

AN ANALYSIS OF PROGRESS AND OUTCOMES OF THE  
INSTITUTE OF AGRICULTURE AND ANIMAL SCIENCE PROJECT

RAMPUR, NEPAL

(Project No. 367-0102)

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Under Contract No. PDC-1406-I-10-1064-00

WU P'I, INCORPORATED  
Cambridge, Massachusetts  
Seattle, Washington

September 1983  
(Bhadra 2040)

"Agricultural development does not and will not come free. It calls for substantial investments and not just material inputs, such as better seeds and fertilizers or in capital projects such as dams and canals, but in increased human skills, knowledges, inventiveness, and productive capacity as well."\*\*

\*\*From an article entitled: "The Role of Agriculture in the Development of Nepal," by Dr. K. B. Rajbhandary (RAMJHAN, 1960. P. 32) as quoted in "Higher Education in Agriculture in Nepal: The Report of a Pre-Feasibility Study," MUCIA, August 1972.

"What now exists is a sturdy young sapling whose roots are in pretty firm soil, but the main roots are not yet deep. And if a mature tree is to emerge, with wide-spreading branches rich with fruit, much careful nurturing is still required--watering, weeding, pruning, propping against the sudden storm, adequate fertilization. Those who had the early vision and those now charged with the nurture of IAAS need to rekindle the spirit of pioneering and endeavor among their colleagues on a continuing basis. What is needed is a growing critical mass of Nepalese who insist that the problems will be overcome and that IAAS can and will take an equal place with other Asian agricultural institutions and be Tribhuvan University's standard bearer for agriculture in Nepal."

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The Evaluation Team  
September 1983

## GLOSSARY

AID	- United States Agency for International Development
ADB	- Agricultural Development Bank
AIC	- Agricultural Input Corporation
APROSC	- Agricultural Project Service Center
CIMMYT	- International Center for Maize and Wheat Research
DOA	- Department of Agriculture
DOL	- Department of Livestock Development
FAO	- Food and Agricultural Organisation
GON	- Government of Nepal
HMG	- His Majesty's Government of Nepal
IAAS	- Institute of Agriculture and Animal Science
ICP	- Integrated Cereal Project
IRRI	- International Rice Research Institute
IRNR	- Institute of Renewable & Natural Resources
JT	- Junior Technician (I;Sc. Ag.)
JTA	- Junior Technical Assistant (One year training beyond High School)
MOA	- Ministry of Agriculture
MOE	- Ministry of Education
MOF	- Ministry of Forest
MUCIA	- Midwest Universities Consortium for International Activities, Inc.
NPC	- National Planning Commission
NMDP	- National Maize Development Programme
OD	- Organisational Development
R and D	- Research and Development
RCUP	- Resource Conservation & Utilization Project
RD	- Rural Development
RCHE	- Royal Commission on Higher Education
SPIS	- Seed Production and Input Storage Project
TU	- Tribhuvan University
UNDP	- United Nations Development Programme
WB	- World Bank

## TABLE OF CONTENTS

	<u>Page No.</u>
I. Executive Summary	1
II. Project and Institutional Setting	5
III. Summary Analysis of Findings	8
IV. Conclusions, Recommendations and Discussion	16
A. Lack of Continuity Slowed the Pace	16
B. Meeting Manpower Needs	18
C. Strengthening Working Relationships	21
D. Improving Instructional Capabilities	24
E. Building More Professionalism For Teaching, Research and Service	26
F. Enhancing Staff Development	29
G. Improving the Use of Technical Advisors	32
H. Improving the Curriculum	35
I. Upgrading Library Materials	40
J. Gaining Momentum in Relevant Research and Service	42
K. Actuating the Research and Demonstration Farm	46
L. Augmenting Housing Facilities	48
M. Encouraging Women in Professional Agriculture	50
N. Maintaining the IAAS Physical Plant	52

### Appendices

- A. Key Events: The Evolution of an Institution
- B. Observations at Paklihawa
- C. Persons/Groups Contacted
- D. Questions Submitted by Students

### Bibliography

## I. EXECUTIVE SUMMARY

### A. Problem and Overview

Nepal's economy is predominately agricultural. The combined pressure of an expanding population on a land area the size of North Carolina and low-level agricultural production is a major problem. Ninety-three percent of the labor force is employed in subsistence oriented agriculture. About 56% of Nepal's 15 million people live in the hills and mountains and 44% occupy the lowland plains or Tarai. Population density in the hills is about 1,500 persons per square kilometer with land holdings less than 0.5 ha. per farm household. The hills and mountains are a food deficit area. The Tarai has a higher land/farm ratio with about 1.5 ha. Effective systems of communication, transportation and education to service the approximately 1.5 million farm households have been difficult to develop even though planned public sector investment in agriculture has gradually increased since 1970.

Adequately trained manpower for agriculture remains a constraint. Although the situation has improved quantitatively, there remains significant need for qualitative improvements. In 1957 only 42 persons were available with higher training (B. Sc. or above) and 93 with middle level training (one or two years beyond high school). By 1971, those with higher level training had grown to about 303 (Ph.D., 9; M.Sc., 117; B.Sc., 197) while the middle level increased to 1,120 Junior Technicians (JTs) and Junior Technical Assistants (JTAs) who receive 2 years and 1 year of training beyond high school, respectively (AID study). In 1972, significant attention was focused on the need for trained agricultural manpower by the creation of the Institute of Agriculture and Animal Science (IAAS) under the administration of Tribhuvan University (TU). In 1974, AID authorized funds to start a 10-year institutional development project in collaboration with GON to improve the quality of trained manpower. A Nepali study showed that employed agriculturists in the public sector in 1980 included 773 higher level and 2,150 middle level manpower. The higher level personnel included 15 Ph.D.s, 202 M.Sc.s, and 556 B.Sc.s; the middle level consisted of 1,411 JTAs and 1,039 JTs. The study projected a slight surplus of higher level trained manpower, but a 1,065 deficit for the middle level by 1985; by 1990 the deficits would be 304 and 1,073, respectively, taking into account the termination in 1986 of the 50 persons per year sent to India for B.Sc. training under PL 480. That study and other sources raise a variety of questions about training quality at both B.Sc. and lower levels.

### B. U. S. Assistance

AID has been supportive of agricultural education in Nepal for many years. In 1970 the assistance included funding a study of agricultural education. In 1972, a combined team of Nepalese and Americans studied higher education in agriculture. Subsequently, in June 1974, AID authorized \$3.2 million for the IAAS Project (Number 367-0102). Implementation began

in December 1975 with the signing of an AID direct contract with the Midwest Universities Consortium for International Activities, Inc. (MUCIA) for provision of technical assistance, training, equipment, and support to IAAS through TU. The stated purpose was "to expand and improve the IAAS so that it will be capable of providing quality training and academic programs for (1) middle and high level officials in the Ministry of Agriculture; (2) vocational agriculture teachers and supervisors; and (3) farmers at the community level". The longer range goal of the project is to increase agricultural production in Nepal's small-farm sector through the provision of trained manpower. In January 1981, AID authorized a project paper amendment to provide an additional \$2.3 million necessary to complete the project by September 1984. A related PL-480 local currency funded project, authorized in June 1975 and identified by the same project number, provided \$4,157,000 local currency equivalent for construction of the physical facilities. The total support by AID to IAAS has been \$9,657,000. In July 1983 the project plan was again amended to reflect the shift in GON and IAAS's goal to an emphasis on B.Sc. training.

#### C. Purpose of the Evaluation

The purpose of this evaluation was to assess the capability of IAAS in meeting the trained manpower requirements of the agricultural sector at the JT/JTA and B.Sc. levels. More specifically, the evaluation identified and analyzed the major strengths and weaknesses of IAAS in fulfilling its stated functions of teaching, research, and service and the adequacy of the assistance provided by AID in the institution-building process. In addition and to the extent possible, specific recommendations were developed as to what could and should be done in relation to major problems, issues and needs.

The evaluation involved about 4 man-months and was based on an analysis of descriptive data obtained from both primary and secondary sources. Primary data were obtained via interviews, small group discussions, solicited written input, and first hand observations of on-going activities and facilities. Sources of secondary data included numerous documents, reports and ephemeral materials obtained from various sources. Preliminary findings were analyzed and prioritized through small group discussions among members of the Evaluation Team and reexamined by means of review sessions involving selected representatives of IAAS, MUCIA, AID, and agencies of GON.

Except for descriptions and discussions of outputs, problems, and needs as developed in the Joint Annual Reviews, end of tour reports, project amendments and other internally-produced documents, there have been no other evaluations of the project.

#### D. Findings

The IAAS project has had a number of significant accomplishments as well as several obstacles over the past 10 years of growth toward being

Nepal's major agriculture institution. A substantial physical plant is in place including an excellent library building. The faculty has grown from a few to 70 persons, with a supporting administrative staff of about 130. When the 20 persons now away for study return, the staff of 70 will include 15 Ph.D. and 50 M.Sc. holders serving 7 departments and about 450 students including 4 women. The Dean and faculty are functioning as a team and the MUCIA advisors are executing a well-developed work plan. The GON continues to support IAAS and a 1983 Royal Commission on Higher Education (RCHE) has clarified several policies guiding IAAS.

Many problems remain; representing opportunities to treat the causes. One major challenge is to improve the quality of IAAS graduates. Sub-challenges include improving the quality of instruction, consolidating the curriculum and integrating better the practical and the theoretical; preparing relevant instructional materials in larger quantities, and generating more low-budget, applied field research. Another high priority is additional physical plant and facilities attention including additional faculty housing to assure that trained staff stay, provision of additional hostel space for students -- especially women, and activation of the research and demonstration farm and further developing the livestock herds and flocks.

IAAS has surmounted the major hurdles. Needed now is help in consolidating its achievements, in strengthening its assets, in filling the gaps pointed out in this report, and in perfecting its operational procedures and processes.

#### E. Project Design and Policy Implications

The Team reached an early consensus that AID assistance to IAAS should not stop on September 30, 1984. The magnitude of the strengths of IAAS exceeded that of the weaknesses, especially when considering Nepal's total needs. The bulk of the Team's findings reflect a shift from evaluating whether or not IAAS should receive additional assistance to what issues should be addressed when a new project is undertaken. The report detail gives a strong emphasis to people development with limited capital construction assistance.

If possible, GON and AID should do all they can during a new plan to provide continuity of leadership and advisors to that leadership. Three long-term advisors are recommended and should possibly remain with the project for its duration. Short-term advisors should be retained so that they can make return visits as needed to achieve particular, joint objectives or in solving special problems related to a department, discipline, or subject matter area. Participant training should favor short-term, non-degree training over long-term degree training and in-country training over training abroad.

All IAAS and AID project furniture and equipment (other than expendable items such as glassware, etc.) should be identified by serial number to facilitate inventory control and accounting processes.

F. Recommendations

It is recommended that the IAAS project be extended 5 years beyond the present project life. Current directions and priorities as established in the MUCIA work plan should be carried out on schedule. The recommendations and discussion in this report should be used as aids in developing a new project plan. That plan, because of its implications for enhancing the investment made by GON and AID as well as the quality of IAAS graduates, should accomplish the following major objectives.

AID should provide assistance in a) training for staff in instructional techniques, preparing teaching materials and in low-budget, applied field research; b) additional housing needs for faculty and women students; c) organizing and equipping functional laboratories; and d) introducing appropriate animal foundation stock and animal production systems. IAAS with limited AID assistance in some instances should perform a variety of tasks including: a) provision of adequate lab and office space for faculty; b) activating curriculum improvements, teacher training, research and development; and production of relevant instructional materials. Tasks for which IAAS will need help from AID or other donors include the fencing, land levelling, irrigation, and drainage of the research and demonstration farm.

5

## II. PROJECT AND INSTITUTIONAL SETTING

The evolution of an institution is a slow and often painful process. Institution-building is the sum total of little and big decisions, the many experiences of the individuals who are the institution, and the perceptions of others who must relate to the institution whether they want to or not. Thus it seems prudent that those who must make decisions along the evolutionary path should frequently look back as they look ahead. Not to do so risks great slippage in progress and often excess wastage of resources. Not to make a decision may be as disruptive and as costly as making too hasty a decision. Therein lies the pain !

