-TA)

At the request of the American Ambassador to limit the overall number of US contractors in Pakistan to reduce security risks to US personnel, the long term technical assistance to the AU was reduced below the level proposed in the TIPAN PP to a maximum level of five persons. Table 6 summarizes the LT-TA inputs since the inception of the project.

a. General appraisal

The start-up of a complex project such as TIPAN is difficult under the most favorable circumstances. It was reported that the LT-TA team apparently was briefed inadequately before arrival at the AU, and the start-up and fielding was delayed for at least six months. It was also reported that there was inexperience and some

Table 6: Number of TIPAN Short- and Long-Term Technical Assistance Staff Provided 1985-87

Specialization	Dates	Person-Months
SHORT-TERM TECHNICAL ASSISTANCE		
<u>FY-85</u>		
Participant Training	11-23-84/12-14-84	1
Administrative Visit	11-14-84/12-14-84	1
Administrative Visit	02-07-85/03-25-85	2
Institution Development	03-15-85/04-05-85	1
Telecommunications	04-85 /05-85	2
Administrative Visit	04-01-85/05-31-85	2
Teaching Program	04-16-85/05-08/85	<u>1</u>
Sub-Total		10
<u>FY-86</u>		
Rural Social Sciences	11-09-85/12-03-85	1
Participant Training	11-15-85/12-03-85	1
Animal Husbandry	11-25-85/12-05-85	1
Administrative Visit	04-86 /02-03-86	1
Microcomputing	02-05-86/03-07-86	1
Microcomputing	02-08-86/10-31-86	<u>9</u>
Sub-Total		14
Total		24

Specialization	Arrival	Length of Stay
LONG-TERM TECHNICAL ASSISTANCE		
Team Leader	06-06-85	Two years
Research Specialist	07-01-85	Extended for second tour
Outreach Specialist	08-08-85	Extended for second tour
Teaching Specialist	08-01-85	Two years
Research Station Mgmt.	09-01-85	Two years

Source: TIPAN Project Officer.

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deficiencies in the initial team leadership. At the outset of TIPAN, the team was not fully familiar with the institution-building (IB) model and the required sequencing of inputs to be as effective as it should have been in organizing activities and advising the administration of the AU. Reportedly, at times the USAID TIPAN project officer had felt he had to make interventions because of some team inadequacies. Finally, the delays in the construction component have had a hindering effect on some of the TA team's tasks during Phase I of TIPAN. Given those handicaps, it is to the great credit of UI/SIU and the current team leader who has now developed a smoothly operating, positive and dynamic relationship between the current two person TA team and the AU officers and staff.

The TA team has been hindered in some of its tasks. The physical improvements at the University farm and the finalization of farm operations policies were only partly completed when the relevant TA person departed after his two years at the end of July 1987. The upgrading of physical facilities at the research stations, greatly handicapped by delays in the official merger of the provincial agricultural research system with the University is far from complete. The development of the outreach program and structure is behind schedule, very much affected by merger delays.

In spite of the foregoing, most contractual obligations of the TAT have been fairly satisfactorily fulfilled, given the context in which the project operated from November 1984 to September 1987. Important achievements include:

- o As of September 30, 1987, AU faculty members were enrolled in degree and non-degree study; and 37 had returned to AU, three with advanced degrees and 34 from non-degree technical training;
- o The merger (incorporation of the NWFP agricultural research system, its personnel and assets into the University) has been accomplished;
- o The University administrative structure has been established; the curriculum, and many courses are in the process of complete revision and improvement;
- o TIPAN provided commodities have had a highly important stimulating effect on most of the University staff;
- o Participation in research and outreach activities has been officially designated as normal responsibilities of the teaching staff most of whom traditionally did little other than teaching;
- o There is already an indisputable, greatly increased interest and activity in research throughout the University;

- o The personnel benefits of the merger (higher salaries, promotion on merit, access to overseas training opportunities), and prospects of upgrading of their resources and facilities, have had important stimulating effects on activities at the research stations; and
- o The agreement between the University and the Extension Directorate of the NWFP Government regarding the respective roles of the two agencies with respect to outreach and extension activities has been signed.

The TIPAN TAT had a basic role in contributing to the foregoing gratifying developments.

b. Effects of LT-TA reductions

The reduction of the maximum number of LT-TA personnel at the AU near the start-up of TIPAN from a maximum of nine to a maximum of five, at any given time, affected greatly TIPAN achievement during the 1984-1987 period. It has reduced the amount of person-to-person contact between AU staff and TA team members during a period of fundamental changes at the University. During that period, such interactions should have contributed to accelerated evolution, understanding and acceptance of the TIPAN project. They could have contributed more directly and indirectly to curriculum improvements and to teaching.

The TA team leader currently has what is probably an unsustainable workload. If it is maintained, TIPAN progress and his personal well-being may be adversely affected. It is urgent that additional LT-TA team members be recruited as quickly as is practical, consistent with engaging individuals with the high professional capabilities and the positive personal characteristics so important to the demanding tasks they will be undertaking in TIPAN.

The Evaluation Team proposes that the Illinois consortium should seek authorization to increase the maximum number of project LT-TA members from the present five to not less than seven. Most important, the Illinois consortium must take immediate action to fill, and keep filled, the five LT-TA positions now authorized.

The AU needs to develop a plan to fill existing gaps in some disciplinary areas. On the basis of the Evaluation Team perceptions of neglected areas of great importance to attainment of the AU's basic objective, high priority should be accorded to: production economics/farm management, a forage crops specialist to be involved intimately in the livestock program and specialists in animal traction farm machines and outreach programs. Other priorities should be determined by the AU in consultation with the TAT.

### 3. Summary of findings

With respect to Technical Assistance, the Evaluation Team found that:

- o Although the generous provision of ST-TA under TIPAN has several advantages, thus far there has been only limited usage and/or interest in this provision;
- o In order to exploit fully the advantages of ST-TA, AU must identify a specific need or purpose in consultation with the TIPAN team, help develop a focused program for ST-TA in country, provide a counterpart/host for the duration of the ST-TA visit, and the TIPAN team must prepare a clear job/task description for recruitment of ST-TA personnel;
- o LT-TA has been sharply reduced, owing to increased security problems in Pakistan;
- o The LT-TA team experienced problems and leadership deficiencies at the outset of the Project, and construction delays have hindered some of its tasks. These problems notwithstanding, the current team leader has successfully developed good operations and relationships between the LT-TA and AU officers and staff;
- o Construction and merger delays have handicapped research and outreach tasks, however the LT-TA has satisfactorily fulfilled its contractual obligations, especially given the project context;
- o The LT-TA has contributed to degree and non-degree training, the merger, establishment of University administrative structure and curricula, procurement of commodities, promotion of increased research and outreach activities, upgrade of personnel, resources and faculties, and the agreement between the AU and Extension Directorate on outreach and extension;
- o The reductions in LT-TA have caused a decrease in interaction with AU staff and have impacted negatively on the evolution of TIPAN;
- o The excessive workload on the LT-TA leader may adversely affect his health and TIPAN progress. Additional LT-TA will help relieve this load;
- o The maximum number of LT-TA should be increased from five to seven. UI/SIU should act immediately to fill the five-person team now authorized; and

- o High priority should be given to filling discipline gaps in production economics/farm management, forage crops/livestock, farm machines and outreach.

J. Home Office Support for TIPAN

1. General observations

The US-based support for TIPAN under the contract with the consortium of the University of Illinois (UI) and Southern Illinois University (SIU) is located at the University of Illinois (Urbana). The Evaluation Team spent two days at Urbana, being briefed by the TIPAN personnel from both UI and SIU.

Every indication at Urbana, and any subsequent indications at Peshawar, suggest that the consortium is working smoothly and harmoniously.

In Illinois, the team was briefed on reception, placement and participant settling-in programs. The Evaluation Team considers the execution of this part of the consortium's contract to be excellent. The gathering of all the TIPAN trainees in the US, in Illinois in August 1987, for a combination of workshops and "R and R for Students" is particularly commendable.

2. Summary of findings

All indications suggest that the UI/SIU consortium is working smoothly, and that, in particular, home office support for reception, placement and settling-in of trainees under TIPAN has been excellent.

K. Host Country Support and Commitments

1. GOP responsibilities

The Government of Pakistan agreed, under the auspices of the University Grants Commission, to budget in its Annual Development Budget for sufficient funds to cover all projected costs for Phase I of the TIPAN Project. GOP further agreed to provide budgetary allocations required to cover the operating and maintenance costs of all on-going activities and those initiated under the Project in the areas of research, teaching and outreach. Additionally, GOP agreed to maintain in good operational condition all physical facilities constructed or rehabilitated under the Project and all commodities and equipment procured under the Project.

It appears to date that GOP has not yet approved funds so that construction of its share of the Phase I building program can commence. On the other hand, as shown in Table 7, the GOP has budgeted approximately Rs. 12 million, Rs. 33 million, and Rs. 49 million for the TIPAN Development Program for the 1985-86, 1986-87 and 1987-88 fiscal years, respectively, but received Rs. 2 million, and 36 million for the two full years indicated.

The implementation of the TIPAN Project requires the addition of new administrative positions. A measure of GOP's contribution can be found in the degree to which new positions have been created and funded. Table 8 shows that 13 professional positions have been established to date (each with the usual complement of assistants, stenographers, and drivers).

The cost of salaries and fringe benefits necessitated by the 13 professional positions and complementary fellow workers (Table 8) was specified in the TIPAN-AU Project Development Budget as depicted in Table 9.

With regard to the operating and maintenance costs of all on-going activities at AU, GOP had funded them to the extent shown in Table 10. Clearly indicated was a significant increase in the annual financial commitment GOP made towards supporting AU. However, AU's budget conventionally only shows two categories of expenses, (1) salaries and fringe benefits and (2) others. No funds were earmarked specifically for carrying out AU's triple functions of teaching, research and outreach. Operating expenses were simply drawn from the "others" category. Consideration should be given to a budgeting and accounting system which accurately reflects the budgetary allocations to each of AU's trilogy of functions. A simple, modern and computerized system should be seriously considered.

## 2. GONWFP responsibilities

GONWFP was responsible for transferring the provincial agricultural research system to AU and for continuing to fund it, including transferring to AU the research system's revenue and annual development budgets.

The Northwest Frontier Province Agricultural Research System (Handing Over) Act, 1986, was passed on 12 February 1987 and went into effect on 18 March 1987. It transferred the agricultural research system to AU and provided that "Government shall continue to make allocation of funds from the current and development budgets to the University in respect of the staff and the Agricultural Research System". It was learned that on or about 15 September 1987 the Provincial Agricultural Research System's recurring budget of Rs. 31.834 million and development budget of Rs. 19.3 million were transferred to AU. The comparable figures for 1986-87 were Rs. 30.59

Table 7: Annual TIPAN Project Development Funding, 1985-88 (in millions of Rs)

Year	Received	Asked For	Amount (Rs)
1985-86	1.943	11.986	28.925
1986-87	36.780	32.780	95.080
1987-88	--	49.088	114.829

Source: Provided by AU officials.

Table 8: Number of New Professional Positions Created by AU to Support TIPAN Project, 1985 to Date

Year	Number	BPS Grade	Position
1985-86	1	21	Pro-Vice Chancellor
	1	20	Director of Research
	1	20	Director of Outreach
	1	20	Director of Teaching
1986-87	1	20	Associate Director of Research
	4	19	Regional Outreach Program Leader
1987-88	1	19	Women/Rural Families Outreach Program Leader
	1	19	Coordinator of Communication Services Unit
	<u>2</u>	19	Outreach Program Leaders
Total		13	

Source: Compiled from AU's Annual Budgets.

Table 9: Project Development Budget for  
Personnel Services, NWFP-AU, 1985-88

Year	Salaries	Fringe Benefits	Total
----- (in Rupees) -----			
1985-86	308,040	220,032	528,072
1986-87	676,826	530,947	1,207,773
1987-88	776,082	616,917	1,292,059*

\*To this figure should be added the costs for two new professional positions.

Source: AU's Annual Budget.

Table 10: Expenditures by the Government of the NWFP at the AU, 1981-87

Year	Recurring Grant	Non-Recurring Grant	Development Grant	Total
----- (millions of Rupees) -----				
1981-82	7.738	1.365	0.489	9.592
1982-83	11.104	0.697	3.100	14.901
1983-84	13.175	0.541	7.045	20.761
1984-85	15.156	0.216	6.660	22.032
1985-86	19.867	0.300	11.680	31.847
1986-87	24.190	0.787	12.624	37.601

Source: Provided by AU officials.

million and Rs. 15.92 million, respectively. It may be of interest to note that of the 1987-88 development budget of Rs. 19.3 million, Rs. 8.129 million have already been approved while the remaining Rs. 11.174 million is yet to be approved by Government pending AU's submission of acceptable PC-Is. The budgetary increases for 1986-87 were a modest 4.1 percent (31.834 minus 30.590 divided by 30.390) for the recurring budget and a significant 21.2 percent (19.3 minus 15.92 divided by 15.92) for the development budget.

3. NWFP-AU responsibilities

a. Negotiating, awarding, monitoring and administering all construction contracts

AU conducted a successful tendering process for bids for the construction of staff housing, women's hostel and selected infrastructure, but, as mentioned earlier, it chose not to award contracts. This decision may have been influenced by the thought that although it was within permissible limits, the lowest bid was still too high, or by the hope that a lower bid might be received if the tendering process were repeated. The delay in construction, though not affecting the quality of the teaching, research and outreach programs directly, cannot but have a negative impact on the morale of faculty affected by this delay.

b. Recruiting and hiring additional staff

From the commencement of the TIPAN Project to the time of the Evaluation Team's visit, AU increased its professional staff by about 60. In a number of cases, difficulty was encountered in locating qualified candidates. Nevertheless, the Team found that AU conducted well-organized recruitment and selection process for additional staff.

c. Identifying suitable candidates for both long- and short-term overseas training, making arrangements to release them, and obtaining all necessary clearances from the government

AU has discharged this responsibility well.

- d. Providing sufficient staff to serve as counterparts to the expatriate consultants

Since the Vice Chancellorship of AU has always been filled, a counterpart to the TIPAN Project Team Leader was always available. In the case of other long-term technical assistants on the TIPAN team, some delays were encountered pending the filling of Pakistani counterpart positions by transfer of present staff, as in the case of the Director of Research, or by recruitment and selection of qualified candidates, as exemplified by the Director of Outreach. The situation for long-term TAs currently appears to be well in hand. However, counterparts were not clearly designated for all short-term TAs, so maximum benefit from their visits was not fully realized.

