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**HIGHER EDUCATION IN AGRICULTURE IN NEPAL:  
THE REPORT OF A PRE-FEASIBILITY STUDY**

**Midwest Universities Consortium for International  
Activities, Incorporated**

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# HIGHER EDUCATION IN AGRICULTURE IN NEPAL

The Report of a Pre-Feasibility Study



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*This report was prepared by a team from the Midwest Universities Consortium for International Activities, Inc. (NUCIA), which worked cooperatively with a Nepalese team during July and August of 1972 in Nepal with financial support from the United States Agency for International Development under Contract Number AID/Asia-583.*

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**HIGHER EDUCATION IN AGRICULTURE IN NEPAL**  
**A pre-feasibility study**

A map is no substitute for a journey

This is a report of a team from the Midwest Universities Consortium for International Activities (MUCIA), which worked cooperatively with a Nepalese team in July and August 1972 in Nepal under the auspices of the U.S. Agency for International Development.

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

From an article entitled: "The Role of Agriculture in the Development of Nepal," by Dr. K. B. Rajbhandary (RAMJHAN, 1960. p. 32).

## Summary

This study carries the unique name of "pre-feasibility." Its architects chose those words because so many of the previous efforts to determine what is feasible in international cooperation have become the captives of prior expectation, have assumed feasibility, and have gone on to describe action programs.

The authors of this document have deliberately tried to divide their attention between the questions of "whether or not," and the questions of "what to do" and "how to do it."

The first chapter is an analysis of the current situation with respect to higher education in agriculture in Nepal. The second explores alternatives of whether or not change is feasible, and moves to the issues surrounding what ought to be done. The third and fourth chapters, in turn, make recommendations for the further development of higher education in agriculture in Nepal and for international technical cooperation in support thereof, and offer examples and illustrations.

Briefly, this study recommends a vigorous and dynamic approach to higher education in agriculture in Nepal --an activity which is declared not only feasible, but necessary -- emphasizing the practical and applied aspects of agriculture

- focusing on the people, plants and animals of Nepal;
- beginning with applied practical agriculture, and going from there to theoretical underpinnings;

- insisting on practical field work with real plants and animals for both students and teachers:
- growing gradually in the Institute of Agriculture and Animal Science from a revitalized I.Sc. program to a B.Sc. program;
- building first a central operating campus; and later satellite campuses serving different locations;
- emphasizing quality and high standards of relevant instruction, and insuring this through teaching staff involvement in appropriately applied research and a variety of non-formal educational programs;
- aiming for a unique system of higher education in agriculture, linked with all other segments of Nepalese education and rural life, consistent with the National Education System Plan, and designed especially for service to Nepal by preparing agriculturalists to serve as teachers, agricultural officers, and in many other ways;
- with the main central campus located in a rural atmosphere with plenty of agricultural land, and, ideally including at least two of the three zones: hills, valleys, and Terai.

The study also recommends a strategy of international cooperation in achieving the type of educational system described above.

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## Preface

The U.S. Agency for International Development (AID) made an unusual request to the Midwest Universities Consortium for International Activities, Inc.\* (MUCIA) with respect to this study. It was not to be called a feasibility study. Instead, it was named a pre-feasibility study.

In response to this request, MUCIA developed a five-phase strategy. In the first phase, knowledgeable scholars and international development practitioners from the several universities were brought together to examine the rationale of such a pre-feasibility study, and determine guidelines for its operation.

In the second phase, some of these scholars were to be joined by colleagues from Nepal and other MUCIA professors who specialize in Nepalese studies. Together, they were to refine the guidelines, and fit them uniquely to the questions relating to higher education in agriculture in Nepal.

The third phase was to involve international travel, with a small joint Nepalese/MUCIA team going to the Philippines, Indonesia, and India. In each country they were to visit agricultural schools of various types.

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\*Includes the University of Illinois, Indiana University, Michigan State University, the University of Minnesota, and the University of Wisconsin; and for this study, joined by Florida A&M University.

In each case they would ask: "What have you tried that has worked very well? Why was it so successful? What have you tried which failed? Why did it fail?"

In the fourth phase, the joint team would carry out its main study in Nepal. The travelling team members would be joined by others, both from the Nepalese institutions involved, and from MUCIA. They would study the current state of agriculture, education, and other relevant aspects of life in Nepal, and then focus on change and further development of higher education in agriculture in Nepal.

As a fifth and final phase, the team would address the questions of the feasibility of USAID cooperation with His Majesty's Government of Nepal in such further development of higher education. To do that, it would be necessary to consider, jointly with appropriate Nepalese, what might be done and how it might be done, at least during the next decade.

When this strategy had been appropriately approved, both in Nepal and in the U.S.A., a small group of MUCIA professors assembled to initiate operations. However, as in most such activity, the professional ideal must be tempered by human, administrative, political and diplomatic realities. In this case, Phase III, the international tour, had to be delayed. Further, plans for two key Nepalese to participate in Phase II were cancelled. But, with those adjustments, the study was carried on much as anticipated, from May to September, 1972, and this document represents a report of its findings.

In Phase I, a pre-feasibility study was defined "as that aspect of a feasibility study which focuses more on alternative goals to be achieved than on alternative means which might be used to achieve them. In international technical assistance, a sequence might include a pre-feasibility study, a feasibility study, then negotiation of an international technical cooperation program, and then the carrying out of activities called for in the program."

The pages which follow, based on both the work of this joint team and of many others who preceded us, go beyond pre-feasibility -- beyond exploration of goals -- and include matters of feasibility of various means for achieving those goals. The writers have tried to make this document as useful as possible to those who might later plan in more detail and assist in implementation of an international technical cooperation program.

In trying to consider criteria for feasibility of a new or modified institution to carry out higher education in agriculture the team identified at least two types of conditions. The first group, and most obvious, might be labeled the standard criteria. The second, and possibly more significant group, could be called the basic criteria.

The standard criteria involve 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?

To all of these, the team has responded, "Yes!" The institution has already been established. It needs to shift its program away from academic exercises and toward practical learning of applied agricultural principles. It needs a new doctrine and style of teaching and learning. But the crux of this is a matter of attitude, and could be accomplished within the constraints of the present recurrent budget.

The basic criteria provide a tougher test. For example: 1) Is there anything known by scientific academic agriculturalists, which would be useful to agricultural producers, suppliers, and marketers, which is not already generally known? 2) Where is the relevant knowledge now? 3) Where else could that knowledge be used? 4) How could it be transferred to potential users? 5) Besides changes in knowledge, are there any feeling kinds of changes (attitudes, appreciations, values) which a modified educational system could carry? 6) And what abilities and skills could or should be transferred? And finally, 7) To what extent is the non-formal educational system adequate or improvable -- what need is there for formal education in agriculture beyond the already existing system?

Numerical data do not answer these questions. The answers do not lie wholly within Nepal. The world experience offers some evidence. The

philosophy, the commitment, and the faith of involved Nepalese carries more weight. And the impressions of outsiders respond.

One of our most esteemed informants told us, 'Nothing is really feasible here in Nepal.' (Dr. H. Gurung) Nevertheless, over ten million people live in Nepal. Some have lived there for at least five thousand years. Some will live there long after the authors of this document are gone. Therefore, we ask ourselves, "Why not?"