Higher education in Nepal dates only from 1918 when Trichandra College was started in Kathmandu as the first and only institution of higher education until 1951. An agriculture office was established in 1924. Then in 1959 an agricultural school was established in Kathmandu under the DOA to train extension workers. In the same year the National University (later to become Tribhuvan University) was founded in Kathmandu. Ten years later, in 1969 the DOA school became a college. Then, following several intensive studies of higher education, including attention to agriculture, a series of momentous decisions led to the establishment of IAAS (see Appendix A). Under TU guidance the Institute was eventually located in Chitwan district in an Inner Tarai resettlement area near the small village of Rampur. The people who made these decisions and especially those who implemented them must be included among Nepal's educational pioneers. Perhaps a remarkably short time in retrospect, the ten years from 1973 have undoubtedly moved agonizingly slow for those closest to the implementing edge of action. Far from Kathmandu the student and staff implementers must have felt like outcasts as they struggled with the institution-building process hampered by mud, mosquitoes, and poor communication with TU and other government agencies.

The AID/MUCIA contract with TU in 1975 marked the beginning of a collaborative institutional-development experience. This influx of assistance stimulated many related institutional-building activities. Arrangements were made by GON and AID to assure permanent posts for staff and to start a process of upgrading staff skills. By September 1984, 54 faculty members will have completed advanced degree programs; approximately 50% of the faculty have been involved in out-of-country professional development during the past year. The relatively long periods of absence have created problems of discontinuity. The full faculty have not yet had an opportunity to work together as a team. As each one returns, he must find his place in the new environment, a process that does not always go smoothly.

Leadership and management are inevitably crucial elements in the development of an institution. Continuity of leadership, if the leadership is right for the time and the tasks to be faced, is extremely desirable. Five individuals have held the management reins since 1972; some have served longer than others. In a similar fashion the frequent changing of MUCIA long-term advisors has caused special discontinuities. The shift in approaches to institutional development in general as well as changes in the technical approach (e.g. grain-based livestock production vs forage-based) suggest that planning within MUCIA on the IAAS strategy was not as long-range as it might have been. Leadership styles have varied -- both Nepali and American. Interpretations of what makes an institution grow and thrive have changed from one manager and advisor to another. Priorities have shifted. These discontinuities are not completely avoidable, but they have significant effects on institutional development.

There are frequently forces external to the institution which cause uncertainties of direction. Policy shifts since 1972 have altered the emphasis from I.Sc.Ag. and vocational agriculture teacher training to B.Sc. training. This substantial change in direction has created new kinds of problems, irrespective of the inevitable disagreements about the correctness of the change. Frequently associated with such

shifts are interagency rivalries which make the formation of strong working relationships difficult. The struggling young institution and its leadership need the help of voices of vision and positiveness that speak louder in the halls of government.

Bricks and mortar are necessary elements of institution-building. A nucleus of buildings existed in 1973 when IAAS moved to Rampur, the remnants of the former Panchayat Training Center. Through local currency generated by PL 480, hostels, classrooms, laboratories, cafeterias, a library and other buildings were built. IAAS has, by some accounts, an enviable physical plant which is appropriate for the main institution of higher education in agriculture in all of Nepal. But buildings are not without their contributions to growth problems. Their construction can cause excessive drain on leadership; a distraction from the principal tasks and talents of the leaders. After completion, maintenance needs start. Unless maintenance plans, budget and functions have been foreseen, extensive damage can occur creating additional drain on scarce resources. For whatever reasons, provisions by IAAS and AID apparently were not made in the past for the substantial maintenance function the large physical plant now in place requires.

The amenities of Rampur have improved substantially since the first days of isolation. Mosquitoes and malaria have subsided. The nine-kilometer access road from the main highway is no longer one long buffalo wallow and was blacktopped in January 1983. The trip to Kathmandu is now only four hours by automobile, where it used to take 6 to 9 hours. While electricity reached the campus in 1976 and was available for three hours, it was 1981 before it was available around the clock. Student and staff housing has evolved from off-campus renting and use of existing buildings in makeshift ways to comparatively spacious hostels and faculty housing units. Nevertheless, additional housing for women and faculty is a pressing need.

### III. SUMMARY ANALYSIS OF FINDINGS

This Evaluation Team believes that, all too frequently people see and use, the evaluation process as a statement of success or failure, good or bad. We would instead suggest that what we have tried to do is assess progress and results. We firmly believe that no one is infallible; that progress and results are the accumulation of positive things over negative. Thus, it is in this context, that we hope the reader will join us in an all too brief look at the IAAS project.

During its first decade IAAS has had a number of significant accomplishments. It has also experienced a number of setbacks and obstacles. Many such problems were beyond the control of IAAS (e.g. student unrest, changing national priorities, etc.); others resulted from unavoidable discontinuities in leadership and management within IAAS and MUCIA. The important thing is that the problems which do exist are understood by the present leadership teams in IAAS and MUCIA. The Team feels that appropriate strategies have been formulated and desirable actions are being taken so that the major problems will be resolved.

It should also be noted that the needs for project improvement identified in this report and the directions being pursued by IAAS/MUCIA are consistent with the recently released recommendations by the RCHE. IAAS is developing appropriately in becoming the primary supplier of the quantity and quality of human resources needed to achieve the goals of agricultural development in Nepal.

With this in mind, following is a list of the major problems and needs which have been resolved or which need continuing attention; a list of present strengths, assets and capabilities; and a list of recommendations of things to do to strengthen IAAS so that it will indeed fulfill its purposes at the level of quality that is crucial to its success. First the past and continuing problems:

- a. Considerable turnover and discontinuity in management (IAAS & MUCIA).
- b. Lack of viable interagency linkages and working relationships between IAAS and user agencies in GON (e.g. DOA).

- c. Lengthy delays in meeting targets in construction, acquisition of lab equipment, and development and operation of the research farm.
- d. Lack of clear policy and directions whether the B.Sc. program should be practical and functional or "academic".
- e. Lack of specific planning for accommodating women students on campus.
- f. Absence of the use of a wide range of effective instructional techniques to facilitate learning, and a professional attitude which interrelates the functions of teaching, research and service into one's full-time job or career.
- g. Policies and practices which discourage unity and cohesiveness e.g., dividing subject-matter fields into many small departments, not sending faculty teams more frequently to the same place at the same time for training, providing extra pay for involvement in research and service activities.
- h. Student unrest and strikes.
- i. Lack of training in management, in higher education, organizational development (OD) and supervision for the administrative staff.
- j. Occasional disharmony within MUCIA teams and too much change in direction and philosophy by long-term advisors.
- k. Failure during the project of some MUCIA team members to function in multiple roles of staff developers, planners, co-workers, advisors and seminar leaders.

The foregoing factors and forces have contributed to a multitude of related but nonetheless important problems and situations which reflect negatively on the qualitative aspects of instruction, research, and general morale. Examples of these include:

- a. Underutilization of library resources by faculty and students alike.
- b. Lack of developing instructional materials by the faculty that are pertinent to the agricultural problems and needs in Nepal.
- c. Neglect in the maintenance of expensive equipment and facilities.

- d. Low level of faculty research in areas of need.
- e. Overly fragmented curriculum, too many class contact hours per week, and too many students per class.
- f. Underutilization of human and physical resources.
- g. Movement toward the "academic" and away from the needed and "practical" aspects of scientifically-based agricultural inquiry.
- h. Preceptions among certain key people in user agencies that IAAS graduates do not measure up to standards required.
- i. Lack of a strong generalized sense of optimism among some key actors and supporters.

The foregoing should not be interpreted as a negative analysis of the AID-assisted experiment in creating a new institution. On the other hand, the analysis represents an opportunity to learn through experience and to treat effectively the causes rather than the symptoms of unmet goals and inadequacies in management, instruction, and faculty development. The Team is unanimous in its belief that this opportunity should not go unmet by AID, GON, TU and IAAS.

IAAS has a firm start in terms of an institutional framework which can provide the quantity and quality of trained leadership needed. This leadership is crucial to the effective implementation of the infrastructure that is taking form throughout the nation to support and assist that valuable resource called farmers and farming.

By concentrating on the positive dimensions of IAAS (and there are many) a far more optimistic note can be sounded. Fact: IAAS has a faculty highly trained at MS and Ph.D. levels in nearly all required areas pertinent to current needs. Fact; with a few exceptions the necessary physical plant is in place, this alone is a significant accomplishment. Fact; Faculty are beginning to function as teams in collaborative ways. Fact; a new management team is in place. It has the confidence of all concerned parties and it has made enormous progress in dealing with major problems and issues as well as with daily, routine operations.

Fact; IAAS has an outstanding library facility (the lifeblood of higher education) containing over 14,000 volumes and documents and growing daily. Fact; the MUCIA team is now achieving significant results in overcoming some of the past problems and attaining new priorities established in the 1980 work plan and supplement. Fact; there are 445 motivated students at Rampur, including four pioneering women agriculturalists, representing nearly every region of the country and a wide diversity of agricultural backgrounds. Fact; a program of outreach and service has been started as an invaluable learning tool for faculty and students.

Most importantly, personnel of IAAS and its user agencies are cognizant of its problems and shortcomings and are committed to strengthening its assets, solving its problems and enhancing the quality of its processes and products. There is considerable evidence that IAAS is "getting its act together" -- that it has weathered the critical stages of development and is gaining momentum in becoming a quality institution.

Considerable work is still needed to consolidate and capitalize on existing accomplishments and resolve the remaining problems. The Team believes that IAAS is near the "top of the mountain" which must be climbed in creating an institution -- and that a few more years of AID assistance will enable IAAS to surmount the remaining obstacles.

Following, and in priority order, are those tasks which can best be met with the help of AID, those which can be met by IAAS alone or with minimal assistance from AID, and those which can be better satisfied with help from AID or other donors.

1. Tasks wherein assistance should be provided by AID:
  - a. Train faculty to sharpen their skills as competent instructors, learning-material developers, and applied researchers train administrative staff in selected areas of management and supervision appropriate for an institution like IAAS.
  - b. Complete faculty and student housing facilities commensurate with numbers and space standards with special attention for accommodating women students.

- c. Create labs which contain efficiently organized and arranged equipment and supplies.
- d. Introduce appropriate animal foundation stock and animal production systems that are compatible with Nepal's terrain, ecological problems, and human food needs.

#### Implications for AID

Faculty and staff development will require selected long- and short term advisors over the next 4 to 5 years. Three long-term advisors are needed who should build on the accomplishments of the current project.

Short-term advisors should be programmed so that each department will have access to one short-term advisor each year on the basis of carefully designed work plans by IAAS/AID. An occasional short-term advisor may be needed for on-campus training of administrative staff and other faculty-wide needs (see section IVG for additional detail).

Arrangements should be made so that short-term advisors will make recurrent visits when needed in order to accomplish objectives jointly established with faculty. Needed faculty and staff development will also require several man-months per year in short-term training abroad as well as total faculty and staff participation in selected training activities conducted on the IAAS campus.

Additional funds are needed to complete the housing facilities for faculty and students. Failure to complete the construction of these facilities will discourage the highly trained faculty from staying at IAAS as well as discourage women students from studying there. Faculty housing should incorporate housing accommodations for long and short-term advisors, visitors and guests. These units should be interspersed throughout the housing area.

Needed improvements in labs and foundation animal stock should proceed satisfactorily over the next year as specified in the revised MUCIA work plan.

