# End of Tour Report

Garland P. Wood
Rural Development Advisor
and
Chief of Party
For the
IAAS-MUCIA Project

1981-1982



MUCIA/AID Project At
The Institute of Agriculture
and Animal Sciences
of Tribhuvan University
Rampur, Nepal

Garland Wood
Professor, Agricultural Economics
Michigan State University
East Lansing, Michigan 48824

Dr. Wood's assignment in Nepal was supported by the contract between the U.S. Agency for International Development and the Midwest University Consortium for International Activities, Inc., Contract Number AID/NESA-C-1197. The views and prescriptions presented in this report are the sole responsibility of the author and do not necessarily reflect MUCIA or AID evaluations or policy prescriptions.

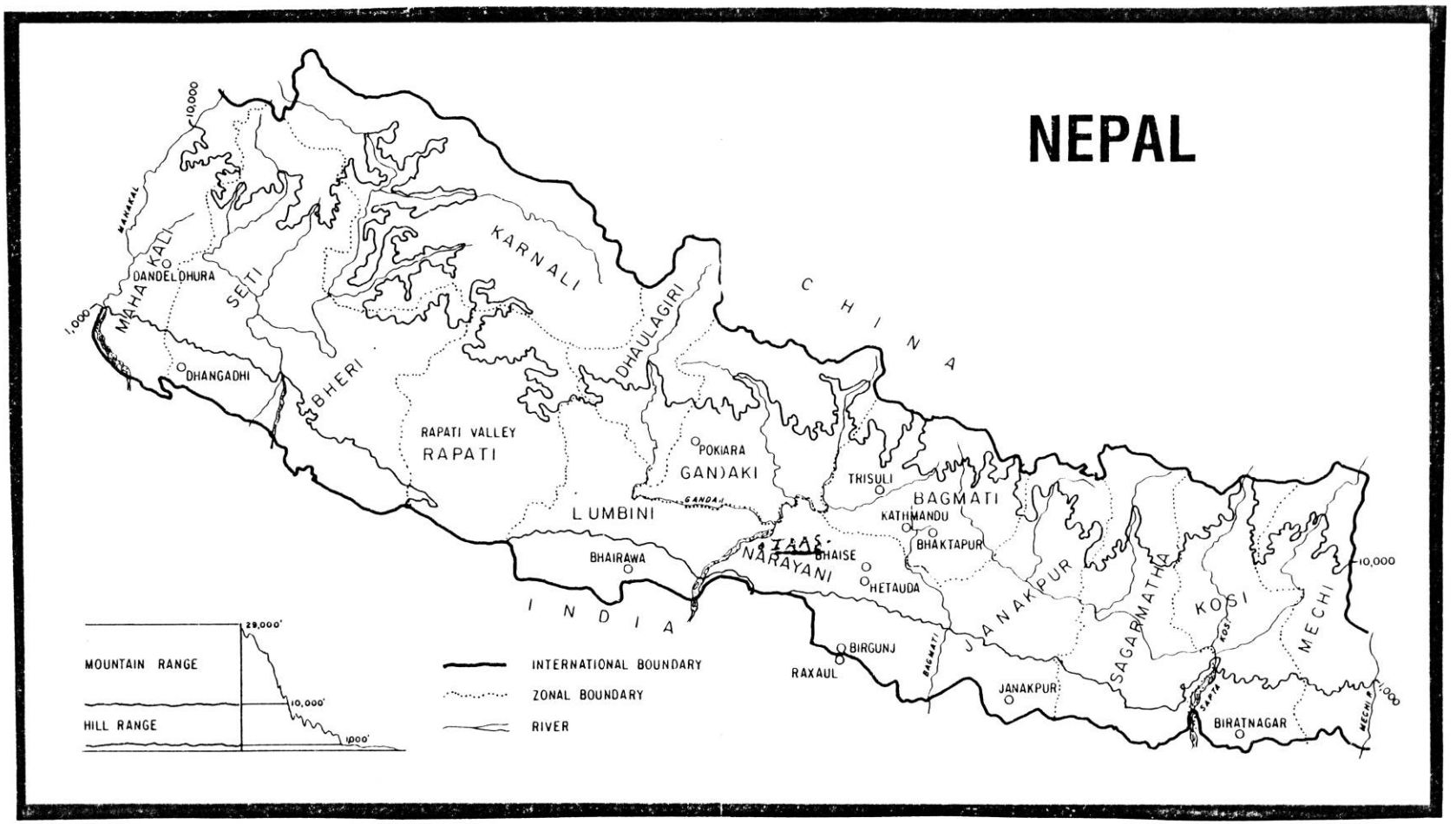

NEPAL
MAHAKALI
SETI
KARNALI
BHERI
DHAULAGIRI
CHINA
INDIA
DANDELDHURA
DHANGADHI
RAPATI VALLEY
RAPATI
POKHARA
GANDAKI
LUMBINI
TRISULI
BAGMATI
KATHMANDU
BHAKTAPUR
BHAIRAWA
BHAISE
TANSEN
NARAYANI
HETAUDA
BIRGUNJ
RAXAUL
JANAKPUR
SAGARMATHA
KOSI
MECHI
BIRATNAGAR
10,000
1,000
MAHAKALI
GANDAKI
BAGMATI
KOSI
MECHI
MOUNTAIN RANGE
HILL RANGE
29,000'
10,000'
1,000'
INTERNATIONAL BOUNDARY
ZONAL BOUNDARY
RIVER

TABLE OF CONTENTS

End of Tour Report for Dr. Wood

December 17, 1980 - February 2, 1983

Introduction:

The following report presents my personal observations, concerns and hopes for the educational organization IAAS. Much of the report will deal with my two year assignment in Nepal as Adviser in Rural Development and Team Leader. Those years were built on the successes and failures registered in past years by MUCIA and Nepalese coworkers at IAAS. First presented is a brief historical record of IAAS prior to my arrival on post January 1, 1981 (Additional details are in Appendix A, page 51.).* The report will then cover in some detail the flow of people and events that we encountered and sometime countered us. IAAS is not an island but is the focus of political factions and carries the economic hopes of a very poor and 90 percent agricultural nation. The report will run that risk of putting IAAS in a national perspective. Finally, I will project with the help of many unnamed colleagues the future dimensions of IAAS.

In Nepal:

My wife and I arrived at the Kathmandu airport the evening of January 1, 1981. We were met at the airport and during the next few days we met with U.S. and Nepalese officials so that we could drive, trek and work in Nepal. Dr. and Mrs. Williams accompanied us to Rampur on this first trip. A flat tire delayed us and we missed by a few minutes the opening for traffic on the Mugling-Naranghat highway that was under construction. Four and one half hours later we were allowed to pass by the courteous Chinese Engineer.

---

*AID mission Nepal requested this report plus a report on the satellite campuses at Paklihawa and language (see Appendix B.).

On our return trip to Kathmandu we decided to escape the road construction hazards. We took the Rajpath road but a student strike 30 kilometers east of Naranghat trapped busses, trucks and vehicles such as ours. We could neither go forward nor back. Four hours later the Chief District Officer with a truckload of armed soldiers broke the blockade. The eight hours trip had stretched to 12.

These events and subsequent visits with villagers and co-workers helped us understand that change is underway in Nepal but it is not everywhere nor is it always welcomed. Progress-growth-change are concepts with positive connotations to those of us from 'developed' nations. But 'change-progress' whether pressuring a family and its way of life or pushing organizations and institutions of a traditional society are perceived as a threat. Even in industrial societies a too rapid change can and does lead to social disintegration as highlighted in Toffler's Future Shock.

Early Observations:

In Nepal we find a traditional society with only its urban doors opened to the outside world since 1951. Change has come quickly in the intervening 30 years in roads, airports, hydro-electric dams, irrigation systems, schools, university, a large and growing bureaucracy. But we should not be mislead by surface appearances. Nepal is still a very traditional rural society and IAAS reflects the tensions of an institution bridging generations and centuries of change.

IAAS itself is a nine year old child, created by Tribhuvan University but with no Nepalese model to follow.[1/] During the six years of the MUCIA/AID

---

1/For the reader interested in the early years of the project, read Appendix A of this report.

Contract many changes have taken place. Faculty have been trained abroad and many have now returned. Buildings have been built, old buildings renovated, others still under construction. Students are being taught at an associate degree level (JTA & JT) both at the main and satellite Campuses. Training for the B.Sc. diploma is now given and during the period of this report the second and third classes graduated. The previous responsibility for training Agricultural Education teachers has been terminated. Discussions and studies are now underway regarding the future of the JTA-JT program.[2/] There are now fields for concentration in Animal Science, Plant Science and Rural Development at the Rampur Campus. An annual system has been super imposed upon a semester system of instruction and within the year will replace the semester system.

Numbers of students to be admitted have doubled and even tripled beyond the expected level anticipated. All of these top down decisions were imposed upon a new and relatively untrained faculty.

During the past three years Nepal and IAAS have been beset by political tensions and cross currents of activities. Student strikes have closed the Institute for months at a time and disrupted the teaching examination procedure so essential for evaluating professional growth.

As expected, Nepal lacks a tradition of scholarship and professionalism. With the rising expectations of recent years, Nepalese youth and their parents saw education as the door to break out of poverty's trap. Student numbers doubled, then doubled again in primary and secondary schools, technical institutes and colleges. Where classrooms and teachers were too

---

[2/]Appendix B of this report covers this issue in more detail.

limited to meet the numbers applying, political pressures were used to admit more students. Student numbers increased more rapidly at all levels than did the human and physical resources necessary to accommodate them. Quality of education fell. The political, economic and cultural legacies of Nepal described below loosely set the parameters for the changes now occurring. It is in this setting of change, tension and challenge that IAAS makes its thrust for institutional recognition.

The Political Setting:

Nepal was in a state of political agitation when I arrived in January 1981. True, the constitutional referendum the year before had opted for the one party Panchayat, but many party leaders including student activists were contesting the fairness of the election. The Rampur Campus was a center of much political activity and two years earlier IAAS students had died in the struggle. Political activism by students is not new to me for I had worked in Colombia and Argentina where student activism in traditional. However, I was never threatened physically in those countries as the IAAS faculty and I were in February 1981 by 150 shouting students demanding unproctored exams. We, the faculty did resist, examinations were proctored and although students closed the campus for most of 1981, student political activities and power began to ebb.

The Country:

Nepal is a small landlocked nation between China and India. It is some 500 miles long with a roughly East-West orientation and a width not exceeding 150 miles. Its total area of 91,105 sg. km (54,663 sq. miles) is the size of the state of Wisconsin. It is divided into three parallel ecological zones running from east to west; the Terai plain, an extension of the

Gangetic plain of India; the Hills which are actually the foothills of the Himalayan mountains; and the Himalayan mountains lying against the Tibetan border. These three zones account for 17, 68 and 15% of the total area of

Farming in the Terai.

Nepal respectively. The hills range from 500 meters to 4000 in elevation and are bisected by rivers and streams that flow from the mountains southward to the Terai. This rugged land of hills and mountains are where most of the population lives (65%). The north south streams plus the rugged terrain divides the country into isolated areas where human porters and pack animals were the only means of access until very recently. Even today there are major regions that are accessible only by foot traffic. Highways are difficult to build and costly to maintain. Transportation costs are a heavy burden in marketing agricultural products and the transfer costs of services and inputs to the rural population.

Nepal's population is currently estimated at 14 million and increasing at 2.6% annually. Population pressure and high underemployment forces up to 50% of the male population of the hills to migrate either seasonally or permanently to the Terai, to Kathmandu or to the military service of India or Great Britain to find employment and supplement income. The increasing population pressures in the hills and the increasing number of food deficit areas are two of the gravest concerns of the Nepalese government. Rapid deforestation, especially in the hill region is being followed by accelerating erosion. Nor is the general state of the economy encouraging.

Nepal's economic performance during the Fifth Five Year Plan 1975-80 has been disappointing. The increase of 2.4% Gross Domestic production (GPD) annually was less than population growth rate. Agriculture was a drag on the national economy. This was highlighted by Nepal's most important export, rice. Nepal exported 500,000 tons in the mid sixties, 300,000 tons in 1977/78 and in 1979/80 became a net importer of rice for the first time due in part to low rainfall. The increasing trade gap has been covered up to now by earnings from tourism and foreign aid expenditures. The sixth five year plan (1980-85) seeks a 4% GPD growth. Major objectives of the plan are a sizeable increase in agricultural production, cottage and small scale industries. The Nepalese government faces a formidable task in creating jobs to reduce present high rates of unemployment and underemployment. The rapid population growth rate must be reduced.

Nepal's Agriculture:

Agriculture provides a livelihood to over 90% of the population and generates two-thirds of the GDP. Human food crops of paddy, maize, wheat, millet, barley and potatoes are grown on some 90% of the total cropped area.

Paddy is the dominant crop, with maize, wheat, millet and barley in lessor importance. Oil seeds, jute, potato, sugar cane and tobacco are the main cash crops of Nepal and are produced in the Terai. About 10% of the cultivated land is devoted to these crops.

Food grain production trends during the 1970-78 period were disappointing. Yield per hectare actually declined at a rate of .9% per year. Only wheat showed sizeable gains during the period. The 1.1% increase achieved by agricultural crops during these years was the result of acreage expansion. But available new lands in the Terai have now been captured and future agriculture production must rely on increased yields, not increased land under cultivation. Many reasons are given for the lack of success in increasing agricultural production. Erratic rainfall, higher cost of fertilizers, inadequate research and extension services and inappropriate pricing policies have all contributed to the decline. For example in spite of Nepals subsidizing about 33% of the cost of commercial fertilizers the farmers of Nepal applied only 6 kg of nutrients per hectare in 1977-78. This is one of the lowest rates in the world and can be compared with India's 25-30 kg. It is true that traditionally Nepalese farmers have relied on their compost for crop nutrients. But the compost applied in the hills and on the Terai does not balance the nutrients taken out by higher producing crops. It must be recognized too that the institutional network for supplying credit, better seeds, irrigation water, insecticides, fertilizer and market information has been disappointing.

In the above section we have briefly described Nepal's political and geographic setting and some measures of its agricultural industry. Now we shall focus on the national agencies that form the matrix of institutions

affecting IAAS. The following section will detail first the resources invested in IAAS, secondly the organization, operating procedures and management within IAAS, and thirdly the products produced by this educational institution.

National Institutions as They Impact on IAAS

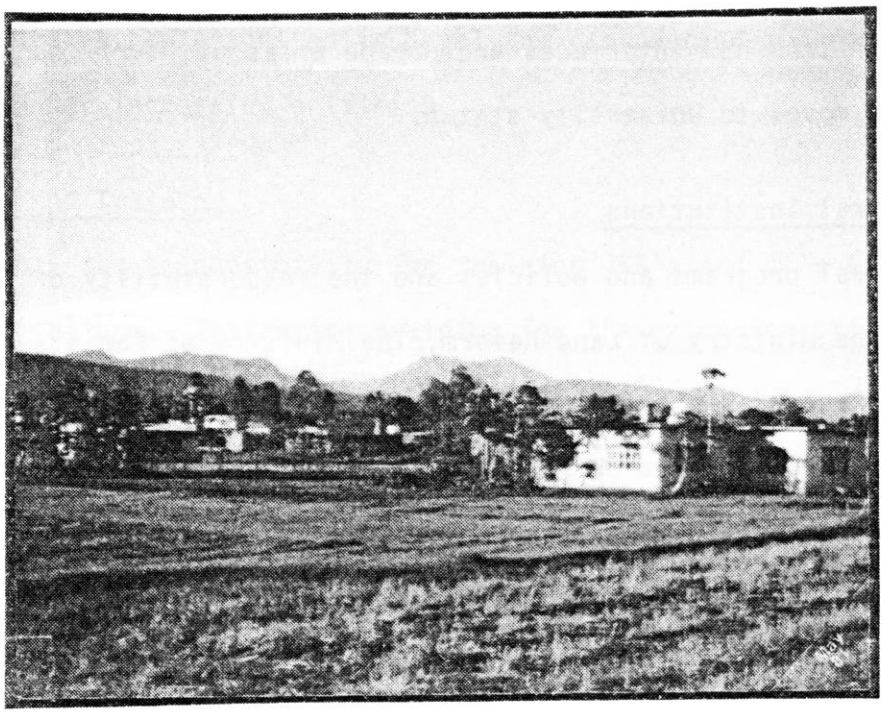
"We have no assurance that modern societies have yet developed procedures for assessing the value of the kinds of organizations modern societies are developing"---.[1] We have considerable assurance that the developing societies have not developed procedures for assessing the value of organizations they are developing including institutions of higher learning. "But because these are powerful instruments we can expect modern societies to exhibit considerable concern over the uses and abuses of complex organization."[2] The developing nations have not had the experience nor the expertise to evaluate the uses and abuses of their own organizations let alone the new complex organizations adapted or adopted from abroad. Universities are one of man's most complex organizations and although IAAS does not have that complexity as yet, a decade or two from now will reflect the present patterns. In the pages that follow the report will describe and list the flow of resources into IAAS. Within the organization of IAAS we shall describe changes in organization structure, operational procedures, the incentive system or lack of it, physical and human resources and the leadership component. We will then list the products the Institute produces, including trained students, extension programs, and research knowledge. These products are the justification

---

[1] Thompson, James D., Organizations in Action, pg. 163.

[2] Ibid, pg. 163.

for the investment of inputs by Nepal such as budgets, lands, students facilities, foreign loans and grants etc. We shall not attempt to assess



Campus setting Rampur.

the value of IAAS as to the nature of its organization nor shall we attempt to compare the uses - abuses of IAAS as contrasted to some alternative organizational structure. That is another task, another time.

Institutional Network:

Nepal is developing an intricate network of formal and informal institutions. These organizations range across the traditional departments of Education, Health and Finance to the new development departments and ministries of Forestry, Water Resources and Irrigation. A National Planning Commission, The Agricultural Development Bank of Nepal and the Nepal Food Corporation are only illustrative of the rapid growth of the network. But some scholars are worried that the weight of the growing bureaucracy will crush Nepal once the foreign aid monies start to decline. This discussion

will focus on the institutions that serve agriculture directly and impact on IAAS either as an input supplier or as a user of its products. The listing should also help us see the matrix of agricultural institutions with which IAAS now interfaces and may be areas of 'turf' concern as the Institute moves to University status.

Agricultural Institutions

Agricultural programs and policies are the responsibility of four ministries: The Ministry of Land Reform, The Ministry of Forests, The Ministry of Water Resources and the Ministry of Food and Agriculture (MFA). MFA includes the Department of Agriculture (DOA) which has the responsibility for promoting agricultural production through extension, training and research. MFA also has responsibility for a number of other institutions including The Agricultural Inputs Corporation (AIC), The Agricultural Development Bank of Nepal (ADBN) and the Nepal Food Corporation (NFC).

Agricultural Extension

The Director General of Agriculture is assisted by a Deputy Director General of Extension and Training. The organization then specifies a Regional Director, who supervises district level Ag. Development Officer/ Assistant Ag. Development Officers. These Officers rely on JT's and JTA's previously mentioned in this report to make the farmer contacts. A recent innovation is the hiring of local progressive farmers and retired servicemen as agricultural assistants (AA) at the local level. The extension wing of DOA employs about 150 B.Sc. graduates and 1000 JT's and JTA's.

Agricultural Research

The Agricultural Department administers research through a Deputy Director General (DDG). The DDG has 52 centers located across the country and

includes research stations, research centers and research farms. This service is responsible for supplying suitable Agriculture technology for development in all the regions and climatic zones of Nepal. Since agriculture production has stagnated in Nepal the past decade the research service has come under increasing criticism.

Education and Training

IAAS now has the responsibility for training JTA's and JT's as well as B.Sc. Agriculture. In-service training for the extension staff is organized by the Extension and Training Wing of DOA.

Agricultural Credit

The single major source of institutional credit for agriculture is the Agricultural Development Bank of Nepal (ADBN). Created in 1973 the ADBN is authorized to (a) provide short, medium and long term credit to cooperatives and corporate bodies engaged in agriculture development, (b) provide loans directly to farmers for the purchase of seed, fertilizer, pesticides, farm machinery and irrigation equipment, (c) invest in small scale industries engaged in processing farm products and manufacturing inputs required for agriculture and, (d) to provide banking facilities in places where commercial banks are not established.

Cooperatives

The Sajha* development program was introduced to link economic development with political decentralization at the local level. The objectives of the Sajhas are to provide credit, agricultural inputs, and marketing facilities, as well as to sell consumer goods, such as salt, kerosene, coarse

*Sajha = cooperative effort.

cloth, diesel oil, rice and sugar. At the village panchayat level they sit as the local agent of the Agricultural Inputs Corporation. There are some 1,170 registered societies. It may be added that most farmers are still reluctant to approach ADBN and Sajha for credit relying instead on friends and relatives and the traditional money lender. Loan recovery for the Sajhas is poor averaging 40 to 50%.

Agricultural Inputs

The Agricultural Inputs Corporation (AIC) is the government agency responsible for the supply of inputs and was established in its present form in 1975/76. Its functions include: (a) importation and distribution of chemical fertilizers and maintenance of a buffer stock sufficient for at least one cropping season, (b) collection, processing, storage and distribution of improved seeds and assistance to DOA in conducting seed multiplication programs, (c) procurement and distribution of agricultural chemicals for plant protection and grain storage, and (d) distribution of locally manufactured agricultural tools and implements as well as importation and distribution of agricultural machinery. AIC distributes improved seed secured through contract growers and seed produced on government farms.

Agricultural Marketing

The main Agricultural Marketing institutions are: (a) The Nepal Food Corporation (NFC), whose main responsibility is to distribute food grains to food deficit hill districts, and (b) The Food and Agricultural Marketing Services Department (FAMSD) whose role is to collect price data, analyze trade patterns, and establish marketing systems, particularly in the hills.

## IAAS Its Institutional Process

In the above section we have described the network of agricultural institutions that impact upon and are impacted by IAAS. There are other agencies, organizations and inputs to IAAS that affect its present and future role in the Nepalese society. The following section briefly lists the more important input actors.