- e. Ensuring that the GOP's PC-I for TIPAN is approved

This was accomplished.

- f. Facilitating the merger with the provincial research system

The merger has been accomplished with a minimum of disruption. Staff, facilities, the recurring budget and the development budget have been placed in the control of AU.

- g. Developing effective working relationships with the Directorate of Extension

With the recent appointment of AU's Director of Outreach, a working relationship with the Extension Directorate has been established. However, more and more people from both organizations should be actively working together towards common goals. Joint activities should include identifying farmer-oriented researchable problems, establishing research priorities, holding on-farm demonstrations, developing packages of technology, sponsoring in-service sessions, etc. The appointment of a new Director-General of the Extension Service will provide an excellent opportunity to further develop a close working relationship between AU and the Extension Directorate.

- h. Implementing recommendations on reorganization and curriculum revision

AU has been most receptive in accepting and implementing TIPAN recommendations. This is particularly true in the case of curriculum revisions and a little less so when it came to reorganization. By the end of the 1987-88 academic year, AU will have graduated its first class under the revised curriculum.

Not adopted was the recommendation to employ four on-campus Outreach Program Leaders. Though acceptable to AU, the recommendation that the Outreach Directorate be staffed with additional administrative officers was significantly delayed, only the Director having been appointed to date.

Reorganization meant the appointment of several senior administrative officers to the TIPAN Development Scheme including one pro-vice chancellor and three directors with other officers pending. These appointments were or will be all new positions. The restructuring included establishment of three faculties, which was to be enlarged to four, each with its own dean. The Evaluation Team feels that while the structure itself was in place, it was not yet functioning as well as it should.

A number of senior officials held dual positions, so were not able to devote full time to promoting their respective roles in teaching, research and outreach. Individual staff members took their institutional concerns directly to the Vice Chancellor, by-passing the department head, the dean, the director and the pro-vice chancellor. Such by-passing negated one of the most advantageous principles of the adopted structure. Finally, department heads were not processing their requests for commodity purchases to the TIPAN Office through their deans, thus preventing each of the latter from discharging his responsibility to coordinate the total program of teaching, research and outreach of his faculty. Clearly, the change from the conventional to the new involved these changes, but also attitudinal modifications committing AU personnel to improve institutional productivity by opening up lines of communication, increasing the efficiency of the administrative process. Further it was to enhance faculty morale by involving as many as practical in the decision making process, assigning responsibility for productivity to each person and to stimulate dedication to duty.

The Evaluation Team was aware of the trials and tribulations to be encountered in the change from conventional ways, but believes that, with organizational changes already made, AU's administration can successfully bring about the needed attitudinal modifications.

#### 4. Achievement to date in relation to plan

The failure on the part of both GOP and USAID to meet construction targets had inevitably affected the achievement of TIPAN goals in all aspects where the absence of planned facilities impinged directly on building institutional development. For example, the razing of farm buildings, e.g., poultry housing, coupled with the delayed construction of new facilities, resulted in the elimination of farm facilities, for teaching and research. The absence of a Continuing Education Center, the intended "heart of the Outreach Program" had militated against AU's production of mass media materials, programs and instructional codes and the holding of on-campus short courses, seminars and workshops; the absence of new offices, classrooms

and teaching research laboratories, especially the latter, was a severe constraining factor to the improvement of teaching and research; the failure to commence constructions of planned faculty and student housing had a negative impact on the morale of faculty and students affected by the delay in construction. Furthermore, the delayed construction deprived AU the psychological benefits to be derived from having on the campus capital improvements resulting from the TIPAN Project clearly visible to all.

The appointment of the Outreach Director was about two years delayed, as will be the selection of other senior outreach administrative and subject matter specialists. A formal agreement on their respective responsibilities had been duly signed, but was little understood and but marginally implemented to date. Progress in the outreach program was behind schedule.

#### 5. Summary of findings

With respect to Host Country support and commitments, the Evaluation Team's findings are as follows:

- o The GOP has budgeted for sufficient funds to cover all projected costs for Phase I of TIPAN, but has not yet released all these funds, particularly for its share of the building program;
- o The GOP has contributed significantly to the creation and funding of new administrative professionals and staff at AU, and to operation and maintenance costs at AU;
- o The current budgeting and accounting system at AU does not reflect accurately costs for teaching, research and outreach; a new, computerized budgeting and accounting system could be installed to resolve this problem;
- o The GONWFP has carried out its responsibilities with regard to the transfer and funding of the AU agricultural research system;
- o Although the NWFP-AU succeeded in collecting bids for building construction, no contracts were awarded; the delay in construction has impacted negatively on faculty morale;
- o AU has succeeded in recruiting and hiring qualified staff, and in identifying and arranging for candidates for long- and short-term overseas training;
- o In general, provisions for AU counterpart staff for long-term TA has been adequate, but such provisions for short-term TA has been less successful, thereby adversely affecting the impact of short-term visits;

- o The GOP PC-1 for TIPAN has been approved, and the AU merger with the provincial research system has been accomplished;
- o A working relationship between the AU Director of Outreach and the Extension Directorate has been established, but more interaction and joint activities are needed;
- o AU has accepted and implemented TIPAN's recommendations on curriculum revisions, but the staff reorganization has not gone as smoothly, particularly with regard to procedures for reporting and commodity purchasing: the problem appears to be primarily one of attitude and resistance to change;
- o The delays in construction have impacted negatively on institutional development, teaching, research, outreach, and student and faculty morale; and
- o Progress in the outreach program has been limited because of delays in appointment of the Outreach Director and senior outreach administrators and specialists.

#### L. TIPAN Relationships

The scope of work for the Evaluation Team asks for an assessment of the nature and effectiveness of the relationships among the major entities involved in TIPAN. Although the Illinois Technical Assistance Team (TAT) is centrally involved with all other agencies associated with the project, there are some other interactions which might also affect TIPAN. The assessment is based on those two divisions.

##### 1. TAT relationships

The Illinois Consortium has two bases for its activities, the TIPAN office at the University of Illinois (Urbana) (Home Office) and the technical assistance personnel at NWFP-AU (Field Office).

##### a. Illinois TIPAN office

The Illinois TIPAN office has three major responsibilities: the recruitment, fielding and support of technical assistance personnel who serve at NWFP-AU; the purchase and shipment of commodities to TIPAN in Pakistan; and the reception, placement monitoring and logistical support of TIPAN participants in the US. TIPAN Illinois also has a management role with respect to the TAT in Pakistan as well as in relations with the AU and USAID/Pakistan. The Illinois office also coordinates relations between the two members of the Consortium.

The Evaluation Team has had to depend on discussions with a number of officials in assessing the Consortium's relationships. The impressions gathered are as follows: the recruitment of TA personnel has reportedly been a source of real concern both as to timeliness and

quality; the considerable initial problems with the acquisition of commodities, not solely an Illinois-caused problem, seemed to be very satisfactorily resolved; responsibilities for participants in the US seem to be dispatched excellently; there was initial slowness to act on a TA personnel problem in Pakistan; relations with the AU are apparently very good; but there remains considerable un-ease in relations with USAID/Pakistan. Every indication has been that relations between the two universities in the Consortium are excellent.

b. The TAT in Pakistan

All indications are that current relations between the TAT and all levels of AU personnel are excellent to outstanding. The current excellent personnel relations are judged by the Team as a major factor in explaining the effectiveness of the TAT in achieving such changes in attitudes and interests at the AU.

Some interventions were made by USAID in the past. Some of those actions were the result of problems associated with commodity acquisitions. Nominations by Illinois of some individuals for TA posts at the AU was another cause of some disagreements. Currently relations are warm and positive.

TIPAN relations with the research stations had minor setbacks from the delays in achieving the merger. Personalities of the current TAT and developments since the merger seem to have re-affirmed very good relations with the research stations.

The Evaluation Team had few opportunities to observe relations between the TAT and such Pakistani agencies as PARC, NARC, VRI, UGC and PFI. Conversations and impressions gave the Team the impression that such relations are at least very good. The meeting with PARC in Islamabad confirmed that impression.

2. USAID relations

The USAID project officer has a key role in TIPAN. During the early stages of the project, and before the current TAT leader assumed that position, the project officer made some interventions which upon occasions caused detrimental initial reactions. A reported external comment was heard to the effect that TIPAN was once the most closely managed project in Pakistan. However, there are now good relations with both the TA team and the AU. It is believed by both the AU officials and TA team that the project officer's role should be one of providing guidance and encouragement in support of TIPAN rather than assume, what appeared at times to be a negative and confrontational style in this role.

The unpacking of shipping containers in Karachi, following an AID procedure, contributed considerably to some of the early problems with commodities. Changes in that procedure have assured arrival intact in Peshawar of recent shipping containers.

### 3. Summary of findings

With respect to TIPAN relationships, the Evaluation Team found that:

- o Relations between UI and SIU are excellent, those between the Home Office and AU are very good, but relations between the Home Office and USAID/Pakistan have been uneasy;
- o In Pakistan, relations between the TAT and AU are excellent, and have engendered effective attitudinal change and high levels of interest in TIPAN at AU;
- o After initial problems between TAT and USAID/Pakistan were overcome, relations are now positive, and the same can be said of relations between TAT and the research stations, and between TAT and other Pakistani agencies; and
- o AU officials and the TAT perceive that USAID's role has been at times negative and confrontational, and should instead be one of guidance and encouragement. This USAID attitude led to initial unfavorable reaction, but relations now appear to be good.

#### M. The TIPAN Construction Program at AU

##### 1. General observations

The proposed construction program is behind schedule. In early 1987, tenders were invited for the construction phase of the TIPAN project. All tenders received for USAID financial construction were unacceptably high. As a consequence, it is intended to re-tender somewhat modified project plans late in 1987. If an acceptable tender is received, actual construction will probably begin about mid-1988.

The delay in the initiation of the TIPAN construction program is unfortunate and has had genuinely adverse effects on progress of the project. The delay in commencement of the US part of the construction program probably contributed to or caused delay in initiation of the GOP part of the program. Lack of new student housing and lack of some research facilities for faculty, such as the poultry unit, are affecting those groups. Delay in establishment of the Learning Resources Center and the Continuing Education Center will have adverse effects on students, staff members aspiring to go overseas for graduate degrees, and the outreach program. Postponement of campus infrastructure development is preventing completion of the University farm development according to plan.

## 2. Summary of findings

The delay in the TIPAN construction program has impacted negatively on project progress, and has affected student housing and faculty research facilities, has affected the ability of students and faculty to qualify for overseas training, and has prevented the completion of the University farm development.

#### IV. CONCLUSIONS, RECOMMENDATIONS, AND LESSONS LEARNED

##### A. General Conclusions and Recommendations

The TIPAN evaluation has resulted in a set of Conclusions and Recommendations which flow from the Findings set forth in the preceding Chapter. There are two general conclusions and two general recommendations on the program as a whole, followed by a series of specific conclusions and recommendations relating to the issues raised in the Scope of Work for this evaluation and discussed in Chapter III, Findings.

##### 1. General conclusions

- a. TIPAN has been successfully launched and important benefits have already resulted.

Implementation of the TIPAN project has already resulted in important changes at AU and throughout the NWFP. Most of the changes, activities and improvements foreseen in the Project Paper for this stage of the project have been made or initiated. There is great enthusiasm for the training program and the curriculum changes. The merger of the provincial research systems, although very recent, has already resulted in some increase in teaching staff and student interactions with the research stations of the province. Commodities such as library and computer acquisitions, laboratory supplies and equipment, and vehicles which enable off-campus research and visits have resulted in marked increases in interest and activity.

- b. The successful implementation of TIPAN has resulted from the good work of the Illinois consortium and cooperation of the AU officials. It is clear, however, that Illinois needs to make improvements in the execution of its contract.

The successful start-up of TIPAN is attributed to: careful and thorough development of the project design; the enthusiasm, commitment and support of the AU and governments of NWFP and Pakistan for the project; the funding support and project guidance of USAID; and the good work of the Illinois consortium in concert with the AU in development of the concept of TIPAN, and for initiation of project implementation.

Some inevitable delays and glitches in such a complex project were to be expected. Recruitment and timely availability of highly specialized and suitably experienced academic personnel for technical assistance tasks often pose problems. Location of universities able and willing to accept foreign students with specific interests, and oversight of the settling-in of a large number of Pakistani trainees scattered across the United States often are complicated and difficult.

## 2. General recommendations

- a. The consortium of the University of Illinois (Urbana) and Southern Illinois University (Carbondale) should continue as the contracting agency for TIPAN Phase II;
- b. The Illinois consortium, however, should make the following recommended changes in its execution of the contract:
  - Establish sufficient lead time for the recruitment and timely placement of long-term technical assistance personnel;
  - Provide at least two candidates for any specific TA request so that AU and GOP have an opportunity to select/request from among the potential appointees;
  - Improve the pre-departure briefing of TA's so that on arrival at AU they are able to become more effective;
  - Request that AU and TIPAN establish TA requirements one to three years ahead to provide ample time to identify candidates who are potentially interested and qualified for the posts indicated; and
  - Endeavor to recruit persons who were members of the TIPAN design team for TA assignments.

### B. University Reorganization, Staffing and Responsibilities

In accordance with the TIPAN design, the NWFP agricultural research system has become a part of the University. TIPAN has also stimulated other structural and curriculum changes at AU. Although there was some delay in the formal legislation for the merger of the research system with the University, the integration proceeded without much slippage in the TIPAN implementation plan. Administrative changes and curriculum revisions are also approximately on schedule.

#### 1. Conclusion

The stage is now well set for the NWFP Agricultural University to embark vigorously on the new curricula and the practical farmer-oriented applied agricultural research--badly needed by both NWFP and Pakistan.