2. Tasks which IAAS can perform alone or in some instances with selected assistance from AID:
  - a. Provide adequate office and lab space for the work of IAAS faculty as determined by a careful review of existing space use and future needs based on planned and projected research needs.
  - b. Implement viable faculty/student/staff committees in regard to curriculum improvements, teacher training, R and D, evaluation, and grievance.
  - c. Expand recreational facilities for men and women students.
  - d. Produce a wide range of relevant instructional materials.
  - e. Create effective working relationships with IAAS's client systems-especially those within DOA.
  - f. Establish a functional reward system which clearly identifies agreed-upon faculty assignments and evaluation procedures.
  - g. Establish an effective system for maintenance of the physical plant and all equipment.
  - h. Design and put into effect a streamlined curriculum which emphasizes a consolidated, interdisciplinary approach to the practical problems of small farm development.
  - i. Implement student-operated (faculty-supervised) small-farm, R and D projects and production enterprises.
  - j. Increase faculty and student involvement in appropriate R and D activities in the labs and on and off the research farm.

Increased emphasis should be given to animal science, agricultural engineering, agriforestry, home science and fisheries.

#### Implications for IAAS and AID

Generally IAAS has the strengths and resources to perform some of the above tasks. Needed are planning and implementation strategies to fulfill the requirements of the tasks.

Necessary faculty and office space can be provided with minor remodeling. Program committees are beginning to function but more time and effort

should be given to their effectiveness. Minimal resources can likely be found by IAAS to improve student recreational services -- especially for women.

IAAS has a good start in designing a faculty reward system. Needed now is minimal advisory help and an implementation procedure. IAAS could profitably use technical assistance in streamlining its curriculum, getting its course syllabi in shape, establishing viable linkages with related agencies (in Nepal and abroad) and moving into needed research to increase agricultural output. Such help will be needed over the next several years and can be provided by the advisors which have been recommended.

3. Tasks for which help is needed from AID or other donors:
  - a. Complete physical facilities to afford full use of the research and demonstration farm (land leveling, irrigation, and fencing) and health protection for IAAS herds and flocks.
  - b. Develop a student/faculty commons/ supply store/book store/tea house convenient to the library.

#### Implications for IAAS and other donors

Completion and development of certain facilities are absolutely central if the IAAS farm is to serve its purposes in training and research. Next to the library, classrooms, and housing, it is the most important and necessary physical asset in the IAAS complex. Development work on the farm should proceed only in line with a master farm plan and will require considerable capital expenditure.

A student/faculty commons should be provided to facilitate informal discussions, provide a place for the sale of books, paper and other supplies, and serve as a recreation center.

IAAS may need strong representation about special problems to influence existing policies at the University level which are not appropriate in view of the unique needs and goals of IAAS. Clearly, certain policy

changes are essential if IAAS is to fulfill its role, purpose and objectives. For example, policies are needed as follows:

- a. IAAS should have more authority for determining and revising its own curriculum.
- b. IAAS should retain in a revolving fund, and be responsible and accountable for, potential income generated through R & D projects and farm production for continued improvement of the farm and for future R & D projects.
- c. JT/JTA training should become "non-academic", i.e., carry no university credit, as has been recommended.
- d. IAAS should have authority and control over admission criteria regarding quantity and quality of student intake.
- e. IAAS should be permitted to pay farm laborers the prevailing local wage rate so that crops (especially those in research plots) can be planted, cultivated and harvested on time.

It is the opinion of the Team that the successful implementation of the above recommendations will establish a first-rate institution of agricultural sciences at IAAS - the kind of institution that is needed to supply the quality human resources essential to the progress of Nepal's agriculture. The recommendations are designed to parallel the important targets and goals of the MUCIA work plan as revised as well as the goals expressed in the 1983 report of the RCHE.

#### IV. CONCLUSIONS, RECOMMENDATIONS AND DISCUSSION

This part of the report is divided into several sections, each relating to significant aspects of institutional life. Within each section the main conclusions reached are followed by specific recommendations. The discussion portion gives suggestions for implementing the recommendations.

##### A. Lack of Continuity Slowed the Pace

###### Conclusion:

1. The lack of continuity in leadership, policy, staff and technical advisors since 1972 has affected the pace and nature of institutional development. However, over the past three years several events have happened that have helped the situation immeasurably.

###### Recommendations:

1. Deans should be posted to IAAS for periods of at least five years, should reside on campus and TU should involve representatives from such related agencies as DOA and IAAS in the Dean-selection process.
2. Every effort should be made by GON, IAAS, AID and MUCIA to maintain policy directions for substantial periods of time in order to facilitate the institutional development process.

###### Discussion:

The rigours of directing the institutional development process, especially at a remote location, are recognized and appreciated. Each Dean, permanent or acting, has faced unique problems and made unique contributions. However, the Team feels that discontinuities in leadership have occurred. Short terms of duty, delays in posting, and permitting off-campus residence all contributed to leadership disruptions during the crucial formative years of IAAS.

However, the Team is unanimous in its belief that the current Campus Leadership is dealing with the problems, many of which were inherited, in an expeditious manner. The current management is good and this is extremely important as the faculty members learn

to become a functioning team. The current leadership should be supported through the crucial shaping and moulding process of the next three to five years.

It is suggested that the tenure of the Dean and the selection of long term advisors should be carefully matched. Without reasonable continuity in the Dean's post, it is difficult to select advisors who are compatible with the Dean's leadership style and perceptions and interpretations of institutional priorities.

The development in 1982 by MUCIA of a Work Plan statement and the subsequent operational supplement by the current team has overcome some of the earlier inconsistency in direction. While past complications and unavoidable happenings made getting started slow, the current team has picked up momentum.

Substantial disruption in the project was caused by lack of goal clarity and the enduring indecision about the appropriate training at the one-year JTA and I.Sc.Ag. levels, who should be responsible for that training, its curriculum design, and where it should be done. However, the 1983 decisions by the RCHE have provided several clear guidelines for IAAS; e.g. JT training is not to be considered as academic training leading directly to B.Sc. entrance; reiteration of the focus on general science and practical training at the certificate level; and the specific stipulation that B.Sc. will focus on the practical as well as the theoretical aspects of production. Eighteen dollar-funded degree participants returned to the faculty ranks since 1980. At present 20 are out on degree programs, 5 on non-degree programs and 2 on sabbatical, leaving 43 faculty to carry the full load. These discontinuities require careful planning to avoid loss of momentum and cohesiveness.

B. Meeting Manpower Needs

Conclusions:

1. Based on the evidence at hand, IAAS is capable of producing the numbers of trained manpower needed at the B.Sc. level, the I.Sc.Ag. level (usually hired for JT posts), and the special one-year training for JTAs. However, some special attention should be given to meeting the slightly higher, immediate, numerical needs for trained personnel in the Department of Livestock (DOL) as indicated by manpower studies and endorsed by the Royal Commission on Higher Education.
2. The issue of the quality of training at both the B.Sc. and the JT/JTA levels needs concerted attention.
3. In-service training needs of the more than 3,200 persons employed in agriculture are undoubtedly great from the standpoint of upgrading knowledge, skills, and understanding.

Recommendations:

1. IAAS should concentrate on improving the quality of B.Sc. and JT/JTA training even if it means decreasing the quantities trained in the short-run.
2. IAAS should carefully study the training needs at B.Sc. and JT/JTA levels from the perspectives of the Department of Agriculture and Livestock (subsequent reference to DOA means both DOA and DOL) and other users.
3. IAAS should begin to provide complementary support to DOA in the area of in-service training.

Discussion:

Secondary published data, the judgments of persons met and the observations and judgment of its members led the Team to emphasize the need to improve quality of training even if it might mean a short-term sacrifice in quantity. It is clear that the quantitative issue will need constant monitoring. There has been in the past few months some unemployment of an estimated 130 B.Sc. degree holders. It is suspected, however, that these individuals could be absorbed in vacant posts across the country.

On the quantitative side, an APROSC study showed that employed agriculturists in the public sector in 1980 included 773 higher level and 2,450 middle level trained manpower. The higher level consisted of 556 B.Sc., 202 M.Sc. Ag., and 15 Ph.D. graduates, the middle level consisted of 1,411 JTAs and 1,039 JTs. JTA and JT employment has expanded rapidly; from 860 to 2,540 between 1968-1980 with 976 added in the last 5 years of the period. Nevertheless, there was in 1980 a number of vacant posts; 134 for higher level and 249 for middle level manpower. Persons with training in livestock science were most needed as the vacancies were highest in that area.

The APROSC study concluded that at the end of the Sixth Plan (1985) there would be a net deficit of 1,065 persons at the middle level and a small surplus of 23 at the higher level. The livestock area would have the largest deficit due to "the ambitious expenditure plan in the Sixth Plan". A total deficit of 3,760 was projected by the study for 1990; 304 at the higher level and 1,073 at the middle level. The projection reflects the termination in 1986 of the PL 480 support of 50 persons sent to India each year for B.Sc. training.

The APROSC study rightly examined the issue of productivity of trained manpower. The absence of suitable standards against which to measure productivity was noted. Thus an indirect method was used by examining growth in agriculture during the Fifth Plan (1976-1980). Although the financial investment target was exceeded, only a 1.1 per cent growth was achieved as against a 3.5 per cent target for agriculture. It was concluded that since there was no manpower shortage, the basic issue was the ineffectiveness of the existing manpower.

Ineffectiveness or low productivity was linked to individual capabilities, attitudes toward work, and management and organization of work. It was noted that the JT training, because of the second

year concentration in basic sciences, was not much better in enhancing capabilities than the one-year "practical" JTA training. The relative immaturity of the JTAs and JTs suggested the minimum age level for recruiting trainees might be raised.

Attitudes were linked with such factors as salary, allowances, promotions, and job security. The study suggested that improvements in these areas are a nation-wide, not just a sectoral, issue if adverse effects on the total system are to be avoided. It was also noted that six out of 21 Ph.D.s have left the country for jobs elsewhere.

Weak management, in the face of complex and rapidly expanding development process, was seen as an important constraint on productivity. The study suggested that evidences of poor management included inappropriate deployment of manpower. There is one higher level person in Kathmandu for 1.3 JT/JTAs compared to a ratio of 1:5 for the rest of the country. In extension the ratio of higher level to lower level is 1:13 as against 1:3 in agriculture overall. Another example of ineffective management cited is expansion of service (establishing an increasing number of skeleton offices) but with operating expenses less than half the amount of the salary item. For comparison the study cited an FAO rough guideline that operational costs should be at least equal to the Budget for staff salaries. The lack of job descriptions and centralization of authority were also given as evidences of poor management.

An FAO/WB report showed that the 1981 supply of agricultural manpower was 770 at the higher level and 2,450 at the middle level. The conclusions regarding projected needs by 1990 were for 670 at the higher level and 3,790 at the middle level, with an emphasis on the provisional nature of the figures. The report also noted that because of institutional and budgetary limitations, the quantity of staff to be trained should be pitched far below the numbers estimated to be needed.

Given the above analysis the Team perceived that IAAS should focus on quality. Thus much of what follows in subsequent sections of Part IV emphasizes the Team's suggestions in this area. To help the IAAS faculty in this process, their involvement in supportive in-service training for DOA existing cadres is recommended. This would mean establishing working relationships with these agencies that permits the utilization of IAAS staff from time to time in planning, conducting and evaluating specific training activities on a joint basis with DOA staff. The idea is to learn by doing; IAAS staff can learn about the process from the existing DOA training center staff and can contribute their own subject matter knowledge.

IAAS is the major supplier of trained agricultural manpower. It needs to have a more adequate understanding of the needs of the user agencies which employ its products. It is strongly urged, therefore, that AID consider funding a study that would assess current needs in key agencies. A qualified entity should conduct the study, but it should be designed not just to obtain relevant data, but also to provide "on-the-job training" for key individuals from IAAS and the user agencies in how to approach such joint examination of needs. The study could focus on job descriptions and their improvement, on specific subject matter needs based on current research findings in such activities as ICP, and other commodity or functional areas. Similarly the identification of specific skills that are needed would be important. Clearly the study or studies should look at both the B.Sc. and JT/JTA employment levels.

C. Strengthening Working Relationships

Conclusions:

1. Given the scarce resource position of GON, the establishment of complementary working relationships between IAAS and TU as well as other GON agencies is crucial to the further development of IAAS as the major institution of higher education in agriculture.

2. IAAS and TU have not yet established the kind of working relationships with the MOA and its agencies that the complementarity between their functions suggests should exist.
3. IAAS is not sufficiently drawing upon the accumulating experience of other GON entities related to agriculture and vice versa.