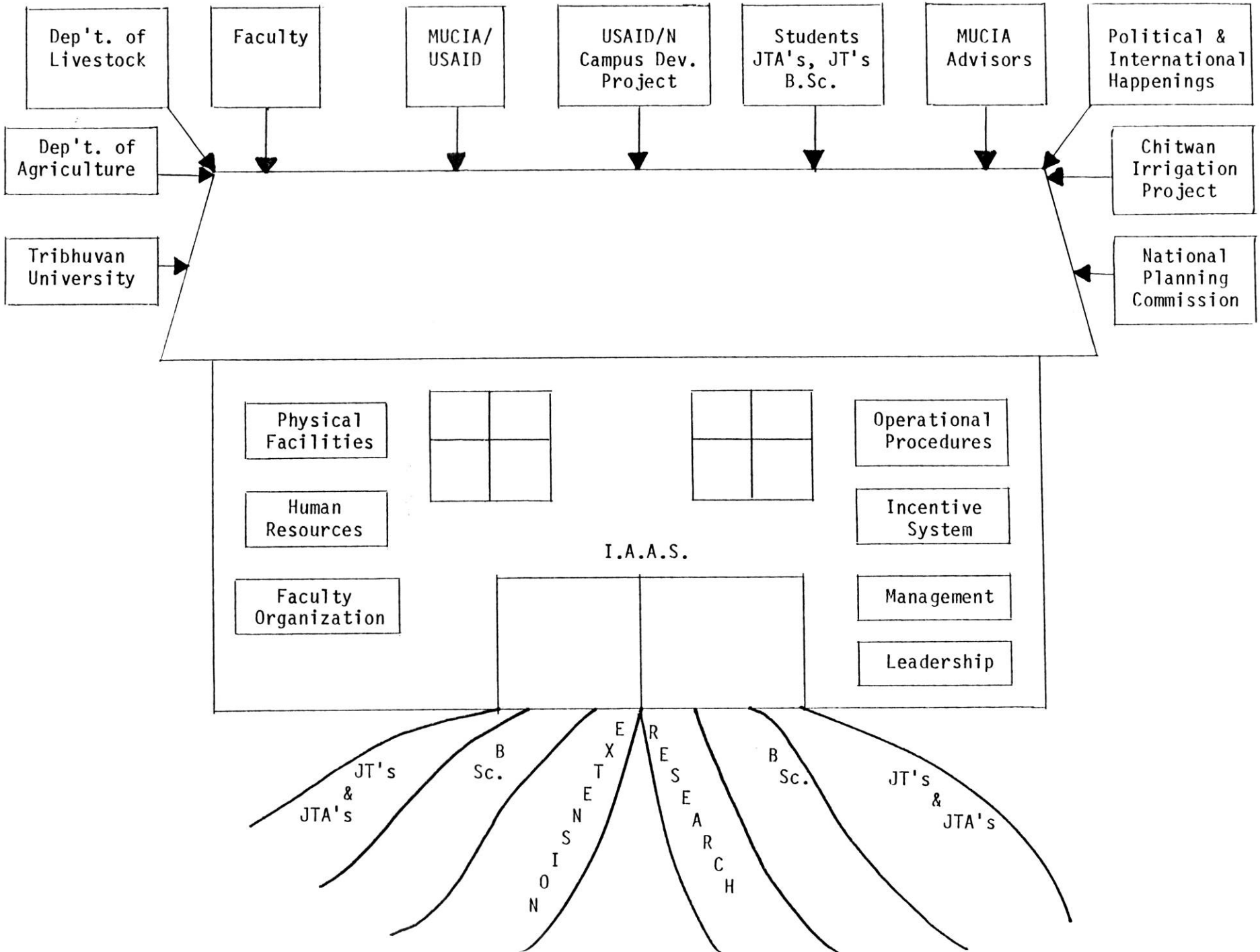
### Tribhuvan University

Serves as the enabling, legitimizing body for IAAS. Funds are disbursed through the Ministry of Education to Tribhuvan University. These funds are apportioned to the various institutes and campuses on the basis of accepted budgets and judgements of officials at T.U.

There are many linkages in addition to budget that presently bind IAAS to T.U. The degree granting power resides in T.U. and examination procedures are handed down by them. Faculty and staff positions are opened at the discretion of T.U. officials who set levels of pay including the daily wage of a harvester of rice. The sale of farm crops and livestock are permitted only with the okay of T.U. officials, and those funds are captured by T.U. These restrictions on decision making by the resident IAAS dean and budget limitations were two important reasons given at the 4th JAR December 1981 for an autonomous or semi autonomous institution at Rampur.

### Department of Agriculture (DOA)

As is seen in Figure one on the following page the DOA makes inputs to IAAS but since it is the number one job outlet for the JTA's, JT's and B.Sc.'s graduating from IAAS it has an important Clientele voice at IAAS. The Director General sits on the academic board of IAAS where important


Dep't. of Livestock
Faculty
MUCIA/ USAID
USAID/N Campus Dev. Project
Students JTA's, JT's B.Sc.
MUCIA Advisors
Political & International Happenings
Dep't. of Agriculture
Chitwan Irrigation Project
Tribhuvan University
National Planning Commission
Physical Facilities
Operational Procedures
Human Resources
Incentive System
I.A.A.S.
Faculty Organization
Management
Leadership
JT's & JTA's
B Sc.
EXTENSION
RESEARCH
B Sc.
JT's & JTA's

curriculum matters are decided. He and other DOA officials are heard in budget discussions and evaluation discussions on the quality and numbers of IAAS graduates.

Department of Livestock

The sixth five year plan puts 50% of its foodgrains sector budget into the livestock industry as contrasted to 12% in the 1979/80 budget. Both Agricultural Projects Services Center (APROSC) and the Planning Commission project significant shortages of middle and upper level trained technicians needed by the livestock industry. For the past three years there has been political pressure applied to have an animal science unit separate from the rest of the Rampur campus. Such pressures will doubtless continue until the livestock section at IAAS has more faculty and physical resources and more graduates with better skills and knowledge for handling livestock problems. The first year training of students wishing to enter IAAS is given at Kathmandu. This number is presently limited to 100 students of whom 20 will be accepted into the BSC program at Rampur.

Faculty

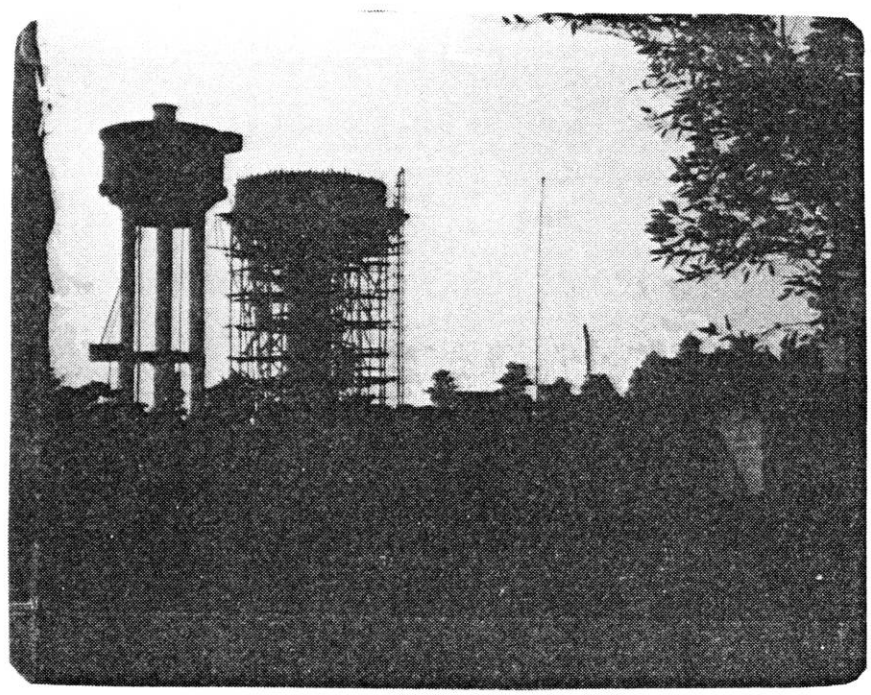
Initially the faculty of IAAS were transfers from other HMG departments, mainly DOA. Now the faculty are almost entirely IAAS personnel which includes contract as well as permanent staff positions. IAAS is currently in urgent need of an Agricultural Engineer but has had little success in retaining one. In the section of this report titled Planning Ahead page 38, I'll cover in more detail the need for creating a better working environment at IAAS including an incentive system that will attract the teachers of Physics, Chemistry, Botany, Mathematics and Ag. Engineering who now shy away because of physical and professional isolation.

MUCIA/USAID

This contract funding serves as another major input to IAAS. The present contract expires September 30, 1984 but efforts are being made to initiate a new contract for an additional period. The present rate of expenditure is some $60,000 per month. This covers long and short term consultants, equipment, books, back up personnel in East Lansing, participant training in the Philippines and the USA and research support for IAAS faculty. The fund also provides the support staff and equipment for the MUCIA team in Nepal.

USAID/N Campus Development Project

This project fund originating out of Public Law 480 monies was and still is the major input for the building of dormitories, classrooms, laboratories, library, clinic, mess hall and the equipping of these facilities. It has



Old and new water towers Rampur.

covered the cost of infrastructures for IAAS including sewer, drainage and water systems plus a road and walkway network. Agriculture Engineering and south farm storage and field buildings have also been provided by this fund. The total to be expended is some 40 million rupees.[1/]

Students, JTA's, JT's, and B.Sc.'s

The central campus Rampur will continue to handle some 400 students a year. This will include some 100-125 certificate level students plus 100 in each of the three years diploma program. This number has fluctuated under political pressures to allow more entrees but 400 students is the present planning level. At the Paklihawa campus there are 400 students currently enrolled of which 175 are JTA's and 225 JT's. The Lamjung campus enrolls 175 students in its one year JTA program.

MUCIA Advisors

MUCIA Advisors impact on the institution to the degree of effectiveness of working with counterparts and in the level of professionalism they bring to their disciplines. They may assist in the organizational structuring of the institute, in establishing communication ties with other institutions and individuals. Helping select the brightest candidates for further study is an important task. Reviewing curriculums, encouraging better teaching methods, securing laboratory and audio visual equipment are all part of the advisors role. Within the last several years the faculty have responded to incentives to be involved in research. Advisors have an important role in encouraging and guiding such research efforts without dominating them.

---

1/ Exchange rate varied during this report; 11.3, 13.1 now 14 + rupees per U.S. dollar.

LONG AND SHORT TERM ADVISORS DURING 1981-82.

| | Field & University | | Term |
|---|---|---|---|
| Dr. Jesse Williams | Animal Science<br>Univ. of Minnesota | 5/1/79-5/31/81 | Long |
| Dr. Paul Kaplan | Rural Development<br>Michigan State University | 8/10/79-9/9/81 | Long |
| Dr. Henry Foth | Plant Science<br>Michigan State University | 9/5-15/80<br>12/30/80-7/31/82 | Short<br>Long |
| Dr. Harry Schwarzweller | Extension/Rural Sociology<br>Michigan State University | 3/15-4/3/81 | Short |
| Dr. Weslie Combs | Animal Science<br>Michigan State University | 1/4-3/5/82<br>9/23/82-9/30/84 | Short<br>Long |
| Dr. Kim Wilson | Work Plan Development<br>Michigan State University | 6/16-30/82 | Short |
| Dr. Andy Sofranko | Work Plan Development<br>University of Illinois | 6/16-30/82 | Short |
| Dr. Marlowe Thorne | Team Leader & Plan Sci.<br>University of Illinois | 7/7-28/82<br>10/15/82-9/30/84 | Short<br>Long |
| Dr. Herbert Whittier | Rural Sociology<br>Michigan State University | 9/27-10/16/82<br>10/22/82-9/30/84 | Short<br>Long |
| Dr. Garland Wood | Team Leader & Rural Dev.<br>Michigan State University | 8/13-23/80<br>12/20/80-2/2/82 | Short<br>Long |

Political and International Happenings:

I have already indicated how the political unrests of the 1979-80-81 period politicized the student body and caused serious weakening of the educational process. International events also affect the agricultural industry of Nepal and the students of IAAS. The rapid escalation of oil prices by OPEC has had a far reaching impact on the use of chemical fertilizers, insecticides and the flow of agricultural goods. International strategies affect the amount of foreign development funds flowing into Nepal. The number and length of agricultural training scholarships offered is also in the hands of foreign policy makers.

Chitwan Irrigation Project:

Funds have now been committed from this fund to bring a surface irrigation channel to the Rampur Campus north farm. The funds will also allow building renovations and improvement of the breeding stock. Irrigation facilities will allow an intensified crop production program, systematic research projects and a more rational use of the livestock population. These funds would not have been captured had it not been for the aggressive leadership of the Acting Dean and the Department of Animal Science.

National Planning Commission:

National Planning Commissions are an exercise of futility in some countries of the world. However, in Nepal the commission carries considerable stature and has the responsibility for drafting the successive five year plans. These plans project the needs for trained manpower at the various levels of expertise. For agriculture the scope of the current five year plan details the organizational needs for such manpower and which institutions, including IAAS, are expected to supply them. To the extent that Finance Ministers and administrative officers of the line agencies follow the planning commission guidelines, planning commissions of Nepal will have great impact on institutions such as IAAS.

## Within IAAS

Physical Facilities:

Buildings do not make an educational system but they can go a long way in making life more pleasant for educator and student alike. One can shake one's head sadly at high cost dormitories, classrooms and laboratory buildings in a poor country like Nepal. When one notes wasted space, poor lighting, little concern for air movement in a tropical region and poor

acoustics one can become angry over architectural blunders. But there are many positive accomplishments and the central campus of IAAS at the end of 1982 is beginning to look like a well organized, well cared for campus.

Several major building projects were completed during the past two years. The cafeteria building was completed in time to hold our December 1-4, 1981 JAR meetings there. One year later the cafeteria building is still not being used as no concessionaire has bid to manage it. In this instance a building does not a cafeteria make.

The newest and final classroom under the project was completed and turned over to IAAS. Its numerous windows and good air flow corrects many of the architectural aberrations of earlier classrooms.

The new library building was also completed and turned over to IAAS by the contractor. The library staff moved all books and holdings into the library during the closure of the campus in June. Metal bookshelves and open shelving were ready for the transfer but wooden furniture including study tables and chairs were still not ready six months later.[1/] However, the new library is a handsome building and should be very functional when all equipment is in place.

The old dormitory is still being renovated. The bathroom section on the east end of the building was torn down and has now been replaced by new facilities. The west end bathrooms are in a similar state of collapse and are now being replaced. Structural defects and weaknesses within the building have now been corrected, The Campus Development Committee has

---

[1/] The detailed library report is given in Appendix C.

Library plus students and faculty of I.A.A.S.

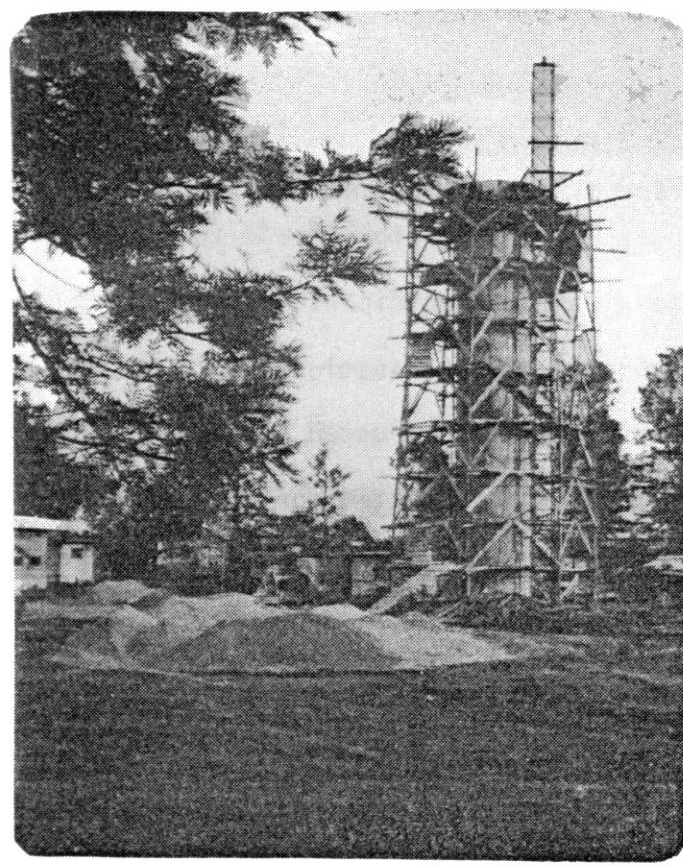
decided to procede with new electric wiring, securing of the first floor veranda against vandalism and renovation within the rooms. This dormitory plus the 3 new ones already constructed housing 90 students each will house the 400 to 450 students now projected for the Rampur Campus.

Four duplex units are now under construction with three located on the south campus area and one on the north campus area. These are faculty housing and are sorely needed. An additional 18 units are needed to meet the needs of returning faculty during the next two years. Staff and workers quarters are also urgently needed. Four units are under construction on the south campus and eight units on the north campus.

Some of the older housing units on campus are in urgent need of renovation. The Campus Development Committee has recently voted to proceed with this work.

A small medical clinic building is now well under way on the south campus and the primary school construction has begun.

Sewer and drainage system work progressed during early 1982 but the monsoon caused suspension of the work and they have only recently resumed construction. Completion of the water system was held up during much of 1982 due to the lack of pipe and fittings. A 130 ft. well was drilled and tested as adequate for the needs of the campus. The new water tower is nearing completion and will be a landmark to the surrounding community.



New water tower under construction.

Cement walkways have now been completed lacking only the connecting areas to the main vehicular road. Curbs and base material are already in place on the vehicular roads awaiting the final black top coating.

The housing for the two large 350 KVA transformers is now completed on the south campus. As soon as final tests are completed, the present south farm transformer, 50 KVA, will be transferred to the livestock farm. With the new high tension line that now reaches the north farm the electrical system will allow important changes to take place there. Water can be pumped into the water tower so that faculty and worker's families as well as livestock have an adequate supply. Electricity will allow the livestock faculty and staff to use grinding and mixing equipment for the preparation of balanced livestock rations. It will also allow the use of electrical equipment for research in present laboratories and those laboratories planned for the year ahead on the north farm.

If the decision remains firm that IAAS maintain responsibility for the two satellite campuses at Paklihawa and Lamjung then certain capital expenditures will need to be made there. These expenditures have been mentioned in Appendix B dealing with the two campuses.

Other buildings have been urgently requested by faculty and administration. Certainly housing and a guest house are high priority items. Specifically a woman's dormitory is urgently needed if IAAS is to begin training women leaders for Nepal. However, as one views the present and nearly completed facilities of the central campus, IAAS is indeed fortunate.

Land Improvement:

As noted above buildings for housing, teaching and research purposes are in place or under construction. But little has been done in terms of land leveling, irrigation and drainage facilities. These investments must now be given top priority if the research potential of IAAS faculty is to be fully utilized. Student work plots can then assume a more professional

status and teachers will have demonstrable evidence of what they are teaching. Year round forage management can be demonstrated in the field, not just talked about in lectures. Farmers field days can be held showing field crops where IAAS crops exceed the local farmers production. This has not been true in the past.

In addition to land leveling, irrigation and drainage facilities there is the need for immediate improvement in the security of crops, fruit trees, pastures, buildings and equipment of IAAS. Research crops are partially stolen, fruit trees stripped, pastures grazed daily by village cattle and equipment stolen or misused. In addition to wire fences and brick walls attention should be given to the internal guard system.

Equipment:

Hundreds of thousands of dollars of equipment for field work, teaching and research has arrived in Rampur and is now enroute. There are sufficient funds in the equipment budget to equip the present teaching and research laboratories. The new diagnostic laboratory for livestock has its own source of funding. The report of the library assistant covers the library equipment needs including audio visual equipment that has already been ordered for the IAAS faculty. (See page 79.)

Human Resources:

For the past several pages we have been describing the resources available to IAAS in terms of land, buildings, equipment and the amenities on campus. Now we shall discuss an even more important input to an educational unit, its faculty. At the time of the 4th JAR one year ago the faculty of IAAS were divided among the six departments as shown in Table I.