## 2. Recommendations

- o All TIPAN participants should give urgent high priority to the development of a very applied program of production and marketing economics, and farm management;
- o The AU should reallocate and/or seek a substantial increase in funds for very applied livestock related research in order to increase that activity to a level at least approximately proportionate to the importance of that sector in the agricultural and national economies;
- o There should be no rigid adherence to some of the explicit details of the TIPAN project such as: percentages of staff time to be allocated to teaching, research and outreach; the ratio of MSc and PhD candidates to be trained overseas; and the faculty and departmental structure and the identification of specific staff members at the University for training. Rapidly changing conditions may make 1984 projected needs unrealistic for continued TIPAN activities;
- o The term "technology packages" should be eliminated from the thinking and writings of AU personnel and replaced by wording somewhat like "improved methods, materials or practices";
- o The AU should develop, publicize and employ new criteria emphasizing priorities of the University and academic merits of candidates as the primary factors in selection of individuals for training overseas;
- o The AU administration and staff should consider placing major emphasis, by all parts of the now enlarged university system, on curriculum, research and outreach programs at NWFP-AU. These activities should focus on adaptive research and on-farm validations that are essential to utilization at the farm level of the improved methods, materials and practices resulting from worldwide agricultural research; and
- o The new criteria for appointments and promotions on the basis of merit and qualifications should be continued by the AU, and the criteria for employment should be standardized, updated and published regularly.

## C. The Teaching Program

### 1. Conclusion

The Team concluded that the TIPAN Project had been commendably successful in its initial efforts to transform the teaching program at NWFP-AU in accordance with the objectives stated in the Design Plan and Project Paper. Further, the achievement of a firmly established and sustainable high quality teaching program will require continual effort and attention. The initial gains noted will be lost unless this effort is a high priority effort by AU.

### 2. Recommendations

- o The Director of Teaching and the faculty deans working through department heads should emphasize the continual upgrading of subject matter content and teaching methodology for each course, building on the experience gained over the last three years. Critical is the full use of new books, journals and the wide range of audio-visual, laboratory and farm equipment now available. Individual faculty members should be assisted in this task and be held accountable for its discharge;
- o The Director of Teaching and the Deans of the four faculties, with the assistance of TAT, should take leadership for regular seminars or workshops or other means, to assist faculty in acquiring improved teaching skills. Needed now are improved skills in more effective use of audio-visual equipment and aids, library resources, and communication techniques. Most important are improved skills in the construction of examinations and objective scoring, assignment of course grades, and use of student evaluations of teaching performance. These skills are essential in increasing the effectiveness of the recently adopted semester mode of instruction.
- o The Teaching Directorate should launch studies, to be repeated periodically, to determine the actual employment status of its graduates to (a) document AU's manpower contribution to national and provincial agricultural economic development, and (b) continually study the national and provincial agricultural manpower needs to keep the supply of graduates in line with demand;
- o The administration and faculty should determine, in the interest of making a quantum leap in raising the quality of the MSc program, whether and when AU could innovatively set defensible criteria for admission (where virtually none exists now) so that only the most qualified applicants would gain admission;

- o The AU administration should consider shifting more of the detailed supervision and management of the new student work experience program from the Director of Teaching to the individual departments concerned so that this experience can become a more integral part of their curricula; and
- o The TAT should, by all means available, increase administration and staff understanding and acceptance of AU's trilogy of functions and should assist AU in implementing the split appointment mode of staff responsibilities as soon as possible.

#### D. Research

##### 1. Conclusions

The merger of the provincial agricultural research system under the jurisdiction of the AU was officially gazetted 19 March 1987, the appointed day for activation being 15 May 1987. Substantial de facto implementation of the merger preceded those official dates. Achievement of the merger is a milestone as it represents fundamental change in how agricultural research is to be done in one province of Pakistan.

Several accomplishments resulted from the work of the long-term Research Station Development and Management specialist. However, given the magnitude and complexity of the task and its long-term nature, much remains to be done. Implementation and refinement of research station management and operating policies will be a rather slow process, as will be the upgrading of the physical resources and the capabilities of some key professional and support personnel at the stations.

##### 2. Recommendations

- o TIPAN-AU should develop and implement a specific plan to upgrade the capabilities of some research station support staff over a period of two to four years. Funding for support for this recommendation will likely have to be provided from local resources; and
- o A line item for research should be included in the AU Annual Financial Estimates, at the earliest practical time, so as to give basic assurance and stability to funding for research. (During the evaluation debriefing, the Vice Chancellor immediately accepted this proposal, including also that a line item for outreach in the annual financial estimates of the AU be established. These revolutionary changes will provide bases for future program adjustments and permit more effective monitoring and evaluation of programs.

## E. The Outreach Program

### 1. Conclusion

The outreach program had progressed at a slower rate than had been anticipated in relation to planned achievements by the TIPAN. However, much had been accomplished in spite of the many constraints encountered for collaboration between two institutional entities. A great deal still remains to be done to transform verbalized acceptance of the new outreach responsibility into concrete activities for implementation. The Memorandum of Understanding agreed to between the AU and the Extension Directorate deals mainly with broad responsibilities of the respective entities. Agreed upon operational plans are now needed for full implementation.

### 2. Recommendations

- o The leadership of AU's Outreach Directorate and the Provincial Extension Directorate should review their agreed upon respective duties and responsibilities at an early date, revise them, and in the light of current circumstances, proceed with the development of operational plans;
- o The Director of Outreach and his administrative staff, with the assistance and advice of the TIPAN Outreach Specialist, should concentrate on developing and implementing an AU operational strategy for utilizing available on- and off-campus manpower resources now to increase the early on effectiveness of the outreach program;
- o The Director of Outreach should continue to emphasize that AU's ultimate institutional *raison d'être* is to raise the productivity of the farmers in the Province.

AU's outreach mandate is relatively new and many staff members are not yet wholly committed to it. In this task, the Director of Outreach must firstly insure that other soon-to-be-hired administrators of his outreach directorate become fully conversant with the philosophy, goals and procedures governing AU's outreach program. Secondly, he and his fellow administrators must solicit and gain the cooperation of the deans of the various faculties and the directors of AU's research/outreach stations, and through them, the heads of departments;

- o The Director of Extension should hasten the development of policies and procedures for determining how much time each staff member is to devote to AU's outreach function and, equally important, how he is to be held accountable for the use of that time;

F. The Learning Resources Center

1. Conclusion

Progress-wise, the library was improved significantly, and the computer laboratory was fully operational in temporary quarters, functioning at nearly maximum potential. The communications services unit, however, and its language laboratory were still in an infant stage. Full development of these components of the Learning Resources Center await the construction of new facilities.

2. Recommendations

AU should request the service of a short-term TA library specialist to advise on ways and means of (1) implementing the library's computerized literature search/information retrieval system as soon as possible, (2) avoiding unnecessary duplication of library services on the campus and between the campus library and those of AU's research stations, (3) effectively and efficiently providing services available in the campus library to clients in off-campus centers, and (4) increasing faculty and student use of the library.

G. Commodity Acquisitions

After many initial problems associated with acquisition of commodities, TIPAN, with the cooperation of USAID, has developed a system that has worked smoothly for several months. Utilization of existing USAID authorization to make certain purchases from or through the Pakistan branches or authorized dealers of American companies should be employed to the benefit of the TIPAN project, and it might entail some savings. Additionally, training and/or service contracts, whether with Pakistani firms or overseas technical experts, is urgently needed for effective use of some of the sophisticated equipment at the University.

1. Conclusions

Commodity acquisition by TIPAN is now operating smoothly. TIPAN could benefit from acquisition and/or installation and/or training and service of some types of equipment by some qualified Pakistani sales and service companies.

2. Recommendations

- o TIPAN should seek to exploit the authorization of USAID to include in commodity procurements provision for purchases, installation and service contracts from suppliers with branches or agents in Pakistan; and

- o ST-TA contract(s) should be arranged for short-term training on the installation, service and maintenance of sophisticated commodity acquisitions of the Project for which there are no suitable Pakistani service agencies available to the AU.

#### H. The Participant Training Program

##### 1. Conclusion

The participant training program is one of the most successful and appreciated components of the TIPAN Project. Under present circumstances, NWFP-AU is meeting the established enrollment goals for degree training as well as could be expected, albeit not without some frustration among participant nominees who could not meet the requirements for admission to advanced degree study in some US universities. In retrospect, the enrollment goals in TIPAN Phase I were too ambitious, especially in view of the low English ability of potential candidates for training, a factor which may not have been adequately considered or accurately gauged by the Design Team.

##### 2. Recommendations

- o NWFP-AU should reformulate criteria for the selection of participant trainees, said criteria to be applied on the basis of academic qualifications and the needs of the University, without the appearance of favoritism. Because the program evokes intense emotions, AU should make these criteria clear and well known to all concerned, in writing and through open discussion;
- o USAID should increase funding for the projected cost of supporting the full complement of participants to be trained. The Evaluation Team counsels against reducing the number of planned participants; and
- o AU should immediately consider alternative strategies, e.g., immersion language training, for the achievement of English competency of otherwise qualified candidates aspiring to obtain higher degrees for the younger professionals whose English competency is lower than that of older professionals.

#### I. Technical Assistance (TA)

##### 1. Short-Term Technical Assistance (ST-TA)

###### a. Conclusion

There has been relatively little use of the ST-TA provision in TIPAN for a variety of reasons.

b. Recommendation

The AU and TIPAN team should consider a more vigorous and carefully planned use of ST-TAs, in accordance with the guidelines set out in Chapter III.

2. Long-Term Technical Assistance (LT-TA)

a. Conclusions

- o Despite a variety of difficulties (detailed in Chapter III), on balance the LT-TA team at the AU has performed well, thanks in considerable part to the role of the current team leader;
- o An increase in the maximum LT-TAs at any specified time is desirable in order to improve prospects for early achievement of TIPAN goals;
- o There is need for UI/SIU consortium to accelerate and improve the recruitment of LT-TAs; and
- o Use and effectiveness of LT-TA's has been below expectations of the PP. However, the Evaluation Team believes use of LT-TA's can and should be increased. This will require improvement in preparation and justification for requests of LT-TA's, and in the scheduling of their activities. Needed actions have been suggested in Chapter III.

b. Recommendations

- o Authorization should be sought from USAID to increase the permissible number of LT-TAs on the TIPAN project at any specified time to not less than seven persons. Chapter III includes arguments to support that recommendation; and
- o Illinois/SIU need to improve their methods of recruitment and timely placement of TAs.

J. Home Office Support for TIPAN

1. Conclusions

- o Some initial weakness in the home office support for TIPAN at AU seems to have been corrected satisfactorily; and
- o Relations and cooperation between UI and SIU with respect to TIPAN are considered to be excellent.

2. Recommendations

- o TIPAN-Illinois should give all ST-TA and LT-TA personnel in-depth briefing before their departure for Pakistan with special emphasis on their roles in strengthening the institutional capabilities of the AU; and
- o TIPAN-Illinois, with the cooperation of USAID in the matter of clearances and approvals, should take steps to improve the speed and quality of TA recruitments for TIPAN. It should be advantageous to offer the AU the opportunity to indicate preferences from among two or three potential candidates.

K. Host Country Commitments

1. Conclusion

The Evaluation Team views favorably the fact that the GOP, GONWFP and AU have fulfilled a substantial portion of their major commitments in this Project. The major exception is that of GOP funding for its share of the construction budget for TIPAN Phase I.

2. Recommendations

- o AU should work with GOP officials and USAID to hasten the construction of the Government's share of building and infrastructure for TIPAN Phase I;
- o The Director of Finance should revise AU's budget and accounting system to portray the expenditures made in support of teaching, research and outreach program areas and by functional support areas, i.e., salaries, operations, etc. AU and TAT should consider the Director of Finance for a non-degree participant training program to study computerized budgeting and accounting systems for adaptation to AU; and
- o The TIPAN Team, with or without short-term assistance, should conduct a training workshop for senior AU officials to help them to (1) acquire additional knowledge and understanding of the administrative process in a transformed University and (2) develop additional skills or techniques for challenging the manpower resources under their control, for greater teaching, research and outreach productivity. The workshop should include, but not be limited to, such topics as: program planning, motivating people to support institutional goals, holding people accountable for their performance, recognizing persons for meritorious achievement in teaching, research and outreach, and evaluating institutional progress.

It should rely heavily on active learner participation and preferably should be held off-campus to minimize distractions. Materials, skills and techniques, appropriate for use with subordinates should be developed and/or acquired. Adequate time, commensurate with the importance of this activity at this stage of AU's development, should be allotted.

#### L. Lessons Learned

A few salient points of sufficient general significance and applicability can be cited as a result of this evaluation which may assist others in AID who are called upon to be involved in projects similar to TIPAN. In order to appreciate these points, it may be useful to summarize briefly the most essential characteristics of the project. In the first place, it was undertaken because agricultural education at the University level was inadequate in quality and content to meet the needs of the NWFP or to contribute adequately to the mounting need to expand agricultural output nationally. Likewise, agricultural research in the NWFP, while doing some useful work, was too narrowly focused, was failing to address the actual problems of farmers and was not producing relevant results acceptable to them. In addition, research results of any kind were unlikely to reach farmers even where useful, because no effective outreach system existed to link research to the farmer. The project therefore sought a comprehensive restructuring and integration of the whole network with major improvements in the quality of teaching, research and outreach. This was to benefit the NWFP and serve as a model for other provinces in Pakistan.

The lessons learned from the mid-term evaluation of the TIPAN Phase I project are as follows with a brief explanation of each:

1. Comprehensive integration and restructuring of the agricultural network (education, research and outreach/extension) for a major provincial-based agricultural university system is a complex and very long-term task whose accomplishment involves difficult social, cultural, fiscal, policy and administrative adjustments. The complexity of the changes required and the time and resources needed to effect them is easily underestimated.

Explanation of Lesson 1: The comprehensive and complex nature of this undertaking is the key factor to be understood. Restructuring and transformation of the network involved building a new institutional structure with new policies, modes of operation, relationships and standards of performance, directed toward achieving a significant favorable impact on farmers in the province in the form of improved productivity and output and increased incomes and employment for rural people. Despite the 11-year span contemplated for the project's ultimate achievement of the main purpose, the time was too limited, and expectations of the rate of change which could be accomplished exceeded

realistic possibilities. The learning process, the modifications of long-standing patterns of social and administrative behavior were too great and the institution-building processes too complex to be fully matured within that period. Others planning such programs should therefore allow for the inevitably slow process of major restructuring efforts, and should be aware of the full reality of the constraints to be overcome in integration of agricultural networks.