Recommendations:

1. TU and IAAS and the MOA should develop a memorandum of understanding to guide the formation of policy and clarify implementation procedures for establishing active relationships.
2. IAAS should develop a strategy to enhance the establishment of viable, working relationships with TU and other agencies in GON like DOA, MOF, etc.
3. Each department in IAAS should identify the agencies which it should be most closely associated with, the purpose(s) of the association and how best to establish linkages.
4. Arrangements should be made from time to time for a temporary or short-term exchange of personnel between IAAS and a cooperating agency.
5. IAAS should enter into consultancy arrangements to provide needed services in the agricultural sector.

Discussion:

The importance of the agriculture sector to Nepal's economy and people, and the simultaneous weakening and stagnation of agricultural productivity have created great pressure on GON resources. In addition, as their own resources tighten, donors are more skeptical and cautious; more attention is given to avoiding duplication and lavish project expenditures. In this context consideration by IAAS and its many supporters of ways to develop complementarities seems especially prudent.

The Team perceived that substantial cooperation and coordination have had to and must exist between TU, IAAS and MOA. Deans and some faculty in the past have been deputed from DOA. IAAS and

its branch campuses have had to understand the functional role of the one-year certificate and I.Sc.Ag. leavers most of whom take jobs as JTAs and JTs. The Team is also cognizant of TU's task of administering IAAS in a fashion that does not create disharmony within its total family of institutes. Nevertheless, there appear to be special problems not readily solved by existing policies and procedures established by TU. For example, farm laborers in the Rampur area typically get higher wages during normal cropping season operations than TU policies permit; IAAS cannot compete. The large physical plant requires careful stewardship. A person capable of developing a maintenance plan and then implementing it would leave the Dean or faculty member free to do other things.

IAAS, as the premier agricultural institution, is expected to provide support to and serve the manpower needs of the MOA and related agricultural agencies. IAAS faculty must be given opportunities, therefore, to make frequent contact with these agencies. The DOA has about 50 research centers staffed with trained persons, many having M.Sc. and Ph.D. degrees, who have linkages with one another and occasionally with major centers like CIMMYT and IRRI. If necessary a special memorandum of understanding with the DOA and the Deputy Director General of Research could help establish working relationships between IAAS and DOA staff. Collaborative research projects, improved flows of Nepali research information for preparing instructional materials and for the library, a better opportunity for IAAS staff to maintain knowledge of research literature, and staff exchanges or "adjunct lectureships and adjunct researcherships" could result.

The special problems created by the presence of IAAS in the Rampur community suggests the need for IAAS, TU and the MOE to consider special relationships with the Ministry of Home Affairs and Panchayat. Problems of security, indiscriminate access across IAAS property, disease contamination and encroachment are sensitive issues needing judicious handling. Another special

relationship related to staff tenure is the presence or absence of adequate educational opportunities in the Rampur area for staff children.

It is clear that IAAS can benefit and should develop a variety of active working relationships. Some will require special attention because of old or new conflicts. Some may require judicious handling by TU and IAAS since established policies may need altering so as not to stifle legitimate functions of IAAS.

D. Improving Instructional Capabilities

Conclusion:

1. Teaching faculty need to have more opportunities to learn and practice the use of appropriate instructional methods and techniques to achieve various learning objectives.

Recommendations:

1. A long-term adviser and/or several short term ones should be engaged to conduct seminars and workshops designed to assist faculty in developing skill in using the most effective methods and techniques available in achieving different instructional objectives in the cognitive, affective and psycho-motor domains. Such methods and techniques also should be used in consideration of student differences in learning style, past experiences, learning rates and motivation.
2. At least one faculty member at the M.S. level should be sent to an appropriate university (e.g., Wisconsin, North Carolina State at Raleigh, the University of British Columbia, or Indiana University) to pursue doctoral level work in the facilitation of adult learning (emphasis-higher education). This person should concentrate his dissertation research on problems and needs regarding faculty development in instructional technology at IAAS and be assigned substantial responsibilities for on-going faculty development in this area upon his return.
3. Since nearly all IAAS graduates will have responsibilities relating to training, disseminating information and helping others change their behavior in desired ways, this person (item 2 above) should also be responsible for monitoring curriculum, teaching activities and student development

so that all IAAS graduates will be competent in the roles of trainers, change agents and facilitators of learning.

Discussion:

If the goals of education at IAAS go beyond students soaking up and being able to pour out "factual" information (which will likely soon be obsolete) then instructional practices must be changed. If, on the other hand, educational goals include students who are prepared to challenge conventional wisdom, help people modify attitudes and change farming practices or adopt innovations, identify and analyze problems or engage in policy analysis and development, achieve group consensus, or relate new ideas to the accumulated experiences of farmers (or co-workers), then instructional practices at IAAS will have to be much more dynamic and varied than at present.

The sciences of instructional design and adult learning methodology have developed a significant body of theory, knowledge and research over the past two decades. It is generally known that the lecture technique is the least effective and efficient technique (among dozens that are available) in achieving the various goals and objectives of higher education. This is especially true in the development of the skills of synthesis and analysis, creative thinking, problem solving and inquiry and in the formation of critical professional commitments, values and attitudes. Faculty should not limit their thinking to hardware and visuals in developing appropriate techniques; others include role playing, brainstorming, small group exercises and discussions, simulation, and games.

Unfortunately most professors have not been exposed to such bodies of knowledge and techniques (nor have teachers of children and youth). Consequently, university graduates through the Ph.D. level tend to follow the only role models they had when given instructional responsibilities and their role models tend to follow only the lecture format which was followed by those who preceded them.

Our observations and discussions with students and faculty alike confirmed that the lecture format is for all practical purposes the main format being employed at IAAS, even in the laboratories.

Training in learning methodologies and instructional design can be found in the departments of adult, continuing or extension education or departments of lifelong learning or andragogy--sometimes located in colleges of agriculture or more often in colleges of education. Such departments have a recent history but presently exist in dozens of universities in North America and Europe. A few have been developed recently in South America. Some of those of international stature were previously identified. There are others of equal quality. Although we do not know why IAAS faculty on out-of-country graduate programs were not required to develop at least minimal competencies in the design and implementation of adult learning activities, it is important that they now be offered such training through in-service development as soon as possible. This is most important. The "trainer of Trainers" USDA short course scheduled for IAAS in 1983 or 1984 will, we hope, provide a needed start in filling this crucial gap.

In view of GON's continued emphasis on agriculture it is fitting that IAAS take the lead in this important area of instructional techniques. However, TU may very well want to examine the possibility of simultaneously building capacity within the Institute of Education to address these teaching skill needs on a broader basis.

E. Building More Professionalism for Teaching, Research and Services

Conclusions:

1. There appeared to be a tendency for the faculty, because of the University system, to see themselves more as teachers than as professionals with multiple role responsibilities which include research and service.
2. When one begins employment in IAAS there is no clearly defined expectation as to what the role or job of the faculty member is supposed to be. (Other than that of a teacher, reader, lecturer, etc.)

3. Most faculty have not had the opportunity to work with role models during their graduate program in ways which could help them develop needed professional attitudes.
4. The existing reward system (IAAS/TU) does not sufficiently reinforce or contribute to the non-teaching or R and D and service requirements of the organization.

Recommendations:

1. TU/IAAS policies should be examined and modified as needed so that the role expectations are clearly defined to include the 3 functions of teaching, research and services.
2. Most staff development activities (in and out-of-country) should incorporate elements to help faculty deepen their understanding of their professional responsibilities in fulfilling the interrelated functions of teaching, research and service.
3. All long and short-term advisors should deliberately attempt to help faculty in the development of professional attitudes by sharing experiences and by example.
4. IAAS should implement a faculty work load assignment, evaluation scheme and follow-up reward system which encourages productivity and quality in the areas of teaching, research and service. Opportunities should be provided to the faculty for year round employment so that research projects will not be interrupted.

Discussion:

In attempting to fulfill its responsibilities as the agricultural institution of higher education in Nepal, IAAS must engage in the interrelated functions of teaching, research, and service. Teaching is defined as the instruction provided to students in class and in practicals. Research is defined broadly to include not only experimental, applied, descriptive, and survey research, but also other creative activities such as the preparation of new instructional materials, writing articles, developing literature reviews, etc. Service is defined as service on committees advising or consulting with other agencies, conducting in-service training for selected groups, conducting method or result demonstrations for farmers, etc.

IAAS and each of its academic departments should clearly define their mission and activities in teaching, research and service. The sum of all Departmental efforts should reflect and be consistent with the overall goals and mission of IAAS.

Data obtained from the faculty showed that of 42 staff available, 29 of them are spending 10 per cent or less of their time on research; the rest spend between 11 and 40 per cent. Similarly 26 faculty spent 60 per cent or more of their time in teaching and preparing teaching materials. At the same time 8 faculty indicated they spent no time in preparing teaching materials while 21 indicated they spent as much time or more time in preparing teaching materials as in teaching. The table below gives the average time spent by all faculty in the five tasks indicated. (Caution: the data were obtained by asking each faculty member present to estimate the amount of time spent in each category; thus the standard is very subjective and the data are indicative only.)

<u>Task</u>	<u>Average % Time Spent</u>
Teaching	41.4
Preparation of teaching materials	24.2
Other assignments & responsibilities	23.8
Research	9.9
Extension	0.7

It should also be noted that the present three Ph.D. holders\* estimated that they spend about 62 per cent of their time on other assignments on the average.

Over the long term it will be self-defeating to give extra pay to faculty for their work outside of teaching which is their expectation at present. On the other hand, the development of clearly defined multi-role expectations, a true sense of professionalism among staff, an assignment system in which all faculty have a full-time equitable load, and a reward system which supports this will pay large dividends in productivity, in quality, and in morale.

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\* Assigned as assistant deans and a department chairman.

The Dean and key faculty should try to find ways to develop recognition systems for various other tasks similar to the annual teaching award. Perhaps procedures could be developed for a special monetary award for the best research project, or the best use of research results in teaching material. The research and service of faculty should find its way into their teaching; their teaching activities should serve as a catalyst to stimulate new ideas for research and service.

For the most part, IAAS faculty have not been exposed to the non-teaching roles of their graduate professors. Consequently, they have not been able, perhaps to incorporate the R and D and service functions into their concept of self, or their professional role. When first employed by IAAS, faculty should have a clear understanding that their work will consist of some combination of teaching, research and service activities and that the percentage of their time assigned to each function will vary from time to time.

F. Enhancing Staff Development

Conclusions:

1. There is a need among faculty members for greater sharing of knowledge gained through training and experience abroad.
2. Little or no training has been afforded to the basic science faculty.
3. Too little training has been provided in the area of teaching effectiveness and designing applied research.
4. There has been little or no training for the administrative staff in management and administration subjects related to their work.

Recommendations:

1. Training abroad must be based on forward planning and selected for relevance to the activities and programs at IAAS.

2. Participants of study tours and short course training programs must give a seminar regarding their experiences and knowledge gained.
3. Participants of higher education must give at least one seminar on their research topic when they return.
4. The special training needs of the Basic Science faculty should be identified, prioritized and acted on.
5. More emphasis should be given to perfecting skills in instruction and applied research.
6. Members of the administrative staff should be afforded short-term training as needed in the areas of management of higher education, supervision, human relations, conflict resolution, team-building, program planning and budgeting and fiscal control. Most of this training can be accomplished in-house with short-term advisors. In some instances short-term training abroad may be desirable.

Discussion:

A number of faculty members have been trained abroad and in-country; through higher education, short course training and study tours. They are the assets of IAAS; knowledge and experience gained needs to be shared with fellow faculty instead of making it only personal knowledge gained. At present the "end of tour" report virtually ends the short-course training and study tours although the Institute expects sharing of gained knowledge from the trainee. Preparation of voluminous reports and getting them printed seems to be getting priority over sharing and implementing the gained knowledge; this is true with all people involved in the development of IAAS.