Table I

INSTITUTE OF AGRICULTURE AND ANIMAL SCIENCE

RAMPUR

DEPARTMENT AND PERSONNEL

(As of December 1981)

A. CROPS AND SOILS

| Personnel | Position | Present Status |
|---|---|---|
| 1. N.K. Mishra (M.S.) | Reader | Study Leave (SL) |
| 2. T.P. Nepal (M.S.) | Lecturer | On campus (OC) |
| 3. D.N. Yadav (B.S.) | Asst. Lecturer | SL |
| 4. N.K. Choudhary (B.S.) | " " | SL |
| 5. J. Timsina (B.S.) | " " | SL |
| 6. A.B. Karki (Ph.D.) | Reader | Resigned |
| 7. T.B. Khatri Chhetri(M.S.) | | SL |
| 8. A.P. Shrestha (M.S.) | Lecturer | SL |
| 9. P.P. Sharma (M.S.) | " | OC |
| 10. S.C. Sah (M.S.) | " | OC |
| 11. J.R. Joshi (M.S.) | Asst. Lecturer | OC |
| 12. B.R. Khakuryal (M.S.) | " " | OC |
| 13. K.P. Sharma (M.S.) | Lecturer | OC |
| 14. R.C. Sharma (B.S.) | Asst. Lecturer | SL |
| 15. U.S. Gupta (B.S.) | " " | SL |
| 16. L.P. Subedi (B.S.) | " " | SL |
| 17. B.B. Basnet (B.S.) | " " | OC |
| 18. Moti Lal Prasad (J.A.) | Instructor | OC |

B. HORTICULTURE

| Personnel | | Position | Present Status |
|---|---|---|---|
| 1. G.K. Shrestha | (M.S.) | Lecturer | OC |
| 2. D.D. Dhakal | (M.S.) | " | OC |
| 3. R.R. Adhikari | (M.S.) | " | OC |
| 4. S.M. Shakya | (B.S.) | Asst. Lecturer | SL |
| 5. G. Upreti | (B.S.) | " | SL |
| 6. D.R. Baral | (B.S.) | " | SL |
| 7. D.M. Gautam | (B.S.) | " | SL |
| 8. R.C. Koirala | (J.T.) | Instructor | OC |

C. AG. BOTANY AND PLANT PROTECTION

| | | | |
|---|---|---|---|
| 1. F.P. Neupane | (M.S.) | Reader | SL |
| 2. C.K. Mandal | (B.S.) | Asst. Lecturer | SL |
| 3. R.B. Thapa | (B.S.) | " | SL |
| 4. S.M. Shrestha | (M.S.) | Lecturer | OC |
| 5. T.B. Adhikari | (B.S.) | Asst. Lecturer | SL |
| 6. G. Dahal | (B.S.) | " | SL |
| 7. S.B. Gurung | (M.S.) | " | OC |
| 8. M.H. Khan | (M.S.) | " | OC (T) |
| 9. L.N. Bhardwaj | (Ph.D.) | Lecturer | OC (C) |

D. ANIMAL SCIENCE

| | | | |
|---|---|---|---|
| 1. N.P. Joshi | (M.S.) | Lecturer | OC |
| 2. S.D. Shah | (M.S.) | " | OC |
| 3. M. Sapkota | (M.S.) | Asst. Lecturer | OC |
| 4. D.B. Nepali | (B.S.) | " | SL |
| 5. J.L. Yadav | (B.S.) | " | SL |

| Personnel | | Position | Present Status |
|---|---|---|---|
| 6. M. Kharel | (B.S.) | Asst. Lecturer | SL |
| 7. K.R. Tiwari | (M.S.) | Lecturer | OC |
| 8. B.K. Sharma | (B.S.) | Asst. Lecturer | SL |
| 9. N.P. Sah | (B.S.) | " | SL |
| 10. S.K. Sah | (B.S.) | " | SL |
| 11. S. Tiwari | (J.T.) | Instructor | On Training |
| 12. A.K. Kayastha | (M.S.) | Asst. Lecturer | LL |
| 13. K.T. Augusthy | (M.S.) | Lecturer | OC (C) |
| 14. M. Shrestha | (M.S.) | Asst. Lecturer | OC (T) |

E. RURAL DEVELOPMENT

| | | | |
|---|---|---|---|
| 1. K.N. Pyakurel | (M.S.) | Reader | SL |
| 2. G.P. Shivakoti | (M.S.) | " | OC |
| 3. B.N. Pokharel | (M.S.) | " | OC |
| 4. P.M. Tulachan | (M.S.) | " | OC |
| 5. G.M.S. Adhikari | (M.S.) | " | SL |
| 6. S.R. Bajracharya | (M.S.) | " | Sabbatical Leave |
| 7. B.B. Bhandari | (M.S.) | " | SL |
| 8. N. Kunwar | (M.S.) | " | OC |
| 9. S.N. Tiwari | (M.S.) | " | On Branch Campus |
| 10. B.B.S. Dangol | (M.S.) | " | " " " |
| 11. A. Shrestha | (M.S.) | Lecturer | Sabbatical Leave |
| 12. M. Subedi | (M.S.) | Asst. Lecturer | SL |
| 13. C.M. Shrestha | (M.S.) | Lecturer | SL |

F. BASIC SCIENCES AND HUMANITIES

| Personnel | | Position | Present Status |
|---|---|---|---|
| 1. T. Mallik | (M.S.) | Lecturer | SL |
| 2. R.B. Chhetri | (M.S.) | Asst. Lecturer | OC |
| 3. D.P. Basyal | (M.A.) | " | OC (T) |
| 4. P.N. Tripathi | (M.A.) | Lecturer | OC (C) |
| 5. J. Prasad | (M.S.) | " | OC (C) |
| 6. J.N. Srivastav | (M.S.) | " | OC (C) |

---

SL = Study Leave

LL = Long Leave

(T) = Temporary

(C) = Contract

OC = On Campus

During the past twelve months, our resident faculty has been strengthened by the return of the following members:

Faculty Returned 1982

| | |
|---|---|
| Mr. Murari Subedi | M.Sc. in Extension and Education |
| Mr. Chandra Kishore Mandal | M.Sc. in Entomology |
| Mr. Deo Nath Yadav | M.Sc. in Agronomy |
| Mr. Jagat Lal Yadav | M.Sc. in Animal Science |
| Mr. Sudarshan Tiwari | Training in Animal Science |
| Mr. Ram Chandra Sharma | M.Sc. in Agronomy |
| Mr. Nagendra Shah | M.Sc. in Dairy Technology |
| Mr. Ramesh Bahadur Thapa | M.Sc. in Entomology |
| Mr. T.B. Khatri Chhetri | Ph.D. in Soil Science |
| Mr. Fanindra Prasad Neupane | Ph.D. in Entomology |
| Mr. Kailash N. Pyakurel | Ph.D. in Rural Sociology |

During 1982 the following faculty left Nepal for further study:[1/]

| | |
|---|---|
| Mr. G.K. Shrestha | Ph.D. in Horticulture |
| Mr. N.P. Joshi | Ph.D. in Animal Science |
| Mr. T.P. Nepal | Ph.D. in Crops |
| Mr. K.P. Sharma | Ph.D. in Crops |
| Mr. Ram Chandra Sharma | Ph.D. in Agronomy |

---

1/ Mr. Shrestha and Mr. Joshi are being supported under the MUCIA/AID Project through September 1984. The remainder have made their own funding arrangements.

Other Trainees:

| | |
|---|---|
| Mr. Ganesh P. Shivakoti | 1 yr. non-degree -- Netherlands |
| Mr. Sant Bahadur Gurung | 1 yr. non-degree -- Netherlands |
| Mr. B.B. Basnyat | Began his masters work in Ag. Engineering at the Asian Institute of Technology at Bangkok, Thailand in January, 1983. |

Faculty Organization:

The single unit organization of the first years of IAAS evolved into the three divisions of Plant Science, Rural Development and Animal Science. In early 1981 the Dean agreed to establish eight departments in place of the three divisions.[2/] In my memorandum to the dean I suggested some simplification of existing committees in line with this departmental restructuring, (pg. 91). The research and extension committees have been reorganized along these lines.

During the past two years approximately half the IAAS faculty were training in the U.S., the Philippines, in India or were on leave. The IAAS faculty recommended that only departments with six or more resident faculty members should be organized at this time. The eight departments were combined into the six departments shown on page 3 Appendix D. Other departments may be created as additional faculty return.

Operational Procedures:

Operational procedures at IAAS are in a large part dictated by Tribhuvan University. These procedures follow the standard format of most developing nations. It is much more important to be able to account for the last

---

[2/] Appendix D, page 90.

paisa and to show the proper initials for its expenditure than to reach a certain goal or harvest a research plot in time. Top down decision making, a relatively isolated institution, a leadership lacking decision making power or unwilling to exercise it sets the stage for frustration and non performance yet everyone protected by the rules. In the book by Caiden and Waidavsky Planning and Budgeting in Poor Countries, the authors point out that even inadequate budgets are seldom fully utilized, in part due to the above reasons. IAAS also returned uncommitted funds to Tribhuvan University in past years while buildings and equipment deteriorated and support facilities were lacking.

The Incentive System:

The penalty/reward system follows T.U. guidelines. Seniority dominates promotion and recognition decisions. There is little flexibility to reward the productive teacher, researcher or extension worker. Job specification and evaluation procedures are discussed but not implemented. The average professional and semi professional in Nepal prefers to stay with the seniority system in spite of its admitted weaknesses than go to another system where relationships and tradeoffs may set the pattern for advancement, where who you know is more important that what you know.

In spite of a limited incentive system IAAS administration with MUCIA/AID help is seeking to raise faculty and staff morale. Better housing, better equipped laboratories and classrooms, possible attendance at regional and international conferences, availability of research funds, with publication of their findings, and an opportunity to interact with other professionals in Nepal, are all being given attention so as to improve morale and productivity of the faculty.

IAAS has upgraded the quality and quantity of support services available. Typists, electricians, plumbers, mechanics and field workers improve the working and living conditions at Rampur. MUCIA/AID funds have provided an Apple II Computer to make available in Rampur statistical analysis capabilities. The latest copier machine has been installed and this makes possible the printing of the Joint Annual Reviews, progress reports and occasional papers. When the reproduction and publication center for IAAS is in place this copier will become its workhorse.

If IAAS moves to become an autonomous or semi-autonomous university as envisioned in the following section of this report the new administration of the Agricultural University will have more freedom to deal with this knotty problem of incentives to productive workers. Unproductive personnel, whether administrators, faculty, staff or field workers, must be removed if they do not respond to guidelines for productivity. Of course both penalties and rewards have to be supervised and subject to review so that they do not reflect personalism, nepotism or a loyalty cult.

Management:

Management in textbook tradition is the bringing together of physical and human resources in an acceptable environment to reach agreed upon objectives - whether physical products, healed patients or trained scholars. Management in Nepal and IAAS is much less theoretical. It is more the art of survival from day to day, week to week. It is finding funds to buy diesel fuel for the tractor to plow the field, borrowing a vehicle to get to the District office, repairing the electric pump so the campus has water. It is interacting with students over a threatened strike or listening to faculty with real or imagined complaints. All of this maneuvering

has to be done within the narrow confines of detailed procedures, financial restrictions and limited decision making power. No wonder that management in Nepal is seen more as a political exercise than the 'managing' of physical and human resources in some efficiency criteria.

Faculty trying to operate in such an incentive and management system have even fewer degrees of freedom. The land was not ready for wheat plots because the tractor was broken down or out of fuel; chemicals required for chemistry class were acquired only partially one month after classes started; laboratory equipment was not working, class textbooks listed in the catalog were not available -- they are no longer in print. The listing of their complaints is embarrassingly long but it is a condemnation of both the effectiveness of administration and lack of innovation of faculty. The faculty may not go on strike but they certainly slow down their productivity. Faculty could do much to improve lab procedures, clean up and maintain equipment, make lectures and field exercises alive and intellectually stimulating. Faculty are the favored few in the Kingdom of Nepal and have a responsibility to do more than they are currently doing.

Leadership:

In institutional development jargon we speak of dynamic leadership, its catalytic function of making things happen. In Nepal leadership is generally spoken of in terms of authority pattern, how much power does the position wield. This is true not only in the power positions of HMG but at the Rampur and satellite campuses of IAAS.

But the past is giving way to the present and this is evident at Rampur. Younger leaders and returning faculty are chaffing at traditional

management and leadership modes. Management by Objectives and other such management techniques may not come this decade but changes are coming.

## IAAS Products

IAAS justifies its existence on the basis of performing three main functions or tasks of teaching, extension and research. The products of such efforts are: trained workers and students; services and shared knowledge with the farmers and agro-industries of Nepal; new practices and production techniques gained from research that are useful in Nepal and to scientists in other countries.

### Teaching:

During the seven year period of the MUCIA/AID-N contract the number of JTA's and JT's graduated from Rampur and the satellite campuses of IAAS exceeded two thousand. These JTA's and JT's plus those now in training constitute the dominant part of the 4,893 middle level trained agricultural technicians cited as required by 1984/85 in the APROSC report pg. 58.[1/]

In addition to JTA's and JT's, IAAS Rampur now offers the three year diploma degree or B.Sc. The third group of B.Sc. graduates has now left the campus. The total number of graduates are 258. There will be no graduating class in 1983 due to the extended strikes on the IAAS campus during recent years. Current projections are that IAAS will graduate approximately 100 B.Sc. students each year.

There is an urgent need to evaluate the teaching program of IAAS and the quality of our graduates. One of the first research proposals under our

---

1/ Nepal: Trained manpower for the Agricultural Sector. Volume 1 Agricultural Projects Services Center.

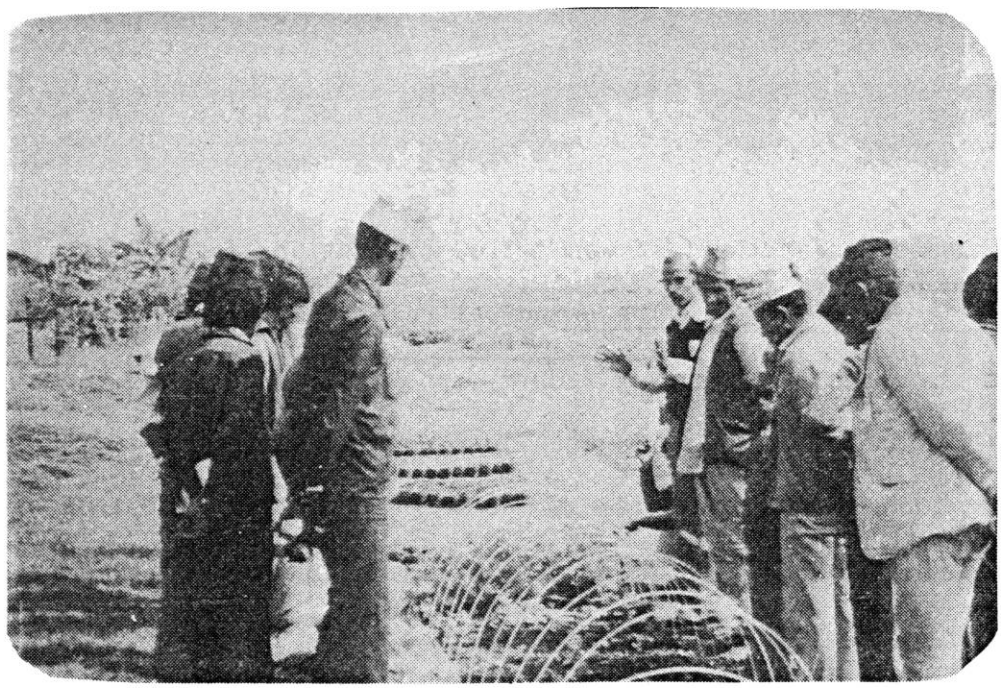
Examination time at I.A.A.S.

MUCIA funded research effort was titled Evaluation of the B.Sc. (Ag.) Program at IAAS, Rampur. The principal researchers, B.N. Pokharel and G.P. Shivakoti, expected to survey faculty, present students and former students and their immediate supervisors as to suggested improvements for the B.Sc. program. Unfortunately, this was the only funded research proposal that was not carried out. The study is still needed and might well be broadened to include the JTA - JT programs.

B.Sc. graduates are employed by the various HMG Agriculture related departments. This includes Department of Agriculture, Livestock, Agriculture Development Bank, Internationally funded development projects, IAAS faculty, etc.

Extension:

Successful farmer's day programs have been held annually on the Rampur Campus. The last one held in March 1982 had over 300 farmers and community leaders on campus. They viewed the demonstration plots, talked to the faculty on diseases of plants and animals, and took soyabean seeds and cassava shoots given to them back to their farms for planting. Faculty have visited farmer's fields to diagnose insect and disease problems. Sometimes the problem requires soil analysis to detect trace mineral deficiencies. Demonstration plots are established in farmers fields to test new or introduce plant varieties and see their adaptability on the



Farmers' Day on campus.

farmer's field. Water buffalo and cows are brought to the livestock farm to breed with high quality bulls. A pilot extension program (PEP) has been established in an adjoining Panchayat. The PEP serves as a social and field laboratory for students and faculty alike. Farmers and Panchayat

leaders have also appreciated the services received. The nature of the project is discussed in the pamphlet titled The IAAS Pilot Extension Program of Shardanagar Panchayat written by S.B. Gurung and G.P. Wood. This publication is available from IAAS or MUCIA on request.

Research

IAAS is considered a teaching unit by T.U. and the incentive system and vacation regulations operate accordingly. Ask any faculty member carrying a major research project if any lessening of teaching loads is given because of his research. "Certainly not" he answers. Actually he thinks he's given more teaching responsibilities when doing research. The faculty cites a lack of administrative support, an almost unbelievable delay on getting supplies and equipment even on approved projects, lack of security of field plots, no pay incentive if research requires working during official months of vacation, no incentive for quality research, non operable laboratory equipment. In spite of the possible truth of the above charges some faculty have carried out creditable research and published it. The following research bulletins are evidence of this:

IAAS Journal Vol. 1, No. 1 December 1977

IAAS Journal Vol. 1, No. 2 June 1978

IAAS Journal Vol. 1, No. 3 September 1979

IAAS Journal Vol. 2, No. 2 June 1981

Starting July 1, 1981 the MUCIA/AID contract provided a sizeable fund to aid and encourage research. The sudden upsurge in research activities across a broad spectrum of faculty and the intellectual excitement it has generated has been most gratifying. To record and encourage this effort of MUCIA funded IAAS research I am adding Appendix E with a synopsis of

In the 1981 JAR proceedings I proposed that a school or college of Home Science be one of the six colleges of the new university. Educational statistics show a rapid increase in the percent of literate Nepalese women. Through radio and newspapers the women of Nepal are insisting on being heard and seen. They want educational opportunities for themselves and especially for their children. The hopes for a prosperous and healthy nation are also heavily dependent on an informed female population. The health and well being of the family, the productivity of the women's labor in the home and in the field all can be enhanced through formal and non-formal educational channels. One year later I conclude that a college of Home Science in Nepal does not at this time have the support that built such colleges at the universities of the Punjab in India a decade ago. However, the time is right to begin the building of a strong department of Home Science. By building a solid department with the functions of teaching, research and extension the foundation will be there for future expansion when demanded.

At the 4th JAR I also stressed the need for a college of Ag. Engineering. The need is evident in fulfilling the teaching requirements listed in the IAAS catalog of courses. The specific objectives of course Agricultural Engineering 31 at IAAS are as follows:

"upon completion of this course the student will be able to -

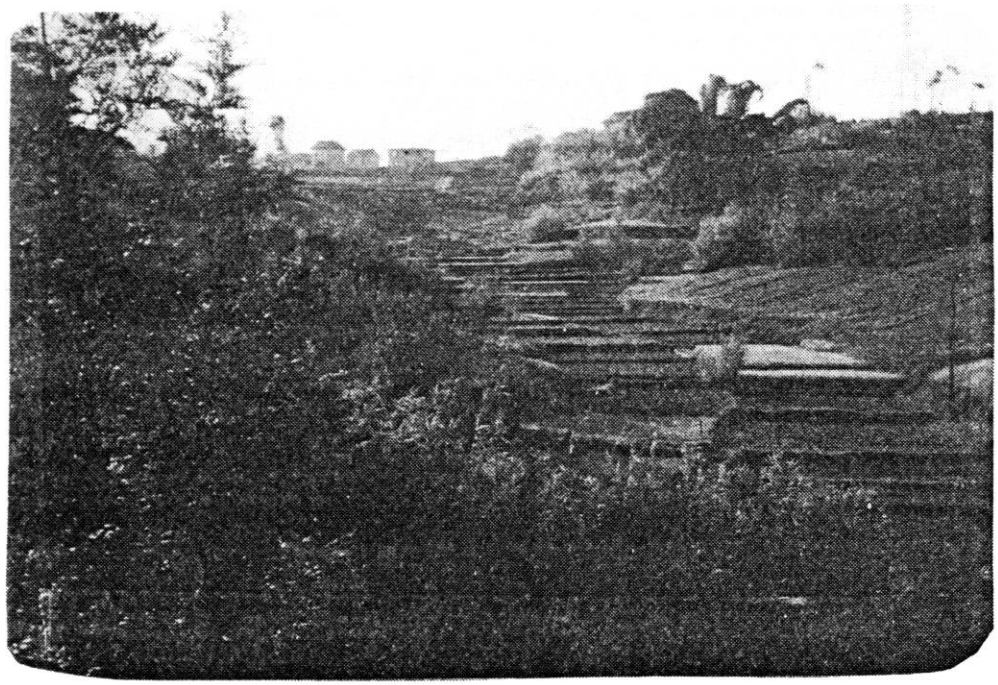
1. operate and maintain different farm equipment.
2. perform soldering, arc welding and gas welding practices.
3. organize, maintain and operate diesel and gasoline engines, centrifugal pumps, electrical motors, wind turbines and water turbines.
4. Survey land, draw contours and determine the slope of land."

During 1981-82 IAAS has not been able to attract and hold one Engineer to teach and supervise the practicals of the above course. Nor is it just a failure in teaching. Valuable machines lie broken down around the North and South farms for want of repair skills. Tractors are broken down, gasoline and diesel motors sit in disrepair. Nepal needs simple machines of appropriate technology for the small farms and smaller fields of the farmer. The farmer needs it to prepare his land, control the weeds, harvest his crops and get them to market. Irrigation is the great hope of Nepal to secure a dramatic increase in its agriculture production. IAAS as the institution of highest learning in agriculture should be in the forefront of knowledge and experimentation on irrigation practices and production yields.

During the past twelve months since the 4th JAR the acting dean of IAAS has worked seriously to bring and retain an Ag. Engineer at Rampur. The relative isolation, the faculty rank and associated low pay scale at IAAS have caused all efforts to fail. It is important that the new dean of the College of Agriculture has the budget and positions to build a strong department of Ag. Engineering over the next few years.

Department of Forestry:

In the hills of Nepal, agriculture and forest products go together. Fodder trees supplement the on-farm forage for buffalo, cattle and goats. Leaves are gathered and added to the farmers compost to maintain land fertility and humus. Wood from the forest is the traditional source of fuel for cooking and winter heat. The recent accelerated soil erosion in the hill agriculture follows the rapid deforestation and loss of soil fertility and threatens the livelihood of hundreds of thousands of farm households.



Hill agriculture Nepal.

Continued deforestation threatens the very watersheds of the great rivers of Nepal. In the Terai, forest products are important for fuel and construction of buildings of villager and farmers alike. The integrated nature of forestry and agriculture in much of Nepal argues for the need of a strong Forestry department at the Rampur Campus. Such a department should maintain close collaboration with the two schools of forestry located at Hetauda and Pokhara.

My closing recommendation for the new college of agriculture is that the manager of the south farm be responsible to the dean of the college. The south farm is used for students' practicals, research sites for the faculty and demonstration plots for the extension program. In the past it has served as an income earner to the Tribhuvan University budget. This latter purpose may decline in the future but IAAS may be more involved in seed

multiplication and certification. For the performance and coordination of the above functions I would have the farm manager responsible to the dean of the College of Agriculture.