Again, the answer is loud and clear. A dynamic new institution was reborn as part of Tribhuvan University on 16th July 1972. The Nepalese year is 2029. The new name is the Institute of Agriculture and Animal Science. We believe the infant will live a long and fruitful life. We also believe that it will be stronger and serve its country earlier if it learns quickly from the current world experience in its field. That's why we also urge a vigorous program of international technical cooperation.

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1972  
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A detailed daily itinerary of the MUCIA field team is not included. Mostly, we worked in Kathmandu Valley. But various individuals also collected information in a great range of places, from the Terai to the hills, by foot along the paths, by motor car, by airplane, and by helicopter.

Team members interviewed farmers, teachers, and agricultural officers in places like Janakpur, Rampur, Hetaura, Pokhara, Lumle and the Paskhal and Palung Valleys, as well as along the roads to Trisuli, to Tibet, and to India. Full schedules are available.

The team also read a great variety of reports, speeches, books, and miscellaneous documents, in addition to conducting hundreds of personal interviews. A bibliography is attached.

. . . . .

Members of the joint Nepalese/MUCIA team are listed in Appendix A. Many others participated in Phases I, II, and IV. Official MUCIA participants are listed in Appendix J, and a copy of the Guidelines which was developed in Phases I and II is attached as Appendix I.

In addition, however, the team is indebted to many others who have contributed significantly to this effort. While we cannot name them all, we owe a special debt to Dr. Trailokya Nath Upraiti, Vice Chancellor and Dr. Surya B. Sakya, Acting Rector, Tribhuvan University; to Dr. Mohammed Moshin, Member Secretary, National Education Committee; to Mr. Harka B. Gurung, Member, National Planning Commission.

Mr. William Carter Ide, Director of USAID/Nepal, and many members of his staff, offered assistance and hospitality in generous measure. Mr. Frank Colling, Acting Chief, Food and Agriculture Division, was particularly effective in supporting the Team's work. Dr. Ann Domidion, Acting Chief, Education Division, and members of her staff were helpful

in many ways. Messrs. Bhuban Tuladhar, Bhava Nath Sharma, Ganga Prasad Acharya, Chetri Prekash, and Shankar Bhakta Shrestha, and Nani Shobha Sitrakar assisted with a multitude of problems of communication and logistics.

Special acknowledgment is due Mrs. Jo Heatley, of USAID/Kathmandu, who exhibited unusual secretarial skill and administrative capacity in keeping "nine wise men" organized and, at the same time, typing this manuscript through six revisions during the course of the study. Similarly, the team appreciates the outstanding effort of the MUCIA executive office staff in reproducing this version of the report -- particularly, Mrs. Ardell Ward, Mrs. Diana Darr, Mrs. Judy DeJaegher, and Mrs. Susan Leone.

Mr. William T. Harris, AID/Washington, who accompanied the MUCIA Team to Nepal, bolstered the Team's efforts with background, ideas, and many kinds of assistance.

Finally from a personal point of view, the Project Director wishes to express deep thanks to the joint Nepalese/MUCIA Team Members, who came to know and understand each other through eight weeks of common effort. And the deepest of thanks to the MUCIA Field Team Leader, Dr. William N. Thompson, and to the Chairman of the Nepalese Team, Dr. K. B. Rajbhandary, both of whom demonstrated splendid professional competence, coupled with energy, commitment, and enthusiasm.

George H. Axinn  
Kathmandu  
31 August 1972  
2029/5/\_\_\_\_\_

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## CHAPTER I

### CHARACTERISTICS OF THE SITUATION IN NEPAL

A small team in a brief period can explore a complex situation. It can taste of samples, it can probe reality, it can develop impressions. It can also read of the explorations of others, and it can listen carefully to the words of more experienced predecessors.

But it would be presumptuous and naive to pretend to have discovered and to be able to report accurately on the dynamic realities of the milieu in which Agricultural Education now operates in Nepal.

Instead, we offer here a set of impressions. These are based on the best exploration we were able to muster. We recommend the setting in motion of certain processes designed to maintain the dialogue -- so that further explorations may lead to further discovery -- and so that each partner will come to know and understand the other better over time.

This chapter summarizes our findings with respect to the current situation in education, the economic situation, the government, agriculture, and other aspects of Nepal's culture which seemed pertinent.

A. CULTURAL FACTORS

Nepal, perhaps even more than other South Asian countries, is characterized by great ethnic diversity. The major features of Nepalese culture which may be relevant to agricultural education and development can be best presented by first reviewing briefly the distribution of ethnic groups within a geographic and historical framework.

At the most simple level (and with some distortion of reality) one can classify the ethnic groups of Nepal into two major categories:

1) those with more or less close cultural affinities to the Indians to the south, Caucasoid in physical type, and speakers of Indic languages, and 2) those more culturally akin to the Tibetans and other peoples to the north and east, tending toward Mongoloid physical type, and speakers of Tibeto-Burman languages. Peoples of the first type are predominant in the Terai region; the Tibeto-Burman speaking peoples inhabit the high Himalayan ranges of the northern border areas. In the middle hills one finds a variety of both Tibeto-Burman and Indic speaking peoples.

In recent centuries the politically, socially and economically dominant people of Nepal have been the descendants of Hindus who took refuge from the Muslim conquerors of India. These immigrants, who belong to the Kyshatriya and Brahmin Varnas, settled in the hills and gradually acceded to dominance over local populations. The present Royal Family of Nepal, the Shah family, was one such group which, after establishing a kingdom in Gorkha, conquered the Kathmandu Valley in the 18th Century. During the succeeding three centuries, dominance at the capitol shifted back and forth among powerful Kyshatriya families, the Rana family being

the most recent and perhaps the most firmly entrenched, until the return of the Shah family to power in 1951. The Newars, a group long settled in the Kathmandu Valley and whose ethnic affiliations are in dispute, also shared to a lesser extent in administrative positions during this period and tended to be dominant in commerce.

The situation at the capitol is to a considerable extent mirrored elsewhere in Nepal: the Kyshatriyas and Brahmins tend to be dominant wherever they have been long settled, and the Newars have spread from Kathmandu and settled in towns scattered throughout the country where they are important in commerce. However, the impact of these dominant groups on the Tibeto-Burman speaking tribes, Limbus, Rais, Tamangs, Magars, Sherpas, Tharus, Gurungs, is variable and depends partially upon the recency of settlement and the numbers of these dominant groups in the various local areas. The northern border areas and some hills areas have never been subject to direct contact and influence by these Hindu peoples, or it has begun only in very recent times. The case of the Terai is somewhat different from that of other regions: there large numbers of people from adjoining areas of India have settled within the last 100 years and make up an important element in the local population along with the "original tribes" such as Tharus, etc. As in the middle hills, the economic, political and social dominance in Terai communities is likely to be in the hands of members of Brahmin and Kyashatriya castes, who, however, are more orthodox than their Chetri, Thakuri or Brahmin counterparts of the hills and who are ethnically more closely akin to their neighbors in India.

Given the prevalence of caste institutions, it can be seen that traditional Nepal, like India, is an hierarchical society. The superiority of the twice-born castes, and the Hindu civilizational elements which they represent has, in general, been accepted in Nepal wherever they have been present for any considerable period. An absorption process sometimes referred to as Sanskritization has tended to bring the various non-Indic speaking peoples into the Hindu fold. In this process, the tribal groups have taken their places as caste groups within the overall system, and have taken on many of the Brahminic social and religious practices. The social and religious hierarchy of caste is reflected also in occupational specialization in the same vague manner as in India. In rural communities, the higher castes and middle castes are generally land owners and cultivators, and the lower castes, a minority of the population, provide craftsmen and others, although these latter also tend to engage in agriculture as well. There are many variations: where Brahminical ideas of ritual purity are strongly held, Brahmin land owners may in some cases not engage in plowing; in some areas of the Terai much of the agricultural work is done by members of castes near the bottom of the hierarchy under the direction of the landowners. The renting out of land on share-cropping basis is common in many parts of Nepal, but except where large estates are involved, there may be little more than a tendency toward caste distinctions between landlord and tenant.