On certain occasions it is desirable that selected faculty be sent abroad for short-term or long-term training. Criteria for selection of participants should be clearly formulated and followed. The selection process should be administered jointly by AID and officials of IAAS. Selection should consider whether a) the training is relevant to the work and responsibilities of the faculty member; and b) the training is the most logical and effective means among other available alternatives for obtaining desired skills and competencies.

Prior to training, the participant should develop with advisor's assistance a plan of study which will specify why the training is important, and how it will be used upon return. A condition of training abroad should also be that the participant implement a seminar and file an "end of tour" report so that new ideas and information can be shared with the total faculty.

The following table shows the degree status of IAAS faculty as of September 1984. Sixty-one out of 70 faculty have or will receive graduate degrees.

Degree Status of Faculty by Department at IAAS, September 1984

<u>Department</u>	<u>Present degree status</u>							<u>No.* presently on study-leave for:</u>		
	<u>Ph.D.</u>	<u>M.Sc.</u>	<u>M.A.</u>	<u>B.Sc.</u>	<u>B.A.</u>	<u>I.Sc.Ag.</u>	<u>BVSC</u>	<u>Ph.D.</u>	<u>M.Sc.</u>	<u>non-degree</u>
Agronomy	-	9	-	3	-	1	-	5	2	1
Animal Science	-	7	-	2	-	1	2	1	3	-
Basic Science & Humanities	-	9	-	1	1	-	-	1	-	1
Horticulture	-	6	-	2	-	1	-	1	1	-
Plant protection	1	3	-	2	-	-	-	-	2	2
Rural Development	1	10	-	-	-	-	-	3	-	1
Soil Science	1	6	-	1	-	-	-	1	1	-
Total: (70)	3	50	1	10	1	3	2	12	8	5
Total after return from study leaves:	15	47	1	2	1	3	1			

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 These are from those listed in "present degree status".

About  $\frac{1}{2}$  of the faculty have had out-of-country professional development exposure; i.e. study tour, conference, workshop, short course. In addition, approximately 30 persons (including 5-6 from National Maize Development Farm) participated in the on-campus, 6-week course on statistics conducted by a short term consultant.

G. Improving the use of Technical Advisors

Conclusions:

1. IAAS needs the continued assistance of technical advisors (both long and short term).
2. To solve the immediate need for IAAS to train effectively the manpower needed by DOA requires a shift in priorities in technical assistance compared with the past.
3. Lack of continuity in long-term personnel, in their philosophy and in the directions they have taken has contributed to some of the uncertainties at IAAS.
4. In the past, short term advisors have not been used in training IAAS faculty in terms of their (a) discovering specific needs of problems which faculty have as a basis for designing instruction, and (b) themselves using the range of instructional styles and techniques which IAAS faculty should use when working with their students.
5. The practice of clustering advisors close together makes it difficult for them to establish the non-formal relationships with IAAS faculty and staff which both groups desire.

Recommendations:

1. Long-term advisors should be assigned for the duration of an AID project. If changes have to be made, the new person (s) should have a philosophy regarding his/her role and function which is similar to that of the person being replaced. Also there should be an overlap of one or two months to insure continuity of works in progress.
2. Long-term advisors are needed in 2 or 3 areas:

- a. A specialist in organization development and management who would function as an associate of the Dean. Ideally this person would have a background in agricultural extension, organizational development and practical (and successful) experience in managing a technical institute or small agricultural college and relevant international experience. An important function of this advisor would be to identify and make arrangements for specific management training needed by the administrative staff.
- b. A specialist in staff development who would work with an assistant dean in charge of this area, the dean, and the other long-term advisors in developing and implementing a variety of needed faculty development activities. This should include the area of teaching and also the design and conducting of low-budget, field research and instructional materials development. Ideally this person would have experience in field level agriculture extension, training in adult/higher education and instructional design, and successful international experience in staff development projects.
- c. A specialist in research farm management who would work with an IAAS counterpart. These two people working together would have the responsibility of getting the research farm operational. That is:
  - i. develop and implement an effective system for maintenance and supplies.
  - ii. maintain herds and flocks in good health.
  - iii. put all land into production as specified in farm plan.
  - iv. work with IAAS researchers in meeting their specifications in conducting crop and animal research.
  - v. efficiently harvest and market all farm products.
  - vi. provide on-going skill training for all farm workers.

The research farm manager specialist should have farm management experience-preferably on a research and demonstration farm, and an academic background in some aspect of agriculture production.

3. Short-term consultants should be selected to help resolve specific problems-e.g., improving the qualitative aspects of the research labs, and developing research strengths in selected areas. In addition to having relevant experience and credentials short-term consultants should have preparation and successful experience as adult non-formal educators.

Plans should be made for short term advisors to have a continuing relationship with IAAS (return visits, etc.) until the joint goals with their counterparts have been accomplished or the problem solved. It would be desirable if each academic department had access to at least one short-term advisor per year for the next 4-5 years.

4. All advisors should perform the multiple roles of staff developers and co-learners with staff in solving problems or in getting things done as well as being resource persons. They should also occasionally lead special interest seminars for IAAS students and faculty.
5. Living quarters for advisors should be dispersed throughout IAAS faculty housing. This would help remove the perception and feeling of isolation eliminate the "little America" syndrome (perceived undesirable by Nepalese and Americans alike) and encourage advisor-faculty-staff interaction.

#### Discussion:

Experiences at IAAS and elsewhere reveal that frequent changes in leadership, personality, vision, and management styles are counter-productive to institutional development. Long-term advisors should be long term advisors--i.e., on board for the duration of a technical assistance contract. To accomplish their objectives nearly all advisors must play a major role as trainers. Much of this "training" should be by example and by learning with one's co-workers. Some of the MUCIA advisors exemplify this concept and can be used as models. Highly qualified senior professors or mid-career younger people who desire several years of international experience can be identified for such positions. Too frequently advisors are selected primarily on the criteria of having a Ph.D., being available, and having international experience. To accomplish the objectives of development, technical advisors must play a major role as trainers. Much

of this training should be by example and by learning with one's co-workers. Such "training" is both an art and science and advisors need to have the sensitivities to know when to remain in the background as well as when to jump in and do things with people. Expert advisors do both of these things at the right time.

Technical assistance teams should be provided with adequate administrative support so that their time can be better used in the areas of planning, staff development, program implementation and assessing progress and results. A major problem encountered by advisory team members and particularly by the Chief of Party is that of drowning in the sea of minutia relating to processing paper for acquisitions, payments, checking out equipment/supplies etc.

#### H. Improving the Curriculum

##### Conclusions:

1. The curriculum should be strengthened by providing certain additional course (or by incorporating additional content into existing ones) which are then supported by the addition of necessary human and physical resources.
2. Improvements should be made in existing course outlines and syllabi. Fragmented courses should be synthesized into larger ones thus resulting in fewer total courses.
3. The content in the basic science curriculum should be reformulated so that it is more closely connected to key concepts in the agricultural curriculum.
4. Practicals and work experience activities should be strengthened and more closely integrated with the curriculum.
5. Certain revision and consolidation is needed so that course content and learning activities are consistent with the now-in-effect annual system.

##### Recommendations:

1. Courses or subject matter should be added in such areas as farming systems, agricultural engineering, marketing, farm

management, designing educational programs for farmers, agri-forestry, conservation and renewal of natural resources, fisheries, home sciences, entrepreneurship and continuing one's own professional education. Supporting resources (faculty and materials) will need to be provided for these additional areas - at least one agricultural engineer and one specialist in agriforestry/conservation. The other areas might be developed with the help of existing staff.

2. Course outlines and syllabi should be improved by providing greater detail and specificity as follows:
  - a. Important student learning objectives should be clearly specified. Activities and projects to achieve the objectives and procedures for evaluating the extent objectives have been achieved should also be indicated.
  - b. Key concepts, principles, study questions and sources of theoretical and practical knowledge should be given for each objective including references to pertinent library materials.
  - c. Each course outline and syllabus should incorporate lab activities if any as appropriate as well as practical and field experience activities.
  - d. Each course outline and syllabus should contain an alphabetical list of references including library call numbers.
3. The curriculum in Basic Sciences should be made more functional so that key concepts, principles, ideas, etc. to be learned are learned in an appropriate agricultural context - e.g., concepts and operations in mathematics should be learned in the context of applied functions in agriculture, ratios of trace minerals needed for healthy livestock, increased yield per ha. needed in maize to break even with various increases in fertilizer, etc.
4. Practicals and work experience activities should be directly related to both course content and actual farming conditions or agricultural problems in Nepal. They should be designed as self-directed/faculty-supervised learning projects with clearly specified objectives, activities and outcomes to be achieved.
5. Curriculum (courses, practicals, work experiences) should be revised and reformulated so that it is logically congruent with the time period of the now-15-effect annual system. By consolidating closely related and interrelated content of selected courses, normal student load should be reduced to 15-18 classroom hours per week plus time for labs and practicals.

6. With a ratio of six or seven students per faculty, the curriculum teaching load and close scheduling should be examined and reorganized to bring class size down to 30 or fewer students.

Discussions:

Those bodies of knowledge which are highly important to improving agriculture in Nepal or in the training of agriculturists should be part of the IAAS curriculum. The existing curriculum is built around a majority of these areas of knowledge. There are also some notable deficiencies which should be remedied as soon as possible. Some training in agricultural engineering is essential. This is especially important in the areas of animal traction, bio-gas and similar appropriate technologies, irrigation and drainage, soil and water conservation, and land reclamation. In addition, an agricultural engineer is urgently needed for research in the above areas and as a consultant for continued development of IAAS farms.

The field of agricultural economics needs strengthening in regard to farm management and marketing. Developments in these areas have significant implications for small-scale farming.

Nearly all mid-hill and hill farmers can profitably use help in integrating sound forestry and conservation practices into their operations. Therefore it is desirable that IAAS graduates have a general knowledge of agriforestry and conservation in their backgrounds. Similarly the introduction of fisheries and water fowl grown in combination have potentials for raising the protein levels in Nepali diets and providing additional revenue to small farmers. These emerging technologies should also be incorporated into the curriculum-- perhaps in a course on integrated, small-scale farming. Selected aspects of home science dealing with food preservation, nutrition, kitchen gardens, pure water supply etc. should be introduced into the curriculum. Care should be taken

in this instance not to create a special home science program just for women since it is important that both women and men work with all aspects of the farm household.

Since a majority of agriculturists in Nepal have some responsibilities for either training, supervision of personnel or the education of farmers directly, it is imperative that the extension education phase of the curriculum be improved in the areas of adult, non-formal education.

It is a fact that much of the technical and some of the theoretical knowledge which IAAS students will learn will be obsolete within a few years after their graduation. In addition the agriproblems, needs, and situations in Nepal will continue to change. Consequently, it is necessary that all agriculturists continue their own professional education throughout their careers if they are to keep abreast of new developments and changing conditions. Skills of lifelong learning (how-what-where-when) have to be learned. These skills are not likely to be developed unless they are injected into various aspects of the curriculum as a continuing process throughout the B.Sc. program.

There are now and will increasingly in the future be opportunities for development of the private sector in farming and agribusiness in Nepal. To encourage students to play leadership and productive roles in this sector, they should be introduced to the ideas of entrepreneurship in regard to farming, farm management, marketing, processing, and providing needed agricultural inputs. This area might be worked in to the agricultural economics phase of the curriculum.

To facilitate learning at IAAS it is imperative that the scientific principles of instructional design and program development be utilized in developing the curriculum. All aspects of the curriculum should continually build bridges between theory and practice. All planned learning activities should be clearly related to predetermined needs, goals and objectives--i.e., lectures, seminars, discussions, field trips, student extension work, use of audio-visual materials, "hands on" experiences, writing of papers, etc. Furthermore students should receive continuing feedback as to the extent that they are making progress in achieving their learning objectives. Most faculty have not been trained to develop curricula in this manner. Additional in-service training is needed to sharpen their skills in this regard.