Research:

The research program at IAAS has proved to be an exciting and satisfying effort during 1982. Many of the research projects have only begun and so the report on research attached to this End of Tour report will be a progress report on certain research projects.[1/] However the range and depth of topics will enrich both the teaching and extension programs of IAAS. The idea of a research division was first proposed in the pre-feasibility study on Higher Education in Nepal.[2/] The study proposed that such a division carry out the following functions:

1. Coordinate, initiate, and support all research activities in the Institute.
2. Secure assistance for supporting all research activities in the Institute.
3. Make periodical evaluation of all research projects.
4. Publicize the results for wider dissemination.

These functions are still valid responsibilities of the research division today.

The present MUCIA/AID-N contract earmarked a sizeable fund to support IAAS research beginning July 1, 1981. It took six months to work out the institutional linkages and auditing procedures but during the last twelve months rapid progress has been made.

---

1/Appendix E, pg. 93.

2/Ibid pgs. 80-82 and appdx. F. of same report.

The director of this division will need to consult with co-administrators of IAAS on joint appointments between teaching, research and extension. Work loads, remuneration levels and research facilities will all involve the director in delicate negotiations.

Animal Science:

The Animal Science Department has displayed new vitality during the past 18 months. Partly this was due to returning staff from India and the USA. Additional funds were being negotiated from the Chitwan Development Project. MUCIA funds were committed for laboratory and production equipment and the arrival of early orders has raised morale. Also it now appears that all blockages have been removed to make sufficient electricity available to the livestock farm to pump water to the water tower, run their motors to grind and mix feed rations and allow the operation of the present laboratory. The proposed diagnostic laboratory and the dairy research and demonstration laboratory will also depend on this augmented electrical supply.

The World Bank is in final discussion talks with Nepal. Sizeable funding commitments for laboratories, buildings, training and equipment will be available if agreement is reached. It is my thought that this animal science division may be ready for college consideration in about five years. At that time the leadership would be exercised by a Dean equivalent to College of Agriculture. This depends of course on the continued growth of faculty numbers and faculty commitment in the intervening years.

My recommendation that the North farm manager be under the director of Animal Science is for efficiency criteria. The north farm is used almost exclusively for livestock purposes including teaching, research and extension. It would be simplest to coordinate such efforts if the farm

manager answers to the director who has overall responsibilities for the north farm.

Basic Science Division:

The Division of Basic Science would build upon the strengths of the present department of the same name. Its faculty would evolve out of the needs of the university it would serve. Presently the department devotes most of its time to teaching. Physics, Chemistry, Mathematics, English, Nepali and Nepali History are presently presented. Project work on meteorology and micro climatology is offered to diploma level students. Due to the heavy teaching loads the faculty of this unit have little time for research. They contend that there has been little opportunity for them to get Ms. and Ph.D. training scholarships. Since there is no science campus in the area they feel professionally isolated.

The director of this division will have to deal with directness and tact to these concerns to lift the morale of his division. Recruiting additional permanent faculty to handle the courses above is needed rather than depending on short term contract personnel. Further study should be given to the possibility of establishing a Basic Science College on the Rampur campus serving the people of the Chitwan district as well as our B.Sc. diploma students.[1/] Such community concerns are evidenced from the fact that two neighboring panchayats have voted to donate 50 hectares of uncultivated land to establish a basic science campus.

---

[1/] 4th JAR proceedings pgs. 67-68.

College of Nonformal Education:

There are few objectives for IAAS that have been raised as consistently and emphasized as strongly as the need for IAAS to initiate and maintain a strong nonformal education program. The prefeasibility study of 1972 pointed to the need for such a program. The contract between MUCIA and USAID on December 1, 1975 made MUCIA a full partner with IAAS in the "development of an extension/adult/non-formal education program for villages and out-of-school youth and adults." Contract amendments have continued to reiterate the need for such programs. Why then have such programs not been implemented? Is there something about the culture, the stage of development that has suppressed the program?

I have proposed in Appendix B, pg. 65 that the satellite campuses become the centers of learning in the regions of their location. This would include the more formal courses for JTA training. It would also include a wide range of learning activities for high school students, out-of-school youths and adults. The scope of such programs would depend on the interest of recipients and the resources of the campus and college. Programs of family nutrition, cleanliness, water purification, crafts, credit management and literacy have proven effective in improving the quality of rural life in many developed and developing nations. These regional centers of learning in other countries have received public and private support for their efforts.

From an organizational point of view I recommend that the Dean appoint a director to coordinate all the administrative details of the satellite campuses whether the number turns out to be two, four or more. Campus chiefs would handle the day to day operations of these satellite campuses.

It is also my recommendation that the extension programs of the Agricultural University be handled by a Director responsible to the Dean of the College of Non-formal Education. The extension programs would include those at the Rampur campus including the Pilot Extension Program as well as those recommended for the satellite campuses. Such extension programs need to give high priority to efforts that will improve the health, skills, knowledge and general well being of the rural women of Nepal.

A director responsible to the Dean of the college could give direction and support to the non-formal programs of education offered on the Rampur and satellite campuses.

I would see the directors of extension and non-formal programs responsible for budget review and program implementation of their respective divisions. They should also have the facilities for the development of audio and visual materials needed for program outreach.

The responsibility for conducting special workshops for medium and high level officials of HMG might well be given to the director of non-formal programs. The importance of this program is stressed in Appendix A, pg. 51. However, at this moment it is difficult to project the demand for such services.

Advisory Board:

I would recommend that the advisory board be constituted in the earliest days of the college and meet regularly with the Dean on policy matters. The clientele of this college potentially range from highest government officials to the landless laborer, from the well schooled to the illiterate. International donors and loan organizations will influence the

college as well as HMG departments that sponsor and hire trainees from the college and so should be represented. An advisory board can help the Dean keep sensitive to the wide range and changing aspirations of the clientele of this college.

Appendix A

The MUCIA Nepal Project

The Early Years

The first institution of higher education in Nepal, Trichandra College, was established in 1918.[1/] From then until at least 1951, this was the only college in Nepal. The National University -- later to become Tribhuvan University -- was established by the University Act of 1959.

The fourth five-year plan (1970-75) emphasized educational quality and the initiation of a practical, vocational orientation from the secondary through the tertiary levels of education. The Tribhuvan University Act of 1971 was responsible for implementing the higher education directives of the new National Education System for 1971-1976. The objective of the new plan was to produce trained manpower. On the 16th of July, 1972 an institutional child was born. Its name was the Institute of Agriculture and Animal Science -- IAAS. It was one of thirteen institutes conceived by Tribhuvan University at the time and it is the Institute on which this report focuses.

The first location of the Institute was a Shri Mahal in Pulchowk - a suburban area near Kathmandu. In 1970, a team from the University of Illinois, a MUCIA member institution, studied agricultural education in Nepal. They recommended that USAID contract with a U.S. university to provide technical assistance for the new agriculture institute. Before the Institute was officially settled in its new home, another team composed of U.S. and

---

[1/] Higher Education in Agriculture in Nepal - the report of a pre-feasibility study. pg. 20. The following references in my report to the 1972 period rely on the pre-feasibility study or synopsis of the same.

Nepalese educators began a study of higher education in Agriculture in Nepal. This team came in response to a request by the Agency for International Development and His Majesty's Government of Nepal to plan and conduct a pre-feasibility study for higher agriculture education. The team from the Midwest Universities Consortium for International Activities (MUCIA) and Nepalese colleagues carried out a vigorous five phased study during the period May to September 1972. The exercise involved an intensive look at the state of agriculture, education and other relevant aspects of life in Nepal. It also involved international travel and seeking what had been learned in other countries applicable to the Nepalese situation.

Urban life in Nepal.

In the final phase, the team asked itself questions like: 1) are there any jobs waiting for those who will complete anticipated programs: 2) Are there likely to be in the future? 3) Are there any students available who meet minimum entrance requirements? 4) Are there likely to be in the

future? 5) Are there adequately prepared staff available? 6) Are there likely to be in the future? 7) Are adequate financial support, buildings, land, and equipment likely to be available?

As the team thought through their responses to these and other questions they turned to knowledgeable informants. One of the most esteemed informants told them "nothing is really feasible here in Nepal" (Dr. H. Gurung). In spite of this sage advice the study team recommended a vigorous and dynamic approach to higher agriculture education in Nepal. They deemed the activity not only feasible but necessary with emphasis on the practical and applied aspects of agriculture as against traditional academic exercises of rote memory for examination purposes. The study recommended a strategy of international cooperation in achieving a unique system of higher education in agriculture and related sciences linked with all other segments of Nepalese education and rural life. The system was to be in conformity to the National Education System plan and designed especially to prepare agriculturists to serve as teachers, researchers, extension workers and agricultural officers.

The study emphasized quality and high standards of relevant instruction adapted to Nepal's needs. Such instruction was to begin with applied practical agriculture and go from there to theoretical underpinnings insisting on practical field work with real plants and animals for both students and teachers. The I.S.C. program was to be revitalized and set to give adequate preparation to a B.Sc. program. The first effort would be building a central operating campus. Later satellite campuses would be built serving different locations in a rural atmosphere with plenty of agricultural lands.

"Early in 1975, after three years of exploratory work with the Government of Nepal, USAID asked American Universities and consortia to submit proposals for a technical assistance contract to build Nepal's capabilities in higher agricultural education.[1/] There was then no College of Agriculture or degree granting program of agricultural education in the country. The Ministry of Agriculture did offer one or two years of formal training to its Junior Technical Assistants and Junior Technicians. Junior Technicians and students who wanted an agricultural degree had to study at Indian Universities."

On December 1, 1975 USAID signed a contract with MUCIA to enter into a full partnership with the Institute of Agriculture and Animal Science (IAAS) of Tribhuvan University to plan and implement various activities designed to achieve the following objectives: To expand and improve the IAAS at Rampur, Nepal so that it will be able to provide quality training and academic programs for: middle and high level officials of the Ministry of Agriculture; vocational agricultural teachers and supervisors; and farmers at the community level.

As contractor, MUCIA was expected to assist with the overall development of the IAAS in terms of educational philosophy and institutional goals. The IAAS was to be a practical and a service oriented institution. Specifically MUCIA was to 1) focus on assistance in the overall development of the IAAS including academic planning with the Field Team Leader working with and through the Dean of IAAS, 2) assist in the development of a departmental structure, curriculum, courses of study, and practical field

---

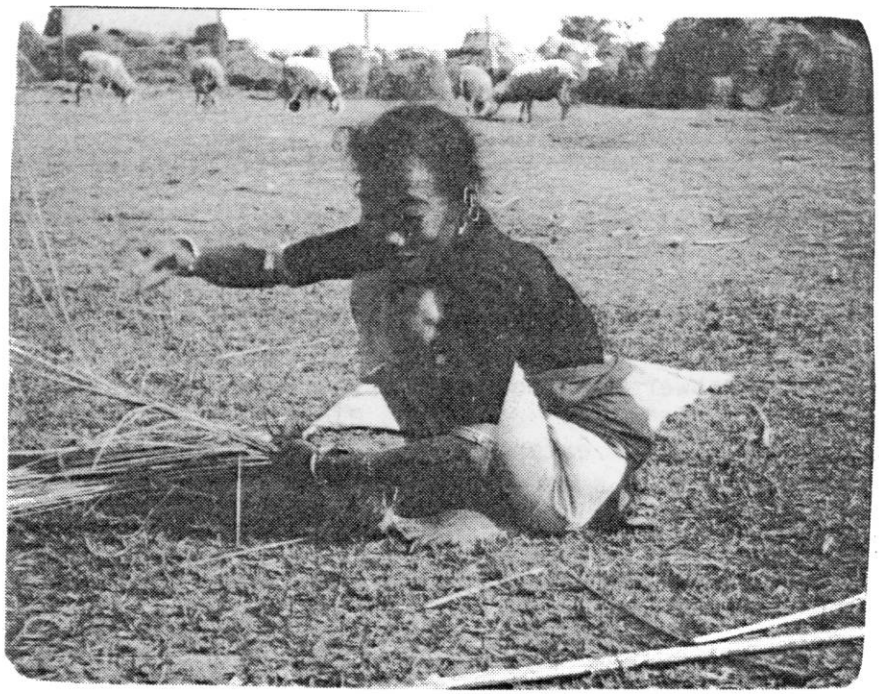
[1/] From notes by George W. Axinn in MUCIA Newsletter, September 1982.

and laboratory experiences, 3) assist with staff improvement, participant selection and campus planning, and 4) assist with the development of an extension/adult/non-formal education program for villages and out-of-school youth and adults.

The functions of IAAS as outlined by the contract include the following: 1) To meet the manpower needs of the various agricultural institutions in Nepal through training of extension and other personnel at the sub-degree, degree training, and short course program; 2) to meet the national educational manpower needs through training of teachers and development of non-formal programs for out-of-school youths and adults; and 3) to meet the need of farming communities through short courses, pilot programs with model villages and training programs coordinated with the Agricultural Development Bank.

MUCIA as prime contractor, subcontracted with Michigan State University and assigned it the responsibility to lead and manage all facets of the project, namely making MUCIA personnel available as visiting faculty members at IAAS, supporting study at MUCIA Universities for IAAS faculty, and assisting in the acquisition of certain educational materials and project equipment.

Overall project goals were to develop professional agriculturists willing to go anywhere in Nepal to increase agricultural productivity and improve rural life for the rural people. The Institute was to emphasize practical learning to understand how rural people make their livelihood. Teachers and students must go beyond textbook and libraries, beyond the Institute laboratories and farmlands, into rural villages to learn from farmers themselves. The aim of bringing farmers, students, and teachers together is to



Rural life in the Terai of Nepal.

create a variety of applied research projects that send faculty and students to farms to gather data and share experiences.

"IAAS was temporarily run by university staff and government officials during its early period, but now all 68 teaching staff members belong to the university and nearly two-thirds of them have an M.S. degree or its equivalent.[1/] Until recently, the IAAS program had been limited to the final year of a two-year Junior Technician (J.T.) training course at Rampur, and depended on the cooperation of the Department of Agriculture to train Junior Technical Assistants (J.T.A.'s) on government farms. The Institute now has two of its own branch campuses where it trains J.T.'s and J.T.A.'s and prepares agricultural graduates with Bachelor's degrees for the job

---

1/ IAAS in Retrospect and Prospect; Pyakural, Kailash. Reader on IAAS Faculty. MUCIA Newsletter, Sept. 1982.

market (at the Rampur Campus). Many graduates are working in various organizations in Nepal and one of the graduates has begun his Masters degree in Education at Michigan State University. In light of resource constraints -- Nepal's economy is still not strong enough to support rapid educational growth, and there are local disadvantages in being far from Kathmandu as well as the inherent bureaucratic problems of all organizations -- IAAS' achievements to date have been rather remarkable and satisfying."

"The focus of plans for the future of IAAS is changing because problems are changing. Old problems were delays in placing candidates for higher studies and difficulties in getting needed materials. The fourth Joint Annual Review in December 1981 has confronted new issues, however. It called for more autonomy for IAAS, envisaged room for additional programs and institutional build-up, and strongly advocated incentives to keep research productive. In earlier years the Institute needed leadership that could build its very foundations (literally from the ground up), explain the Institute's doctrine, negotiate year-to-year goals, and move the organization in timely fashion toward its intended mission. Now, with a young, energetic, and qualified cadre of faculty members and the establishment of the Institute accomplished, expectations have shifted from program-building to faculty-building."

"Some of the more important manpower problems during IAAS' initial years were lack of timely recruitment of personnel, difficulty in the nominating procedure for higher training, and an inadequate number of faculty members on campus. Today there emerge new problems -- such as those associated with unbalanced growth of different faculties and a rising need to

establish incentives for outstanding research -- to be tackled and solved. Faculty members must not only know objective criteria for job performance but must also see tangible rewards for their accomplishments."

Contractual Basis of MUCIA/IAAS/USAID-N Arrangements

We have been tracing the beginnings of Agricultural Education in Nepal. We have recorded the need, the philosophy of approach and activities envisioned to implement educational policies. But as Dr. Pyakural has stated in the above article IAAS has grown and a new array of problems, concerns and challenges face the Institute today. Have the contractual arrangements changed to meet these new conditions? Do they need to be changed? Let us review briefly the outline of contractual arrangements beginning in 1976. Then we will look at the mission of IAAS at the beginning of the project and that of today. I shall present a rationale as I see it for the changes in IAAS mission during this period of time. Did the contracts, contract amendments and agreements recognize and authorize the changes that took place? Only in a partial manner.

"A. General Agreement[1]/

The General Agreement between TU and MUCIA consists of certain activities for the following purposes:

1. Staff and program development, including training of teaching and research personnel.

2. Research projects, preferably of a collaboratative nature, involving scholars both in Nepal and in the U.S.

3. Exchange of scholars.

4. Exchange of students.

---

1/ This section excerpts material relevant to the historical tracing of IAAS from the Wilson-Sofranko IAAS work plan.

5. Development and exchange of publications, library materials, biological specimens, data and other research and teaching materials.

6. Exchange of information and services relating to academic, cultural and professional affairs on a continuing basis.

B. Activity Agreement

Activity agreement No. 1 between IAAS and MUCIA lists the following objectives:

> ".... the needs for development (at IAAS) of the educational philosophy and institutional goals as part of the foundation for program and staff development, academic planning, campus planning, and development of educational experiences for students. In addition, there is a need to develop a non-formal program for villages and for out-of-school youths and adults which is directed toward solution of problems of national development."

C. The contract between MUCIA and AID

The contract between MUCIA and AID which supports the development of the IAAS program stated the following:

> "The contractor (MUCIA) will assist with the overall development of the IAAS in terms of educational philosophy and institutional goals. The IAAS is to be a practical and service-oriented institution, with the 'upside down' curriculum (one which engages the students in a combination of practical experience and academic training) operating in all programs."

The contract states that MUCIA's involvement will include, but will not be limited to, the following:

"1. Assist in the overall development of the institution, including academic planning, with the Chief-of-Party working with and through the Dean of IAAS.

2. Assist in the development of a departmental structure, curricula, courses of study, and practical field and laboratory experiences. Contractor staff members will initially teach a minimum number of courses.

3. Assist with staff improvement, participant selection and campus planning.

4. Assist with the development of an extension/adult/non-formal program for villages and other out-of-school youths and adults."

D. Program Goals

The objectives in the several documents above were consistent with those of IAAS. Program goals to meet the several objectives have been carried through from the initial work plan to the present. In brief, IAAS/MUCIA/AID program goals are composed of:

1. Development of IAAS staff.

2. Organizational development.

3. Program development (degree, research and extension programs).

4. Administrative support programs (physical plant, services).

5. MUCIA team management (support system in the remote area of Rampur).

E. Changes since the beginning of the contract in 1976

Beyond including in this document, for the record, the above sets of objectives, several changes in the direction in this program have occurred which are vital to understanding the operational environment in which this work plan is placed. Briefly, the mission of IAAS at the beginning of the project and that of today, is summarized:

1. In 1976, His Majesty's Government (HMG, the government of the Kingdom of Nepal) envisioned in Rampur, an institution (IAAS) which would provide practical agricultural training, at respective levels, for:

   a. Teachers of vocational agricultural education in the secondary school system;

   b. practical/technical training through one- and two-year certificate programs for HMG/Ministry of Agriculture and commercial agriculture personnel;

   c. short courses for farmers;

   d. an array of non-formal educational programs for out-of-school youths and adults.

2. Today, HMG views IAAS as being responsible for producing:

   a. agriculturists with practical training (one- and two-year certificates, Junior Technical Assistants, JTA, and Junior Technicians, JT, respectively:

   b. Professional agriculturists at the B.Sc. level.

   c. A program complete with teaching, research and extension responsibilities.

What has happened to the original mission in the intervening years? Have the vocational agricultural and nonformal educational programs been completed? Or set in motion? On the contrary, these responsibilities have been discontinued or their fate undecided or have been assumed, in part, by other agencies or institutions. The mission of IAAS has shifted from a practical, applied program of training to a combination of applied and elite agricultural education."

Q. Why was the training of Vo. Ag. Teachers dropped at IAAS? Late in the decade of the 70's there was a growing national disenchantment with Vocational Education in the high schools of Nepal and this included Vocational Agriculture. The training of Vo. Ag. teachers at IAAS was terminated as a policy reflection of national priorities in 1978.

Q. What if any changes have taken place at IAAS for practical/technical training of one and two year certificate programs (JTA & JT)?

All training of JTA's is now done at the Satellite campuses of Paklihawa and Lamjung (see appendix B). The only exception is a small group of 25 JTA horticulturists starting in the second half of 1982 at the Rampur campus.

The decision by the Agricultural Academic Board in July 1982 to terminate the academic JT program and break the JTA's academic ladder linkage will upset many potential JT-JTA candidates. Many students saw and used the earlier linkage to gain access to the B.Sc. degree and neither they nor their parents saw serving agriculture as fulfilling their goals. Many JTA's and JT's became politicized and used their political leverage to thwart examination and quota systems and move into the B.Sc. program. This harrassment of teachers and administration contributed to growing consensus of IAAS faculty that at least at the Rampur campus they would be happier with only B.Sc. students.

Q. How well implemented has been the 'upside down', practically oriented curriculum so strongly pointed to in the prefeasibility study?

The IAAS curriculum catalog still stresses the laboratory, the field plots, and the farm experiences. But closer observation will indicate that many laboratory exercises are only demonstrations by the teachers, lectures instead of doing, and seldom fill the scheduled time. Field and livestock projects are partially successful. Some faculty work hard to give their students a meaningful experience in these projects. Other faculty, knowing there is no reward system for doing a good job, get by with a minimum of effort.

Q. What has happened to the objective of providing short courses for farmers? Little has happened and little is likely to happen without a change in the organizational and incentive system. I propose in Appendix B that the Satellite campuses could and should offer farmer short courses. They could offer an array of non-formal educational programs for out-of-school youth and adults. Faculty from Rampur and guest lecturers from Kathmandu could be brought to their campuses to complement local faculty. But I am now persuaded that the Rampur campus should be engaged in this same educational effort. The honourable Mohan Man Sainju worried at the 4th Joint Annual Review that he saw the IAAS faculty withdrawing into its secluded ivory towers. I think he made a correct analysis. I believe that the above short course involvement of the faculty with the farmers, merchants, housewives and officials of the region will help keep IAAS faculty relevant to the agricultural problems around them.