It is fair to say that in Nepal, outside of the Terai, Hindu institutions apply with somewhat attenuated force by comparison with Uttar Pradesh or Bihar across the border in India. In some areas of the middle

hills, where Brahmins and Chetris are present among a majority of "tribals" such as Magars or Gurungs, Hinduism is rather lightly borne by the latter. The more prosperous and upwardly mobile may adopt Sanskritic religious and social practices, but the majority tend to remain committed to their own customs. In these cases, caste tends to shade off into ethnic group status, although the peoples of Magar, Gurung, Rai, etc., caste may be little different in cultural characteristics from their fellow tribesmen located in areas in which Brahmins and Chetris have not been present at all.

The Tibeto-Burman speaking peoples of the hills are generally regarded as maintaining a kind of independence of outlook and capacity for initiative less frequently found among middle and lower caste cultivators in India who have for long periods been subject to tightly knit caste institutions. It is possible that these capacities have been reinforced by the recruitment of the hill people into Gurkha regiments for many generations. Military service abroad, by providing an alternate source of livelihood as well as relative social and intellectual sophistication, may have provided necessary leverage for independence from domination by local elites.

Those peoples, especially Tibeto-Burman speaking tribes, who have been minimally integrated into the institutions of Hinduism have, in effect, the status of backward, minority ethnic groups in Nepal. Up to the present there have been few manifestations of ethnic nationalism and separatism. One exception is the Limbus of the far eastern hills, where a nationalist movement has apparently been provoked, in part, by the loss

of tribal land ownership rights to Brahmins who have begun recently to settle in the area.

The modern, urban-based sector of Nepalese society, unlike the rural sector, is not stratified directly along caste lines, but the influence of caste and ethnicity is nonetheless quite apparent. The personnel in higher posts in Government, the holders of degrees, and members of Rashtriya Panchayat, for example, are overwhelmingly drawn from a relatively few castes and ethnic groups, by and large the same groups which have been traditionally dominant in Nepalese affairs. The following table indicates the extent of the skewness of the distribution at the higher level of Government service.

Distribution of Castes and Ethnic Groups in  
Government Positions at and Above the Under-  
Secretarial Level\*

<u>Groups</u>	
Brahmins	105
Kyshyatriya	60
Newar	92
Terai People, Jha, Rajput, Etc.	19
Rai, Limbu, Gurung	4
All Others	6

\*Adopted from Pashupati Sumshere J.B. Rana,  
Nepal's Fourth Plan - A Critique, Yeti Pocket  
Books Pvt. Ltd., 1st ed., Kathmandu, 1971,  
p. 18, Appendix IV.

This distribution can be traced in part to the monopolization of educational opportunity by groups and families who held elite or relatively elite positions in society in the past. In part it results from the uneven

geographical distribution of higher educational opportunity. Groups who have had a base in Kathmandu have been in a position to avail themselves of both superior secondary schools and those institutions of higher learning located mainly in the valley. It has been reported that Kathmandu Valley, with 3-4% of the population of Nepal, passes out 15% of the primary school graduates, 35% of the secondary graduates (S.L.C.) and 46% at the intermediate level and above (Pashupati Rana, Ibid., p. 10, 21). In rural areas, it is members of the higher castes, generally more prosperous than others and proportionally more literate, who tend to see their children through primary and secondary schools. Moreover, formal education has traditionally been under the control of Hindu and Buddhist functionaries and largely the prerogative of Brahmins. The modern elites are not, strictly speaking, stratified in terms of caste, and, as in India, caste membership per se is not a significant criterion for recruitment to position in the modern sector, but the legacy of the traditional stratification system, (and the continued force of traditional modes of social organization and stratification in rural areas) along with the uneven pace of development of various regions, contributes to the structure of the present modern elite.

The point is sometimes made that the attitudes and values of Nepalis, particularly those of upper caste backgrounds, are important factors impeding modernization and economic development. The elements cited include a tendency to ritualize knowledge rather than to apply it (allegedly derived from Brahminical religious practice and presumably reflecting other worldliness and disdain for manual work), attitudes toward time

differing from those of the West, and a lack of a strong public service ideal (Read and Read, Nepal in Transition, University of Pittsburg Press, 1966, pp. 151-69). These issues are very complex and difficult to evaluate in short compass, but they require some discussion since they constitute a set of assumptions which do appear to play a part in current development planning by both Nepalese and foreign consultants.

There has been considerable discussion in social science literature of the part played by orientation toward work, attitudes toward application of knowledge, time concept, etc., of traditional South Asian elites, and the situation in Nepal should be considered within the context of these discussions. It is true that in South Asia there was never a formally articulated ideology which raised single-minded devotion to work to the level of a primary religious obligation to the individual; in Hindu ethical systems work seems to have been regarded as one among several proper concerns of the individual and was seen as appropriately a dominant concern only at certain points in the individual life cycle. It is tempting for Westerners or others, impressed by the contrast between Protestant work attitudes and those prevalent in South Asian ideology, to assign a major part to such factors in the development process. However, the recent historical experience of South Asia probably does not bear out any such simple interpretation. Compartmentalization of religious and ideological concerns on the one hand, and mundane concerns on the other, is apparently a personal strategy available to South Asians as well as to Westerners. South Asians of various communities and castes have often proven capable of taking advantage of opportunities to occupy

newly available occupational and business niches during the past century and a half (though there has always been a tendency for such fields to remain largely a monopoly of a given community once a foothold is gained).

In Nepal, the Chetri community, long a source of elite leadership, has not been without a spirit of enterprise in military and other ventures, and some of the more diligent medium and small cultivators are Chetris. It is by no means certain, or even likely, that values inimical to modernization are deeply embedded in the personality or belief systems of Nepalis of high caste.

On the other hand, it is fair to say that the experience with occupational roles of the overwhelming majority of the Nepalese people contrasts rather sharply with that of Westerners'. Work experiences in formally structured organizations such as government bureaucracies, modern business firms and the like in Nepal is quite shallow in time depth and narrow in proportion of people encompassed. Work activity in the rural agricultural setting has not required fine interdigitation of personal time schedules or an interest in abstract time. "Being on time" to the peasant farmer has to do with accommodating his activity to demands of seasons, weather and the like (with, of course, some need to take account of the market, tax collections, etc.), and coordinating his efforts in an informal manner with others in the community. The dominant style in traditional schooling has reflected a personal Guru-follower relationship rather than submission to the impersonal discipline of Western pedagogical techniques. In public life the dominant style has been the complex of patron-client relationships, and even now, with a formal bureaucracy, the personal

relationship between the faction leader and his followers and dependents remains a significant reality. In accordance with cultural expectations, the efforts of leaders have centered more on providing amenities for the benefit of personal constituents than the discharge of duty of office to promote the welfare of an abstract commonwealth. Up until recently (and even today for those without formal schooling), the concept of career as it is known in the West is largely absent. The individual is not expected to arrange his life in order to ascend the rungs of an occupational or professional ladder, but remains committed to pre-established occupational and community roles.