2. Projects undertaken in the "collaborative mode" (e.g., under Title XII) require a careful delineation of the respective roles and responsibilities of AID and the contractor to avoid misunderstandings, shortfalls and/or confrontation between the parties and implementation difficulties.

Explanation of Lesson 2: Because much is implied in the "collaborative mode" for project design and implementation, it may be useful prior to undertaking execution of such an effort to prepare a detailed memorandum of understanding between AID and the prospective contractor specifying the roles and responsibilities of the parties to the contract. Such a memorandum might include at a minimum specifics on the following:

- o Content of the design team from the home campus and specific key jobs on the long-term technical assistance team which would be filled by persons participating in the design;
  - o How many long-term positions would be filled by tenured staff from the institution(s) carrying out the activity and how many nominees would be provided for each long- and short-term TA position to be filled, and how much lead time would be provided for nominations in advance of the date a staff member is needed/expected at post;
  - o Nature and content of on-campus briefing for long-term TA team personnel;
  - o Planning and arrangements protocol to ensure that short-term personnel are fully familiar with background and environment of a project and details of the task to be carried out/results to be achieved during the time at the project site; and
  - o Relationships between TA team and USAID project manager, TA team and host institutions, USAID and host institutions and respective roles and responsibilities of each.
3. It is counterproductive to include in the assumptions for project outputs, factors which are primarily or largely dependant on the achievement of project outputs (in this case, that technologies developed by the project will be appropriate and acceptable to farmers).

Explanation of Lesson 3: Sometimes assumptions are stated in the log frame that are in fact areas within the management control of the project. This was unfortunately the case in TIPAN regarding farmer-acceptability of technologies developed by the project. This tends to cause ambiguity. Assumptions should only be made for topics that lie beyond the management control of the project.

4. Institutional reforms of the type most critical to sustainability, e.g., achieving meaningful impact to increase productivity, output and incomes are among the slower and most difficult to achieve. They must be rigorously pursued with patience and tenacity over an extended period of years.

Explanation of Lesson 4: The designers of TIPAN may have expected to see results in terms of socio-economic impact at a stage of the activity substantially earlier than reasonable. Doing so leads to false expectations. Realistic projections in a project which embraces a broad range of institutional changes and system restructuring would allow several years for those modifications to become established before expecting to see employment, output or income effects flowing from project efforts.

5. Projects with a mix of TA and facilities construction are likely to be inhibited by delays in the development of the new facilities. Since developing countries have endemic difficulties in providing adequate resources to meet project construction funding commitments, a careful and realistic balance of projected progress between institutional reform and construction is required to avoid waste and frustration where the facilities are critical to successful restructuring.

Explanation of Lesson 5: As in the TIPAN case, construction is often handled through processes and contracts not directly related to the TA and subject to numerous vicissitudes of funding, contracting and physical resource availabilities. Design of the project should carefully appraise relative schedules and the likelihood of delays. When TA and restructuring gets ahead of the construction program as has happened to a degree in TIPAN, there is frustration, a threat to morale and significant potential for the waste of resources. This argues for a careful balance and a search for means to provide flexibility from the outset to prevent significant imbalance or schedule conflicts in these two aspects of major projects.

ANNEX 1

(TIPAN) Evaluation Scope of Work

## ANNEX I

### (TIPAN) Evaluation Scope of Work

#### A. Activity to be Evaluated

The Mission requests an evaluation of the TIPAN Project (391-0488) from project authorization to the present date. Phase I life of project funding is \$35.5 million. The project agreement was signed August 30, 1984. The first phase will be completed by September 30, 1990.

#### B. Purpose

The purpose of this evaluation is to review progress in implementation and to assess the extent to which original project objectives are being met. The project paper specifies that Mission decisions on follow-on activities will take place only after prior activities have been evaluated. The technical assistance contract indicates that an evaluation of the activities is to take place by the end of the third year of the contract to determine whether or not the contract should be extended. The evaluation is being scheduled somewhat earlier than initially planned. The project paper suggested early 1988 and TIPAN was not initially listed in the Mission's FY 1987 evaluation plan. To save time, the Mission decision is to combine the contractually mandated TA team review with all other project activities. In addition, an evaluation of TIPAN now will aid in making decisions on the shape and direction of the TIPAN project under the post 1987 program. In particular, the evaluation will be used to

inform mission views and/or decision making on: (a) a continuation of the project into phase II; (b) continuation of the TA team contract under the collaborative mode; and (c) level of host country support and commitment to the project.

C. Background

TIPAN is an institution-building project involving not only the NWFP Agricultural University but also provincial agricultural research systems. The goal is to merge the University with the various provincial research organizations into a modern, integrated system oriented toward solving problems relevant to agricultural development in the NWFP. Under the project, the University faculty is being given advance training, the curriculum is revised, and the University's physical plant is being upgraded and expanded. Research staff are also being trained, along with the procurement of equipment and the introduction of a new system for planning and implementing research. In addition, an outreach capability is being developed within the merged system and closer working relationships established with the provincial Agricultural Extension Department in order better to serve farmers in the NWFP. The overall objective is to create within the Northwest Frontier Province Agricultural University a dynamic, outward-looking, problem-solving, farmer-oriented center of teaching, research, and outreach linked together to increase agricultural yields, agricultural production, farm income, and rural employment in the NWFP. Nearly three years into the project, implementation is now well underway. Some of the major policy components of the project--including issuance of a formal ordinance merging the provincial

agricultural research network--have been achieved. Thirty-one short-term and 42 long-term participants have been sent for overseas training, with the first PhD candidate scheduled to return to his teaching post in June 1987. The five-member long-term TA team from the University of Illinois arrived over a five-month period beginning in June 1985 and are now actively assisting in a range of administration, teaching, curriculum, development, research, outreach, and other activities. Designs for a major upgrading and expansion of campus facilities have also been finalized, with construction expected to begin during summer 1987.

D. Statement of Work

This initial project evaluation is focused on management and implementation issues, the primary purpose is to (1) assess the performance of the TA team as measured against its terms of reference as defined in the contract and described in its work plan; (2) review other management and project implementation issues related to achievements to envisaged policy and institutional changes, progress in attaining proposed project inputs, and relationships among major entities involved (USAID, GONWFP, TA team, other donors, etc.); and (3) based on these findings, make recommendations concerning the future scope and direction of the project.

The evaluation shall include but not necessarily be limited to the following areas:

1. TA Team Effectiveness

a. Assess the effectiveness of long- and short-term TA in establishing relationships with GOP counterparts and assisting in

implementation of specific project components (training, teaching, research, outreach, etc.).

b. Assess the nature of home office support for the project and comment on its effectiveness. Prior to departure for Pakistan the core evaluation team will travel to the University of Illinois, Urbana, Illinois, and for a period not to exceed four days including domestic air travel, review project backstopping as defined in the relevant contract. Major backstopping elements are:

- (1) training,
- (2) commodity procurement and shipping, and
- (3) campus coordination.

c. To what extent have TA team goals been met when measured against its terms of reference as defined in the contract and its detailed plan of work?

d. The original long-term TA was programmed to increase to nine persons in 1987/88 and then to decrease by three by 1990. As a result of non-project considerations associated with security and Americans' presence in Peshawar, the level of LT-TA has been reduced to five person years annually and some increase in ST-TA. The evaluation team will explicitly examine the results of this change and to the extent possible quantify the impact of this change on the feasibility of obtaining original project outputs.

## 2. Other Policy and Implementation Issues

a. To what extent have project objectives envisaged under Phase I met as measured against project's inputs and outputs as described in the project paper? What evidence is there that

institutional capacity is increasing in ways projected in the project year?

b. To what extent have policy and institutional changes described as critical to the project's success in the project paper been met? For example: GOP success in meeting CP's, adequacy of GONWFP funding, merger of research with education, including transfer of staff and control and use of physical facilities.

c. Are there policy and implementation issues related to any facet of University operations that should be added to the project paper and/or the TA contract scope of work?

d. Assess the nature and effectiveness of the relationships among major entities involved (USAID, GOP, GONWFP, TA team, other donors, etc.).

5. Recommendations and Conclusions

a. Based on the findings presented above, discuss possible project changes that should be considered. Will the project assistance completion date (PACC) need to be changed? Should changes in TA modes or in the mix of short-term and long-term and home office support be considered? What steps should be taken by other entities, including the GONWFP and USAID, to improve overall project effectiveness? Should a Phase II be supported and, if so, what lessons learned under Phase I should be taken into account?

D. Team Composition

The core evaluation team shall consist of three members recruited under an Indefinite Quantity Contract (IQC) having the mix of skills described below. One evaluation team member shall be designated as

team leader, with full responsibility for coordinating the evaluation and drafting and presenting the final evaluation report. Strong writing skills and prior evaluation experience in agricultural-related institution-building projects in the developing work are essential for all members of the evaluation team.

1. Institutional Specialist

Background in implementing and/or evaluating similar kinds of Agricultural University institution-building projects elsewhere in the developing world. Knowledge of university administration and operations is essential.

2. Research Specialist

University research experience (agronomic preferred) with experience in research management and a background in implementing and/or evaluating agricultural research programs in LDC setting.

3. Education/Curriculum Specialist

Education and university curriculum development background in a third world setting. Teaching training experience helpful.

In addition to the above core evaluation team, the following two additional team members may be added by USAID/Islamabad as appropriate: (1) a representative from USAID/Islamabad who is familiar with the project and the range of issues that need to be addressed in the evaluation; and (2) a Pakistani national who is familiar with agricultural research and education in Pakistan and who could serve as a resource person throughout the evaluation process.

F. Reporting Requirements

1. Format of the Report

The final report shall contain at a minimum the following sections:

- a. Basic Project Identification Sheet.
- b. Executive Summary of not more than three single spaced pages reviewing major findings and conclusions.
- c. Main body of the report, which shall review and analyze the questions and issues raised in the statement of work.
- d. A concluding section which includes a list of lessons learned and recommendations.
- e. A set of annexes that include at a minimum the evaluation scope of work, a bibliography of individuals and documents consulted, and a completed evaluation summary in the format provided by AID/W. Fifteen copies of the final report shall be submitted to USAID/Islamabad for distribution to the concerned GOP agencies in Pakistan. The final report shall be well written. The contents of the report shall distinguish clearly between the descriptive information underpinning the evaluation team's findings, interpretative information leading to conclusions, and the team's recommendations for possible modifications and further actions which stem from the conclusions.

## 2. Other Requirements

The evaluation core team of three people will require 24 working days of effort in country plus four working days in U.S. prior to arrival. Six-day work week is authorized. Individual members of the team shall coordinate simultaneous arrival and departure times to ensure that all members are involved in conducting the evaluation,



preparing the final report, and presenting evaluation findings to the Mission and the GOP.

Evaluation methods will include reviewing secondary source data as well as collection of primary source data through interviews and field visits. At least three and not to exceed four days shall be spent in Illinois at the beginning of the evaluation reviewing and discussing the nature and effectiveness of TA team home office support. Members of the team will also meet in Islamabad prior to traveling to Peshawar to review the overall evaluation strategy and review files and other documentation relating to the TIPAN project. The bulk of the evaluation will take place in Peshawar. The evaluation should begin in early August 1987 and be completed by the end of September 1987.

A draft report shall be submitted to the USAID Regional Office in Peshawar no later than 17 working days after the arrival in-country for preliminary review. A near final draft report (one which has been revised at least once based on Mission/GOP review) shall be submitted before the evaluation team leaves Islamabad. Fifteen complete and edited copies of the evaluation document shall be forwarded to the Mission no more than eight weeks after the evaluation team leaves Pakistan. Close-out presentations in Pakistan shall take place in Peshawar.

#### G. Funding

As stated in the project paper, the cost of evaluation shall be met using project funds. (Funding citations and illustrative budget for preparation of PIO/T in AID/W will be cabled later.)

Additional Mission comments and concerns.

1. Information for IQC Evaluation Team

The Mission has been requested by the Ambassador to reduce American presence in Peshawar. To this end the TIPAN project was required to reduce the total number of long-term TA from a high of nine to a maximum of five persons and short-term TA to a maximum of three persons at any one time. This restriction has necessitated a rescheduling of TA over the life of the project in order to accomplish the original objectives. The evaluation should take this situation into account by putting emphasis on contractual accomplishments of technical assistance in-country rather than contractual requirements for TA as a whole.

2. Evaluation Time Frame

Due to contractual requirements in TA contract, the evaluation must be completed by end of September 1987.

Due to lengthy Pakistan holiday periods, the Mission proposes the following schedule:

Aug. 30, 1987	Evaluation team travel to University of Illinois, Urbana
Aug. 31 - Sept. 3, 1987	Review backstopping
Sept. 1, 1987	Depart Urbana, travel to Carbondale,
Sept. 3-4, 1987	Depart Carbondale, in DC for briefing
Sept. 7, 1987	Arrive Islamabad
Sept. 8, 1987	USAID/Islamabad, O/ARD
Sept. 9, 1987	Depart Islamabad, arrive Peshawar
Sept. 10-30, 1987	Evaluation Peshawar

Oct. 1, 1987	Present draft report, exit interview
Oct. 2, 1987	Travel to Islamabad
Oct. 3, 1987	Depart Islamabad

ANNEX 2

A Framework for Review and Analysis of the TIPAN Project

## ANNEX 2

### A Framework for Review and Analysis of the TIPAN Project

#### A. Background: The Context of the TIPAN Project

##### 1. Socio-Political and Economic Setting

Pakistan is a nation of great diversity. The natural resources base is highly diverse, including the high mountain ranges of the north, inter-mountain valleys, irrigated plains, rugged plateaus and deserts. Although agro-climatically Pakistan is part of the South Asian semi-arid region, rainfall patterns are variable over the nation, ranging from five to 38 inches annually.

The population is composed of six major ethnic and language groups which affect both the economic integration and political processes of Pakistan. This diversity is likewise reflected in the organization of the nation into four major provinces (plus the several tribal and northern areas) each with its peculiar mix of native languages, attitudes and viewpoints with respect to both economic and political aspirations.

Forty years have not elapsed since independence was achieved in 1947. The process of partition and the ensuing migrations and emancipation from Colonial rule created new political and economic aspirations of the migrants, superimposed on those of local populations. This process of integration is continuing within a new nation still in the making.