Q. What has been done on the objective of IAAS giving in-service training and holding workshops for middle and high level government officials of HMG?

Little has been done to date. Faculty expertise of sufficient stature has only recently been attained at IAAS with the return of well qualified M.Sc. graduates plus three Ph.D.'s in the last nine months. There will be other colleagues returning with Ph.D.'s in the next two years. Now is the time to take this objective seriously. With the addition of an adequate guest house (25-30 beds) the Rampur campus could become an exciting meeting place for HMG officials, citizens and academia to share new research knowledge, teaching techniques, economic development programs, national and international policy changes as well as how to meet the needs of food, shelter and clothing for the poor of Nepal. Foreign experts from India, the Philippines, International Research Centers, Western Europe and the United States could be invited and would be pleased to share in such workshops. We had hoped to initiate such a distinguished Seminar Series in the fall of 1982 but time and uncertain IAAS leadership mitigated against it.

Q. Do you agree that HMG now views the mission of IAAS as having shifted from a practical, applied program of training to a combination of applied and elite agricultural education and that such a program include teaching, research and extension?

Today in Nepal, no institution articulates clearly the mission of IAAS. T.U. officials, the National Secretary of Education, the National Planning Commission and the National Committee on Education hold disparate views on the evolving role of IAAS. With few exceptions the

faculty and administration of IAAS see their role as offering a combination of applied and elite agricultural education. The faculty has been hard at work in recent months to integrate and strengthen the B.Sc. program. They now are looking toward offering an M.Sc. program by 1987 in selected fields (see a copy of the 4th. Joint Annual Review for an elaboration of the rationale and implementation plans).

The changes that have taken place at IAAS in its brief history and especially since 1976 are not unusual. Taking into consideration the volatile political pressures on the educational system of Nepal and the rapid growth of IAAS faculty training abroad, one should expect IAAS to reflect these new dimensions of policy moving from the practical applied program of training to a combination of applied and elite agricultural education. Some of these changes were recognized in the MUCIA/AID contract amendments. Other changes were discussed by all parties and reported in progress and end of tour reports. The fact that they were not incorporated specifically in drafted contract form seems to be the monitoring agencies responsibility.

# APPENDIX B

## The Paklihawa and Lamjung Campuses

### Introduction

This report focuses on the two satellite campuses of IAAS, Paklihawa and Lamjung. The purpose of the report is to summarize my observations on recent trips to the two campuses. My observations centered on physical resources including land and buildings; on electrical, water, transportation and communication systems. It included visiting library facilities and looking over teaching aids, laboratory facilities and living quarters for faculty and students. Both visits included time for individual and group faculty discussions. My conclusions are that if the JTA program is to be continued in Nepal that both Paklihawa and Lamjung campuses should have a significant part of the action. However, if these two campuses are to remain under the IAAS administrative control then the central campus at Rampur must dedicate much more support to them in terms of permanent staff, equipment and operating budget than they have to date.

### Satellite Campuses

There were two satellite campuses of IAAS during the 1981-82 period. The Lamjung campus is located in the hill country mid way between Pokhara and Gorkha and has 175 students in its JTA program. The Paklihawa campus lying just south of Bhairawa on the Indian border has some 400 students each year. There are currently 175 students in its JTA program and 225 in the second year JT program.

### Lamjung Campus

The Lamjung campus is reached via foot trail from the nearest road-head Dumre. Dumre is located 140 Km. west of Kathmandu on the Kathmandu-Pokhara

road. The campus is some 28 km. from Dumre and during the monsoon season access is by foot only. During the dry season jeeps can reach within 1 1/2 hours walk of the campus. There are no medical facilities on the campus nor within a day's foot journey. There are no telephone nor short wave radio communication systems in the area.

Lamjung campus faculty and friends.

The campus itself is situated at an altitude of 650 meters on the side of a beautiful valley. Two large permanent streams coming from the north and west join near the campus to the east. Due to the volume and velocity of the streams one could expect adequate water supplies and electricity for the campus and communities. In fact there is neither.

Water

The campus was created in 1976 and was to have its own water supply two years later. As of now it is still 'borrowing' water from a neighboring village. On several occasions the village has cut the campus water supply.

Students have protested by striking. Even when the borrowed water is not restricted there is not enough water to make the hostel's bathrooms functional. Water is not available during the dry season for student field plot work, horticulture trials and livestock forage experiments. All agree that water is the number one need at Lamjung. A detailed Engineering report on the Lamjung campus water supply scheme is now available. For Rs. 928,772 a permanent gravity flow water supply can be installed that will supply drinking water to two nearby wards, a school, and still allow adequate reserve for drinking and supplemental irrigation on the campus. Two thirds of this amount is now pledged and Mr. Tiwari, the campus chief, and local officials are looking for the remaining Rs. 300,000 equaling $22,901.

Electricity

This is the second most critical need on the campus. It is needed so that students can study at the library or in their rooms. During the long winter nights there is little else to be done on campus. Life would be much more attractive for faculty and their families if the benefits of electricity were available. Lights and a hot plate can help overcome some of the disadvantages of isolation. For those who say lets not talk about electricity for Lamjung I say why not? If we're not willing to think about the issues they consider important then we shouldn't waste their time and ours talking. There is no engineering study on the feasibility of generating electricity for the campus. However, just to the west of Sundar Bazaar, 1 Km from Lamjung, a local businessman has been discussing with officials of the Seed Production Inputs Storage (SPIS) the joint use of a small hydroelectric generator using his existing water course for the water supply. Mr. Tiwari has hopes of persuading the businessman and SPIS to put in a larger generator and allow the campus to buy the surplus power generated.

There are complications to this arrangement since the businessman already uses the water supply for his hulling, grinding, oil seed extraction mill.

Mr. Tiwari and local officials showed me an alternative they are exploring. They would build their own water diversion course from the nearby river and use a 30 foot water drop through their own turbine 6-8 KVA generator. They have no cost estimate on this alternative but planned to have the study made soon.

Other Needs

Additional hostel space is needed at once. There is space now for 64 students in the 32 rooms on campus. The 111 other students currently enrolled stay in surrounding villages. Some live as far as 1 1/2 hours from campus. Mr. Tiwari lists other priority needs as follows:

1. Two classrooms - 100 students each.
2. One auditorium 200 + Capacity.
3. One more office building.
4. One building for small dispensary, or put it in another building.
5. Six additional units for faculty housing.
6. Housing facilities for support staff.

The need for the above units will be in my summary discussion of both satellite campuses.

The faculty presented the following list of supplies and equipment for the instruction and work projects of their students.

1. Slide projector with film strip adapter
2. Overhead projector
3. Cassette recorder/player

4. Kerosene incubator (100 eggs capacity)
5. Kerosene brooder
6. Egg grader
7. Cream separater (Manual)
8. Butter churn
9. Centrifuge (hand rotary) for fat testing
10. Honda portable generator set 1000 W.
11. Soil-water-plant testing kit (ICAR)
12. Slides and filmstrips on diseases, insects, crops, soil, livestock and poultry.
13. Transparencies and related supplies for use and projection of educational materials for overhead projector.
14. Screens with stand for projectors
15. Mould board ploughs (2)
16. Seed treating drum, hand operated
17. Duster (insecticides) hand powered fan
18. Seed cleaner
19. Short wave radio

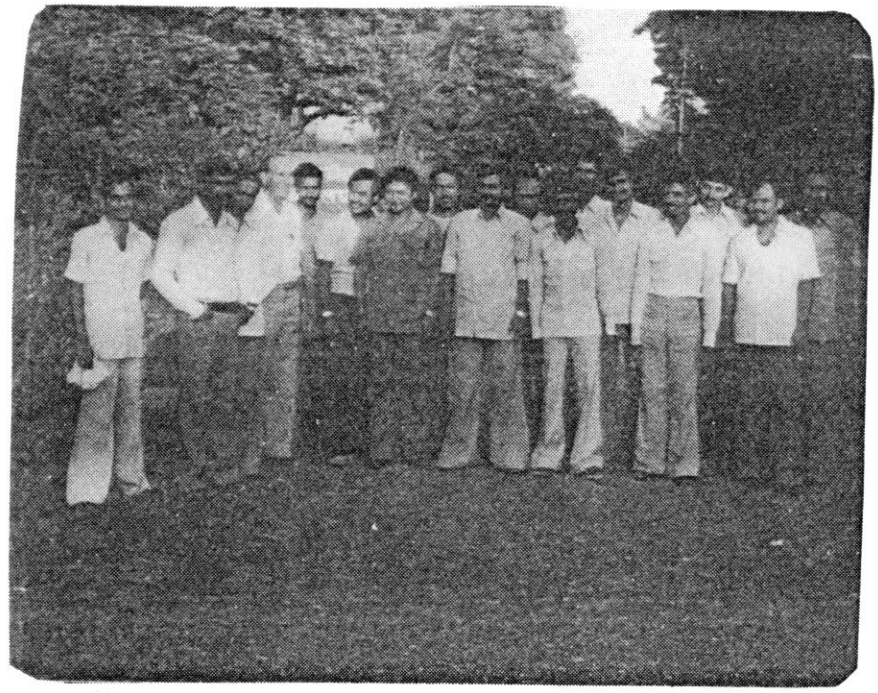
As the faculty at Lamjung and I discussed their teaching equipment needs, lack of funds for the development of their lands, few permanent staff positions, no communication system, no health facilities, an uncertain water supply and no electricity, I could understand their resentment at being neglected by IAAS and T.U. officials.

In spite of the above conditions their morale was good, their dedication to their teaching task unquestioned. If one of their colleagues was ill or had to travel someone took over the class without question. Our Rampur campus colleagues could learn cooperation from their Lamjung coworkers.

Paklihawa Campus

Mrs. Wood, Mr. Malla our project Engineer, Mr. Tulachan IAAS Lecturer and I visited the campus August 10 and 11, 1982. Discussions were held with the campus chief Mr. Dongel and his 16 faculty members. We also visited classroom, offices, laboratories and the newly acquired farm of 34 bighas.[1/] I had briefly visited Paklihawa twice before.

Paklihawa campus was started in 1978. The facilities are an ex-British army camp. My impression of the facilities are that they are simple yet



Paklihawa faculty plus visiting team.

very adequate for dormitory, classroom and office needs. Windows on a number of buildings are broken, paint is peeling and woodwork rotting--but this is a maintenance problem and exists at Rampur as well.

---

[1/] 1 bigha = 1.5 acres, .67 hectares.

There evidently is a security problem and both faculty and students say they have been threatened by local inhabitants. I did read a petition about 16 months ago signed by most of the faculty and students. They requested that the campus be closed and moved elsewhere. The main reason given was the hostile community and lack of security. IAAS faculty say that the hostility is due to the local people's preference for the economic spin-offs of the British garrison that was stationed there as contrasted to little gain from the campus.

In our August 1982 visit, I heard little about moving the campus. There was listing of needs by the faculty and a free give and take discussion on developing the newly acquired farm. The faculty, like their sister campus at Lamjung, can cite convincing evidence of lack of permanent staff, shortages of budget and equipment. Yet again I detected a positive attitude and willingness to discuss their responsibilities for change.

Following is the list of the basic equipment, books, livestock and teaching aids requested as evidence of the realism of their requests. At Paklihawa there are 175 students taking the hands - on extension oriented JTA courses. There are 225 enrolled in the second year basic science JT courses.

Equipment and other resources requested

1. Incubator - kerosene or electric

2. Teaching aids - models, slide sets, filmstrips, prepared microscopic slides, slide projector, opaque projector, overhead vugraph.

3. Office - mimeograph machine or some kind of duplicator, copier, typewriter.

4. Livestock - Animals for teaching and use on demonstration farm - water buffalo, cattle, goats, sheep, poultry.

   Demonstration equipment - including tags, dehorning, etc.

Farm Development Concerns

a. Overall farm plan (use multidisciplinary group from IAAS for initial plan. Farm planner expert from MUCIA funds if needed).

b. Fencing needs of farm for security and management purposes.

c. Use of farm for;

   Work projects of JTA's

   Demonstration to surrounding farmers

   Faculty research

Library needs

1. Journals for faculty

2. Additional copies of basic texts as per IAAS catalog so that increased numbers of students have access to texts. It should be noted the library did not have even one of some basic texts listed in the catalog.

3. Broadening of general book holdings in the fields taught.

Transportation on campus

There are no motor vehicles available on campus to the campus chief for medical or administrative purposes.

Faculty concerns

1. No work for basic science teachers during vacation and periods when courses are not taught.

2. No horticulture teacher on campus to teach the horticulture courses.

3. Most faculty have no job security -- short term contracts and temporary assignments. Only two of faculty are permanent IAAS staff. This gives problems of rapid turnover, lack of institutional commitment.

Summary

Paklihawa and Lamjung together are training more students each year than the central campus at Rampur. They do this with less than 1/10th the permanent staff on the central campus and a minor part of the IAAS budget. With only a small increase of capital investment and operating funds the ambience of students and faculty can be greatly improved and the quality of instruction enhanced. Should these funds be invested is quite another question. It requires an answer to the future of JT, JTA training in Nepal and whether the Lamjung and Paklihawa campuses are to be a part of this training.

The JT, JTA policy issue

The farmer contact extension work in Nepal is being entrusted to a Junior Technical Assistant (JTA). This JTA has a 10th grade school leaving certificate (SLC) plus his one additional year of practical JTA training. He is typically urban oriented since high school and beyond high school training are in urban areas. His average age will be less than 21 years as

he goes out on his extension job. His areas of responsibility will be two or three panchaayats, some times more. The number of farm families he is expected to serve will be 2500 to 3500. Typically there will not be a job description for him nor even an orientation given him by the Agricultural District Officer. He will not have a vehicle for transportation -- even a bicycle. Only in the Terai would a bicycle be useful. This JTA would only by happenstance be serving farmers whose livelihood is earned by crops or livestock in which the JTA has more than rudimentary knowledge. The JTA has neither the age, the experience nor a packet of better technology inputs to earn an audience with his farmer client.

After a few rebuffs the JTA retires to the tea shop and plots for another government assignment. Who can blame him. He has his counterpart in many countries of Asia, Africa and Latin America.

In spite of the system above some JTA's are effective. Since the government is not likely to abandon the JTA program (there is commitment to train 2614 during the present 5 year plan) we should study how to make it more effective. What are the elements of success with those JTA's who are effective? Are there recruitment and preparation procedures within the system that knowingly will increase the risk of failure of the program? I think there are on the basis of my experience in other countries, of discussions with Nepalese officials, IAAS colleagues, evaluation reports and discussions with project field workers.

Before commenting on suggestions for improving the system let me acknowledge two other important clientele in Nepal that may effect in a major way the future JTA program. The World Bank has proposed an increase in the training of JTA's in Nepal to some 480 per year. This training would take

place in four training centers with a capacity of 120 trainees each. The loan has been made and accepted by Nepal but many questions of implementation have arisen so the final procedures have not been worked out. In the earlier discussions the training was to be under the Department of Agriculture and so the training sites were Department of Agriculture sites and did not include Paklihawa and Lamjung. In July 1982 the Agriculture Academic Board meeting in Rampur decided that JTA training should be directed by the Ministry of Education. A committee was constituted to study and recommend needed changes in the JTA curriculum to train a more effective extension worker. The training sites also come into the discussions. As of now the plan is for a new world bank team to come into Nepal in February or March 1983 to work out the final details for the program.

A second major actor has come onto the educational scene in recent months. There has been much public and private concern raised about the lowering of the quality of education in Nepal, at all levels. Some six months ago the King appointed a Royal Commission on Education. It's purpose is: To study the quality and breadth of present offerings of higher education in Nepal; To recommend new areas needing attention in the near future; To study educational linkages with the world intellectual community and recommend how to improve the network.

The Commission is composed of five members to be aided by teams of specialists as constituted by the Commission. The Commission has the mandate to study the totality of higher education in Nepal including IAAS and its satellite campuses so its recommendations could well change the institutional linkages of the JTA program in Nepal.

In Agriculture Education the Commission will focus on:

1. The status of Agriculture Education prior to the new National Education System plan.

2. Agriculture Education policies in the new National Education plan.

3. Efforts expended for the development of Agriculture Education during the new National Education System plan.

4. Also to comment on the present situation
   a. Aspects of manpower production
   b. Aspects of academic programs
   c. Aspects of Institutional development

Without trying to anticipate the outcome of the two decision makers above let me propose several changes in the JTA selection and training process. Then I will conclude with how the Paklihawa and Lamjung campuses might fit within this framework.

JTA selection and training

As indicated earlier in this report many of the present selection, training and support measures of JTA's assures a high percentage of failure in their extension efforts. Age and urban orientation are two of the complicating factors. To overcome this dual handicap, the decision could be made that starting with the next training cycle all future JTA's would be a minimum of 21 years of age. Secondly that only candidates with actual farm experience would be considered. JTA's with such farm backgrounds could more easily establish rapport with their farming clientele.

Another major problem of the present JTA program is the assignment of personnel without consideration of their social and cultural acceptability in the panchayats assigned to.

An interesting proposal was suggested by M. Subedi and others of the IAAS family to overcome this acceptance problem.

> "Start next year with 100 panchayats spaced across Nepal. These panchayats would be selected on the basis of progressive farm leadership and supportive panchayat leadership. Each panchayat would nominate one or more local progressive farmers who were at least 21 years of age and possessed a school leaving certificate. Entrance requirements agreed to by the Ministry of Education and the Department of Agriculture would screen the applicants for acceptability to JTA training. The selection process should assure that each of the 100 panchayats should have one of their residents in JTA training. The number of panchayats could be increased each year so that by the end of 5 or 6 years all panchayats in Nepal would have 1 JTA serving them and most of them would be members of their own community. Such assigned JTA's should be retained in the panchayat of their farm experience. Local leadership should have a direct voice in the evaluation of such JTA's including promotion or termination."

## Conclusion

Let's suppose we were to implement the new JTA program on the basis of the suggestions above. Could the Paklihawa - Lamjung campuses be expected to have a part? The answer is a qualified yes. The two campuses together could handle the 100, 200 or even 300 JTA's that might be recruited annually under such a program. Both campuses require capital investment, equipment purchases and permanent faculty to upgrade the quality of instruction required by present and future extension workers of Nepal. These investments would be far less than creating new training centers.

I have not discussed the JT program which enrolls some 225 students at Paklihawa. At Lamjung both faculty members and local political leaders asked when the JT program would be introduced at their campus. The

Agricultural Academic board at its July 1982 meeting at Rampur decided to terminate the JT academic program as such. The Department of Agriculture may promote its JTA's to JT' but it will not be an academic program. So if and until other policy decisions are made I'm assuming the termination of the JT program under IAAS responsibilities.

Footnote

One of the responsibilities of IAAS identified in the MUCIA/IAAS Agreement was nonformal education. Learning activities for high school students and adults were anticipated. The range and scope of such programs would depend on the interest and needs of the recipients and the resources available through IAAS. Such programs whether teaching family nutrition, crafts, care of livestock, or cleanliness have done much to improve the quality of rural life in developed and developing nations. This nonformal education has earned these public institutions recognition and support. Somehow this nonformal education objective has not received a high priority at the central campus of IAAS nor at the satellite campuses.

It is my recommendation that the satellite campuses of Paklihawa and Lamjung become the center of nonformal education thrusts over the decade ahead. If the World Bank or other agencies make funds available to Nepal to expand the number and geographic spread of these outreach campuses so much the better. Such campuses could function much as our 2 years community colleges function in the U.S. making formal and nonformal education available to the wider community. His Majesty the King speaks with deep feeling on the need for raising the quality of living of his people. Public institutions of education and specifically the satellite campuses could be the pioneers of this effort.

Appendix C

Library Report[1/]

If we ever claim that the library is finished, then it has ended its usefulness. The library must remain vital, ongoing, and ever seeking of new resource material. My efforts for the past two years have been to create an efficient mechanism through which resources can be made readily accessible. To a large extent, this goal has been reached, but there is always more to do. Perhaps we should look at the positive side, before the limitations are discussed.

As reported at the end of 1981, the cataloging of the existing collection was completed. Of course this is an ongoing work, as this year we have had a large input of new books. Since January 1981, 3,500 new books were added to the library (as against 1,500 in the period 1979-1980). This is without including the approximately 200 new books just clearing customs, and an additional 150 'off-the-shelf' books awaiting AID clearance. We have only begun to broaden beyond the basic courses taught, to include Nepali history, some religious works, English literature, etc. Until now the scope of our collection has been very narrow, but now that the required areas have a good working base, we are looking to round out the overall holdings.

At the present time an inventory is in process, the first of its kind. It is misleading that the accession register has reached 12,000 in number. Of this, perhaps 40% is in multiple copies, and I dare say at least 3,000 books are missing. A large number of books were lost in the period before the present assistant librarian came. Since then, the control has been

---

1/Mrs. Jeanne Wood, Assistant to the Librarian.

improved, and presently is monitored as effectively as possible. Also, the administration has agreed to support a system of fines, as well as the holding of certificates until library records are clear. Until now, there has been little enforcement of rules, nor motivation to return books. The new coupon system, instituted at the beginning of the November, 1982 semester, should facilitate the circulation of books, as well as make a workable system of fines. In addition, a student handbook was completed, and given to each student with the issuance of the new coupons. The handbook includes rules and regulations for the use of the library, location of the various collections and facilities, as well as information regarding the Dewey Decimal system and the use of the card catalogs. This has met with a positive response from both students and faculty alike. Orientation sessions were given to new students, and the English teacher plans to include 'practicals' in the use of the library.

The Documentation Center, started last year, has continued to grow and doubled in size. Well over 300 file boxes are filled, containing over 2000 pieces of cataloged literature. Again, this has met with much success, and teachers are now assigning materials from there to supplement the book resources. However, it is a large task to keep ahead of the constant flow of materials. These must be kept current and cataloged for maximum use, and this consumed perhaps 50% of my time. An assistant librarian, trained in Documentation as well as the other aspects of the library is sorely needed. These serious staffing needs will be discussed later.