People in Nepal today, particularly those trying to make their way in the modern sector, would seem to face a more difficult and poignant task of conflict resolution than people in countries further along the road to development. It is not merely that old and new life styles, institutions, and belief systems constitute mutually exclusive alternatives. In many cases, in fact, tradition probably can be modernized over time in a gradualist fashion with relatively little ostensible conflict along the way. For example, in India, many castes (or more strictly speaking the endogamous jatis) have over the years evolved into associations functioning to promote the political and economic interests of members and have come to resemble in some ways voluntary associations in the West. But India has had a much longer period than Nepal to accommodate to the impact of forces from the West. In Nepal it appears that the process of the absorption of non-Hindus into the traditional Hindu fold continues or is even accelerating at a time when secular values

and life styles among younger intellectuals is beginning to gather momentum. Given the sharply contrastive standards available for judgment, the individual may find it difficult to be sure about his own achievements, competencies, or even goals. This may be seen as part of a larger problem of the working out of a viable self-image, a species of the so-called "identity crisis." Full acceptance of modernism may imply a rejection or strongly negative evaluation of one's past, one's relatives and friends, and thus an essential part of oneself. This may be reflected in what appears to outsiders as glaringly inconsistent attitudes and behaviour in which foreign and local cultural or technological elements are alternately uncritically embraced and uncritically rejected or mixed in apparently unworkable combinations. On the personal and psychological levels, the result may often be ambivalence toward both the indigenous and foreign culture and institutions, and a less activist posture regarding work than might otherwise be possible.

Planners have expressed hope that by recruiting young men of lower castes and classes, and by structuring the training process so as to emphasize the values of practical work and manual labor, success of development programs may be greater than in the past. As useful as such an approach might be, it is probably desirable that expectations for quick results not be set too high. In the ideology of the contemporary West, a strong work ethic is often viewed as a fundamental element, or even a prime mover, in the economic development process. But if a powerful commitment to work played a part in the emergence of economic modernity in Europe, it did so in circumstances considerably different

from those of Nepal today. The values which came to characterize those classes who contributed most directly to bringing about the commercial and industrial revolution were created in the course of conflict and confrontation with the classes which had been in the ascendant. The new attitudes toward work were not merely a reflection of the qualities of individual personalities, but were a part of the more general political and religious movements which expressed the aspirations of the new classes to replace the ones previously in power and to create a new kind of social order. Once the commercial and industrial order had gained a firm foothold, the social reality experienced by the middle classes and their value systems and ideology became increasingly mutually reinforcing.

By contrast, in Nepal, as in many other of the less developed countries, the young man undergoing technical, vocational or professional training can look forward to a position within a governmental or quasi-governmental organization. Entrepreneurial spirit has never been particularly characteristic of governmental bureaucracy. Moreover, Nepal has not had the opportunity to develop the tradition of service, resourcefulness and probity which administration in India and Pakistan inherited in part from the old I.C.S. In government, practices tantamount to work-spreading are encouraged not only by experience with a labor surplus and labor intensive economy, but also by the importance to officials of building a personal constituency in their organization.

Personal strategies which assure a successful, or at least a safe, career are likely to be mastered to some extent even at the student level through a process of anticipatory socialization. Alert students

will soon become aware of the actual modus operandi of institutional life. The doctrines which the school consciously attempts to inculcate in its students will be taken into account as well, but they are likely to internalize only those values which do not militate against adaptation to the work world for which they are preparing.

B. THE GOVERNMENT SYSTEM

The "Government system" can be taken to include the structure and operation of official and quasi-official agencies; formal and informal rules and processes of distribution of power and decision-making; recruitment, assignment, and rewarding of personnel formation of law and administration of justice. The intention here, however, is to focus on some major features of the system as a whole and on certain specific issues which appear to be germane to agricultural education and the future growth and effectiveness of the Institute of Agriculture and Animal Science (IAAS), rather than to attempt any comprehensive treatment.

Government in Nepal resembles government in other South Asian countries where the private sector (apart from agriculture) is relatively small; that government is looked upon as the major employer of trained manpower and the major impetus to economic growth. Graduates of technical institutes in Nepal will, in overwhelming proportions, become government servants (or employees of quasi-public corporations), for the foreseeable future. Organized effort to improve agriculture in Nepal, beyond the level of the individual farmer, is likely to be largely a government responsibility.

General resemblances of Nepal's government system and that of India and Pakistan are apparent in such matters as the categorization and gradation of officials, in the methods of appointment of officials, in the outward structure of the secretariat, and in the patterns of local government which have been adopted. Unlike India, however, which inherited a bureaucracy format by more than a century of British rule and whose

political system emerged from more than three decades of struggle for independence, Nepal's present government system is of very recent vintage, dating the restoration of the Shah dynasty in 1951. Under the previous Rana regime, government consisted of a mixture of poorly coordinated and overlapping agencies. In practice, decision-making was highly centralized and personalized in the hands of the Rana rulers themselves. At the same time, there was considerable defacto regional decentralization of rule due to geographic and ethnic barriers, and limited government resources. The legacies of this recent past are still evident in the system, and difficulties are magnified by the complex tasks of economic development and nation building taken on in the last two decades. On the other hand, the newness of the modern machinery of government in Nepal, compared with India, might allow for flexibility and openness of options and thereby provide certain opportunities for successful growth less available elsewhere in the sub-continent.

In Nepal there is no civil service corps closely corresponding to the I.A.S., C.S.P., and other elite services in India and Pakistan. In the mid-1950's, the central secretariat was reorganized (by 1959 it was placed under about 12 ministries) and a civil service law was enacted.

A patron-client system, common in the political life of South Asia (and other countries as well) is said to have been especially characteristic of the Rana regime (each of the higher Rana officials had his own darbar or court) and remains important today on a less formalized basis. An official high in the secretariat (and lesser officials as well) normally has a following of clients. He is responsible for protecting

and advancing their interests and can depend upon their support in turn. Success may be judged more by achievement in this game than by efficient implementation of policies.

The regional and local administrative and political systems are characterized by conflicting tendencies regarding the key issue of decentralization. Beginning in the early 1960's the old regional administration was reformed into 75 development districts, grouped into 14 zones. This arrangement emphasizes the requirements of development; thus administrative units combine Terai, inner Terai, and hill areas for more efficient planning of transportation system, river valley schemes, etc. In addition to the regular administrative machinery, there are elected panchayat assemblies at the zonal, district, and local levels. There is a nascent but apparently growing demand for autonomy and participation in decision-making by those bodies which seems to correspond with the expressed long-term intentions of some elements high in government, but is in conflict with current inclinations of departments engaged in development activities.

Effective implementation of development programs will probably require a generous measure of devolution of responsibility and authority at the zonal, district, and even lower levels of administration. Geographic barriers to communication are too pronounced, government resources too thin, and local situations and people too varied to permit successful control of programs from the center, even if attempts are made to provide for monitoring and supervision. It is relatively easy to suggest patterns of administration, based primarily on Western experience, which would

seem to promote the goals of individual initiative, and creative and responsible planning and implementation of programs. But the problems of fitting these patterns to the Nepalese situation are difficult. Government officials and even students preparing for government service seem almost universally to expect the criteria for recruitment and advancement to be heavily weighted in favor of particularistic factors rather than based on quality of work. For those who by training or personal characteristics are inclined toward a commitment to performance on the job rather than the prevailing mode of administration politics, the resulting job insecurity is likely to exact a high cost in morale.