The performance of the Pakistan economy since independence, in the aggregate, and by its major sectors reflects the volatility of the policy directions of the various governments. The impact of changes in domestic policy pronouncements during the past four decades is reflected in both sectoral and national performance (Burki). Dr. Burki's analysis is in accord with the now widely accepted framework for economic development, which places a considerable weight on the need for agricultural productivity increases in the earlier stages of development. He divides Pakistan's political/economic history into four periods as follows:

a. The first (1947-58), characterized by competitive parliamentary democracy, as indigenous leaders of the various regions began the process of recapturing political power from the migrant community.

b. The second period (1958-71), of military rule in which the civilian and military bureaucracy forged political alliances with several middle class urban and rural groups.

c. The third period (1972-77), a civilian rule which sought to retain government control mostly with populist support.

d. The fourth period (1978-85), began in 1977 as the third military government built on the alliances of the second period, hoped to retain control, by broadening the constituency and introduction of Islam into economics and politics.

Sectoral performance in agriculture and manufacturing varied among the foregoing periods partly in response to policy shifts of the Government of Pakistan (GOP), while surprisingly over the entire

period the economy achieved dramatic growth in Gross Domestic Product (GDP) with annual increases of five or more percent annually.

According to Dr. Burki, author of Pakistan: A Nation in the Making, decision making in the first period was dominated by a few politicians and civil servants who migrated from India who displayed little knowledge or appreciation of agriculture. As a consequence, industrial development rather than agricultural received most of government's public development resources.

During the early years of the second period, with the return to political prominence of the landlords and midsize farmers, government interest in agriculture was revived. The "green revolution" was made possible during this period by the introduction of high yielding varieties (HYVs) of wheat and rice suitable for irrigated areas. The result was one of the highest annual rates of increase in food grain output in the world. In a 10 year period total food output increased by 25 percent. Likewise, a shift in investment toward rural industries, reflecting demand from the increased rural output, resulted in an eight percent annual increase in manufacturing output, again among the highest in the world. This was a period of strong economic and social development encouraged by national policies which provided favorable conditions for agricultural development.

The third period was a period of great structural change in Pakistan, resulting from the nationalization of a number of enterprises in industry, finance, trade and communications. Investment in the public sector increased to more than 60 percent of GOP national budget. However, the annual average growth rates in

manufacturing fell precipitously from the former period by more than 35 percent. In the agricultural sector, average annual growth rates fell more than 45 percent. The momentum of the annual gains in output stimulated by the policies of the former period was thus cut short by the drastic shift away from policies favorable to agriculture. There was a flight of capital out of Pakistan to the Middle East, Europe and the United States. Noteworthy, however, is the fact that the GNP remained high not because of value added but because of speculative growth in trade and construction and by the increasing contributions of remittances from Pakistanis working abroad.

The fourth period represents a gradual but confused effort to regain the support of the middle class constituency of the second period. The necessary policy shifts to constrain the rate of public enterprises in the economy, inherited from the preceding period, were difficult to establish. However, private sector entrepreneurs were invited back to invest in the economy, especially those that provided inputs for agriculture and in processing of agricultural output. The fact that the people of Pakistan have an inherent propensity for private enterprise among its shopkeepers, artisans and especially among farmers, permitted a turnaround in productivity in a surprisingly short time. Agricultural output increased to an average of 4.6 percent annually, nearly double that of the former period, and the annual average increases in manufacturing rose from 5.2 to 9.1.

Few countries can so dramatically demonstrate (within a span of only 40 years) the direct impact of changes of policy on productivity. The abrupt changes in policy likely account for the fact, noted by

several observers, that Pakistan possesses many of the characteristics of a middle income country but still remains among the poorer of the developing countries. (Sixth Plan, p. 153)

A second aftermath of these abrupt policy changes was the serious lack of attention to social infrastructure. Primary school attendance and literacy (probably overestimated at 24 percent) are among the lowest in Asia. The equally weak health infrastructure is as reflected in extremely high child mortality rates. The population, now at 100 million, is increasing at three percent per year, one of the highest rates in Asia, and is expected to double in less than 25 years. The greatly expanded demand for food, for education, health and for services will severely constrain implementation of development initiatives. The already high rural to urban migration rates will increase, placing further pressure on education, housing and health facilities in Pakistan's crowded major cities. The population is young and creating job opportunities for those entering the labor market in increasing numbers each year, will be a critical component in the development process.

## 2. Changes in Focus: The Sixth Five Year Plan

Policy distortions and lack of consistency in direction have delayed the speed of economic development in Pakistan. The Sixth Five Year Plan 1983-1988 (Plan) has laid out a direction generally consistent with developmental needs. Limitations in implementation capabilities are related to GOP financial constraints and the weakness in institutional capacities and manpower skills and experience. Another constraint now is the impact of a whole series of external

factors such as the Afghanistan war, changes in rates of foreign exchange, etc. Tough policy decisions have to be made at all levels but achieving implementation expectations are highly dependent on the sequencing of the interventions and consistency of directions. While these considerations apply generally to all sectors, they are especially required for the development of the agricultural sector, where the ultimate actors are the millions of farmers who must be mobilized to create a surplus for developmental investments.

### 3. The Unique Role of the Agricultural Sector

Farm families are generally willing actors in development, particularly when the possibility exists to improve incomes with appropriate technologies. Improvement in individual outputs and incomes, however incremental, when added together for the millions of participants can result in substantial contributions to the National Gross Domestic Product (GDP). It is from the "rural" surplus thus generated that funds for building the rural roads, schools, and health clinics must be derived in order to achieve an indigenous sustainable financial capability for investments.

The set of institutional requirements for mobilizing the agriculture sector are critical and complex, difficult to construct, and require a proper sequencing of activities and interventions. They must become indigenous institutions as soon as practicable. Ultimately they will be sustainable by the income flows they generate/

## B. The Agricultural Economy

### 1. National Overview

The economy of Pakistan is essentially agricultural,

employing 50 percent of the work force and generating 50 percent of its exports. The contribution of agriculture to GDP has averaged 30 percent in recent years.

Manufacturing is concentrated in mostly small scale enterprises producing consumer goods and processing agricultural products. Processing of cotton for cloth and thread is a significant source of foreign exchange earnings and provides 40 percent of manufacturing employment (CDSS).

Pakistan has become self-sufficient in wheat and rice as an outcome of the introduction of high yielding varieties (HYVs) in the mid-1960s; the impact of self-sufficiency, though muted by policy shifts, is continuing in terms of increasing output. The market surplus thus generated in both wheat and rice has made possible export of these crops in recent years. Cash crops, i.e., sugar and cotton grown principally in the Punjab and Sind provinces, have through yield increasing technologies become significant foreign exchange earners.

Pakistan's agriculture is among the most complex in the world, reflecting its diverse crop ecological zones. Wheat, the nation's major staple, is grown almost entirely in the rabi (winter) period, whereas rice and cotton are grown in the kharif season. Maize, millet, sorghum and barley, sugarcane and sugar beets are kharif crops, whereas pulses, oilseeds, fruits and vegetables and fodder are grown in both seasons. Cropping intensities are generally high, ranging from 50 to over 150 percent according to ecological zones. Cropping patterns likewise vary according to size of farms, tenure security and infrastructure availability.

Often overlooked is that this diversity in crops and season of production places a larger burden on the economy than would be the case for a country or region with fewer crops. The requirements for seed multiplication, storage, types of equipment, transport, marketing facilities, for each of the crops vary, thus creating infrastructure needs far more complex than in a monoculture or a system with fewer crops.

Agriculture diversity also requires a very high level of management skills on the part of Pakistani farmers. Fortunately the experience of generations has so far served them well. However, as science is introduced into the production system and as more of the output is moved into the market channels to serve urban populations, the farmers' skills will have to be improved and adapted to the new systems.

Livestock enterprises in Pakistan principally involve ruminants and represent adaptations by farmers who over generations have used animals to solve their needs for power and provide food and clothing. Farmers have integrated livestock into their cropping systems, again derived from long experience. However, the application of science to this sector is in its infancy. Challenging opportunities exist in the areas of genetic improvement, nutrition, management and especially in the integration of livestock as a component of the whole new farm system, especially for smallholders. The income and employment generation possibilities for integrated agriculture have yet to be exploited.

## 2. The Agriculture of the Northwest Frontier Province (NWFP)

### a. Overview

The NWFP comprises an area of nearly 102 thousand square kilometers, about 13 percent of the area of Pakistan. (Pakistan is roughly the size of the combined area of California, Oregon and Washington.) Slightly more than one-fourth of the NWFP is administered as Federally Administered Tribal Area (FATA) along the border with Afghanistan. These areas are much less accessible and less developed.

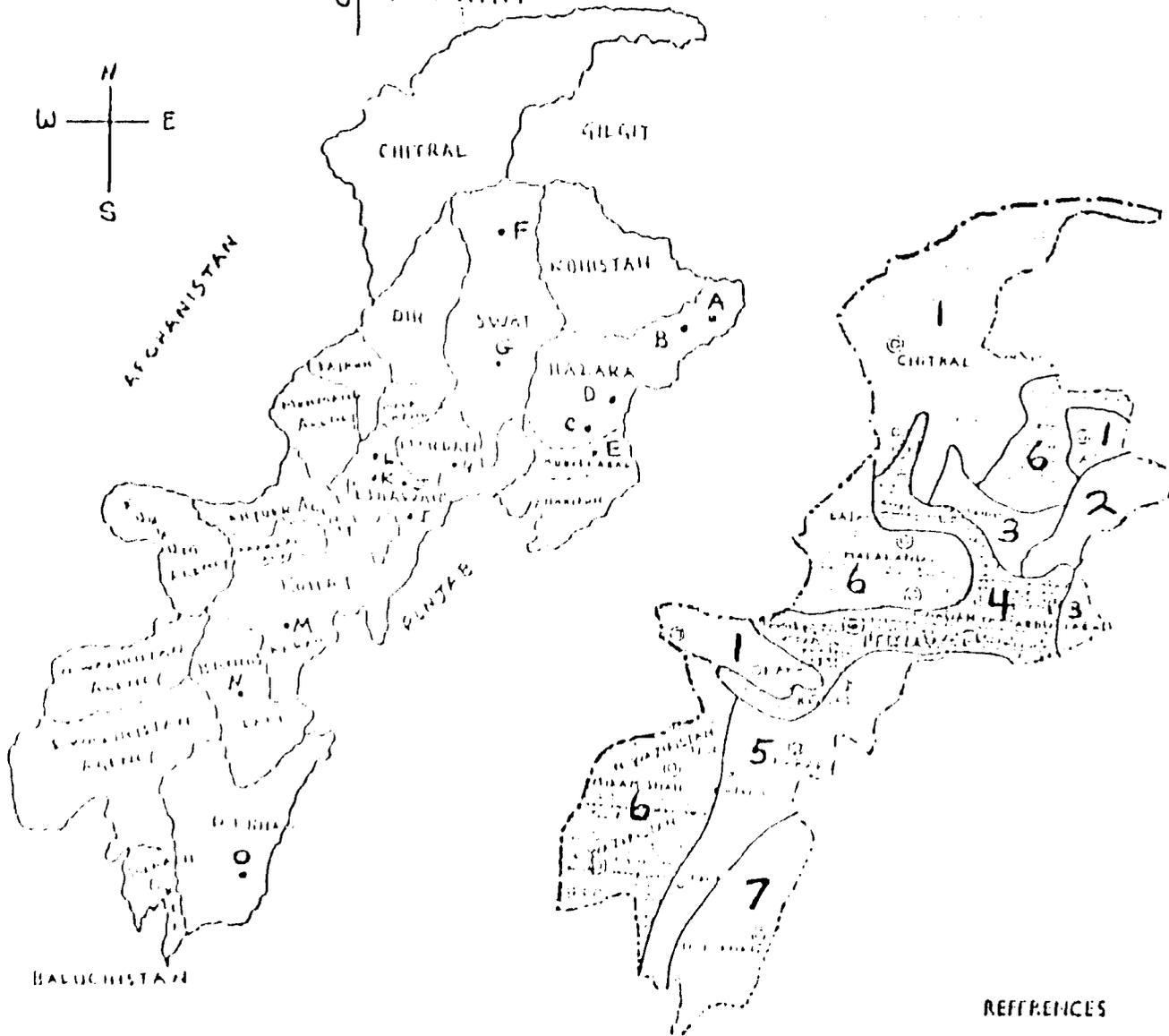
The population of the NWFP is estimated at 13 million, with a population density of 150 persons per square kilometer, well above the national average of 105, but below that of Punjab. Population growth rates are higher than the national average and rural to urban migration rates are also high, reflecting immigration of recent years from adjacent countries. The ethnic, linguistic and cultural diversity of the NWFP is greater than in other provinces. Except for Baluchistan the level of education and availability of health infrastructure, especially in the rural areas, is the lowest in the country.

Sixty percent of NWFP farms are less than 10 kilometers in size and tilled mostly by owner-operators. Traditional inheritance practices have resulted in fragmentation of holdings; over 70 percent are fragmented, having from two to nine parcels.

There are over 4,200 primary agricultural cooperative societies in NWFP but less than 50 percent are said to be functional.

Figure 1

# AGRO ECOLOGICAL REGIONS OF N.W.F.P.



## Research/Outreach Stations

- A. Bhatreandi (Substation)
- B. Mardan (Substation)
- C. Dera Ismail Khan
- D. Jalalpur
- E. Chakwal
- F. Peshawar (Substation)
- G. Hangu
- H. Mardan
- I. Nowshera
- J. Peshawar
- K. Peshawar
- L. Peshawar
- M. Peshawar
- N. Peshawar
- O. Dera Ismail Khan

## REFERENCES

CLASSIFICATION	STATION	ASSOCIATED CLIMATE ANNUAL RAINFALL
WET - Cold, low wind & dry	1	100-150 mm
COLD - Cold	2	100-150 mm
WET - Cold, humid	3	100-150 mm
COLD, low wind	4	100-150 mm
WET, low wind	5	100-150 mm
WET - Warm, low wind	6	100-150 mm
WET - Hot, low wind	7	100-150 mm

b. The Intent of Current Policy Directions

The area of what is now the NWFP was considered a peripheral area under the administration of Colonial British India centered in New Delhi and therefore received less than average development expenditures during this period. In present day Pakistan it is said that until recently, the area was equally neglected in terms of both physical and social infrastructure investments. The Sixth Plan (1985-1988) however does indicate a strong recognition of the development needs of the NWFP, targeting investment on developing agricultural and water potential, roads, and improving skills and health of the people (Sixth Plan, Chapter 13). Anticipating the content and direction of the Seventh Five-Year Plan, the NWFP-AU has already outlined its objectives and responses in a revised Agricultural Research Plan for the period 1988-89 to 1992-93 (Research Plan).

c. NWFP Cropping Patterns

In general, NWFP's mix of crops by kharif and rabi and the role of livestock in its agriculture are almost a mirror image of the national profile. Exceptions are the larger proportion of cotton acreages, a larger proportion of acreage grown under rainfed systems and the larger array of deciduous fruits such as apples.