The library has continued to keep evening hours, and in fact extended to 9:00 P.M. to meet student needs. The daytime hours are filled with classes, and unless a class is not taught, or a practical dismissed early,

there is little daytime use of the library. MUCIA has continued the supplemental pay needed for the evening hours. This need for evening hours was first limited by budget but even after more budget was secured the restrictive overtime policies of T.U., have kept IAAS from meeting this need. Evening hours are vital to the students. It would be more valid to open the library later in the day than to close at 5:00 P.M., or as in winter hours, 4:00 P.M. if the overtime cannot be resolved.

The move into the new library facility was accomplished with a minimum of chaos at the beginning of the summer break. Our new book shelves were all in place, but the bids were yet to be let for the rest of the furniture. I regret not keeping a running account of the delays, snags, problems, etc., involved in furnishing the library. Suffice to say the designer was chosen at the December 30, 1981 C.D.C. meeting, and given complete layouts and pictures of the furniture needed. Tenders were not ready until October, 1982 and even their opening was delayed until the last week of October due to another unbelievable fluke. I regret even more not seeing the completion of the furniture, now due the end of February, 1983. It should indeed be the most outstanding Library facility in Nepal. Needless to say many hours were spent with the designer, in C.D.C. meetings, pre-qualifying builders and the like.

The Audio-visual center for the library has passed the conceptual stage, and is on its way to becoming a reality. All equipment is ordered, including tape listening center, (especially for English language use,) individual slide and filmstrip viewers, small opaque and overhead projectors and Micro-fiche/film for the central campus.[1/] The equipment

---

[1/]See Attachment B for Audio-visual order disbursement.

should arrive early in 1983. This order also includes equipment for the Paklihawa and Lamjung Campuses. Lamjung, you say? They have no electricity. This was taken into consideration by the Library Committee, but the consensus was that the campuses should be treated equally, and that at least minimal power should be generated at Lamjung. If not that, then the audio-visual requirements as prescribed in the IAAS bulletin should be stricken.

During the year an acceptable binder was located in Kathmandu, and the sizeable backlog of journals sent for binding. Well over 300 volumes have been completed, and missing issues are being sought to complete incomplete volumes. Since budget constraints are likely to continue at IAAS, it was thought well to establish our own bindery for the future. Part of the equipment has arrived, and when the lever cutter along with a small box of tools that turned up missing in the last shipment arrives, we can begin operations. The binder from Kathmandu has agreed to come to Rampur and instruct our clerks in the use of the equipment. This is a simple hand operation, but will allow journals to be kept intact in the future as well as rebind the books that require more than simple mending. Combined with the new copying machine, the printing and binding of research papers, reports, etc., can be completed on the IAAS campus -- definitely preferable to the involved procedures of printing and binding materials in Kathmandu, (especially when MUCIA ceases its back-up support).

The work described above has been a positive contribution to the IAAS library and to the institution as a whole. However, one must be realistic, and realize that all our goals may not be met in the time frame allotted. One such goal, as outlined in the workplan for 1982 was to seek out an

agency that would subsidize textbooks for the students to rent or buy. Seek I did, but find I did not. To name but a few, UNICEF, UNDP, FAO, USIS, Asian Development Bank and the British Council were pursued. UNICEF only subsidizes elementary school books, FAO and USIS have limited budgets, etc. The students to IAAS central and branch campuses could benefit greatly from being able to purchase some of the basic textbooks at reduced rates. As these young people are sent into the field, a 'back-up' textbook on crop production, soils, or animal science could be a valuable resource. Such funding should still be sought.

Another unrealized goal was the upgrading and training of our library staff. Outside of the assistant librarian, the English competency was such that only basic alphabetical and numerical shelving plus minor catalog search could be taught. True, we had the addition of two clerks this year to help monitor the expanded facility, but this is only token to the real needs. It was impossible to send our present assistant librarian for the additional year needed to become librarian, as there was no one to take his place. Librarians, even assistants, are a scarce commodity in Nepal. There are so many opportunities in Kathmandu, it is even more difficult to attract them to Rampur - especially for the same wage. One possible solution is to send one of the interested administrative staff for one year training in India, to return to the position of assistant librarian. This would allow the present assistant librarian to be released for one year's further study. Without the assurance of further training, our present assistant librarian may also heed the 'call of valley'. One full librarian and one assistant librarian at top level is minimal to the needs of the central campus. Presently, I do not feel the branch campuses need assistant librarians, but the present clerks could benefit by coming to Rampur

for some instruction. A very adequate cataloging system has been instituted at the Lamjung campus, without the need of Dewey classification. Given the present collections and even projected expansion, this system will suffice. It could and should be instituted at Paklihawa as well.

As I foresee the involvement of MUCIA in the next two years, I would like to see the following input to adequately 'oil' the wheels of the mechanism we have begun.

1. Books are basic to any library, so faculty should be kept abreast of new publications and encouraged to order same. IAAS central campus now has a good basic agriculture collection as well as the related sciences. Keeping current with new technology and research will be the greatest need now.

The branch campuses need additional input of books as well as teaching aids. Since the holdings have been acquired independently, they should be dealt with in that way. On visiting the Paklihawa campus, the basic text-book and recommended reference books were noted down, and many found to be lacking, or in short supply. I compiled a list and ordered these for off the shelf purchase. These have been waiting since early October for 'off-the-shelf' clearance from AID. Taking into consideration that less than 1/3 of the required textbooks, or less than 1/4 the recommended reference books are U.S. publications, and virtually all are available in cheaper reprint form in Kathmandu, this seems at best unduly restrictive. Given our charge to build up the institutions, and in this case the libraries, we must seek to meet their needs. I would like to see Lamjung campus given a credit amount of say Rs. 15,000 (for a starter) from which to make their selections from the excellent resources in Kathmandu. They have a small

but well balanced collection, and are in the best position to choose the needed input. Each campus would like a minimum of three U.S. journals, i.e. plant science, animal husbandry and soils; not so much for the student use, but to keep the faculty abreast of current research. They have been isolated too long.

2. Continued support of evening hours (i.e. supplemental pay) at Central Campus until such time as IAAS will assume the responsibility.

3. With the arrival of Audio-visual equipment, a technician should be trained and in place. IAAS central campus has agreed in principle to an AV technician being in charge of all AV equipment. This would include scheduling and operating the equipment upon faculty request. This would encourage more use by the faculty, who hesitate to use machines that are either non-operational or contrary at best. The training of such a technician should be MUCIA's responsibility. (Training possibilities in Bangkok are being explored.) After training the technician, IAAS would (upon prior agreement) create the AV technician position, to be attached to the library where all AV equipment will be housed. The technician would be responsible for maintenance, and oversee the use of the AV center in the library.

4. With the arrival of the bindery equipment, MUCIA should bring the binder from Kathmandu for the instruction of the in-house clerks. He should be allowed to purchase those supplies needed from the local market (Kathmandu) for proper teaching. Also, sufficient supplies should be purchased to maintain the on-going operation. Without this input, equipment will go unused. Mending tapes have been sent to the branch campuses, and more is available at central campus. The mending tapes are not available in Nepal,

and additional supplies from the U.S. will probably be necessary before the present contract expires.

5. The up-grading of the present assistant librarian to librarian, and training of another assistant librarian as discussed earlier, is of primary importance. Even 'status quo' will be tenuous with the present staffing and level of training. In the same vein, I would like MUCIA to explore an 'untapped' resource. That is, encouraging and training the wives of present IAAS trainees. Even two or three courses in library science would give them a head start to becoming actively involved, and make a valuable contribution to the library upon returning to Rampur and the branch campuses.

6. There is immediate need for eight additional four door book cases in the reference section at Central campus. We had hoped there would be funds left after the laboratories were complete, but this now appears out of the question. Since the greatest influx of books has been in the reference section, we are already to the point of overcrowding. The cases are available in Kathmandu from the same supplier as the originals. The branch campuses are also in need of additional shelving, but should be consulted as to type.

7. Lastly, if other donors are not un-earthed, I would hope that any un-expended funds could be put into the textbook subsidy. Again, this was discussed earlier, and I believe this a valid use of funds. Due to the nature of the basic textbooks, this would again require local purchase. To twist an old adage, "A book in hand is worth two in a far off library."

In conclusion, I would like to thank the IAAS faculty, and the library staff in particular for their encouragement and friendship during the past two years. As one staff member put it, "I now know what a 'workaholic' is," but he meant it kindly. It's been a challenge, but with it the opportunity to make a positive contribution to an ongoing institution has been the reward.

Attachment B

Subject: Disbursement of the Audio-Visual equipment order.

IAAS Central Campus library:

1. Microfiche reader (1)
2. Rollfilm attachment and dustcover for microfiche (1 each)
3. Singer Caramate Playback slide viewer (1)
4. Sharp electronic Cassette players (2)
5. Telex listening center - 6 position (2)
6. Pana-view automatic viewer + transformer (2)
7. Standard Filmstrip previewer (2) + lamps (6)
8. Compact Opaque Projector (1)
9. Beseler G100 overhead projector (1) + lamps (2) + dust cover
10. pk. 10 blank cassettes (1)
11. Cassette tape repair kit (1)
12. AV reference cards (2 pkt)
13. File tray (for micro-fiche)
14. Knox-wall mount screen
15. Voltage convertors (9)

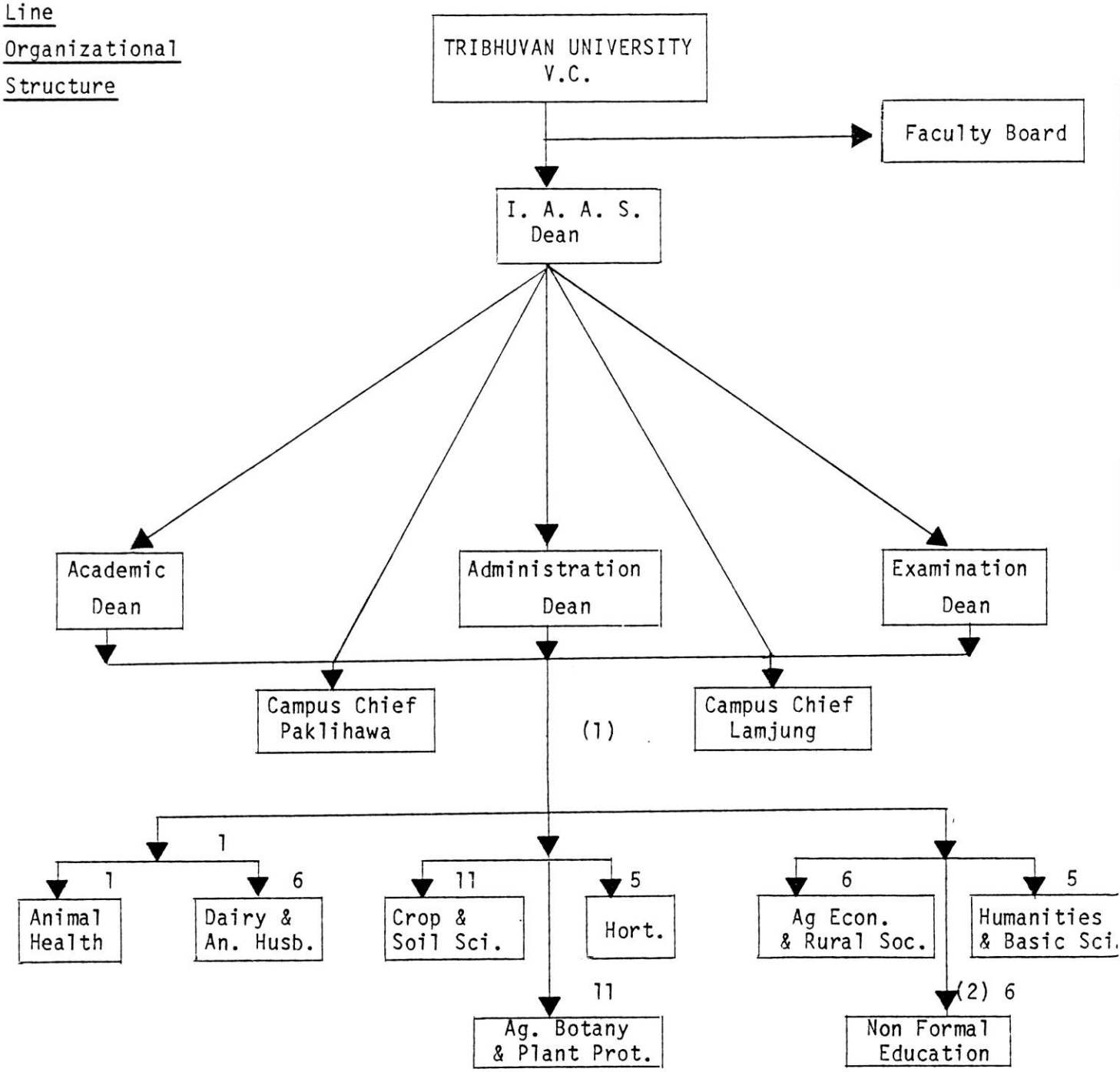
Paklihawa and Lamjung campus - 1 each campus of the following:

1. Sharp Electronic cassette player
2. Telex listening center
3. Beseler overhead projector + dust cover + lamps (2 each)
4. Ektagraphic Project, case, tray, dust cover
5. Filmstrip adapter + lamps (2 each)
6. pk. 10 blank cassettes
7. Cassette tape repair kit

8. Draper tripod screen
9. voltage convertors (3 each)

APPENDIX D (from discussion page 30)

Line Organizational Structure




(1) All departments are primarily engaged in teaching at the present stage of development of IAAS.
In the immediate years ahead all departments will need to devote increasing time to research and extension relative to teaching.

(2) This is primarily teaching department the same as the other departments. Subject matter would be principles of communication, methodology of extension both agriculture and non agriculture.

APPENDIX D

Coordinating Organizational Structure

General IAAS

Standing Committees

1. Research Committee
   - One member from each department
   - One Asst. Dean
   - One MUCIA member
   - Invited participants at research review sessions

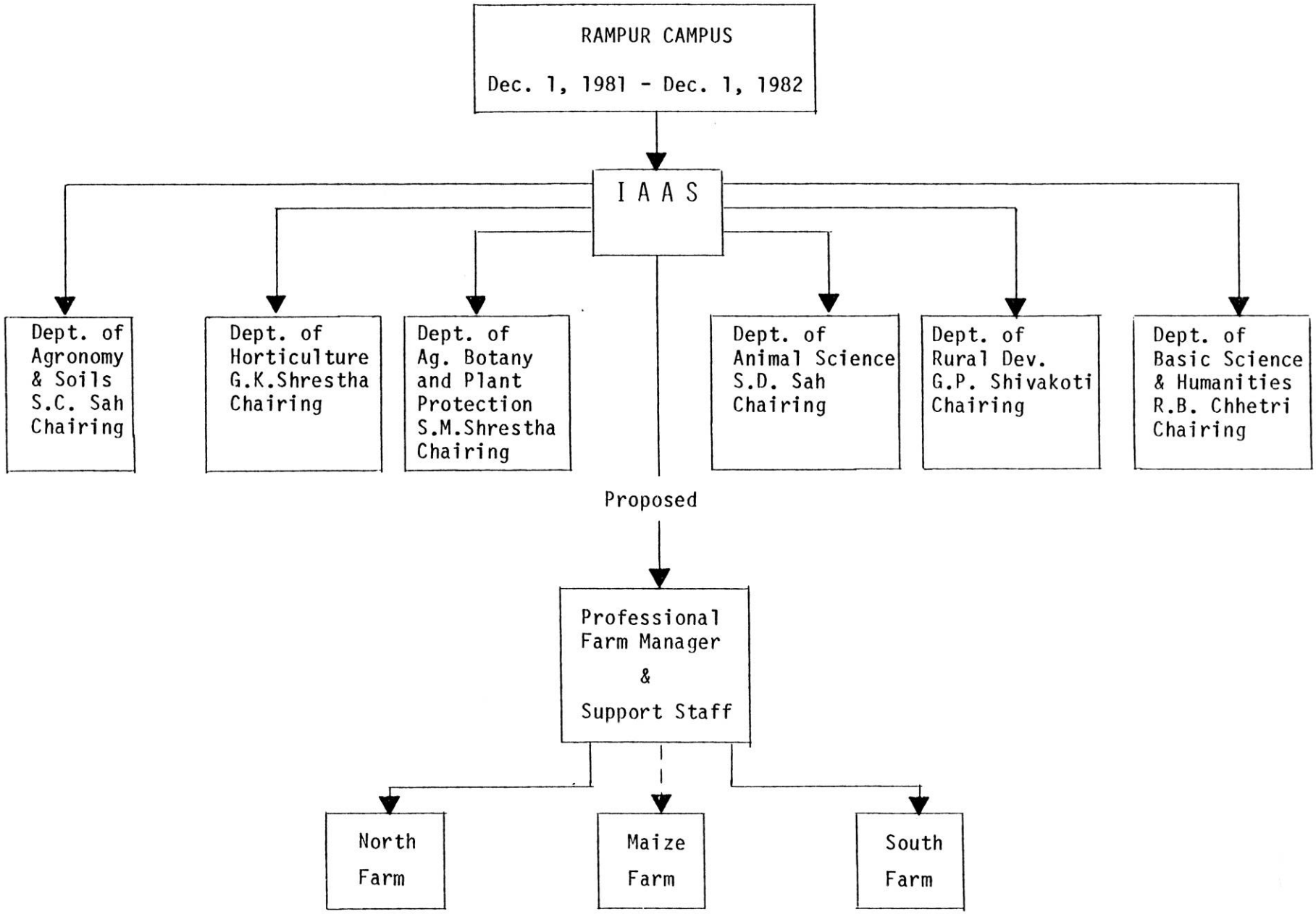
2. Teaching Committee
   - Instructional Chairman from each department
   - Academic Asst. Dean
   - One MUCIA member
   - Participants as invited

3. Extension Committee
   - One member from each department
   - One Asst. Dean
   - One MUCIA member
   - Participants as invited

4. Journal and other publications committee.
5. Library Committee.
6. Grievance Committee.

Ad Hoc Committee

1. Scholarship Committee
2. Extra Curricula Activity Committee
3. Other


RAMPUR CAMPUS
Dec. 1, 1981 - Dec. 1, 1982
I A A S
Dept. of Agronomy & Soils S.C. Sah Chairing
Dept. of Horticulture G.K.Shrestha Chairing
Dept. of Ag. Botany and Plant Protection S.M.Shrestha Chairing
Dept. of Animal Science S.D. Sah Chairing
Dept. of Rural Dev. G.P. Shivakoti Chairing
Dept. of Basic Science & Humanities R.B. Chhetri Chairing
Proposed
Professional Farm Manager & Support Staff
North Farm
Maize Farm
South Farm

# APPENDIX E

## Research at IAAS

### Introduction

"Research is finally getting administrative attention." "It's getting respectable." "Somtime I hope my research is considered a part of my professional work load." Such comments of IAAS faculty seem strange coming as they do ten years after the prefeasibility study stressed research importance in these words, "Research and teaching are complementary to each other.[1/] It is through carrying out research that the professional competence of the teaching staff can be augmented. New frontiers of knowledge are reached through research. Research can be neglected only at great cost to an educational institution and, to a larger extent, to the nation as a whole. It is through research that academic personnel sharpen their tools, including that of teaching."

In the same feasibility report the authors recommended the creation of a research division. I have expanded on this idea in the section Planning Ahead in my end of tour report pg. 38. It is evident that research has received a prominent place in the subsequent documents of activity agreements, the MUCIA-AID contract and contract amendments to date. Contracts not-withstanding, research is still a stepchild. As late as June 1982 Wilson and Sofranko in their work plan report pondered the lack of emphasis by T.U. and IAAS official.[2/] "The reasons why research has received such low priority are as varied as the individuals queried. They range from the

---

1/ Op. Cit. Higher Education in Agriculture in Nepal pgs. 95-97.

2/ Op. Cit. Wilson, Kim and Sofranko, Andrew.

inadequacy of facilities, to lack of incentives, to a belief that what has occurred has been better than what one could have expected."

In common recognition of the weakness of the IAAS research program, the MUCIA/AID contract extension provided $92,000 for research support for the period July 1, 1981 through January 31, 1983. "A joint faculty research committee will administer these funds to promote applied research on Nepalese Agriculture and related problems."[1/]

"IAAS will be responsible for providing MUCIA with an annual report including title of each research project, name of researcher, funds allocated for each research project, a progress report on each research activity and a copy of each final activity report when completed."

MUCIA/AID Funded Research

Anticipating the early release of research funds the memorandum of June 21, 1981 (attachment 'A') was distributed to all IAAS faculty. In agreement with the Dean of IAAS the decision was made to channel the funds through the IAAS administrative offices. Experienced faculty argued for funds disbursement directly by MUCIA to avoid critical delays of funding. But if institutions building is to take place, including administration of research projects, it may as well start now.

It was nearly six months later before an agreement was reached on funding disbursement and auditing procedures from the institutions involved namely: USAID/N, Tribhuvan University, Michigan State University and IAAS. The actual transfer of funds from the MUCIA account to IAAS is quite simple.

---

[1/] Pro-Ag. FY 1981 Pg. 4.

Once the research committee sends written confirmation of a given research project to me and if this is signed by the IAAS Dean or his designated authority I draft a check against the MUCIA account for all or some part of the research budget. This check is attached to a memorandum and a copy of the research budget. The memorandum authorizes the finance officer to disburse funds at the written request of the principle researcher on the project but within the limitations of the budget. I send the finance officer's receipt along with my monthly imprest voucher to Michigan State University to replenish my rupee-dollar account in Nepal. All funding transactions are subject to audit by T.U. internal auditors, the Auditor Generals office of Nepal and USAID auditors. Michigan State University has agreed to accept USAID auditors in lieu of MSU auditors.