In the field of agriculture, government workers in the districts, located at the interface between the government system and the local community, face certain additional problems. Even in South Asian countries where administration is much more mature, such personnel must accommodate their activities to the local community structure and particularly to the more powerful interests located therein. For extension workers physically located in the village communities, this means, in practice, fitting one's self into the local patron-client system, and seeking to work out some mutually satisfactory trade-offs with the local man of power. At the same time, the demands of the department to which he is responsible must be in some way satisfied. Programs at the actual field level tend to be the outcome of such complex processes and may differ from the format envisioned in the formal plans and periodic progress reports.

**C. THE EDUCATIONAL SYSTEM**

Prior to 1951 educational opportunity was very limited in Nepal. Since 1951 when the 100-year Rana domination of Nepal's politics ended, education has made some impressive gains. Much remains to be done, however. The education that evolved was, in the words of the National Education System Plan, elitist, disorganized and irrelevant to Nepal's needs. Education in Nepal was and is characterized by an emphasis on the academic over the practical, and by rote learning for the purpose of passing internal and the all important external examination(s).

Because the Nepalese recognize the weaknesses of the present educational system, this year (1972) is witnessing a major reorganization of education at all levels. Last year the National Education System Plan for 1971-76 was presented in an attempt to muster educational potential to provide required manpower for national development.

The nature of formal education in Nepal, as it is evolving under the new Plan, is as follows:

Primary Level	Classes 1 to 3	Aim is literacy
Lower Secondary	Classes 4 to 7	Aim is character building
Secondary	Classes 8 to 10	Aim is to produce skilled workers through vocational training
Higher Education	Certificate Level (Intermediate)	Aim is to produce technical manpower at basic level
Higher Education	Diploma Level (Bachelor's)	Aim is to produce technical manpower at middle level
Higher Education	Degree Level (Master's)	Aim is to produce technical manpower at high level
Higher Education	Research Level (Doctorate)	

The rate of recent educational growth in Nepal is impressive. The following statistics will give an impression of recent accomplishments of Nepal's educators:

	<u>PRIMARY LEVEL</u>			
	<u>1961</u>	<u>1964</u>	<u>1967</u>	<u>1970</u>
Enrollment	252743 (182,533)	334007	442251	449141
Percent of Age Group 6-10	21.5 (15.8)	26.6	32.0 (32.2)	32.0

	<u>SECONDARY LEVEL</u>			
Enrollment	41444 (21,115)	55848	78304	96704 (102,704)
Percent of Primary School Enrollment	16.3 (12.0)	16.4	17.7	21.5 (23.0)

	<u>HIGHER EDUCATION</u>			
Enrollment	5220 (5143)	6372	11802	17200
Percent of High School Enrollment	12.6 (24.4)	11.4	15.0	17.7 (16.0)
Number of Vocational Institutions	1	12	18	

	<u>TOTAL NUMBER OF SCHOOLS</u>		
	<u>1961</u>	<u>1967/68</u>	<u>1969/70</u>
Primary	4,001	6,631	7,256
Secondary Schools	156	841	1,036
Higher Education	33	36	49

The statistical entries with double figures result from two different sources reporting differently on the same category: Educational Statistical Report, Planning, Statistics and Research Division, Ministry of Education, RMG, June 1971; and National Education System Plan for 1971-76.

In spite of these gains, the National Education System Plan recognizes serious deficiencies: educational policies and objectives not well defined (2.3.1); past educational philosophy based on unproductive social values (2.3.2); educational system unrelated to national development (2.3.3); the lack of consolidated educational institutions (2.3.4); educational wastage (2.3.5); and the educational system not being action-oriented administratively (2.3.6). The Education Plan is designed to correct these shortcomings.

#### Higher Education

The first institution of higher education in Nepal, Tri-Chandra College, was established in 1918. 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.

One objective of the third Five-Year Plan (1965-1970) in higher education was to expand existing facilities at Tribhuvan University and to initiate additional programs and degrees. During this time, the Kirtipur campus development master plan was prepared.

Emphasis has been placed in the fourth Five-Year Plan (1970-1975) on improving quality and on initiating a practical, vocational orientation from the secondary through the tertiary levels of education. Tribhuvan University Act of 1971 (October 22, 1971), is responsible for implementing the higher education directives of the new National Education System Plan for 1971-1976. The objective of higher education under the new Plan is to produce trained manpower. In this regard, the University has, or is now planning, programs in a number of subjects that are organized as

13 institutes, each offering varying levels of certificate and degree work. These institutes and level of training offered are:

Institute of Nepalese and Asiatic Studies	(Research level only)
Institute of Law	(Up to diploma)
Institute of Sanskrit Studies	(Up to research)
Institute of Education	(Up to degree)
Institute of Agriculture and Animal Science	(Diploma level)
Institute of Forestry	(Up to diploma)
Institute of Engineering	(Up to certificate)
Institute of Medicine	(Up to certificate)
Institute of Applied Science and Technology	(Up to certificate)
Institute of Humanities and Social Sciences	(Up to research)
Institute of General Sciences	(Up to research)
Institute of Business Administration, Commerce and Public Administration	(Up to degree)
Institute of Fine Arts	(Up to Certificate)

The last five entries are not yet planned in any detail. The proposed function of the Institute of Public Administration is now being carried on by the Centre for Economic Development and Administration.

The degree levels referred to above include certificate level, diploma level (bachelor's), degree level (master's), and research level (doctoral). Each of these levels is self-terminating, with admission to next higher level based on talent and merit.

The seven functioning institutes and their campus locations are as follows\*:

Institute of Nepalese and Asiatic Studies	T.U. campus (Kirtipur)**
Institute of Law	Now being planned
Institute of Sanskrit Studies	
Institute of Education	Seven teacher training centers, National Vocational Training Center (NVTC), and two lab schools, with main T.U. campus at Kirtipur
Institute of Agriculture and Animal Science	Presently located at Shri Mahal in Pulchok**
Institute of Forestry	Hetaura
Institute of Engineering	Pulchok**, with training center at Balaju
Institute of Medicine	Kathmandu; no central campus yet, but seven extension training centers
Institute of Science and Technology	Now being planned

The present program of post secondary education in agriculture is heavily oriented to basic science training, and has little practical agriculture. At the I.Sc. (Intermediate Science) Ag level, in the first year, the students have 19 hours a week in lecture classes on such general topics as chemistry, physics, botany, zoology, and mathematics and only nine hours a week on

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\* For further detail regarding the organization and procedure of Tribhuvan University, see National Education System Plan for 1971-76, Nepal, and Tribhuvan University Act, 1971, H/G Ministry of Law and Justice.

\*\*Suburbs of Kathmandu

agricultural subjects as agronomy, horticulture, and animal husbandry. In the second year, the balance is more nearly equal, but the general subjects still outnumber the applied, 16 hours to 12 hours. As for practicals: there are four classes in general subjects to three in agricultural subjects in the first year, and five general subjects to two agricultural in the second year.

This happened to be the class schedule early in August, 1972. However, the figures are somewhat misleading in that they change from time to time. By the last week of August, for example, the applied hours outnumbered the general by 14 to 12 in the second year I.Sc. program.