Clearly at present there are too many narrowly-prescribed courses being offered at IAAS. This is especially true in view of the constraints imposed by the annual system. Too much compartmentalization of knowledge and fractionation of fields of study (i.e. plant and soil sciences into crops, horticulture, crop protection, soil science etc.) at IAAS is counterproductive in that students will never see the forest for the trees. It is more important that students early in their careers learn general principles and the interdependences of closely allied areas of knowledge than about highly specialized quanta of information. This sort of specialization should be reserved for graduate studies.

Finally, it should be remembered that our major constant is change. This means that the processes of curriculum development should be viewed as a continuing process. Just as no faculty member or student should be the same from one term to the next, no course outline or syllabus should be exactly the same either.

## I. Upgrading Library Materials

### Conclusions:

1. The physical facilities of the library are most adequate. It is the best building on the main campus. Its holdings are relatively large and increasing and the procedures for classification, shelving, and check out are appropriate. Its development of a documentation center is an extremely valuable and useful idea.
2. Numerous materials now in the collection are generally out-dated and are not sufficiently relevant to the present curriculum. Instructional materials prepared by faculty in terms of revised text materials pertinent to Nepal conditions, course syllabi and outlines or faculty papers and reports are conspicuous by their absence. Texts and resource materials needed in quantity for courses taught are in short supply. The facility could be more highly utilized by faculty and students.

### Recommendation:

1. Nearly all faculty should be assigned a reasonable portion of their time to reformulate and synthesize selected bodies of theoretical, research-based, and practical knowledge so that the relevancy of such knowledge is defined for agricultural problems and development in Nepal. Time and materials required for this effort should be a high priority for the immediate future.

### Discussion:

The source of such information resides in contemporary journals, reference works in English, handout materials and class notes obtained during out-of-country study and various research publications and reports. The recommendation is not to simply translate materials from English to Nepali. Rather it is intended that a person would begin with a specific agricultural problem, condition or need; then organize and weave in pertinent areas of the literature which have practical and/or theoretical implications regarding the topic being developed. Qualified students ought also to be invited to participate in this important material resource development activity as a part of

their learning experience. In time such materials would be a ready source of information for a variety of problem areas serving the needs of instruction as well as research and extension.

Formats for such materials could be varied according to purpose, interests and need; e.g., programmed instructional materials, analytic reviews of research applied to given problems, innovative practices in production or marketing, integrated approaches to small scale farming, bibliographic essays on particular topics, papers to identify practical research questions, etc. At some future time these original manuscripts might be held on microfiche. Selected manuscripts might well be published by IAAS.

The library as well as respective academic departments should maintain a vertical file of all course outlines and syllabi produced. In addition, the library should establish in its documents section a copy of each document (paper, report, review, proposal, evaluation, etc.) produced by IAAS and MUCIA and plan for the acquisition of similar documents in the future. Additional funds are needed to bring the library up to functional standards in developing and maintaining its collection of references and text materials reflecting the various departments in IAAS. Selection of such materials should be made via collaborative decisions among appropriate MUCIA advisors and faculty.

A small but timely collection of materials should be acquired relative to the development and operation of institutions of higher education, practical aspects of instructional technology and the facilitation of adult learning. The library is under-utilized by students and faculty as well. Pertinent materials relating to courses are not there, references to the literature in course syllabi are insufficient and sometimes irrelevant, and students are infrequently required to use the library as a result of course :

or practical assignments. Perhaps faculty do not make use of the library because most of them perceive their role as teachers (givers of information) who transmit to their students what has been transmitted to them. This constricted view of their role is self-defeating and hopefully can be changed by means of faculty development activities, clearly defined responsibilities in the preparation of instructional materials and research, and corresponding changes in the evaluation and reward system.

The long-and/or short-term advisors recommended for assistance in enhancing faculty teaching competencies should also be responsible for helping faculty in the development of instructional materials, use of the library and in the selection of needed acquisitions. Utilization of the library would be enhanced if a student-faculty commons/supply store/book store/teashop were conveniently located nearby. Such a facility is high on the list of felt needs expressed by students.

J. Gaining Momentum in Relevant Research

Conclusions:

1. It was not possible to determine if an overall direction of research has been established. Resource constraints, the need for recently returned faculty to gain research experience under their own conditions, and the constant need to help students gain practical knowledge suggest the main research direction for the immediate future should be on low-cost, applied field research.
2. TU and IAAS need to develop a system for judicious allocation of research funds which will permit a significant growth in research activity among IAAS faculty after the current MUCIA funds are exhausted.
3. Although a research committee gives general guidance and reviews all research proposals, other organizational and supportive elements are needed to encourage young and energetic staff to do research.

4. Interdisciplinary research among the staff was not evident.
5. More collaborative research with technical staff and facilities of DOA is needed.
6. The nucleus collection of Nepalese agricultural research reports needs strengthening.

Recommendations:

1. The Dean and the Research Committee should make recommendations to the Faculty Board and/or TU officials regarding research needs. These should include: a) the rationale for low cost, applied field research; b) the additional funds needed for research showing how results will be relevant and how they will be used in teaching; and c) how collaborative linkages are being strengthened through research.
2. The Research Committee should continue to strengthen its process of setting research priorities and guidelines so that small-farmer relevance, low-cost, the contribution to instruction, and practical experience for students are major criteria.
3. A small, but well-thought-out and designed plan for collaborative research for 2 or 3 faculty members should be prepared each year for the subsequent year and used to develop stronger linkages with other agencies.
4. IAAS, perhaps through the Dean or Faculty Board, should make arrangements so that IAAS can be a primary research contractor to help other agencies.
5. When possible and appropriate, long-and short-term advisors should collaborate with faculty members on research.
6. The documentation system should be strengthened so that all research reports and journal articles in Nepal become part of the library collection.
7. IAAS agricultural staff persons should visit selected farmers to gain an insight into their production problems so that the most important ones can be selected for research.
8. Farm-site research should be employed when problems cannot be solved on the IAAS research farm. For example in order to validate soil fertility recommendations it will be necessary to have farm-site research.

Discussion:

IAAS was created primarily for teaching applied agriculture in Nepal. Research is necessary to gain information and knowledge that can be used to improve and update teaching. The world's agricultural research can be helpful only in part. Nepal's unique natural resources and climate dictate the degree to which borrowed agricultural information can be applied. On-site research for example helps to obtain optimum crop yields and quality goals, maximum land utilization, and preferred development of livestock production systems giving optimum yields of milk and meat.

A systematic review of Nepalese agricultural research reports and journal articles should precede field research. One benefit of literature research is the base it provides for determining some of the most important research needs. It also avoids unnecessary duplication where replication is not the issue. Another benefit is that much of the information gained can be synthesized and articulated for inclusion in current instructional materials. Faculty should develop text materials for their students that reformulates the best agriculture information available in ways that address Nepali reality.

The IAAS research and demonstration farm should become a major facility for applied research. Well-designed research plots will first serve a demonstration purpose for other faculty and students and increasingly for farmers. However, research farm results cannot substitute for trials on farmer's field under his conditions. The ultimate test of any research finding is the extent to which farmers can duplicate the results. Part of applied research practice is to visit farmers frequently to gain clear insights into their production problems and to determine which ones seem to be most important.

IAAS apparently has a start, at least, in research activities as a result of MUCIA funds; 22 research projects have been approved by the Research Committee in the last two years. All of these proposals dealt with pertinent issues. However, no completed reports were made available to the Team, several of the proposals had been dropped, and the status of others was not learned. It is noted that about 20 or so faculty have returned from abroad since 1980, but other data also revealed that by their own estimation 29 of 43 faculty spend 10 per cent or less of their time on research; only 3 persons estimated 35 to 40 per cent. At the same time the Team learned that for the 1983-84 fiscal year TU has allocated only 16 thousand rupees (slightly more than \$1000) to IAAS for research purposes. This is only 0.3 per cent of the net total expenditure of IAAS.

The Team was surprised to find such a limited effort and resource allocation for research, given the facilities and number of staff.

The Rural Development department does have an active service learning program in the nearby farming community. A variety of services have been extended to nearby farmers, especially in the area of rice diseases, which has engaged some of the staff, at least, in looking at applied problems. The Team agrees, however, with the general purpose of the "IAAS Extension Program"; primarily it is a valuable learning tool for faculty and students rather than an attempt to duplicate the DOA extension services. The surrounding rural community should be utilized as microcosm, not only for learning how to extend, but also as a basis for research into the non-production aspects of rural life. Students who will ultimately be working as agriculturists can become exposed to research into extension methods, needs and process. The community can even serve as a place for the spouses of faculty members and AID advisors to work as volunteers in variety of community or extension programs.

K. Activating the Research and Demonstration Farm

Conclusions:

1. The research and demonstration farm has a good start on needed facilities: e.g., staff housing, threshing and grain storage facility, animal buildings, implement sheds, etc.
2. At present the farm is underdeveloped and consequently underutilized.
3. The farm is being used more by the public than by IAAS.

Recommendations:

1. GON, AID, TU, IAAS and MUCIA should give high priority to getting the research farm operational.
2. Adequate management and supportive training should be provided to operate and maintain the farm efficiently (see section of this report on technical advisors).
3. The farm should be fenced, drained, irrigated and fully-utilized for research and training; this will discourage public abuse of the facilities.
4. All IAAS animals should be health tested, treated, cured, or remove before any new animals are brought to the farm.
5. A 1 or 2 ha. plot near the highway should be used to create a model small farm utilizing appropriate technology that is within the reach of most small farmers.
6. Faculty research with plants, crops, animals, soils, fertility, irrigation etc. should receive first priority for land use.
7. IAAS students should make more use of all plots as part of practical experiences under faculty supervision and should receive appropriate credit and perhaps the returns from the plots.
8. All land or animals not in use for student training or research should be maintained in production, exemplifying good agricultural practices; e.g., land suitable for human food production used for that purpose, and best suited for the production of forage used accordingly, etc.
9. Income from farm production should be put in a revolving fund.

Discussion :

The research farm is desirable for an agricultural university in order to: a) provide practical learning experiences for students and b) provide a place for controlled experimentation by faculty researches.

IAAS has approximately 400 acres of farm land surrounding the campus. In addition it has a buffalo and cattle herd in the making, a few chickens and an out-dated research farm plan. It also has numerous barns, sheds, staff housing and storage buildings, a new fish pond and some tillage equipment. The farm also has a staff of 3 supervisor/managers and some laborers.

At present the farm is mostly used by the public for grass cutting, pasture, and as a place to get their cows bred by IAAS sires. In the near future the farm should be used for student training and faculty R and D projects. In the meantime it should be put into operating condition and farmed. This will require complete fencing of the perimeter, some drainage, some land leveling and "cleaning up" the farm animals; i.e., disease, parasites, etc. Land that is not in research or result demonstration plots may be used for commercial production. It is suggested that revenue from the farm be placed in a revolving fund to support improvements, production and research.

A complex management operation will be required in the future as research, demonstrations, and field production activities increase. Research by faculty members will have specific requirements relative to kind of land, plot size, fertility level, planting dates, insecticides, fungicides, weed control, irrigation and other requirements. The experimental farm manager must have an appreciation of research, the ability to organize and be able to handle researchers

as well as his workers. As the operation is greatly different than production agriculture, it would be desirable that the manager have training in the management and care of an experiment farm.

In the area of animal science, it is common among universities that one faculty member is made responsible for the management plan of each livestock unit; cattle, buffaloes, sheep, goats, swine, poultry. It is suggested that this pattern be followed at IAAS. In the area of crop science, similar division could be made for various cropping patterns. Management plans for each of the livestock units should be developed so that they will be suitable for research.

L. Augmenting Housing Facilities

Conclusion:

1. Additional faculty housing will become an extremely important issue as the 20 persons now on degree programs all return to make a total of 70 faculty.
2. Dormitory space for women is a pressing need.

Recommendations:

1. The additional housing units to accommodate the full faculty should be constructed in the near future.
2. Dormitory space for at least 40-50 women should be provided as rapidly as possible.