Research Program in Action

The administrative functions above had to be worked out but the exciting part and the pay off of all the effort was about to begin. In January 1982 the Research Committee met with invited participants to review the first research project proposed to be funded under MUCIA funds. Since this was the first approved project and involved the largest fund commitment to date and the only one requiring legal tenders I shall use it as a case study to illustrate established as well as evolving procedures. I shall follow this with a synopsis of the 19 research projects reviewed and approved by the research committee during 1982. This synopsis will be followed by a report on research progress to date. The concluding section of this research report will look at some new research dimensions that might be considered.

Duck Cum Fish Culture Research Project

Directed by Mr. K.T. Augusthy

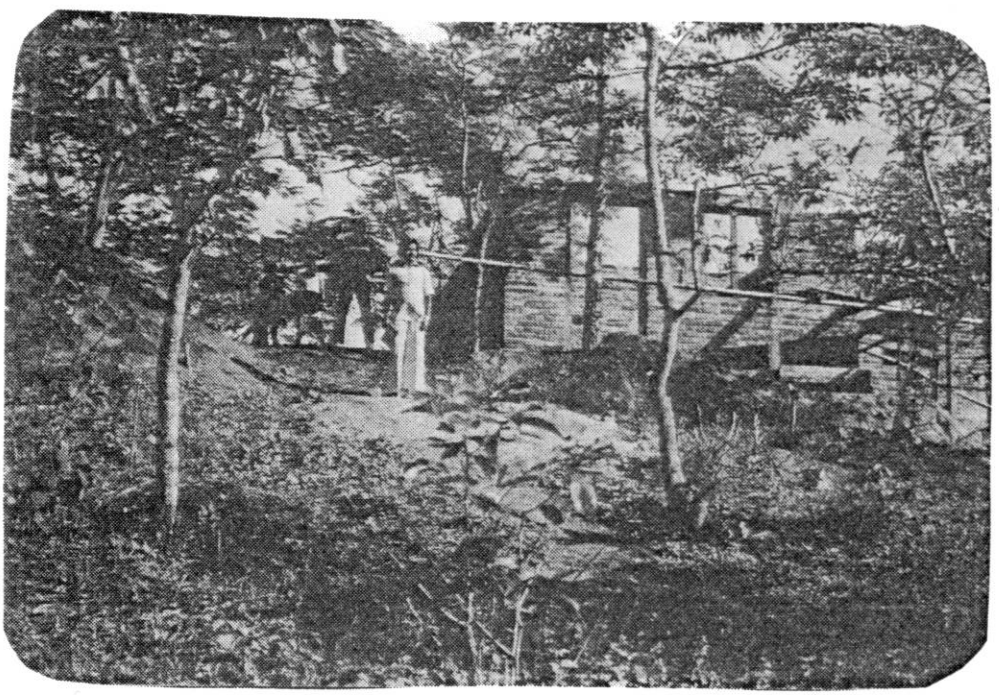
The proposal presented to the research committee by Mr. Augusthy in January 1982 had already had the inputs of suggestions from his colleagues, MUCIA advisors and knowledgeable fish specialists in Nepal. In his review of the literature and his statement of the fish production problems in Nepal he carefully presented international research and Nepalese experience that related to his research proposal. He also related the experience of a local farmer who produced fish on lands similar to his proposed site. He explained the dangerously low intake of protein in the Nepalese diet and the possibilities of supplementing this with fish protein.

The research committee listened to the total proposal and the objectives which included: raise fingerlings in the nursery pond; feeding fish, feeding ducks, adjusting the pond fertility by applying manure; noting food conversion ratio of ducks and geese; compute the economic food conversion of fish and ducks; effects of water temperature on food conversion.

The research committee and all in attendance were invited to react to the total proposal including the research analysis procedures. All were unanimous in support of the project including Drs. Foth, Combs and other IAAS faculty who had been invited to participate. Dr. Combs later made a written suggestion that the production pond be divided into four smaller ponds so as to allow a wider range of variables to be tested. Mr. Augusthy incorporated this suggestion into his research proposal and the research committee accepted the amendment.

This proposal included the construction of a production pond; nursery pond; duck house; office building, store room and watchman house. Such

construction must be publicly bid by 'tender' documents according to T.U. rules. So research designs and material specifications had to be prepared.



Duck house and office building under construction.

In May the tender documents were published for construction bids. In June the successful bidder was chosen. The lowest construction bid was still thousands of rupees higher than the research estimate due to the rapid escalation of building material prices. A binding legal contract for the construction of buildings and fish ponds was signed by the Dean of IAAS and a local contractor. Actual construction was not started until the end of the monsoon period. The site chosen for the project was one of three studied and was agreed to by Mr. Augusthy, the research director; Mr. Malla our IAAS contract engineer, Acting Dean Joshi and myself. Of course the Dean of IAAS has the final responsibility for such decisions.

I have given this case recording of one research project to illustrate the general procedures. I am appending attachment B to illustrate the actual

transfer of money from MUCIA to IAAS. In this project only a small initial fund was needed to start the work, additional funds will be required as the construction progresses. This project when in operation will generate much interest among rural development agencies of Nepal and local farmers.

Research Committee Activities 1982

In the period from January through September the research committee met monthly and sometimes weekly to review, suggest changes and accept research proposals. Weeks of my time were spent going over initial research drafts and necessary amendments. By mid October, nineteen research proposals had been accepted for funding. Several more were asked to amend their proposals and resubmit. A few were rejected. The following listing of the 19 proposals illustrates the range and applied nature of the research.

1. Duck Cum Fish Culture Research: Principal researcher, K.T. Augusthy in collaboration with M.K. Shrestha. In this study, the researchers will test the economic viability of a duck/fish pond culture and examine the impacts of various food sources for ducks and fish on their growth rates.

2. Soyabean Research and Extension in Chitwan: Principal researcher, K.P. Sharma in collaboration with S.P. Katel, S.B. Gurung, S.M. Shrestha, S.C. Shah and R. Poudel. Several research activities will be conducted, one which is to test the hypothesis that low initial seed moisture content and seed storage conditions are more critical factors than genotypes and duration of storage in preserving soyabean seed viability.

3. A Case Study of the Farming Systems of Shardanagar Panchayat: Principal researcher, P.M. Tulachan. The researcher will conduct a

baseline study of farming systems in the Shardanagar Panchayat to identify current practices and socio-economic and physical constraints faced by farmers. This material will be used to develop a farming systems handbook to be used as a reference by researchers and planners and in the agricultural economics curriculum. This is a multidisciplinary study and includes the following collaborators: Drs. Garland P. Wood and Roger Montgomery, Ag. Economists. Mr. S.B. Gurung, Extension Chief, Mr. J.R. Joshi, Soil Scientist, Dr. K.R. Tiwari, Animal Scientist, Mr. Ganesh Shivakoti, Ag. Economist.

4. Mapping and Characterization of Major Soils of the IAAS Farm at Rampur: Principal researcher, B.R. Khakural in collaboration with J.R. Joshi. A complete mapping of soils on the IAAS farm and their classification according to physical and chemical properties will be done to aid in the placement of experimental plots to determine the applicability of research results to other farms.

5. Evaluation of the B.Sc. (Ag.) Program at IAAS, Rampur: Principal researchers, B.N. Pokharel and G.P. Shivakoti. The researchers will make recommendations for the improvement of the B.Sc. program based on the results of a survey of faculty, students, and former students and their immediate supervisors.

6. Effect of Date of Sowing and Nitrogen Levels on the Incidence of Rice Blast and Leaf Spot at the Nursery Stage: Principal researcher, S.M. Shrestha in collaboration with L.N. Bhardwaj, R.B. Chhetry and Moti Lal. In this study, S.M. Shrestha will test the hypothesis that the date of sowing and nitrogen levels are the critical factors affecting the susceptibility of Masuli variety rice seedlings to blast and leaf spot at the nursery stage.

7. Studies of the Effect of Seed Dressing and Foliar Sprays on Seedling Health and Blast and Brown Spot Disease of Paddy: Principal researcher, L.N. Bhardwaj in collaboration with S.M. Shrestha, M.H. Khan and Moti Lal. This project will test the effectiveness of fungicides in reducing losses of rice seedlings in nursery beds.

8. Studies on Chemical Control of Root-Knot Nematodes of Okra and Eggplant: Principal researcher, L.N. Bhardwaj in collaboration with S.M. Shrestha and R.C. Koirala. This project will evaluate the effective dose of furadan necessary to control root-knot diseases of okra and eggplant under local conditions.

9. Survey and Identification of Plant Parasitic Nematodes in Chitwan: Principal researcher, M.H. Khan. The project will identify plant parasitic nematodes associated with vegetables, legumes, fruits, and other economically important crop plants, and their population and distrubution in relation with hosts in different localities in Chitwan as a first step towards their control and the prevention of crop losses.

10. Year Round Production of Vegetables in Rampur: Principal researcher, Rishi R. Adhikari in collaboration with Durga D. Dhakal and Ram C. Koirala. The purposes of this project is to develop a planting schedule for year round vegetable production for home consumption and sale by the farmers of Chitwan District.

11. Radio and Other Sources of Information to the Farmers in the Chitwan District of Nepal: Principal researcher, Mr. Narayan Kunwar. The research will identify and evaluate the various sources and channels

of Agricultural information that forms a communication network around farmers. It will test the effectiveness and applicability of the radio forum concept in Nepal. It will allow the involvement of IAAS diploma students in radio forums as a requirement of practical work in Agricultural information courses.

12. To Study the Effect of Levels of Rice Polishings on the Performance of Growing and Finishing Pigs: Principal researcher, Mr. Sahadeo Sah. Collaborator Dr. K.R. Tiwari. The purpose is to study the substitution effects of rice polishings versus yellow maize on pig growth up to six months of age. Maize is a major human food source in Nepal and is needed for direct human consumption.

13. Study on Different Methods of Storing Perishable Fruits and Vegetables: Principal researcher, Mr. Rishi Adhikari. Purpose to find cheap, easy methods of storing vegetables and fruits. The data will be used in extension efforts, in classroom instruction and published for use by researchers outside IAAS.

14. Chemical Control of Root-Knot Late Blight Disease Complex on; Tomato, Powdery Mildew of Pea and Alternaria Leaf Spot of Mustard: Principal researcher, S.M. Shrestha in collaboration with Dr. L.N. Bhardwaj, Mr. R.R. Adhikari and Mr. D.N. Yadav. This project involves several research activities. The first concerns tomato, one of the most commonly grown vegetable crops in Nepal. Its successful cultivation has become questionable because of the high incidence of Root-knot and late blight disease complex. This research will use fungicide and insecticide combined and test their effectiveness over fungicide or insecticide alone. Secondly; pea is another important vegetable crop

endangered by the powdery mildew disease. A research trial will be carried out on the comparative efficacy of Kerathane and Bavistin in controlling powdery mildew. Thirdly; Mustard is the most important oil seed crop of Nepal. Alternaria blight is the most common disease and seriously reduces the oil yield. An experiment will be made to evaluate different systemic and non-systemic fungicides against this disease.

15. Fungicide Control Trial Against Stem-gall of Coriander Under (i) in VIVO Condition and (ii) Field Condition: Principal researcher, Dr. L.N. Bhardwaj in collaboration with S.M. Shrestha and R.R. Adhikari. Coriander is an important spice crop in India, Russia, Morocco and Turkey. In Nepal it is grown for household consumption as a kitchen garden crop and used daily as an essential spice in vegetable curry. This research will test the effectiveness of controlling stem-gall by the application of fungicides.

16. Effect of Nitrogen and Sulphur Fertilizers on Yield and Oil Content of Mustard Crop: Principal researcher, Mr. S.C. Sah in collaboration with Dr. T.B. Khatri Chhetri and D.N. Yadav. Mustard oil as one of the most essential items for home consumption and there is a deficit of edible oils in Nepal. Mustard is also the main cash crop of the Chitwan District. This research will provide the actual doses of nitrogen and sulphur for the maximum yield of mustard. Such rates can then be recommended to the farmers.

17. To Study the Biological Performance and Economic Effects of Raw Mustard Cake as Compared to Raw Ground Soyabean on Swine: Principal researcher, Mr. M. Sapkota. Mustard cake is the by-product of the

mustard oil extraction process and is not commonly used as human food. Soyabean grains are used directly as human food. If mustard cake could economically substitute for soyabeans in the swine ration additional protein would be available for human consumption. This research project will test the economic feasibility of substituting mustard cake for soyabean in swine rations.

18. Incidence of Liverfluke infection in Dairy Cattle of Livestock Farm of IAAS: Principal researcher, Dr. I.P. Dhakal in collaboration with Mr. D.B. Nepali. The project has two parts; part I - The incidence of Liverfluke infection in dairy cattle of the Livestock Farm of IAAS. Part II - Comparative study of the effectiveness of 2 drugs locally available against the disease.

    Liverfluke is estimated to affect 85 to 90% of the dairy cattle in the Chitwan. It reduces the milk yield of infected cattle and causes a general deterioration of health.

19. Contribution of Dew On Winter Wheat in Rampur: Principal researcher, Mr. P.P. Sharma in collaboration with Dr. T.B. Khatri Chhetri, Mr. R.B. Chhetri and Mr. R.B. Dhakurel. Wheat is grown as a winter crop (November - March) in Chitwan. There is little rainfall during this period but nightly dews. It has been generally assumed by farmers and scientist alike that irrigation is not necessary. This research will: 1) Verify if there is a substantial increase in yield by dew which may be comparable to irrigated wheat yield, 2) Know if

the dew provides enough moisture for the evaporation need while the crop utilizes storage moisture from the soil, 3) Recommend to farmers as well as irrigation authorities in the Chitwan as to whether wheat crops need to be irrigated or not.

Conclusion: Another $71,000 will be available February 1, 1983 as provided in the MUCIA/USAID contract extension. This should fund research proposals of returning faculty plus any follow up research of present faculty.

Without trying to devise a research agenda for IAAS let me encourage three areas worthy of consideration. 1) IAAS now has a secure faculty research laboratory with a stabilized electrical supply. They also have recently received excellent laboratory equipment requested by them. Their research should now include the use of such equipment. 2) Nepal is pinning much of its hopes on a break-through in agricultural production on a multiple increase in available and efficiently used irrigation water.[1/] IAAS should be geared for this type of research as soon as an irrigation tube well can be constructed on the south farm and the surface irrigation canal from the Chitwan project reaches the north farm. 3) Cooperative research between IAAS faculty and HMG departments has been encouraged starting with the pre-feasibility study 10 years ago. The faculty is now sufficiently numerous and well trained to make such research a profitable partnership arrangement.

---

1/ Sixth 5 year plan.

MEMORANDUM #4 DATE: June 21, 1981

TO : IAAS Faculty

FROM: Dr. Garland P. Wood, MUCIA Chief of Party

SUBJ: Research Guidelines

As of July 1, 1981 there will be several lacs of rupees available yearly for research by IAAS faculty. These funds are provided under the MUCIA/AID Contract to Nepal. The general guidelines for supervision and dispersal of these funds are provided in the contract. I have drafted the implementing procedures below which will allow scholarly review of research proposals and meet the contractual requirements for accountability of funds. I have reviewed these guidelines with AID officials as well as IAAS administrative personnel. These guidelines supplement the 'Revised Research Proposal Form' for IAAS Research Committee dated March 9, 1981.

## MUCIA RESEARCH FUNDING PROCEDURES

1. The research proposal is submitted to IAAS research committee by researcher:

   a) Departments or Divisions may do prior screening of proposals.

   b) The research committee as outlined in my March 27 memo is composed of:

      - One member from each department
      - Dean or Assistant Dean
      - MUCIA Chief of Party
      - Invited participants including the proposed research leader or research team, interested faculty members and outside agency representatives.

   c) Each proposal should include a clear statement of

      1) Why the problem should be studied.
      2) The researcher's knowledge of the problem -- discussions with farmers, coworkers, other professionals.
      3) Review of the literature.
      4) How this research is related to researcher's on-going professional interests.

   d) How does this research relate to the forward planning of researcher's department articulated in 1981 JAR (Joint Annual Review)?

      1) Teaching _____
      2) Extension _____
      3) Research _____

2. If favorably recommended by the research committee the MUCIA research fund commitment will be made by the signature of the Dean or his designated authority and the MUCIA Chief of Party or his designated authority.

3. If research is more than six months in length provision will be made for a biannual review. A shorter period for review may be set by the research committee.

4. At termination of any funded phase of research an end of project report shall be submitted outlining research results and budget expenditures. Additional research funds to the listed research leader shall not be authorized until the previous research report is submitted.

5. Funds released to IAAS from the MUCIA research fund and not expended for the specified research shall be returned to MUCIA with the end of project report.

## RESEARCH COMMITTEE POLICY QUESTIONS

1. General Emphasis

   a) Nepalese agriculture and related problems.

   b) Farm related problems.

   c) Multidisciplinary problems.

   d) Areas not now emphasized but needing support.

2. Major research thrusts, policy question

   Shall IAAS cover as wide a range of subjects as the research interests of its faculty indicate or shall it concentrate the majority of research time and money on three or four main topics over the next four or five years? There are pros and cons on either side and this is a critical decision for IAAS at this stage of development.

3. Specific research areas to be considered (not prioritized)

   A) Production

      a) Crops - what crops, why? diseases, pests, utilization.
      b) Soils - production emphasis, other rationale for emphasis.
      c) Horticulture research - what emphasis, why?
      d) Livestock research - what animals - focus on nutrition, health, new breeds, rationale for choice.

   B) Farm management

      Helping farmers and their families make better use of their resources to improve their quality of life and that of Nepal.

C) Home economics

A field of study receiving minimal attention as of now in Nepal but of critical importance for the future wellbeing of Nepalese families.

D) Rural development

Farmers, their families and rural neighbors live in a matrix of institutions. Institutions are created by men to help them gain a better life but some institutions have lost their usefulness. How can we improve the institutions of education, communication, transportation, health, credit and markets that will improve the quality of rural life?

R.D. research work covers a wide range of social, economic, cultural and political factors. Choosing first priority topics requires much deliberation.

ATTACHMENT B

MEMORANDUM #1 DATE: March 30, 1982

TO: Finance Officer, IAAS

From: Dr. Garland P. Wood, MUCIA Chief of Party

SUBJ: Funding of Research Projects

1. This is an initial funding of the Duck Cum Fish Culture Research Project directed by Mr. K.T. Augusthy.
2. These funds are to be disbursed in strict agreement with the attached budget.
3. Funds are to be disbursed on the written request of the Project Director Mr. Augusthy.
4. Funds are to be kept separate and accountable to this Project.
5. As per letter of Tribhuvan University December 14, 1981 these funds constitute an ongoing fund not captured at the end of fiscal year.
6. The returns that may be generated from this project will return to this research fund.
7. The total commitment for this project is Rs. 245,372.66
8. This initial check is for Rs. 10,000
9. Your receipt is requested for this amount.

Project #1

## Progress Report of Duck-Cum-Fish Culture Research Project

The Duck-Cum-Fish Culture project was approved by IAAS Research Committee for financial support by MUCIA during February 1982. Much time was taken to advertise the tender notice in newspaper ('Gorkhapatra'). An official letter from IAAS could only be issued to Mr. Desiram Pradhan, the contractor who undertook the work only on August 5, 1982 because of official processes of IAAS. The construction work of duck house, office building, store and watchman house are in progress now. Due to 'Desain' festival, the work of these buildings was discontinued for about 2 weeks. These buildings are likely to be completed one month from now.

The work of the nursery pond and fish ponds will be started within two weeks after the 'Tihar' festival. This work could not be started earlier because the water output in the marshy area where these ponds are to be made was so high that pumping out of the water was not possible. Now, the water level is low and so the work can be started. The work of fish ponds is likely to be completed in two months from now.

K.T. Augusthy
Lecturer
Fisheries and Zoology
IAAS, Rampur

DATE: November 10, 1982

Project #2

November 10, 1982

To
The Chairman
IAAS, Research Committee
Rampur

Subject: Research Progress Report

Dear Sir:

I have produced a Research Progress Report of the project "Soyabean Research and Extension in Chitwan" for 2 1/2 months (Bhadra 9 - Kartik 24, 2039). The report is attached herewith for your record.

Sincerely yours,

S.C. Sah
Project In-Charge[1/]

cc: Dr. G.P. Wood
Chief of Party
MUCIA/IAAS

Account Section
IAAS

---

[1/] Note that Mr. K.P. Sharma the original project director is now in the U.S.A. in a Ph.D. program. Mr. S.C. Sah has been assigned the project.

## Research Progress Report

| Sr.# | Nature of Research | Work Completed | Work to be done |
|---|---|---|---|
| 1. | Effect of seed moisture content, duration ..... in Chitwan (Part A) | Seed germination tests of 2 dates interval of 3 months, observation:- germination percentage, pathogen attack. | 3rd date of germination best. |
| 2. | Study on yield ..... ..... in Chitwan (Part B) | Disease, insect-pests date of maturity, harvesting of all plots except local at four location. Thresh-ing, yield storing of 53 plots. | Harvesting of local variety and threshing weighing of 43 plots. |
| 3. | Effect of planting date ..... inter cropping (Part C) | Maize harvested, threshed weighed, necessary observation taken. Soyabean of all dates harvested, soya-bean of 40 plots threshed and weighed. Observation:- flowering date, lodging shatter-ing etc. taken. | 35 plots yet to be threshed and weighed. |
| 4. | ISVEX (Part D) | Observation:- Days to flower, days to maturi-ty nodules, shattering lodging, plant height, plant harvested, pods per plant Pod height of all plots. Yield & weight of 100 seeds of 60 plots. | Yield & weight of 100 seeds of 4 plots germina-tion % of all plots' soyabean. |
| 5. | SPOT (Part E) | All observations as in case of ISVEX were completed. Threshing, yield and weight of 100 seeds of only 19 plots. | Yield, weight of 100 seeds of 29 plots. Germina-tion % of all plots soyabean. |
| 6. | Seed multiplication (Part F) | Four varieties were grown for seed production in about 2.5 ha. all harvested & kept on threshing floor. | Threshing & Yield record-ing. |

| Sr.# | Nature of Research | Work Completed | Work to be done |
|---|---|---|---|
| 7. | Local & Exotic varieties | About 30 varieties were grown (in four to ten lines) for seed for future use. All harvested except two. About 50% threshed. | Harvesting of 2 varieties and threshing of 50%. |
| 8. | Soil analysis | pH, N, P, K analyses completed of four locations (IAAS, Lanku, Ratna Nagar and Gunjanagar) | X |
| 9. | Response of Soyabean to Boron application | All harvested | Threshing and yield yet to be done. |

NOTE: Besides above works regular visits (were made) at farmers' field to check insects-pests and diseases. Mr. R.P. Chaudhary, coordinator of Grain Legume Improvement Program, Department of Agriculture and Dr. Karl Hittle, Supervisor of ICP Project visited twice at all locations to study the different aspects of Soyabean. Similarly a group of Soyabean researchers from Sri Lanka and Khumaltar (Nepal) also visited the Soyabean research plots to study the different aspects of soyabean. Besides those, the Director of USAID (Asian Region) Dr. Greenleaf also visited the Soyabean Research Project.