Further, at the time of this study, there were no laboratories being utilized in any of the agricultural subjects. Students in agricultural practicals were occasionally taken by truck to Kumaltar (two miles) to visit research plots, or to work as farm laborers. Only in agronomy were there any student plots, and there, in a piece of nearby land to Shri Mahal (temporary site of the Institute), each student had a small maize plot, and was responsible for its care.

The extent of practical knowledge with respect to crop or livestock production gained by students in such an I.Sc. program is not likely to be very great. They are apt to be better prepared to go on to further education than they are to serve as intermediate technicians in agriculture.

All B.Sc. level and above agriculture training is presently received at universities outside of Nepal, primarily in India. Some 200 USAID-sponsored B.Sc. graduates returned from India in the period from 1968 to

1972 (103 within the past two months) and some are still in India. This is an important source of high-level agricultural manpower; however, it can be inferred that the policy of external post-I.Sc. training has delayed the development of institutional capacity to train B.Sc. graduates within Nepal.

Table 1.

TRIBHUVAN UNIVERSITY ENROLLMENT PROJECTIONS					
by					
Areas and Technical Institutes					
Areas		1972-73	1973-74	1974-75	1975-76
Arts	Certificate	5800	6000	6300	6600
	Diploma	1600	1800	2000	2200
	Degree	600	700	700	700
	Total:	8000	8500	9000	9500
Science	Certificate	2400	2600	2750	3000
	Diploma	800	975	1000	1100
	Degree	100	125	150	200
	Total:	3300	3700	3900	4300
Commerce	Certificate	2000	2000	2000	2000
	Diploma	825	850	880	880
	Degree	200	200	200	200
	Total:	3025	3050	3080	3080
Sanskrit	All levels	450	500	500	500
Law	Diploma	160	200	300	300
Music & Fine Arts	Certificate & Diploma	20	40	100	100
Nepal Studies	Research	10	20	20	20
	Total:	640	760	920	920
GRAND TOTAL:		14965	16010	16900	17800
<u>Technical Institute</u>					
Engineering Institute		612	775	1035	1059
Inst. of Agriculture & Animal Science		443	475	530	570
Institute of Forestry	*	43	60	80	70
Inst. of Applied Science & Technology		132	136	143	143
Institute of Education		*3484	4266	4969	5672
Institute of Medicine		262	359	372	372
	Institute Total:	4986	6071	7129	7826

\*Enrollment figures

Source: Tribhuvan University

### Non-Formal Education and Agriculture

Most non-formal education in agriculture in Nepal is carried on in families, where father teaches sons, and each generation passes on the most important skills, attitudes, and knowledge to the next. This is found among producers, marketers (such as water-wheel millers), and suppliers.

In addition, the Department of Agricultural Extension in the Ministry of Food and Agriculture, carries on extension education in rural Nepal. The director of this department has, in addition to his deputy administrators, three special sections: agricultural information, rural youth, and the Gandak project. The field work is organized into six regional offices, each headed by a Regional Agricultural Development Officer (RADO). These regions are, in turn divided into districts, each of which is headed by a District Agricultural Development Officer (DADO). The DADO supervises and supports several junior technicians (JT) and junior technical assistants (JTA), both of whom do the "front-line" extension work with the farmers.

Farmer contact made by the JTA is through local panchayat meetings; continual contact of the agriculturalists in the area identifies the progressive farmers for the front-line field workers. Much of the extension work is done through these progressive farmers. Methodology used by the JTA's includes demonstration plots, leader-farmer training, crop-growing competition, farm visits, etc.

Discussions with staff members at all levels of the extension service reveal several problems. These include the low-level of general training

of the JTA's; i.e., brief training in several crops, but not in-depth knowledge about any. Also, the problem of getting supplies to the farmers, especially in the hill areas, plagues agricultural development. Either there are no roads in the area, necessitating seed being carried by porter and usually arriving too late to plant, or there is not enough foundation seed supply to provide the level of demand.

There is a felt need of having subject matter specialists as a back-stop to the JTA's in an area. They can supply the technical know-how to answer farmers' questions concerning new practices, for which the JTA does not have the training nor experience.

Field investigation suggests that most farmers learn new practices from other farmers in the area. Progressive farmers are identified by the extension agents and then serve as cooperators. The new seed, fertilizer, and practices are used by those farmers with the special guidance of the JT, JTA, and maybe even the DADO. These farmers are also selected for the "leader-farmer training," the intention being that agricultural information about new practices will be disseminated throughout the area by these progressive farmers.

Different districts have extension programs of varying intensity. Since the Terai is the most productive area and therefore has greater potential for food grain production, it gets more extension attention than do the hill areas. "Intensive" programs -- consisting of institutional inputs (Agriculture Development Bank, Agriculture Marketing Association, etc.), an infrastructure (roads, communications), a greater agricultural consciousness among the people, and a greater density of

JTA's -- are being carried out in 28 of Nepal's 75 districts, mostly in the Terai.

"Intermediate" programs -- based on fewer institutional facilities, fewer roads and communication channels, fewer JTA's per panchayat, and sometimes with a contiguous district under an intensive program -- are to be found in most of the districts. Two districts have no extension program at all; these areas have food deficits. Future plans include an unsophisticated, limited program for these areas.

The Department of Agriculture Extension manpower resources and projections are:

	<u>1972</u>	<u>Additional Requirement by 1975</u>
Gazetted . . . . .	57	66
DADO . . . . .	51	
RADO . . . . .	6	
Non-Gazetted . . . . .	701	760
JT . . . . .	176	300
JTA . . . . .	525	460

In addition to the problem of adequate training of JTA's, there is also the problem of retraining well qualified and experienced staff. The semi-governmental/semi-private corporations (jute, sugar, tobacco), hire the experienced and the more qualified JTA's away from the Extension Department by offering them twice their salary as paid by HMG.

Other organizations concerned with agricultural development in specialized areas include the Agriculture Development Bank, the Agriculture Marketing Corporation, and agricultural cooperatives. The linkages

between these and the Extension Department varies by area, conditions, and personnel. Coordination at the field level may be less than desirable.

D. THE AGRICULTURAL SECTOR

Nepal's problems and prospects for development are inextricably bound up in the agricultural sector of its economy. Some 90 percent of the people depend upon agriculture for their livelihood and 85 percent of the employment is in this sector. With anticipated rates of population increase for the near future of 2 percent or more, and slow rates of growth of the industrial and service sectors of the economy, the number of persons directly dependent on the land is certain to increase for many years to come.

About two-thirds of the gross domestic product is generated by agriculture and a similar proportion of Nepal's exports are from farms, thus agriculture is an important earner of foreign exchange sorely needed for purchases from foreign countries.

Physical Features

Seventy-three percent of the country comprises mountains (34 percent); hills and valleys (39 percent); with the remaining 27 percent made up of alluvial plains called the Terai.

Only 12 percent of Nepal's land area is cultivatable. Nearly one-third of all land is forested. Approximately 20 percent represents wasteland, some of which may be reclaimable, and 15 percent is under perpetual snow.

1. The Terai alluvial plains of the south range in altitude from 250-1,000 feet. The area is a 20-mile wide flood plain created by rivers and streams originating in the mountains located in the north. Although much of the Terai is forest-covered, it is the most

productive agricultural area of Nepal with paddy as the main crop. The annual rainfall varies from 90 to 100 inches with over 80 percent of it occurring from June to September. There is a wide variation in rainfall from east to west, it being highest in the east. Mild winter and hot summer temperatures allow for year-round cropping. Two crops of 110-120-day paddy can be produced in the Terai regions although most farmers prefer to use paddy varieties that take 180 to 220 days to mature.