Average NWFP yields for the major food crops (i.e., sorghum, oilseed (rape), wheat, rice and grain) are lower than the Pakistan national average. In the case of maize, yields exceed the national average but are less than those obtained in the Punjab. (Project Paper, Tables 12 and 13). Potential yield increases for the above

crops using data from NWFP farm field trials, compared to the average yields now obtained in the province, indicate that a quantum increase exceeding current national average is possible. The range of potential percentage increases extrapolated from the data appearing in the project paper cited above is as follows: maize, 65 percent; sorghum, 18 percent; oilseed (rape), 33 percent; wheat, 47 percent; rice and grain, 38 percent.

d. The NWFP Livestock System

The mix of livestock and poultry enterprises and their use for power, clothing, etc., is similar to that of the other provinces. Although firm data are not available, the proportion of small ruminants is higher than in other provinces, reflecting NWFP farmers' needs to utilize more fully the grazing resources of the hills and mountainous slopes of the province. All areas, except those under standing crops, perennial snow, bare rock, and roads and human habitation, are used for grazing at one time or another during the year (Agricultural Research Plan, 1988-89 to 1993, NWFP). This intensive use, with increasing population pressure on resources, has resulted in a high and growing rate of loss of land through erosion and deforestation to what is locally called wasteland areas.

Given the social and economic environment, it will be an extremely difficult task for the NWFP research and extension professionals to fashion suitable technologies to integrate more fully the livestock enterprises with the cropping system. However, the potential for increased income and employment as a result of such integration is great. An additional benefit would be reduced

environmental degradation. Research and extension professionals must similarly provide the specific technical possibilities for reducing the deterioration of land/soil resources. The GOP and the Government of the NWFP (GONWFP) must simultaneously provide a strong and consistent policy and support to reduce the rate of deterioration through reforestation and possibly management of grazing intensity.

e. Constraints Summary

The above sketch of the agricultural economy of NWFP indicates the following constraints impinging on the development of the province:

- o A fragile resource base, agro-climatic diversity and a variety of cultural systems;
- o Relatively weak physical (roads, import markets, processing) and social (education, health, governance) infrastructures;
- o Cultural and linguistic diversity;
- o A long established socio-economic social system based in part on self-sufficiency, security and survival of the family, class and ethnic group.

These constraints tend to interact with each other, and some are more intractable in obtaining increased agricultural output than others.

A consistency in national policy and implementation support will be vital to the development of the province. Above all, a set of indigenous institutions (public and private) adapted to specific needs and tasks will be required. Institutions for the enhancement of the physical and social infrastructures must be established to support effectively the most critical of all institutions for development,

i.e., the institutional capability to generate and diffuse technology required on a timely sequential basis.

### C. Enhancing NWFP Agricultural Productivity

#### 1. Background

A substantial increase in agricultural output becomes the prime mover in economic growth in earlier stages of development. Historically, productivity increases have been the precursors of all economic development. Productivity increases in agriculture are not only those achieved from improved input/output relationships but include also those efficiencies generated by physical and social infrastructure in support of agriculture. With only a few exceptions, there are no shortcuts to this empirically established process. Further, as agriculture generates increased output, incomes and employment rise. In the short term, the rate of rural to urban migration is being reduced as rural off-farm employment is encouraged through growth of agro-based manufacturing and service industries.

The urban-industrial impact model as espoused by the policy makers of India (up to the mid-1960s) and exported to Pakistan early in its development is now seen as inappropriate. This model does not attend to the food self-sufficiency and employment needs of the nation. The rapid growth of urban centers is a result of population pressures in rural areas and is running ahead of employment growth in the cities. Pakistan has shifted in the Sixth Five Year Plan to a model of induced innovation beginning first in the agricultural sector to accomplish both food self-sufficiency and employment generation.

## 2. Agricultural Productivity Increases in NWFP

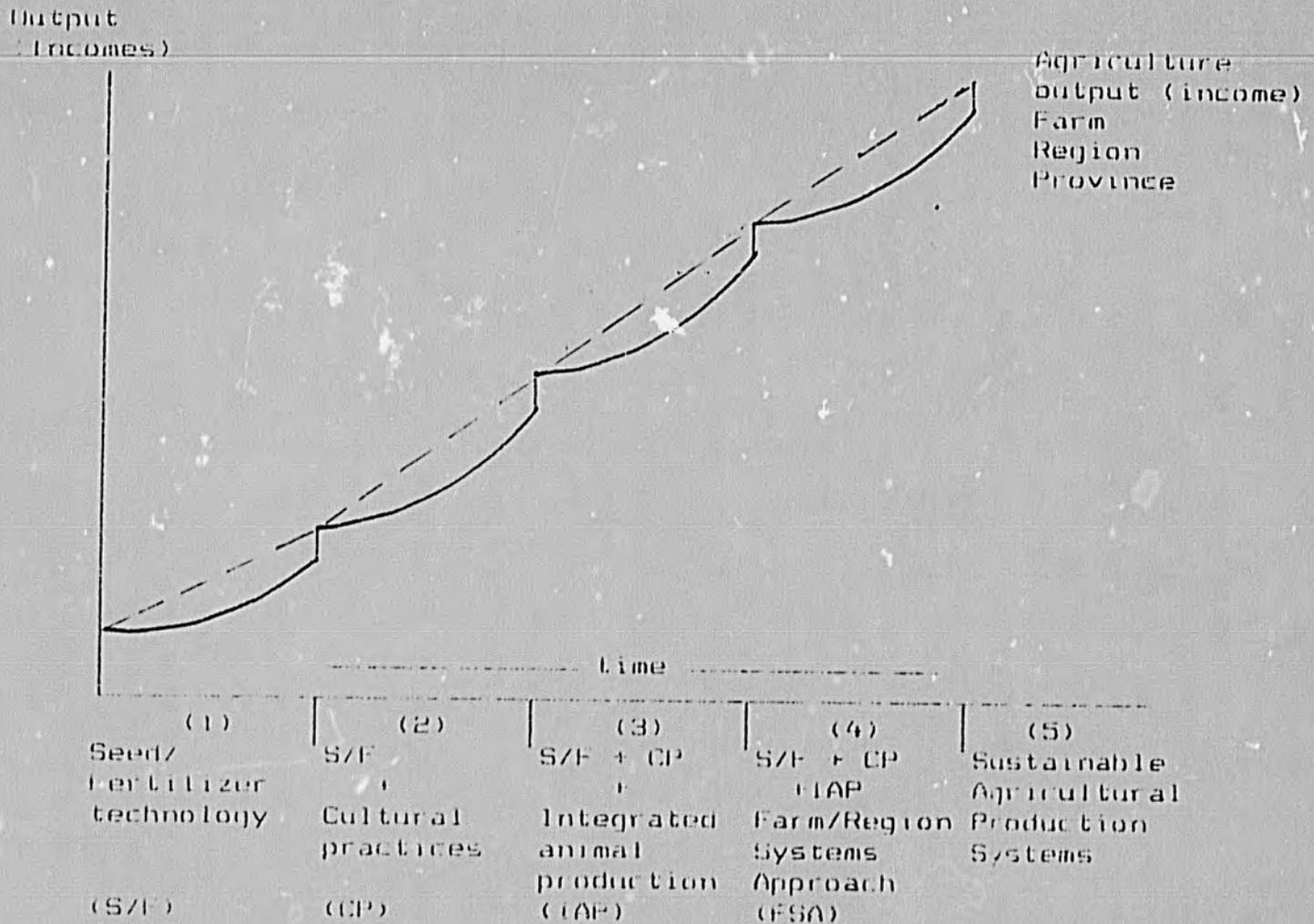
The central force in achieving productivity increases in agriculture is building an institutional capacity for applying science to agriculture and thereby improving the efficiency of the use of inputs in achieving larger outputs. Ruttan aptly captured the essence of this concept in the statement, "The capacity to develop and manage technologies in a manner consistent with a nation's physical and cultural endowments is the single most important variable accounting for the differences in agricultural productivity among nations". (Ruttan, Chapter 2, emphasis by authors)

A simple schematic, shown in Figure 2, illustrates the idea of induced innovation applied to the agricultural sector. The central core is the square (6). The core applies science to problems and constraints to productivity and acts as the prime activator and catalyst.

In NWFP the square on the schematic is AU, an institution that must achieve a high and sustainable capability to serve as a catalyst. It must accomplish this through generation and diffusion of adapted technology packages to increase the output and income of the province. It is the single most important agricultural institution in the province and has a task that is both challenging and difficult. The leadership, the professionals and the staff together have the responsibility to upgrade skills, structure and institutional procedures. As one constraint is overcome, new constraints will arise requiring new rounds of research and technology application.

Figure 2

SCHEMATIC  
FOR  
INDUCED PRODUCTIVITY ENHANCEMENT



Given parameters

Natural resources base, agroclimatic feature, topography

Existing Influencing Utilization Parameters

Monoculture, Irrigated, rainfed, soils, intercropping, rotations, social systems, level infrastructure availability

Adequate (6)  
Research  
and Linkages  
Technology  
Packaging  
Capability

Key Actor

By farms, district, region, specific  
(whole farm systems perspective)

Requires appropriate  
Disciplinary  
mix of talent

Technical packages to farmers  
For extension

increased  
output

II Assumptions:

A Policy framework and infrastructure which supports Agricultural productivity enhancement i.e, infrastructure capability, appropriate price policy etc.

The NWFP-AU must be engaged in producing various technical packages, i.e., those illustrated as (1), (2), (3), (4) and (5), that must be attractive to the ultimate users, the families on the 650,000 farms of the province. Induced innovation begins when the technical packages are adapted and widely used. The content of packages (1) through (5) are illustrative, implying neither that the NWFP has only placed into operation technical package (1), nor are they necessarily in sequence for each of the various crop and livestock systems. The sequence of (1) to (5) is intended to show that packages are likely to become more complex and require a higher order of skill over time to develop them. For each crop, fruit or vegetable, etc., the present state of the art in the current production system may require beginning at level (2) or (3) or some combination of technologies.

The impact of each yield-increasing technology when added together will, through time, trace out a curve suggesting ever rising output and incomes. Ultimately the curve may flatten and could turn down, especially if the technologies temporarily result in environmental degradation.

Finally, the degree of success of AU will also depend on the viability of education and health institutions and the extent of the physical infrastructures. Indeed, in many instances, the nature of the available associated institutions will shape the content of the technical packages that are feasible for introduction. But the key institution for growth in output in this province will be the NWFP-AU.

## D. Accelerating Institutional Capabilities for Agricultural Productivity

### 1. Background

Economic history strongly suggests that accelerated growth in productivity is often based and supported by technologies brought in from other countries or regions. The history of plant and animal introductions into regions beyond their original site of domestication is well known. This process continues today in plant and animal improvement, in scientific methodology and in technical processes and cultural practices.

For NWFP, the sources of improved plants, animals, practices, machines and methodologies are now worldwide and include the hundreds of research/extension institutions of many nations. The 13 International Agricultural Research Centers (IARCs) were established to assist in developing technologies and to link with the emerging national agricultural research systems. Nations and regions, desiring to embark on the pathway of productivity, now have the opportunity to link their institutions with the other available institutions. Probably the most critical deficiency in many less developed country, national or provincial research institutions is the failure to build sufficient local capacity for linkages to outside sources for technologies that often require only local adaptation. These linkages are critical if a speedy transformation of indigenous agriculture is desired.

## 2. Building Institutional Capacity More Rapidly

There is an overwhelming need to build the institutional capacity for innovations in the NWFP agriculture system. Rapid population growth and the higher expectations of this population for better health, education and material well-being are the twin sources of the pressure on the resources of this province. The speed and intensity of this pressure, activated only within the last several generations, requires immediately increasing yields. People are impatient and hope to reap the benefits of increased outputs soon.

AU has the role of accelerating productivity increases and thus must now accelerate its capacity to perform. A schematic of this process of acceleration is shown in Figure 3.