Project #3

A Progress Report

Farming System Research

Mr. Pradeep Tulachan

This research project has completed the following to date:

1. A systematic survey of 30 farm households was completed. The major variables included were family composition, education, household assets, various household enterprizes, on & off farm employments, experiences in natural hazards, livestock health & care, extension program, various social & cultural differences, values & beliefs. The information gathered on above variables were edited, coded & tabulated. Included were last year's production & consumption data of foodgrains.

2. Information on various production inputs such as seeds, farm yard manure, fertilizer, bullock labor, human labor etc. used for maize crop were gathered & production costs were calculated by different farm strata. The crop yield was determined by the sample crop cut procedure.

3. One day farmers' training was conducted & thirty farmers who have been participating in the research project attended the classes of practical importance in plant protection, livestock, diseases and farm management.

4. Information on paddy production inputs such as seeds, fertilizer, labor flow data were also collected and cost estimates of paddy production is in process.

5. Until now a composite map of the Sharadanagar Panchayat alone was not available, but now it has been prepared with the help of the aerial photographs and it can be brought in use in many other studies too.

6. Forty soil samples from the fields of the participant farmers were collected. A simple analysis was completed. Analysis for specific elements is in process.

7. A fortnightly record keeping of household balance sheet on consumption, expenditures, and other activities of the participant farm households has been continuing regularly. They are regularly edited, coded and tabulated.

Project #4

November 18, 1982

To
The Research Committee
IAAS, Rampur

Subject: Progress of the Research Project

Dear Sir:

The progress of my research project entitled "Mapping and Characterization of IAAS Soil" is as follows:

Work completed by now:

(a) Auger observation of N. and S. farm. at 60 m grid.

(b) Delineation of soil boundaries in Aerial Photo.

(c) Profile description (7 Soil Profiles have been described from each mapping unit).

(d) Taking bulk samples from each horizon of all 7 profiles and their preparation (Total 36 samples).

(e) Organic determination.

(f) Particle size determination.

Work in Progress

Determination of Total N.

Work yet to be completed.

(a) Remaining chemical analysis.

(b) Writing a final report.

Yours sincerely,

B.R. Khakural
Assistant Lecturer
Soil Science

cc: Dr. G.P. Wood
MUCIA Team Leader

The Dean, IAAS

Project #6

# Effect of Date of Sowing and Nitrogen Level on the Incidence of Rice Blast at Nursery Stage

S.M. Shrestha, L.N. Bhardwaj, R.B. Chhetri & Moti Lal

## Abstract

Masuli variety of rice was sown in the nursery beds treated with four different nitrogen levels at five different dates with seven days interval to see their effect on rice blast caused by Pyricularia oryzae cav. Earlier sowings were found significantly less attack of disease as compared to later sowing. Positive correlation was observed between nitrogen levels and disease intensities. The interaction between sowing dates and nitrogen levels with disease intensities were more significant in early sowing as compared to late sowing.

## Introduction

Blast of rice caused by Pyricularia oryzae cav. is the most important fungal disease of rice. Its occurrence has been reported from all the rice growing countries of the world. It is a serious problem of rice in Nepal. However, its attack on seedlings of Masuli variety at nursery stage has been found very severe in Chitwan valley. It has been observed constantly over the last few years in these areas with very high intensity, sometimes killing all the seedlings in the nursery. This problem is not only confined to Chitwan valley but also found in different parts of the country. Thapa (1981) reported this disease very severe in the seed bed of variety Masuli in Jhapa.

The fungi P. oryzae causing blast disease on rice is quite sensitive to climatic conditions, particularly temperature, rainfall and humidity. The disease was recorded more in later plantings at Cuttack (Padmanabhan and Ganguly, 1953). Subramanian (1967) pointed out that both susceptible and resistant varieties were infected with large lesions at 15°C. Similarly, nitrogen fertilization also plays a vital role in the susceptibility of the plant to the fungus. The susceptibility to infection was found to be increased by nitrogen fertilization (Gangully et al, 1951, and Bier et al, 1959).

Keeping in view the vital role played by different climatic conditions and nitrogen fertilization on the blast incidence, an experiment was conducted to find out the most suitable date of seeding and amount of nitrogen to be applied to minimize the disease incidence of Masuli variety of rice at nursery stage under Rampur conditions.

## Materials and Methods

The experiment was conducted in a split-plot design with four replications. Rice seed of Masuli variety was sown under five different dates in the main plots at seven days interval beginning from 6 June 1982. Sub-plots within the main plots were used for the treatment of four different nitrogen levels such as 0,40,80 and 120 kg N/ha. In case of 80 and 120 kg N/ha, half was applied at the time of soil preparation and remaining half was top-dressed after 15 days of seeding. The experiment was kept under constant observation to find out the date of disease appearance. Disease incidence was recorded after four weeks of seeding in each plot. At the same time plant heights for each plot were also noted. The incidence was taken according to 0 - 9 scale (0 - no lesions; 1 - small brown specks of pinhead

size; 2 - large brown specks; 3 - small, roundish to slightly elongated, necrotice gray spots, about 1 - 2 mm in diameter with a brown margin; 4 - typical blast lesions, elliptical, 1 -2 cm long, usually confined to the area of the 2 main veins, infecting less than 2% of the leaf area; 5 = typical blast lesions infecting less than 10% of the leaf area; 6 = typical blast lesions infecting 10 - 25% of the leaf area; 7 = typical blast lesions infecting 26 - 50% of the leaf area; 8 = typical blast lesions infecting 51 - 75% of the leaf area; and 9 - all leaves dead) described in the "Standard Evaluation System for Rice" (Anonimos, 1981). Data for disease incidence and plant heights were tabulated and analysed statistically. The results are presented in Table 1, 2 and 3. Meteorological data recorded during the experimental period are given in the Appendix - 1.

## Results and Discussion

It is evident from the data presented in Table 1 that the disease intensity was increased significantly with the increased level of nitrogen fertilization in case of those seedlings sown during 6, 13 and 20 June, 1982. Nevertheless there was no significant difference between different levels of nitrogen except in case of zero nitrogen when the seeds were sown on 27 June 1982. Despite very high disease intensity (above 97%) the plant height was found to increase very significantly with higher doze of nitrogen fertilization when the seeds were sown on 6 and 13 June, 1982.

Table 1: Effect of seeding dates X nitrogen levels on the incidence of rice blast and plant height

| Dates of seeding | Nitrogen Levels in (kg/ha) | Percent disease intensity | Plant height in (cm) |
|---|---|---|---|
| | 0 | 13.4 | 10.4 |
| 6 June 1982 | 40 | 25.5 | 13.3 |
| (23 Jestha 2038) | 80 | 39.1 | 14.6 |
| | 120 | 49.2 | 18.3 |
| | 0 | 12.0 | 9.8 |
| 13 June 1982 | 40 | 21.6 | 14.4 |
| (30 Jestha 2038) | 80 | 29.4 | 16.4 |
| | 120 | 55.8 | 18.0 |
| | 0 | 29.6 | 10.1 |
| 20 June 1982 | 40 | 81.1 | 10.7 |
| (6 Asad 2038) | 80 | 91.0 | 11.5 |
| | 120 | 96.4 | 11.6 |
| | 0 | 82.2 | 9.1 |
| 27 June 1982 | 40 | 97.5 | 10.5 |
| (13 Asad 2038) | 80 | 97.8 | 10.6 |
| | 120 | 98.0 | 10.1 |
| | 0 | 92.8 | 7.7 |
| 4 July 1982 | 40 | 97.3 | 7.4 |
| (20 Asad 2038) | 80 | 98.7 | 7.5 |
| | 120 | 98.9 | 7.1 |
| CD at 5% | | 2.2 | 1.2 |

Table 2: Effect of seeding dates on disease incidence, plant height and time of disease appearance

| Dates of seeding | Percent disease intensity | Plant height in (cm) | Appearance of disease after sowing in (days) |
|---|---|---|---|
| 6 June 1982 | 31.8 | 14.1 | 24 |
| 13 June 1982 | 29.7 | 14.6 | 21 |
| 20 June 1982 | 74.5 | 11.0 | 18 |
| 17 June 1982 | 93.8 | 10.1 | 14 |
| 4 July 1982 | 96.9 | 7.4 | 10 |
| CD at 5% | 2.4 | 1.3 | |

Seeding dates affected the seedlings greatly for their susceptibility to the attack of blast caused by P. oryzae. The intensity of disease was increased significantly with the delay in sowing the seeds in the nursery beds. Minimum average disease intensity was recorded in first and second date of seedings i.e. 31.8 and 29.7 percent respectively and was maximum in last date of seeding which had 96.9 percent disease incidence (Table 2). Seeding dates are inversely proportionate with the time of disease appearance. First appearance of disease was noted after 24 days of seeding in case of first sowing, whereas it was noted after 10 days only in the last sowing.

Table 3: Effect of nitrogen on disease incidence and plant height

| Nitrogen in (kg/ha) | Percent disease intensity | Plant height in (cm) |
|---|---|---|
| 0 | 45.9 | 11.8 |
| 40 | 64.6 | 14.1 |
| 80 | 71.2 | 15.1 |
| 120 | 79.6 | 16.3 |
| CD at 5% | 0.34 | 0.10 |

Direct correlation of nitrogen fertilization with disease incidence and plant height was found (Table 3). As the nitrogen level was increased from 0 to 120 kg/N/ha the disease incidence and plant height were also increased from 45.9 to 79.6 percent and 11.8 to 16.3 cm, respectively.

The relative humidity and rainfall were playing major roles for disease development since temperature was almost constant and suitable throughout the experimental period (Appendix - 1).

Present finding with less attack of disease in early sowing is in agreement with the result obtained by Padmanabhan and Ganguly, 1953 at Cuttack and Anonymous, 1981 from IRRI Philippines. Also with the nitrogen fertilization the results are at per with the findings of Bier et al, 1959.

From the results obtained in this experiment we can suggest to the farmer of Chitwan valley to put the seeds of Masuli variety in the nursery bed within Jestha month (15 June) with nitrogen fertilization up to 80 kg/ N/ha to have minimum attack of blast disease and vigorous growth of the seedlings at nursery stage.

However, this experiment should be repeated in the subsequent years to confirm the results. Alternatively, chemical control trial is suggested for later planting to protect the seedlings from blast attack.

Acknowledgement

My sincere thanks are due to the Dean IAAS and MUCIA team leader Dr. G.P. Wood for funding and providing necessary facilities during the course of investigation. I am also thankful to Mr. P.P. Sharma for his help in statistical analysis of data through apple II computer.

Literature cited

B.J. Thapa 1981. Report on rice diseases in Nepal - paper presented in ninth summer crops workshop at Parwanipur Agricultural Station.

Beir, R.D., J.D. Panger and E.C. Tullis 1959. The interrelationship of nitrogen and other factors affecting the blast disease of rice caused by Pyricularia oryzae cau. Pl Dis. Reptr. 43:477-482.

Ganguly, D., M.S. Balakrishnan and S.Y. Padmanabhan 1954. Effect of manuring on the incidence of blast. Rice News Teller 2:130-38.

Padmanabhan, S.Y. and Ganguly 1953. The effect of date of planting on the incidence of blast disease of rice. Rice News Teller 1:21-25.

Subramanian, S. 1967. Effect of nyctotenperature on blast disease (Pyricularia oryzae) metabolic changes in rice. Abstr. Inter. Symp. Pl. Psth., New Delhi, P.11.

Appendix - 1

Meteorological Data

| Date | Temperature Max. | Temperature Min. | Relative Humidity (%) | Rainfall (mm) |
|---|---|---|---|---|
| June 6 | 29 | 23 | 87 | 7.4 |
| 7 | 33 | 34 | 76 | 0.0 |
| 8 | 34 | 24 | 76 | 0.0 |
| 9 | 29 | 23 | 100 | 27.0 |
| 10 | 34 | 23 | 88 | 73.0 |
| 11 | 30 | 22 | 94 | 65.2 |
| 12 | 30 | 23 | 87 | 1.2 |
| 13 | 33 | 24 | 76 | 0.0 |
| 14 | 32 | 23 | 87 | 38.2 |
| 15 | 32 | 23 | 76 | 25.4 |
| 16 | 33 | 23 | 76 | 31.0 |
| 17 | 35 | 25 | 70 | 0.1 |
| 18 | 33 | 23 | 84 | 26.0 |
| 19 | 34 | 22 | 82 | 65.0 |
| 20 | 36 | 25 | 71 | 0.0 |
| 21 | 37 | 24 | 70 | 0.0 |
| 22 | 35 | 25 | 76 | 0.0 |
| 23 | 32 | 23 | 94 | 6.0 |
| 24 | 32 | 22 | 94 | 23.4 |
| 25 | 34 | 22 | 76 | 0.0 |
| 26 | 35 | 21 | 70 | 50.0 |
| 27 | 34 | 22 | 88 | 29.3 |
| 28 | 31 | 24 | 87 | 7.3 |
| 29 | 33 | 23 | 64 | 1.0 |
| 30 | 34 | 24 | 76 | 0.0 |
| July 1 | 34 | 25 | 77 | 0.0 |
| 2 | 35 | 26 | 77 | 0.0 |
| 3 | 36 | 25 | 76 | 0.1 |
| 4 | 36 | 26 | 72 | 0.0 |
| 5 | 35 | 26 | 70 | 1.4 |
| 6 | 32 | 23 | 82 | 21.0 |
| 7 | 34 | 24 | 76 | 6.3 |
| 8 | 35 | 26 | 82 | 0.0 |
| 9 | 32 | 23 | 100 | 44.2 |
| 10 | 31 | 24 | 94 | 3.4 |
| 11 | 31 | 24 | 94 | 3.4 |
| 12 | 33 | 24 | 96 | 0.2 |
| 13 | 34 | 24 | 76 | 17.4 |
| 14 | 33 | 24 | 70 | 6.3 |
| 15 | 34 | 24 | 88 | 12.2 |
| 16 | 35 | 25 | 82 | 10.0 |
| 17 | 34 | 25 | 77 | 0.1 |
| 18 | 34 | 25 | 83 | 38.4 |
| 19 | 34 | 23 | 82 | 69.3 |
| 20 | 33 | 24 | 100 | 28.0 |

| Date | Temperature Max. | Temperature Min. | Relative Humidity (%) | Rainfall (mm) |
|---|---|---|---|---|
| July 21 | 34 | 26 | 86 | 3.3 |
| 22 | 34 | 26 | 76 | 0.0 |
| 23 | 33 | 24 | 72 | 4.0 |
| 24 | 32 | 24 | 82 | 28.0 |
| 25 | 31 | 23 | 86 | 67.2 |
| 26 | 32 | 24 | 94 | 7.2 |
| 27 | 33 | 24 | 95 | 10.3 |
| 28 | 34 | 24 | 88 | 4.3 |
| 29 | 34 | 25 | 76 | 0.0 |
| 30 | 34 | 26 | 82 | 0.1 |
| 31 | 35 | 24 | 76 | 31.1 |
| Aug. 1 | 37 | 25 | 83 | 0.0 |
| 2 | 35 | 25 | 82 | 2.1 |

Project #7

Progress Report

L.N. Bhardwaj

1. Studies on the effect of seed dressings and foliar sprays on seedling health and blast and brown spot diseases of paddy.

L.N. Bhardwaj, S.M. Shrestha, M.H. Khan and Moti Lal

The experiment was designed with a view to test the efficacy of fungicides against blast (Pyricularia oryzae) and brown spot (Helminthosporium oryzae) disease of paddy in the nursery stages.

The trial was conducted in IAAS production farm in the first week of June 1982. The following fungicides viz; Bavistin, Callixin, Vitavax, Cuprarikh, Dithane M-45 and difolatan were used as a foliar and seed dressings to control the disease under natural incidence. The sowing of seed was done in randomized block design with 4 replications and the urea was applied @ 50 gm/sq. meter. Just after sowing, it rained heavily and as a result a thick layer of soil crust was formed which adversely affected the seed germination. The experiment was again repeated after 10 days but it failed again due to lack of rain.

Project #8

Chemical control of root-knot nematodes of okra and Eggplant: Directed by Dr. L.N. Bhardwaj.

2. Studies on Chemical control of root-knot of okra and egg-plant L.N. Bhardwaj, S.M. Shrestha and R.C. Koirala.

Root-knot nematode is one of the limiting factors in vegetable production in Chitwan. Root-knot nematodes not only affect the plant health and vigour but greatly reduce the quality of fruits and decrease the yield of the crops.

In the present study different dosages of Furadan was tried against Meloidogyne spp. Causing root-knot in okra and egg-plant. The experiment was laid out in RCBD in the vegetable research farm of IAAS during mid July 1982.

Both the experiments on okra and egg-plant have been completed successfully. The data on yield, plant height, root length, fresh shoot weight and root weight was recorded. Similarly, the data on root-knot index and egg-mass index of different treatments was also taken to test the effectiveness of Furadan against root-knot nematodes. The data has not yet been analysed statistically but it appears from the data that the application of higher dosages of Furadan has effectively controlled the root-knot nematodes. The yield of the furadan treated plots also increased significantly over control.

Project #9

## Research Project Progress Report

"Survey and Identification of Plant Parasitic Nematodes associated with crop-plants in Chitwan, Nepal

The Panchayats around IAAS, Rampur, Chitwan surveyed so far are Mangalpur, Shiva Nagar and Gita Nagar. A number of Rhizosphere soil samples of Rice, Maize, Millet, Pineapple, Banana, Citrus, Papaya, Soyabean, Chilli, Okra and Colocasia etc. have been collected from different places in the above mentioned Panchayat.

Nematodes were isolated from the soil samples and identified with temporary mounts up to genus level. Some specimens are permanently mounted on slides and some are preserved in vials for species identification.

This survey will be continued to collect rhizosphere soil samples for the study of plant parasitic nematodes associated with winter crops in the Panchayats around IAAS, Rampur, Chitwan, Nepal.

Submitted by,

M.H. Khan
Project Leader

November 25, 1982

Project #10

DATE: November 6, 1982

To
The Dean
Institute of Agriculture and
Animal Science
Rampur, Chitwan

Subject: Report on the Progress of the Research

Dear Sir:

This letter is to bring to your kind notice that I have been envolved in 15 months research project entitled "All the Year Round Vegetable Production in Rampur Chitwan," which was funded by MUCIA. As, I have been asked by the funding agency to give a brief progress report about the research. I have hereby submitted the progress report (attached) for your information.

Sincerely yours,

Rishi Adhikari
Lecturer
Department of Horticulture
IAAS, Rampur

cc: Dr. Garland P. Wood
MUCIA, Chief of Party
IAAS, Rampur

## All the year round Vegetable Production in Rampur, Chitwan

The objective of the research is to find out a planting time schedule of 15 major vegetables consumed by the people in Chitwan and collection of technical problems for horticulturists, pathologist, entomologist, and soil scientists involved in vegetable research for finding out ground work and guidelines for future research in vegetables.

I was supposed to start my planting schedule from the months of Baishakh (April 1982) 039. Due to the delay in research committee decision and the time taken by the release of fund and procurement of essential inputs I did my first planting by the middle of Ashadh. The list of the vegetables planted and the pertinent information against each vegetables is presented below.

| Month | Vegetables | Description |
|---|---|---|
| Ashadh | Chillies | Pant C-1 variety doing very good. No problem. Three harvests done already still flowering/ fruiting. |
| | Radish | Minowase variety. Root production was there. However very pungent due to high temperature and rain. |
| | French Bean | Germination problem. Rhizoctonia collar rot was severe. Could not harvest at all. |
| | Okra | Pusa sawani. Excellent fruits. Harvesting done already. Nematode infestation was there but no trace of YVM. |
| | Bitter gourd | Pusa Domosami. Did alright. Harvesting finished already, germination problem was there. |
| | Amaranthus | No germination. This has been dropped from the research. |
| | Pointed gourd | Vines not available. Dropped from trial. |
| Shrawan | Tomato | Rampur Sano variety. Excellent growth good sized fruits not ripened yet. Bacaterial will taking slight toll. |
| | Brinjal | PPL. Variety. Germinated well but all eaten by cut worms. |
| | Cauliflower | Early Kumari. Good germination. Extra elongation of the stalk and damping off. |
| | Bittergourd | Vines coming up. Look alright. |
| | Cabbage | Golden Acre. No germination at all. |

| Month | Vegetables | Description |
|---|---|---|
| Bhadra | Potato | Local Red. Variety late emergence. Vines doing good. |
| | Chillies | Plant doing good. Low germination doing good. |
| | Cauliflower | Doing good. Dropping off problem. |
| | Radish | Good size roots. Less bitter. Harvesting done already. |
| | Onion | Rotting. No crop. |
| | French Bean | Excellent. Two harvest done already |
| | Peas | No germination. |
| | Okra | YUM attack. Harvesting going on. |
| | Mustard | Doing good |
| | Cabbage | Pride of India good performance |
| Ashwin | Potato | Doing good |
| | Tomato | Doing good |
| | Brinjal | Doing good |
| | Cauliflower | Doing good |
| | Bittergourd | No germination |
| | Cabbage | Doing good |
| Kartik | Potato | Planted |
| | Chillies | Planted |
| | Cauliflower | Planted |
| | Radish | Emerged |
| | Onion | Planted |
| | Peas | Planted |
| | Okra | Emerged |
| | Mustard | Planted |
| | Cabbage | Planted |