2. The Hills areas, ranging from 4,000 to 7,000 feet elevation, are characterized by steep mountain slopes containing hundreds of terraces along the slopes. These drastic differences in elevation greatly affect soil types, water availability, sunlight and temperature relationships for growing crops. Climatic conditions vary depending on elevation and exposure and have a marked bearing on the nature and type of crop production. At altitudes of 2,000 to 6,000 feet, the growth period generally starts from the end of February and lasts until September or October. The average rainfall is about 100 inches in the east, 40 inches in the extreme west, and 50 to 55 inches in Kathmandu.

3. The Farms: The number of farms in Nepal is not accurately known but there may be as many as 1,500,000 with small farms predominating. There is about one-half hectare of cultivated land per agricultural laborer and one and one-fourth hectare per farm household; however, the size of holding varies widely. In general, farms are very small in the hills and much larger in the Terai; e.g., 83

percent of the farms in the hills are one acre or less while 66 percent of those in the Western Terai are between five and ten acres (farms in Eastern and inner Terai are smaller than in Western Terai). The problems of small size of farm unit are intensified by excessive fragmentation of holdings.

About 28 percent of the crop land is rented, varying from less than 10 percent in the Western hills to over 40 percent in the Western Terai. There has been considerable concern over the effect of the tenure system on production incentives and security of those on the land. The main features of the current land reform program, as provided by the Land Act of 1964, are: abolition of the Zamindari system in which there was a revenue assessment intermediary between the tenant and the government; a fixed ceiling on land holdings which varies among the Terai, Kathmandu Valley, and hill "regions;" guarantee of tenancy rights; and rent ceilings fixed at a maximum of 50 percent of all crops. The Land Act also provides for a system of compulsory savings and restrictions on high interest rates and exploitive loans of money lenders.

4. The Crops: Nepal's soils and climate permit growth of a wide variety of crops, but a high proportion of the cultivated land is devoted to cereal crops, rice, maize, wheat, millet, and to potatoes. Jute, sugar cane, tobacco, and oil seeds are important cash crops, mainly in the Terai. Horticultural crops are grown to some extent throughout the country and some fruits are grown in the hills.

Table 2.

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Area and production of main crops in Nepal, 1970-71

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	<u>Gross Area</u> <u>(000 Hectare)</u>	<u>Production</u> <u>(000 Metric Tons)</u>
<u>Food Crops</u>		
Paddy	1,182	2,305
Maize	446	833
Wheat	228	193
Millet	115	129
Barley	27	25
Potato	49	273
<u>Cash Crops</u>		
Jute	55	53
Sugar Cane	14	236
Tobacco	7	9
Oil Seeds	49	273

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Source: Economic Analysis and Planning Division, Ministry of Food and Agriculture.

5. Production and Yield Trends: Nepal cannot be characterized as being caught up in the "green revolution." A recently completed study by Pant and Jain shows that production of food grains increased by 2.09 percent per year during the 1961-62 to 1969-70 period (Table 3). Only in the case of millet, a minor crop in comparison to rice and maize, did production increase more than the area under the crop, indicating that average yields of rice, maize, and wheat declined during the period. This may be due to lower quality land being brought under cultivation and an increase in cropping intensity.<sup>1</sup>

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<sup>1</sup>There is also the possibility of inconsistency in reporting of area and production, as the reporting has improved in recent years.

Table 3.

Rate of growth of area and production of principal crops in Nepal, 1951-62 to 1969-70		
Crops	Annual Rate of Growth	
	Area (Percent)	Production (Percent)
Paddy	3.06	1.86
Maize	3.34	1.13
Millet	7.94	11.50
Wheat	12.91	7.82
Total Food Grains	(3.67)	(2.09)
Jute	9.66	8.93
Sugar Cane	11.53	11.55
Tobacco	-	2.81
Oil Seeds	1.08	2.66
Total Commercial Crops	(2.55)	(7.46)
Total All Crops	3.58	2.42

Source: Y. P. Pant and S. C. Jain, Long-Term Planning for Agriculture in Nepal, Vikas Publications, Delhi, 1972, pages 7 and 8.

The production of commercial crops during the 1960's was more encouraging, largely as a result of increase in yields of oil seeds and acreage of jute and sugar cane; however, a large share of the increased rate of production of these crops occurred in the early part of the decade, a rate that was not sustained in the later years.

In summary, one can only conclude that the rate of growth of food grain production in Nepal is little if any more than the rate of population increase. But this does not give a complete picture because the increases in production are largely confined to the Kathmandu and Rapti Valleys and to the Terai area where the geography,

markets and prices are more oriented toward India than toward the hills of Nepal. The current (August 1972) food shortages in the hills and external food aid programs indicate a worsening of the food situation in the hills where the majority of the people live.

6. Livestock: It has been estimated that livestock contributes 22 percent of the agricultural production of Nepal. Animals are an important source of protein for many farm households, serve as a source of power for farm production and transport, and provides manure in significant measure. At the same time, the per capita consumption of such products as meat, milk, and eggs is low.

The 1969-70 production and 1974-75 target for livestock production are shown in the following table:

	<u>Unit</u>	<u>Est. Production</u> (of 1969-70)	<u>Target</u> (of 1974-75)
<u>Meat</u>			
Buffalo	M.T.	46,100	53,475
Pigs	M.T.	19,000	23,200
Sheep	M.T.	4,200	5,600
Goats	M.T.	2,700	3,100
Fowl	M.T.	7,300	8,475
Others	M.T.	10,000	10,000
<u>Milk</u>			
Buffalo	1000 litres	582,600	717,000
Cows	1000 litres	178,000	212,000
Others	1000 litres	4,600	5,000
<u>Milk Products</u>			
Ghee and Butter	M.T.	9,000	12,000
Cheese	M.T.	37	75
<u>Eggs</u>	1000	180,000	227,000

Source: The Fourth Plan (1970-75), National Planning Commission

There is undoubtedly potential in development of the livestock sector of the economy; however, the relative rates of return from scarce resources invested in improved and/or expanded livestock production in comparison with other alternatives are not clear.

There has been neither a definite policy nor well-coordinated efforts relative to livestock. However, some progress has been made in such areas as improved veterinary facilities and services, chicken and egg production for a limited market, processing of dairy products, and improved breeding through artificial insemination. Formidable problems remain in a country where first claim to land is held by food crops although there are significant quantities of food crop by-products and large areas of land that are suitable only to production of livestock feed.

7. Markets and Marketing of Farm Produce: The markets for and marketing of the products of Nepal's farms are dominated by the demography, geography, and topography of the country. The hills regions contain about two-thirds of the population but density is about half that of the Terai. On the other hand, 60 to 70 percent of the food grains (and more of the rice) are produced in the Terai. The regional imbalance of food grain production and requirements is illustrated by data for the current year as estimated by the Agricultural Marketing Corporation.

Table 4.

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Estimated food grain production and requirements 1971-72 (000 metric tons)

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<u>Area</u>	<u>Production</u>	<u>Requirement</u>	<u>Surplus or Deficits</u>
Hills	986	1159	-173
Terai	<u>1226</u>	<u>682</u>	<u>+544</u>
Total	2212	1841	+371

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The Terai is both geographically and economically linked to India and the marketing pattern flows toward India instead of toward the food deficit hills. The purchasing power of the hill people is not sufficiently strong to overcome the formidable problems of communication and transportation that is necessary to attract the food grain surpluses from the Terai. In recent years, problems of both too little and too much rain have accentuated the food deficit problem of the hills.