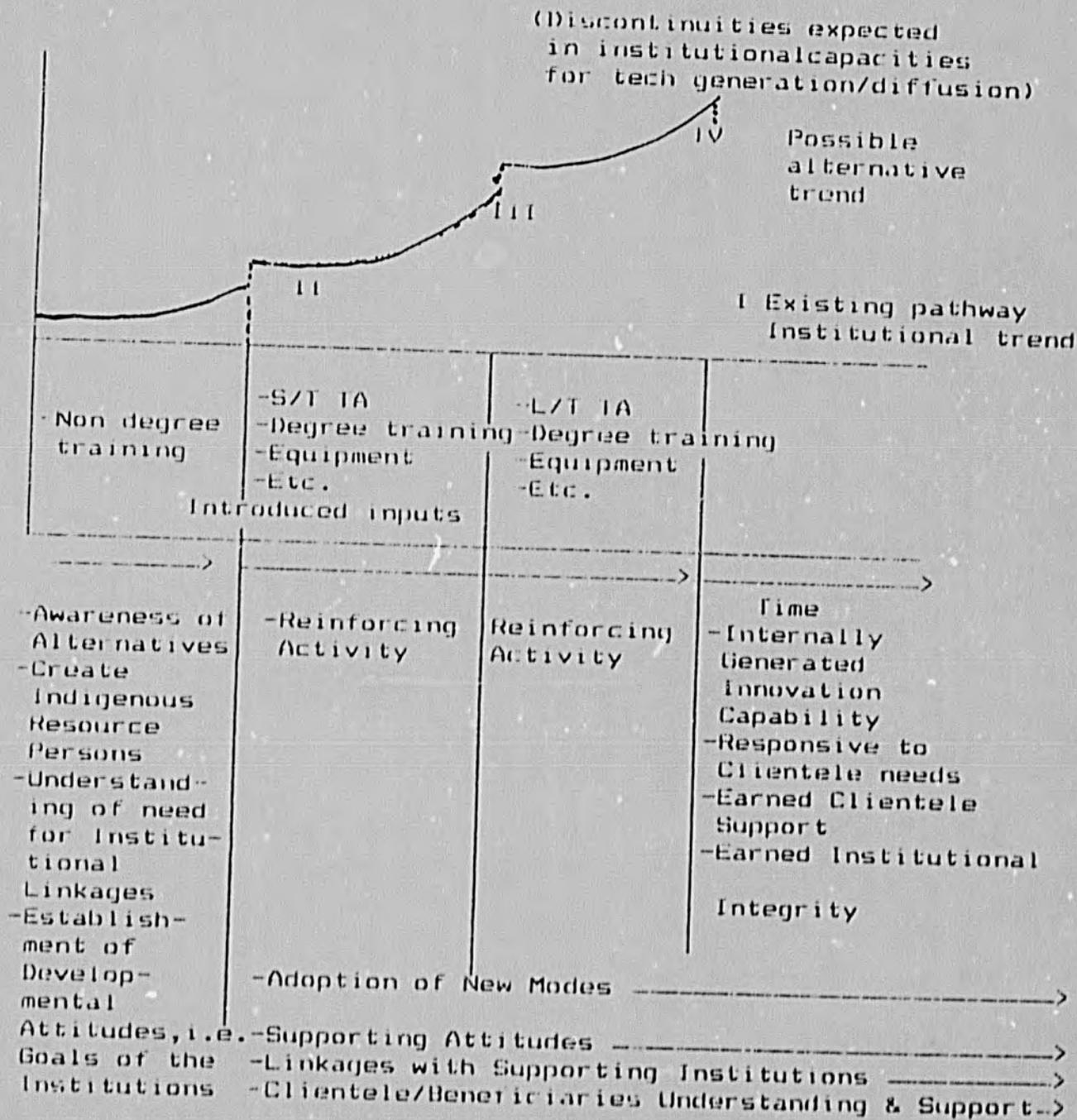
This schematic is intended to show that as the various technical assistance components are introduced (the horizontal axis), they are expected to result in increasing institutional capacity (i.e., the vertical axis). As this process continues, it would be expected that the cumulative impacts of these inputs, i.e., TA, equipment, facilities, will trade out a curve showing increased institutional capabilities (line II). The horizontal line I is intended to show the initial beginning level as a result of many factors: complacency, quality and orientation of professionals, lack of financing and support and lack of awareness of alternative options.

The requirements for the orchestration of the process are extremely high, especially if the intent is to achieve institutional capacity in the shortest possible time frame. The achievement of a more rapid rate of institutional capacity building requires a clear

Figure 3

SCHEMATIC  
FOR  
ACCELERATING INSTITUTIONAL CAPABILITIES<sup>1</sup>  
(Sequencing of Input Elements)

Tech/Diffusion  
Output Capability<sup>2</sup>



<sup>1</sup> Context:

Increasing rates of per capita agricultural output in excess of population growth rates.

<sup>2</sup> Assumptions:

Institutional/linkage development will lead to enhanced technology generation and diffusion capability resulting in increased agricultural output. Political commitments will be achieved and be expressed in support of national goals for increased agricultural output and incomes, to be able to pay for roads, education, health, and for needed infrastructure.

understanding of the process by all involved. In the case of the TIPAN Project, it will require the continued intensive collaboration by all concerned parties, the AU, the TA team and USAID. Implementation and management deficiencies can result in great disappointments, delay and even abort the process.

ANNEX J

TIPAN Logical Framework

PROJECT DESIGN SUMMARY: LOGICAL FRAMEWORK

Project Title and Number: Transformation and Integration of the Provincial Agricultural Network (TIPAN)  
(391-0488)

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Program or Sector Goal:	Measures of Goal Achievement:		Assumption for Achieving Goal Targets:
<p>The broader objective to which this project contributes:</p> <ul style="list-style-type: none"> <li>-To increase NWFP's agricultural yields, agricultural production, farm income and rural employment</li> <li>-To transform the agricultural technology transfer network in the NWFP</li> </ul>	<ul style="list-style-type: none"> <li>-Increased production and availabilities of food and fiber</li> <li>-Decreased food imports</li> <li>-Improved foreign exchange situation</li> <li>-Increased per capita income</li> </ul>	<ul style="list-style-type: none"> <li>-Published data on agricultural production, yields, and rural employment</li> <li>-GOP planning budget documents</li> <li>-Basic socio-economic data</li> <li>-AID project reports</li> <li>-Field observations</li> </ul>	<ul style="list-style-type: none"> <li>-Continued GOP commitment to the agricultural sector in general and to agricultural education and research in particular as evidenced by adequate budgetary allocations and favorable policies</li> <li>-Required inputs for agricultural production are consistently available at affordable prices</li> <li>-Farmers adopt new technologies</li> <li>-Weather conditions are favorable</li> </ul>
Project Purpose:	Conditions That Will Indicate Purpose Has Been Achieved: (EOPS)		Assumptions for Achieving Purpose and Outputs:
<ul style="list-style-type: none"> <li>-To integrate agricultural research in the NWFP with agricultural education at the University level, improve the quality of education offered and research undertaken by the University, and strengthen linkages with agricultural extension through a problem-solving, farmer-oriented outreach program at the University.</li> </ul>	<ul style="list-style-type: none"> <li>-AU is a dynamic force for improved agricultural development in the NWFP</li> <li>-AU is producing high quality graduates who are staffing the public and private agricultural sector</li> <li>-the AU-directed provincial research program is generating improved technology packages which are relevant to NWFP farmers and their problems</li> </ul>	<ul style="list-style-type: none"> <li>-Project evaluations</li> <li>-Special surveys, studies and reports</li> <li>-Published agricultural area and production data</li> <li>-AID and GOP project records</li> <li>-Field observations</li> </ul>	<ul style="list-style-type: none"> <li>-GOP continues to accord high priority to agricultural education and research in terms of policy support and financial commitment specifically to AU</li> <li>-AU's mandate in agricultural education and research is supported and reinforced both Federally and provincially</li> <li>-Adequate numbers of qualified local staff are recruited and hired</li> </ul>

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PROJECT DESIGN SUMMARY: LOGICAL FRAMEWORK (CONTINUED)

<u>Narrative Summary</u>	<u>Objectively Verifiable Indicators</u>	<u>Means of Verification</u>	<u>Important Assumptions</u>
	<ul style="list-style-type: none"> <li>-AU outreach activities are integrated with Provincial extension efforts, and new technologies are being effectively delivered to farmers and other client groups.</li> </ul>	<ul style="list-style-type: none"> <li>-Provincial research reports and records and scientific publications</li> <li>-Employer interviews and AU student testing program</li> <li>-Extension Department Reports</li> </ul>	<ul style="list-style-type: none"> <li>-Students and staff of AU respond positively to new curricula and other changes at AU</li> <li>-Merged research staff respond positively to initiatives by AU's research program</li> <li>-Provincial extension service responds positively to initiatives by AU's outreach program</li> <li>-Technologies developed are socially and economically appropriate to farmers</li> <li>-AU successfully fosters research and extension dialogue</li> </ul>

<u>Outputs</u>	<u>Magnitude of Outputs</u>	<u>Means of Verification</u>	<u>Assumptions</u>
-AU staff strengthened and expanded	-Increase from 110 to 208	-Project evaluations	-Sufficient staff and resources will be made available within the merged university-research system
-Quality of AU teaching, research and outreach staff improved	-70 Ph.D.'s and 70 M.Sc.'s trained	-Special surveys, studies and reports	-Project consultants are successful in transferring skills and technology to AU staff
-AU administration improved	-5 new senior administrative positions established and 6 academic and 12 short-term training programs in administration and management completed	-Published agricultural area and production data	-GOP prepares and approves PC-Is as needed
-Curricula, courses and teaching techniques for the B.Sc. and M.Sc. programs upgraded and expanded resulting in higher quality graduates	-12 curricula for fields and sub-fields of specialization and 8 new courses for core program developed and institutionalized	-AID and GOP project records	-Qualified staff are selected for training
-Student body expanded	-From 683 to about 1200 by end of Phase III.	-Field observations	-Necessary skills and materials are available locally for construction program
-Research program merged and improved	-225 Dept. of Agriculture professional staff merged into AU and research program refocused and projectized	-Provincial research reports and records and scientific publications	-Adequate numbers of qualified personnel can be hired and retained to staff AU
-Learning Resources Center established	-One	-Employer interviews and AU student testing program	-Student enrollment demand projections are realized
-Department of Extension Education and Communications established	-One	-Extension Department records	
-Continuing Education Center established	-One		
-Improved technological packages for each agro-ecological zone developed and disseminated	-Packages developed for each agro-ecological zone in the N4FP		

PROJECT DESIGN SUMMARY: LOGICAL FRAMEWORK (CONTINUED)

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Inputs:	Implementation Target: (Type and Quantity)		Assumptions for Providing Inputs:
<p>1. <u>A.I.D.</u></p> <ul style="list-style-type: none"> <li>-Short and long-term technical assistance</li> <li>-Short and long-term academic and non-academic training in U.S. and Third Countries</li> <li>-In-country training</li> <li>-Vehicles, computers, research equipment and other commodities</li> <li>-Field studies and demonstrations</li> <li>-Evaluation</li> <li>-Construction</li> <li>-Operating expenses</li> </ul>	<ul style="list-style-type: none"> <li>-See financial analysis, implementation schedule, and commodity, TA and training plans in the project paper</li> </ul>	<ul style="list-style-type: none"> <li>-AID and GOP project records and financial documents</li> <li>-Project evaluations</li> </ul>	<ul style="list-style-type: none"> <li>-AID and GOP funding levels proposed are approved and disbursements are made on a timely basis</li> <li>-Appropriate overseas training programs can be identified</li> <li>-Construction is undertaken according to agreed upon standards and practices and is certified for payment by AID and the GOP</li> <li>-GOP meets the conditions precedent</li> <li>-Appropriate consultants can be recruited to provide required technical assistance</li> </ul>
<p>2. <u>GOP</u></p> <ul style="list-style-type: none"> <li>-Staff salaries and operating expenses</li> <li>-Operating and maintenance costs for newly constructed/rehabilitated facilities</li> <li>-Vehicle operating costs</li> <li>-Construction</li> <li>-Commodities</li> <li>-In-Country Training</li> </ul>			

ANNEX 4

Enrollment in Departmental Specializations

## ANNEX 4

Enrollment in Departmental Specializations

Name of Faculty/Department	BSc (H) III	BSc (H) IV	MSc Hons Previous	MSc Hons Final
<u>Faculty of Agriculture</u>				
1. Agronomy	15	11	15	25
2. Agricultural Chemistry	2	6	6	6
3. Plant Breeding & Genetics	9	10	18	27
4. Plant Pathology	12	7	10	-
5. Entomology	4	3	8	7
6. Plant Protection	22	8	5	18
7. Horticulture	14	14	20	20
8. Soil Science	7	5	24	38
9. Food Science & Technology	2	3	12	31
10. Agricultural Mechanization	5	-	2	3
11. Human Nutrition	5	-	1	-
12. Water Management	-	-	-	-
<u>Faculty of Agricultural Economics, Extension Education &amp; Rural Sociology and Developmental Studies</u>				
1. Agricultural Economics	10	3	8	4
2. Extension Education & Rural Sociology	2	-	-	-
3. Rural Development	-	-	3	-
<u>Faculty of Animal Husbandry and Veterinary Sciences</u>				
1. Animal Husbandry and Veterinary Science	3	-	7	5
2. Livestock Management	-	-	1	1
TOTAL	112	70	140	185

Source: Records of AU Registrar

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ANNEX 5

Memorandum of Understanding Transformation and  
Integration of the Provincial Agricultural Network  
(TIPAN) Project - 391-0488

(Between AU and Extension Directorate)

ANNEX 5

Memorandum of Understanding Transformation and  
Integration of the Provincial Agricultural Network  
(TIPAN) Project : 391-0488  
(Between AU and Extension Directorate)

The NWFP Agricultural University (AU) and the NWFP Department of Agriculture have reached the following understanding to work in close cooperation with each other to ensure efficient implementation of the TIPAN Project (hereinafter referred to as the "Project").

A. Executing Authorities

The Executing Agency for the Project on behalf of AU will be the Vice Chancellor, NWFP-AU. The Executing Agency for the Project on behalf of the Department of Agriculture will be the Director of Agricultural Extension, NWFP.

B. Objectives

The project has been designed to accelerate growth in the NWFP agricultural sector on a progressively sustained basis to improve farm income and quality of life; increase production of better quality at less cost per unit area and maintain the quality of the environment by:

1. Turning out graduates of higher caliber both at BSc and MSc levels.
2. Developing an agricultural research program that will create productive technology packages for NWFP farmers.
3. Developing a modern innovative outreach program, including involvement and commitment of staff and students that will complement

and strengthen the NWFP Extension Directorate in extending new technology to farmers and other potential users.

4. Becoming the source of a vigorous and dynamic program for agricultural and rural development in the NWFP.

C. Delineation of Responsibilities

1. The Agricultural University will:

a. Establish and maintain an outreach organization (proposed set-up attached as Annex) to undertake on-farm adaptive research and verification trials, on-farm demonstrations, and in-service training of Extension personnel at the regional level.

b. Develop mass media technological information packages in cooperation with the Extension Directorate for dissemination to farmers.

c. Provide in-service and refresher training to agricultural officers and subject-matter specialists in the Extension Directorate.

d. Interface with the Extension Directorate in the development of improved packages of technologies for major crops, animal husbandry practices and the farming systems for the various agro-ecological zones of the NWFP.

e. Assist associate extension personnel in the identification and prioritization of research topics.

f. Nominate an Extension Liaison Officer of the Outreach Division to work with the Extension Liaison Officer of the Extension Directorate and other extension personnel to obtain feedback on application of improved technologies, other problems encountered in

the field, needs for additional/improve audio-visual educational materials and training facilities.