Discussion:

Several additional faculty housing units are needed to provide housing for all 70 faculty members currently carried on the faculty roster. Twenty of those are away on long-term study leaves and two are on sabbaticals leaving 48 persons currently present. At least 3 multiple family units are now under construction which will relieve some of the pressure when completed. Not all of the faculty are

married and not all have their families with them. The exact number of units needed under an optimum faculty roster, therefore, would have to be determined. The Team did not attempt to assess, for example what the optimum faculty/student ratio might be as one looks ahead. The ratio at the beginning of September was 1:9 (50:445). If student numbers stay static the ratio would become about 1:6 when all faculty are back in place. If student numbers were to rise to 750 as suggested in one study as the maximum potential and faculty numbers stayed static the ratio would be 1:10.

A more crucial point is the importance of campus amenities as a factor in the retention of the well-trained faculty. One Ph.D. resigned recently and it was learned that a few have applied to the United Nations volunteer program. Faculty members' comments and past actions reflect concerns about salary level, housing, schooling for children, and the relative isolation of IAAS. Such concerns are normal with faculties the world over. However, the Team concluded that an optimum provision of faculty housing as a part of the IAAS amenities is at this time important and relevant and should be addressed.

Similarly, past and present evidence indicated that accommodations for women are an absolute necessity if IAAS is to attract a significant number of women students. The four women presently enrolled are housed in one of the trailers at the MUCIA complex. Given the interest in education that the women expressed and the general role of women in agriculture undergirds the recommendation to consider this special housing issue. Two alternatives seemed possible. One would be to construct a separate dormitory for at least 40-50 women, 10 per cent of the present student numbers. Assuming a fixed enrollment at this level, this arrangement would relieve already existing dormitory pressure. A second alternative would be to declare a policy not to enroll women students! The Team opted strongly for the former when all factors and possibilities were considered.

M. Encouraging Women in Professional Agriculture

Conclusion:

1. The enrollment of women at agricultural campuses has been negligible because of lack of necessary facilities. The present project as well as GON has not provided any incentive or made arrangements to include women in agricultural training.

Recommendations:

1. A certain number of seats on campus must be reserved especially for women students, maybe a minimum of 10 per cent of the total enrollment.
2. Similarly some of the scholarships that are being provided should be allocated for women students only; however they should be awarded on the basis of merit.
3. An appropriately furnished women's dormitory should be arranged on the campus.

Discussions:

Most of the farming operations and decisions in Nepal are done by women. The male-female ratio in the country is almost 50-50. Agriculture is a way of life and a majority of the Nepalese are dependent on it. Therefore, lower-level agricultural training should not be regarded as only for the professional. Instead it should also be made available to the general masses. GON's policy guideline of making JT and JTA training non-academic can be considered as a step toward decentralising agricultural training, that is, taking agricultural knowledge to the general masses. The profitability of self-employment in farming and agricultural business as against service in some institution and the lack of other employment opportunities will automatically lead people to work on their own farm in the future.

There are Four women students enrolled in Rampur campus three in B.Sc. and one in certificate level. They all have agricultural backgrounds and good academic records. After graduation all of them plan to engage in research work relating to agriculture. Due to lack of a women's dormitory on campus, they are housed in a section of a trailer-house in the MUCIA complex. Discussions with them revealed that they at least knew a few women willing to enroll at IAAS who are not doing so because of lack of housing facilities. They do not feel left out in academic life, but do socially. They feel the housing is cramped and have difficulty in getting their groceries and other necessities. Provision of the necessary facilities will increase women's participation in learning agriculture.

At present there are only three women students at the Paklihawa campus; one in her first year and two in their second year. Two of them are living in a so-called girl's dormitory on campus. Discussion with them during the Team's visit revealed certain crucial and interesting facts. One of the girls has a very good academic background; passed SLC in first division but chose to join the campus. The others also had good academic records. They, however, feel insecure on campus in terms of continuity in their study. If one of them drops out the others feel they might as well. The fact that they are so few in number, discourages them to continue their studies and tends to keep them aloof from fully participating in class discussions and campus activities. Their lack of certainty that they will continue has prevented them from buying curtains for their room. On the other hand, the dormitory facilities are less than adequate as mentioned earlier. (For additional information on Paklihawa Campus see appendix B).

N. Maintaining the IAAS Physical Plant

Conclusions:

1. Deterioration is taking place in old and new buildings.
2. Electrical wiring and fixtures tend to be inadequate and classrooms and offices have illumination levels below those required for effective reading and work.
3. The plumbing appears adequate and functioning for lavatories and other needs. However a purification system for drinking water is urgently needed.
4. There was evidence of inadequate equipment maintenance causing some laboratory items to be in a state of disrepair.
5. The desks, tables and chairs were in satisfactory condition although more are needed.
6. There is an inventory system, but it is not being well implemented. Generally equipment and furniture are not identified by serial numbers which makes inventory control impossible.

Recommendations:

1. Although TU has been increasing the maintenance budget of IAAS, there may be obstacles in effectively using these funds. A maintenance engineer should be provided who would oversee continuing maintenance of all buildings physical plant, equipment, and campus grounds. A maintenance staff including such positions as carpenter, electrician, and plumber should be under the maintenance engineer to handle daily maintenance.  
  
A second maintenance person should be in-charge of maintenance and inventory control of all instructional, laboratory, and other research equipment. While expendable items (glassware) and frequently used items (microscopes) should be under control of the departments where they are used, such equipment also should appear on the central inventory and be periodically accounted for. Funds should also be available for replacement of expendable equipment, that which wears out or that which is lost or stolen.
2. Paint the walls white to increase illumination within classrooms, laboratories and offices.
3. All items of equipment and furniture should be inventoried and identified with a serial number and inspected yearly or more often as appropriate.

4. Place the inventory list in the Apple II computer to give rapid retrieval as to the location and condition of all equipment.
5. Certain pieces of sophisticated equipment should be placed under one person's charge as is being done with the computer. This would permit such equipment to be available to all faculty having a need for it.

Discussion:

Continuing daily maintenance of the buildings, electrical wiring, transformers and plumbing is the least expensive way to keep buildings sound and useable. Little problems lead to big and expensive ones; e.g., the leaky roof in the newly-built student hostel. As the roof leaks, it is causing deterioration of the walls and inconvenience for the students.

On-going general maintenance is very rewarding. It eliminates a great deal of lost time. A faculty person needing to demonstrate a piece of equipment may waste an entire classroom session if that equipment has become inoperable. A building that is dark inside causes both faculty and students to lose much valuable time if it is too dark to see to read. White walls can do a great deal toward reflecting enough light so that activities can continue.

## SOME KEY EVENTS : THE EVOLUTION OF AN INSTITUTION

It is especially helpful to those not so familiar with an institution, as well as those who are, to review the course of key events which have marked the path of development. For the former it is an opportunity to visualize some of the forces which have shaped the institution. For the latter it may prevent taking a bit of history for granted at a crucial decision point. While this list has been compiled primarily for the use of the Evaluation Team, it is shared here with the concerned reader. The list is certainly not free from errors of omission and accuracy; the friendly and more knowledgeable reader will hopefully fill in the gaps automatically.

Higher education in Nepal dates from 1918 with the establishment in Kathmandu of Trichandra College, the first and only institution of higher learning until 1951. The following selected dates and events are perceived to have shaped the progress of higher education in agriculture in Nepal.

- 1959      -an agriculture school established under DOA in Kathmandu to train extension workers
- National University (later Tribhuvan University) established in Kathmandu by the University Act
- 1969      -the agriculture school becomes a college
- 1970      -an Illinois team studies agriculture education
- 1971      -National Education System Plan establishes that the college should become the Institute of Agriculture and Animal Science under the aegis of Tribhuvan University; also introduces semester plan.
- first dean of IAAS is assigned
- 1972      -MUCIA/Nepalese team studies higher education in agriculture and does a prefeasibility study of the potential for IAAS
- 1973      -IAAS moves from Kathmandu to Rampur in the Inner Tarai to the site of the earlier Panchayat Training Center; over 150 km and 8 hours away from Kathmandu
- 1974      -AID authorizes funds for an institution-building project and asks for proposals

- 1975 -MUCIA is awarded contract to assist TU in developing IAAS; contract calls for four advisors to stay 25 months - 1 administration institutional development position, 2 agriculture educators, and 1 extension/nonformal/adult educator
- second Dean is assigned
- 1976 -IAAS commissioned by GON to train vocational agriculture teachers, 1-year and 2-year (JTA & JT) certificate holders; short courses for farmers; and nonformal education programs for out of school youth and adults. First batch of JTAs and JTs are employed in extension work by the DOA
- first MUCIA team arrives; composition according to contract, but the two agriculture educators stay 14 and 18 months (see 1978 entry)
- electricity reaches IAAS campus (3 hours daily)
- branch campus is started at Lamjung (in the hill area northeast of Pokhara) to train additional JTAs, access is by foot 1½ hours in dry season, 6-8 hours in monsoon
- 1977 -road to Rampur graded and gravelled
- first batch of BSc students admitted
- 1978 -decision made by GON to stop training of vocational agriculture teachers at IAAS/Rampur
- Paklihawa branch campus started to train additional one-year and I.Sc. Ag certificate students; campus located in southern Tarai near Indian border and Bhairawa town
- MUCIA contract amended to change team composition; second team arrives-1 animal science, 1 plant science, 1 education and curriculum (in place of new rural development position); 1 member stays 4 months, another 16 months
- 1979 -first rural development advisor arrives, stays 25 months; new animal science advisor arrives for 25 months
- 6 dollar-funded MSs return
- 1980 -first BSc graduates
- semester system dropped and annual system adopted; courses run all year and external examinations determine advancement

- MUCIA contract amended to lengthen field tour from 25 to 32 months; third MUCIA team in place; 1 rural development stays 25 months; 1 plant science stays 18 months
- 1981
  - AID authorizes additional 2.3 million dollars to project
  - Acting Dean is assigned
  - 62 BSc graduates
  - 3 dollar-funded Ph.D.s and 5 MSs return
  - political activism by students disrupts classes; campus closed for most of year
  - electricity available 24 hours a day on IAAS campus
  - research funds established (MUCIA/AID source) to generate faculty research
  - divisions of Plant Science, Livestock and Rural Development changed to 8 departments and then back to 6
  - pilot Extension Program started
  - construction of new library building started; library system rejuvenated
- 1982
  - TU doubles IAAS budget
  - new library building finished
  - Walson/Sofranko work plan for 1982-84
  - new well
  - apple II computer installed
  - ISc Ag training terminates at IAAS/Rampur campus
  - another Acting Dean assigned
  - Royal Commission on higher Education formed to study education issues; Agriculture Academic Board recommends that the one-year training preparatory to JTA employment with DOA be directed by Ministry of Education
  - new MUCIA team arrives
  - 6 dollar-funded M.Sc.s return

56

- 96 BSc students graduate
- 1983
- new Vice-Chancellor is named
  - Road from main highway to Rampur is metalled (blacktopped)
  - new Dean is assigned
  - AID amends project plan to alter purpose to emphasize BSc training
  - Royal Commission report findings released in late August and clarifies policy issues

5/1

## OBSERVATIONS AT PAKLIHAWA

The Satellite Campuses

Originally the JTA and JT programs were in the Agricultural College at Kathmandu which was administered by the DOA. The new National Education System created the IAAS in 1971 and shifted the responsibility of JTA and JT training from DOA to IAAS which was created within the administration of TU.

To decentralize the JT and JTA training and to increase participation by more students throughout the Kingdom, two satellite campuses were created. One was established at Paklihawa in 1978 and the other at Lamjung (only JTA's are trained there) in 1976. These campuses function under the Dean of IAAS.

The Paklihawa Campus

Only the Paklihawa campus was visited as the Lamjung Campus was inaccessible without a 6-8 hour walk due to the monsoon season. A full day was spent viewing the facilities, classes being taught, livestock and farm areas and having extended discussions with the administration, faculty and students.

Purpose

The basic objective of Paklihawa campus is to train JT and JTA which are employed by DOA for agricultural extension programmes and other related agencies such as AIC, ADB, commercial banks etc. Another objective of the campus (IAAS at Rampur now emphasises 'only' B.Sc. Agricultural training) has been to produce students capable of continuing their higher studies at Rampur.