2. The Extension Directorate will:

a. Maintain and strengthen the capability of extension personnel to transfer needed information and improved packages of technologies developed by the Agricultural University to the farmers in a manner to be easily understood by them.

b. Establish demonstration farms on farmers' fields to enable the farmers to see for themselves the benefits of application of improved packages of technologies and to facilitate their adoption.

c. Arrange for the training of field extension personnel to educate the farmers and practically demonstrate to them the advantages of adoption of improved technologies, farming practices and systems.

d. Assist the Agricultural University in the selection and prioritization of research topics.

e. Organize field-days at the AU for the progressive/key farmers to see for themselves what the agricultural scientists were doing for their welfare, discuss their problems with the scientists concerned and take advantage of the new knowledge unearthed by the scientists for their benefit.

f. Nominate an extension Liaison Officer of the Extension Directorate to interface with the research and outreach personnel of the Agricultural University to serve as a bridge between research, outreach and extension.

Signed: \_\_\_\_\_  
Directorate of Agriculture  
NWFP, Peshawar

Signed: \_\_\_\_\_  
Vice Chancellor, NWFP  
Agricultural University,  
Peshawar

ANNEX 6

Memorandum of Understanding Transformation and  
Integration of the Provincial Agricultural Network  
(TIPAN) Project - 391-0488

(Between AU and the Animal Husbandry Directorate)

## ANNEX 6

Memorandum of Understanding Transformation and  
Integration of the Provincial Agricultural Network  
(TIPAN) Project - 391-0488  
(Between AU and the Animal Husbandry Directorate)

The NWFP Agricultural University (AU) and the NWFP Directorate of Animal Husbandry have reached the following understanding to work in close cooperation with each other to ensure efficient implementation of the TIPAN Project (hereinafter referred to as the "Project").

### A. Executing Authorities

The Executing Agency for the Project on behalf of AU will be the Vice Chancellor, NWFP-AU. The Executing Agency for the Project on behalf of the Directorate of Animal Husbandry will be the Director of Animal Husbandry, NWFP, Peshawar.

### B. Objectives

The project has been designed to accelerate growth in the NWFP livestock sector on a progressively sustained basis to improve farm income and quality of life, increase production of better quality at less cost per unit and maintain the quality of the environment by:

1. Developing a cooperative working relationship to maximize efficient utilization of resources at Livestock Farm, Harichand, Semen Production Unit, Surizai, and Poultry Farm, Peshawar.
2. Turning out graduates of higher caliber both at BSc and MSc levels in Animal Husbandry.
3. Developing a research program that will create productive technology packages for NWFP livestock farmers.

4. Developing a modern, innovative outreach program, including involvement and commitment of staff and students that will complement and strengthen the NWFP Animal Husbandry directorate in extending new technology in livestock extension programs such as artificial insemination, breeding, feeding, management, etc.

5. Becoming the source of a vigorous and dynamic program for livestock and development in the NWFP.

C. Delineation of Responsibilities

1. The Agricultural University will:

a. Establish and maintain an outreach organization (proposed set-up attached as Annex) to undertake on-farm adaptive research and verification trials; on-farm demonstrations and in-service training of livestock extension personnel at the regional level.

b. Develop mass media technological information packages in cooperation with the Animal Husbandry (Extension) Directorate for dissemination to the livestock farmers.

c. Provide in-service and refresher training to Animal Husbandry officers and subject matter specialists in the Extension Directorate.

d. Interface with the extension activities of the Animal Husbandry Directorate in the development of improved packages of technologies for animal husbandry practices.

e. Assist associate livestock extension personnel in the identification and prioritization of research topics.

f. Nominate a Livestock Extension Liaison Officer of the Outreach Division to work with the Extension Liaison Officer of the Animal Husbandry Directorate and other extension personnel to obtain feedback on application of improved technologies, other problems encountered in the field, needs for additional/improved audio-visual educational and training facilities.

2. The Animal Husbandry Directorate will:

a. Make the facilities available to the University faculty members and students for cooperative work at Livestock Farm, Harichand, Semen Production Unit, Surizai, and Poultry Farm, Peshawar.

b. Maintain and strengthen the capability of livestock extension personnel to transfer needed information and improved packages of technologies developed by the Agricultural University to farmers in a manner to be easily understood by them.

c. Establish demonstration farms to enable the farmers to see for themselves the benefits of application of improved packages of technologies and to facilitate their adoption.

d. Arrange for the training of field livestock extension personnel to educate the farmers and practically demonstrate to them the advantages of adoption of improved technologies for better livestock production.

e. Assist the Agricultural University in the selection and prioritization of research topics.

f. Organize field-days at the AU for the progressive livestock farmers to see for themselves what the agricultural scientists were doing for their welfare, discuss their problems with

the scientists concerned and take advantage of the new knowledge unearthed by the scientists for their benefit.

g. Nominate a Livestock Extension Liaison Officer of the Animal Husbandry Directorate to interface with the research and outreach personnel of the Agricultural University to serve as a bridge between research, outreach and extension.

Signed: \_\_\_\_\_  
Directorate of Agriculture  
NWFP, Peshawar

Signed: \_\_\_\_\_  
Vice Chancellor, NWFP  
Agricultural University,  
Peshawar

ANNEX 7

Schedule of Persons and Places Visited

ANNEX 7

Schedule of Persons and Places Visited

September 2-4, 1987

Home Campus Support, Urbana, Illinois  
Dr. Thomas A. McCowen, TIPAN Campus Coordinator  
Dr. William H. Thompson, TIPAN Senior Advisor  
Dr. John W. Santas, TIPAN Training Officer  
Dr. Andrew J. Sotranko, Faculty Liaison Group (Rural Sociology)  
Dr. Violet Malone, FLG (Extension Education)  
Dr. Howard H. Olson, FLG (Animal Science)  
Dr. Errol D. Rodda, former TIPAN Field Team Leader  
Dr. James Sinclair, FLG (Plant Pathology)  
Dr. John Campbell, Dean, College of Agriculture, University of Illinois

September 4-7, 1987

En route from Urbana to Islamabad

September 8, 1987

USAID-Islamabad  
Mr. Maurice Fleming, TIPAN Project Officer, USAID  
Mr. Harry Dickherber, Section Chief of Research, Education and Forestry, USAID  
Mr. Jonathan Addleton, Evaluation Officer, USAID  
Dr. Marian Fuchs-Carsh  
Dr. H. Patrick Peterson, Chief Officer of Agriculture and Rural Development, USAID

September 9-10, 1987

Dr. Ray G. Cragle, TIPAN Team Leader  
Dr. R. William Seiders, TIPAN  
Dr. Frederick Fliegel, TIPAN  
Dr. G. M. Khattak, Vice Chancellor, NWFP-AU  
Mr. Maurice Fleming, Project Officer, TIPAN  
Deans and Directors

September 12, 1987

Dean Mohd. Karim Khan - Faculty of Agriculture  
Departments: Agricultural Chemistry  
Agricultural Mechanization  
Agronomy

Entomology  
Food Science and Technology  
Horticulture  
Human Nutrition  
Plant Breeding and Genetics  
Plant Pathology  
Plant Protection  
Soil Science

Dean Basit Ali Shah - Faculty of Animal Husbandry  
Departments: Animal Nutrition  
Livestock Management

Computer Laboratory

Dean (Dr.) Nurul-Islam Mian - Faculty of Rural Social Sciences  
Departments: Agricultural Economics, Rural Sociology and  
Extension Education  
English  
Institute of Development Studies  
Islamic Studies  
Mathematics, Physics and Humanities  
Pakistan Studies

September 13, 1987

Mr. Ali Khan - Librarian  
Tour of Library

Professor Hafiz Inayatullah - Director of Teaching

Ikramullah - Commodities  
Mohammad Ayaz - Commodities

Prof. Basit Ali Shah - Department of Nutrition  
Dr. Iqbal Shah - Department of Livestock Management  
Dr. Moin Bushtaq Ahmad - Poultry Science  
Department Heads - Animal Husbandry

Mr. Muhammadin Shah - Director of Finance

Mr. Siraj Afridi - Director of Works

September 14, 1987

Mr. Mohammad Siddiq Khan - Director of Research  
Dr. Jeraqir Khan Khalil - Provost  
Mr. Ittikher Ahmad - Warden  
Mr. Ishtiar Ahmad - Warden

Shelly Reiten - Administrative Assistant, TIPAN  
Fayyaz Ahmad - Administrative Assistant, TIPAN  
Mrs. A.M. Amin - Secretary, TIPAN  
Zahida Perveen - Secretary, TIPAN  
L. Raja - Driver, TIPAN  
Gulrez Shams - Driver, TIPAN  
Mira Khan - Driver, TIPAN  
Afzal Sher - Driver, TIPAN

Dr. Hanif Qazi - Researcher

Dr. Jameel Siddiqi - head, Department of Agricultural Economics,  
Rural Sociology and Extension Education

Ten Junior Faculty Members (less than two years service)

Salim Khan - Agricultural Chemistry  
Johar - Livestock Management  
Sher Nadir - Animal Husbandry  
Noorul Amin - Horticulture  
Mukhtar Ahmad - Agricultural Economics  
Razi ud Din - PBG  
Amir Zaman - Agronomy  
Inayatullah - Entomology  
Farmanullah - Plant Protection  
Mushtaq - ID

Mr. Munir Khan, President  
Faculty Association and 10 members

September 15, 1987

Department Heads

Dr. A.J. Siddiqi - Agricultural Economics, Rural Sociology and  
Extension Education  
Prof. M. Yousaf Khan - Mathematics, Physics and Humanities  
Prof. Dilshad Khan - English  
Prof. Abul Bayan - Islamic Studies  
Dr. Nurul Islam Khan - Institute of Development Studies

Mohd. Ahmad Khan - Chief of Research  
Anwar Hussain - Junior Research Specialist  
Mir Kalan Shah - Research Specialist  
Raheela Begum - Junior Research Specialist

Department Heads - Agriculture

Dr. Saeedul Hassan - Plant Breeding and Genetics  
Prof. Jehangir Khattak - Soil Science, Professor and Chairman  
Dr. Tajammul Hussain - Agricultural Chemistry and Human Nutrition  
Prof. Mohammad Tariq - Agricultural Mechanization  
Prof. Bakhtiar Hussain - Food Science  
Prof. Hamidullah Shag - Agricultural Chemistry and Human  
Nutrition, Assistant Professor

Prof. Jehangir Khalil - Human Nutrition, Professor  
Prof. Abdul Rashid - Soil Science, Associate Professor  
Prof. Sami Ullah - Food Science and Technology, Assistant  
Professor  
Prof. Mohammad Karim - Faculty of Agriculture Dean  
Prof. Mir Hatam - Agronomy  
Prof. Mohd. Shahid - Entomology  
Prof. Sher Hassan - Plant Pathology  
Dr. Naseer Hussain - Plant Protection  
Prof. Hafiz Inayatullah - Horticulture  
Prof. Faridullah Shah - Horticulture, Associate Professor

Researchers

Dr. Tajammul Hussain - Human Nutrition  
Dr. Rasool Bakhsh  
Prof. Jehangir K. Khattak - Soil Science  
Dr. Mohammad Shahid - Entomology  
Dr. Nurul Islam Mian - Institute of Development Studies

Professors and Research Specialists (Women)

Sajida Parveen - Assistant Professor  
Amtul Matin - Lecturer  
Raheela Begum - Junior Research Specialist  
Shaheen Shaukat - Junior Research Specialist  
Khalida Shahnaz - Junior Research Specialist

On the way to the Staff House  
Stop at the Dairy Barn  
Prof. Nazir Ahmad

September 14-19, 1987

Revision of outlines, review of data sources, visits with Team,  
other officials, report writing.

September 19, 1987

Visit to Surezai Research/Outreach Station (Cattle Breeding and  
Management)

Dr. Mohammad Bashir Qureshi, Director  
Visiting Party included the Evaluation Team  
Dr. G.M. Khattak, Vice Chancellor, NWFP Agricultural University  
Dr. Iqbal Shah, Associate Director of Research  
Dr. R.G. Cragle, Team Leader, TIPAN

Visit to Pirsabak Research/Outreach Station (Cereal Crops)

Mr. Allaudin Khan, Director  
Dr. Mohammad Saleem  
Dr. Fazli Karim  
Visiting Party included the Evaluation Team  
Dr. Iqbal Shah, Associate Director of Research  
Dr. R.G. Cragle, Team Leader, TIPAN

September 20-22, 1987

Drafting

September 23, 1987

Travel to Hazara Division (Abbottabad)  
Visiting Party included  
Dr. Elmer Kiehl, Evaluation Team  
Dr. G.M. Khattak, Vice Chancellor, NWFP Agricultural University  
Dr. R.G. Cragle, Team Leader, TIPAN  
Dr. R.W. Seiders, Team Member, TIPAN

September 24, 1987

NWFP Agricultural University  
Farming Systems Field Day  
Trangri Paeen Village (Mansehra)  
Mr. Gulfam Khan Jehangiri, Overall Coordinator and Director of  
Dhodial Research/Outreach Station  
Over 600 persons were in attendance  
Visiting Party included  
Dr. Elmer Kiehl, Evaluation Team  
Dr. G.M. Khattak, Vice Chancellor, NWFP Agricultural University  
Dr. R.G. Cragle, Team Leader, TIPAN  
Dr. R.W. Seiders, Team Member, TIPAN  
USAID-Islamabad Officials were also present

September 25-26, 1987

Report Drafting

September 27, 1987

Meeting with Research Station Directors, Drafting

September 28, 1987

First Draft Review with AU and USAID  
Dr. G.M. Khattak, Vice Chancellor  
Mr. Maurice Fleming, Project Officer TIPAN  
Basit Ali Shah  
Mushahedin Shah  
Mr. Farooq  
Prof. Yousaf  
Director M. Siddiq  
Prof. Hafiz  
Mr. Harry Dickherber, USAID  
Mr. John Addleton, USAID  
Dr. Marian Fuchs-Carsh, USAID  
Roy Hafterson, USAID  
Dr. Ray G. Cragle, Team Leader, TIPAN

Dr. Bill Seiders, Extension TA  
Dr. Fred Tom, Evaluation Team  
Dr. Fred Bentley, Evaluation Team  
Dr. Elmer Kiehl, Evaluation Team

September 29 - October 4, 1987

Reviews and redrafting of report to reflect comments recieved from AU and AID staff.

ANNEX 3

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## ANNEX 8

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