Management of the Campus

The 'Campus Chief' takes care of the daily administration of the campus. On policy decisions and important matters he is controlled by the Dean of IAAS and the Registrar of TU. Academic matters are reviewed by the Instruction Committee which is comprised of faculty members. This committee

assists the campus chief in the implementation of the academic programmes. The animal and poultry farm and agricultural farm are under one manager. The scholarship committee recommends on the distribution of funds available for scholarships and the hostel warden looks after the physical facilities in the dormitories.

### Physical Facilities

The number of buildings is more than needed at present. This was evident as 8-9 buildings were unused and locked up. However, with few changes, adjustment and management, these facilities could be utilized for needed dormitories. Presently 3-4 students are grouped in one room where they cook their food, study and sleep. More importantly, there is only one bathing place (shower or tap to take bath) for 420 students! Otherwise the buildings are fine.

Furniture in the offices, laboratories, and faculty housing seems satisfactory. Furniture is of insufficient quantity in the dormitory and classrooms. There are insufficient number of desks and chairs in the dormitory where students study and do homework. The problem of furnishings in the classroom is probably more a question of management than lack of furniture. During the Team members' visit to the campus it was observed that a few chairs were unused in one class whereas two students were sharing one chair in another class.

Lab rooms were small and congested. An increase in number of students in the future will require more space. Lab equipment in basic sciences is satisfactory but in agriculture and animal science it does not meet the bare minimum. animal science does not at present possess even a castrator. There is no water and no gas (for heating) in the labs which are urgently needed for practicals. Equipment is in short supply and if not increased will create a problem as the student numbers increase in the future. Surprisingly however both students and faculty members were content with what they had.

The library has 2600 books but pertinent journals, magazines and reference books are lacking. There are two basketball fields, two volley ball courts and a soccer field. Except for the soccer field they have not been used and are deteriorating because of lack of playing equipment.

### Conclusion

Appropriate and adequate physical facilities not only help increase or maintain quality teaching and training, they also help build the morale of students. The team feels that the physical facilities on campus must be improved and increased by adding equipment and more importantly by better utilizing existing facilities with better management and planning.

### Recommendations

The following recommendations are suggested (not necessarily in order of importance)

- a. Students should not be allowed to cook their food in their rooms. An alternate facility should be provided for this. This could be a cafeteria managed by students themselves (if a contractor cannot be arranged as is done at Rampur campus), allotting a separate and exclusive cooking place for them.
- b. Agronomy and horticulture labs should either be extended or moved to a larger place.
- c. Water and gas should be provided in the lab immediately. Simple and essential equipment such as a seed dressing drum, castrator, etc., should also be provided.
- d. The books in the library should be catalogued. This problem might be solved by sending the librarian to the Rampur campus for several days of training.
- e. The existing bathrooms for the students must be improved and bath/shower facilities must be included therein.
- f. Requirements of furniture for the students should get preference over the furniture requirements of faculty and staff. Each student living in the dormitory must be furnished with a desk and chair.

Curriculum and teaching

Students as well as faculty members felt that the present curriculum is rather theoretical and non-functional. The "upside down" curriculum does not seem to fit the objectives of the training. The problem regarding JT and JTA training has been very controversial. It should be dealt with seriously and from the perspective of long term planning.

Students complained that in many cases only 35-40 percent of the course outline is covered in the class; and students have to make up the remainder of the class by themselves. One important reason for this is the teaching method. It was observed during the Team's visit that in one class the instructor was dictating the lecture and in another was writing out almost all his lecture on the black-board so that students could copy it down. It is understandable why an instructor cannot complete the course with such teaching methods and especially when text books are not available.

Temporary appointment of many of the instructors was another factor deterring the quality of teaching and adding to students' dissatisfaction. Students were worried about their English course as the instructor was gone for the last three months and no one was teaching English. Absenteeism among the teachers may not be solved by creating permanent posts, however, permanent instructors will have the feeling of responsibility and dedication that will keep up their motivation to teach and to improve. There are only 8 permanent instructors out of 20 at present.

Textbooks in agricultural sciences are lacking and few are available in the basic sciences. Class handouts are rarely distributed; this is done at the end of the academic year if the course is not completed. Many discussions with the students by this team were devoted to the need for handouts. Lack of funds, materials and equipment prevented the free distribution of handouts. The students in the beginning were not receptive to the idea of sharing some of the costs of preparing handouts. However the Team feels, after discussion with the students, that they have almost accepted the idea of sharing the costs.

There is much to be said for the old adage 'seeing is believing', 'practice makes perfect', etc. The students should be given practical training, and learning should be by doing and seeing. The walls in the agricultural science labs are covered by posters of plants, insects etc. imported from India and have no plants or insects for display or use. Such materials are abundantly available outside the lab rooms.

The quality and capability of the students graduating from the campus was questioned by some and appreciated by few others. However the students believe that they are not getting the right kind of training and they are not confident enough to practice what they are being taught.

#### Conclusion

The 'upside down' curriculum needs rethinking. However the curriculum should be decided in the context of education policy and/or the objectives of the training in satellite campuses and synchronized with the IAAS curriculum. Permanent faculty members in the long run will be more advantageous for the branch campus than temporary ones. Appropriate and more teaching materials must be provided and used for effective teaching. This will enhance the qualitative nature of the learning experience and of the students.

#### Recommendations

- a. The curriculum needs to be revised in the context of the objectives of the campus. If JT and JTA training are made non-academic, then more agricultural science with practical training should be included at the expense of basic science. On the other hand, if it continues as it is now, then the "upside down" curriculum should be changed so that some basic science is taught in the first year.
- b. Policy decisions regarding JT and JTA should be made clear; otherwise the curriculum of the institute and campuses will not be synchronized.
- c. Arrangements must be made to distribute class handouts as long as text books are not available. A duplicating machine, type writer, typist, and other necessary resources must be provided. (This will not only help improve the quality of teaching but will help reduce the students' dissatisfaction with the campus).

61

- d. Teaching aids such as models, slide sets, slide projector, prepared microscopic slides etc, should be provided for effective teaching and learning.
- e. The picture posters and extension handouts published and distributed by the Agriculture Information Section of DOA should be kept in the library for reference and used as teaching materials.
- f. The teaching staff should be made permanent and their number increased.

### The Farm

Two years ago the campus acquired 34 bigha of land (22 hect.) for providing practical experience in farming for the students. However, the land has been scarcely used by the students. Instead the lower level staff members are farming some parts of it for personal use. GON has provided 400 thousand rupee this fiscal year to fence the farm and to buy a tractor. These alone are not going to help the students utilize the farm land; what is required is a plan and program to utilize it. It was surprising that farm implements such as ploughs were not bought when the farmland was acquired. At present the campus has about 15 spades and virtually nothing else.

Discussions with the faculty members revealed the intention of improving the farm was to be by providing irrigation facilities, levelling the land, acquiring 'heavy mechanical implements', etc. Students seemed reluctant to gain practical knowledge of farming because, at present, such practical works do not carry any credit in their academic activities. Besides, lack of appropriate implements have also discouraged them from working in the fields. The campus has the policy to provide 500<sup>2</sup> meter land to a group of 3-4 students to work on it and gain practical experience in farming. Students are authorized to keep any profit gained by such farming.

### Conclusion

Lack of appropriate curriculum and farm implements have discouraged the students, and the faculty members as well, not to use the farmland properly. It seems as though they are waiting for improvements to the farm.

### Recommendations

This Team feels that the farmland should be used to provide practical and functional training to the students instead of making the whole farm as a 'model' farm which will be completely different than the actual operating farms in Nepal. With these basic guidelines, the following recommendations are suggested:

- a. Develop a plan for farm utilization. Some parts of the land should be kept for research purposes and other parts for practical training. The site for practical training should be made as representative as possible of the real life farm operation in Nepal; training should not be provided as an "ideal farm" that can not exist in the country.
- b. Appropriate implements should be made available to the students to work on the farm.
- c. Changes in curriculum should be made such that the practical work experience of the student is credited toward his degree requirements.

### General Observations

- a. Health services to the students and faculty are poor. There is allotted a small building for a so-called 'dispensary' where a medical doctor comes one hour every week; virtually it is non-existent for the clients.

The campus should persuade the Ministry of Health to establish a health center by providing a staff and medicine. And the center should also be made as a health education or extension center such that the students are exposed to information and knowledge regarding health. Such arrangement will not only provide medical facilities to the students but at the same time will help provide health education.

- b. The hostile environment outside of the campus was discussed by all. In the past it has been recommended to move the campus to another place. The Team does understand the seriousness of the problem faced. However it was not made clear to this Team as to what has been done and what has been planned to improve the situation. Moving the campus away from the present site will not only be costly and disruptive to the academic program but there is no guarantee that such problems will not arise in new place. This Team feels that the campus should try to improve public relations by different activities with local participation and seek (if necessary) help from the local administration.

## PERSONS/GROUPS CONTACTED

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IAAS/MUCIA  
Rampur

Group of Students Representing  
Student's Union at IAAS  
Rampur

Random Group of Students  
at Dormitory  
Rampur

All Three Girls' Students  
Studying at IAAS  
Rampur

Mr. T.U. Nepali  
Actg. Campus Chief  
Paklihawa Campus  
Paklihawa

Large Group of Students Studying  
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Dr. Prakriti S. Rana  
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## NEEDS AND PROBLEMS EXPRESSED BY IAAS STUDENTS

A group of students selected by the Student Union and by the Dean were invited to meet with the Evaluation Team. The purpose was to develop information as to what aspects of the IAAS project might be improved from the point of view of students. The results of more than two hours of discussion with this group (as well as with other unplanned meetings with small groups of students) provided many valuable insights. Following is an unedited list of areas for consideration which was presented by the students and discussed with them.

PROBLEMS

1. The graduates of this institute are facing great problem for their jobs (Employment). It would be better to have direct employment after their graduation.
2. Practicals are as important as theory for the technical subjects. So, all the mentioned practicals in the courses should be properly performed. They are more oriented to theory than practicals.
  - No laboratory in Animal Science (A.I., Nutrition)
  - No " in Horticulture,
  - No " in Plant & Animal breeding.
3. Necessary lab. equipments, materials and furnitures should be available.
4. Sufficient text & refernce books should be available in library.
5. All the courses which we studied in different subjects that are not clearly mentioned in the mark-sheets. e.g., Fishery is in course but not mentioned in mark-sheet.
  - So, we cannot get employment in Fishery (Officer)
6. WEP under academic credit.
7. Students involvement in research work
  - indispensable.
8. Stationary goods available in IAAS.
9. Back paper (Supplimentary examination) should held twice a year.

10. Audio-visual aids related to agri. extension should be available. Students of that course should get to handle them.
11. Teaching technique training to the teachers is most and supervised them.
12. Cent percent students stipend and amt. should be increased.
13. Educational tour should be conducted in selected Indian Agri. Universities in the final year of B. Sc. Ag. (But in Agri. Exp. Station inside country).
14. Well managed class room size and seat. (Dark & Ventilation)
15. The students from remote areas should get economical (help) assist from Institute (Poor students)
16. Recognition of B.Sc. (Ag) degree by other Agri. Universities is most necessary.
17. Each & every subjects should have 3 hours examination period (In the final exam of theory).
18. Mess should be conducted by Campus.
19. Jacket and cap labelled IAAS.
20. TOFFEL training for students.
21. Coachers with materials for different games.
22. A medical doctor and medicine should be available in the dispensary.
23. Subject matter specialists should be available in each subject.
24. Swimming pool.
25. A free guest room for students.
26. A common room and waiting room.
27. Ladies Hostel.
28. Interested students should get land for individual uses. e.g. Individual researches.
29. Provision of filtered water in hostels and mess.
30. Diets to sportsman.
31. Maintainance and repairing of Hostel.

32. Provision of wire net in windows to protect mosquitoes from outside.
33. Bicycle for extension program.
34. Each room of hostel should have electric bulb.

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(Note: Twenty five to thirty mimeographed reports concerning research findings about maize, wheat, rice soybeans and pulses were also scanned.)