The processing plants that use agricultural raw materials are concentrated in the Terai and the markets for these products is Terai -- and India-oriented. These include jute mills, sugar factories, and a cigarette factory.

In general, the agricultural marketing system of Nepal is not highly developed. Except for the Terai, the marketable surplus above the needs of the individual family or village has been increasing

little, if at all. The markets in the larger towns are unorganized and unregulated. The only standardization, quality control, or use of uniform weights and measures is that imposed by those who purchase for their own consumption. Prices vary widely from season to season and from market to market reflecting seasonal production variation, difficult transport conditions, perishability of products, and few market information services.

In the Terai, the Nepal and India markets are interlaced making problems of export and import control difficult. This has been characterized as an area of "irregular and even illegal markets -- from where carts loaded with agricultural goods flow day and night to India."<sup>2</sup>

In summary, the gross marketing problems are in inter-seasonal storage, and in the variety of marketing functions required to get the food grain surpluses of the Terai to the hills. At the same time, the size of the market is severely constrained by low purchasing power requiring that the marketing functions be performed at low cost. Currently, the agricultural marketing system is probably as well developed as is the farm production. But neither is adequate for an efficient agricultural production and marketing system striving toward modernization.

The Supply of Farm Inputs: Nepal is faced with the need of an efficient organization and delivery system for the new technologies that are

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<sup>2</sup>Mathema, Pushpa Ram Bhakta, Agricultural Development in Nepal, Shanti Printing Press, Kathmandu, 1966, pp. 59-60.

associated with a more modern agricultural production and marketing system. There are significant agricultural research laboratories, experiment stations, and demonstration farms that are emphasizing adaptive research. However, there is limited capacity for production of new technologies and importation, largely through India, presents many problems. In addition, the internal distribution system is in need of further development. There is a considerable body of evidence to support the thesis that known improved technologies are finding their way to only a limited proportion of Nepal's farms.

The Agricultural Supply Corporation was organized in 1966 to procure and distribute farm inputs. This organization, which was changed to the Agricultural Marketing Corporation in July 1972, has branches in Kathmandu and five Terai towns. Credit is made available through such organizations as the Agricultural Development Bank and the Land Reform Savings Corporation; nevertheless, as is true in most countries, family and other private lenders are the most important single source of capital to finance farm production.

## CHAPTER II

### POTENTIAL FOR CHANGE

#### A. PLANNING AND AGRICULTURAL DEVELOPMENT

Nepal established a Planning Board in 1955 and has had four plans as follows: The First Five-Year Plan (1956-57 to 1960-61), the Second or Three-Year Plan (1962-63 to 1964-65); the Third Plan (1965-66 to 1969-70) and the current Fourth Plan (1970-1975). The planned public sector investment outlays by major departments during the first three plans are shown in the following table:

Table 5.

Planned Public Sector Investment Outlays in Nepal's  
First Three Plans by Major Department  
(Rs in Million and Percent of Planned Outlays)

<u>Department</u>	<u>Plan I</u>	<u>Plan II</u>	<u>Plan III</u>
Transport and Communications Percent	124 (37.6)	144 (23.9)	615 (35.4)
Agriculture & Village Development <sup>a</sup> Percent	94 (28.7)	117 (19.6)	378 (21.6)
Industry & Power Percent	55 (16.6)	193 (32.1)	385 (22.1)
Social Services <sup>b</sup> Percent	44 (13.3)	115 (19.1)	292 (16.8)
Miscellaneous Percent	12 ( 3.8)	32 ( 5.2)	70 ( 4.1)
Total Percent	330 (100)	600 (100)	1740 (100)

<sup>a</sup> Includes agricultural resettlement, land reform, cadastral survey, food, panchayat, cooperatives, forestry, and irrigation.

<sup>b</sup> Education is included: Plan I, 19; Plan II, 40; Plan III, 130.

Source: Dhital, Bhaarat Prasad, "Role of Agriculture in Economic Development in Nepal," Unpublished Ph.D. dissertation, Iowa State University, Ames, 1970, pp. 66-67.

The First Plan has been characterized as a "document of piecemean programs" that was drawn up and implemented during a period in which the government was changed six times and it was "treated by various governments as no more than an illegitimate child."<sup>3</sup> While the Plan outlay was estimated at Rs 330 million, the government was able to spend only Rs 214 million, while the annual budgets totalled Rs 600 million. The balance came from external assistance amounting to Rs 383 million. The Plan only dealt with the public sector. Dhital concludes that the First Plan was "more of an adventurous experiment in planning than a real development plan, partial or comprehensive."<sup>4</sup>

Achievements under the Second Plan were greater than under the First with Rs 500 million of the Rs 600 million planned coming from external aid; however, few of the physical targets were achieved. Education was an exception. The Act providing for land reform was enacted during this period. A number of agricultural aid projects were started, some of which were not a part of the Plan. The share of agriculture in total plan outlays was lower than during the First Plan period.

The Third Plan was more comprehensive than its predecessors, including estimates for the private sector and providing for use of the Panchayat System as a medium for development. The total outlay was estimated at Rs 2,500 million; public sector, Rs 1,740; private sector, Rs 530 million; and panchayat sector, Rs 240 million. The external assistance

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<sup>3</sup> Dhital, Bhaarat Prasad, "Role of Agriculture in Economic Development in Nepal," Unpublished Ph.D. dissertation, Iowa State University, Ames, 1970, pp. 39-43.

<sup>4</sup> Ibid., pp. 43-58.

share under the Plan was 57 percent. The agriculture and village development share under the Plan was about the same as under the Second Plan --lower than for transport and communication and for industry and power. In terms of agricultural production targets, performance under the Plan was reasonably good for cereal crops, particularly paddy and maize, but disappointing for cash crops.

While progress was made in all sectors under the Third Plan, most targets were not met, leaving much undone so that under the current Fourth Plan (1970-75) "priority has been given to the continuing projects which were started during the Third Plan period or to those projects related to the foreign aid for the utilization of the greater portion of the resources available during the Fourth Plan period."<sup>5</sup> The breakdown estimated expenditure under the Fourth Plan is shown as follows:

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<sup>5</sup> National Planning Commission, HMG, "The Fourth Plan (1970-75)," Singha Burbar, Kathmandu, July 1970.

(Rs in Millions)

	PUBLIC SECTOR	Per- cent	PANCHAYAT SECTOR	Per- cent	PRIVATE SECTOR	Per- cent	TOTAL	Per- cent
	Amount		Amount		Amount		Amount	
Transport & Communic.	1050.0	41.0	52.0	43.3	15.0	17.3	1250.0	35.4
Agriculture, Land Reform, Irrigation, Forest & Vegetation	662.8	26.0	39.0	32.5	47.0	54.0	117.8	33.0
Industry, Commerce, Power and Mining	470.0	18.5	-	-	25.0	28.7	720.0	20.3
Panchayat, Education, Health, Soc. Science	352.5	13.8	29.0	24.2	-	-	381.5	10.8
Statistics	14.7	0.6	-	-	-	-	14.7	0.4
<b>TOTAL</b>	<b>2550.0</b>	<b>100.0</b>	<b>120.0</b>	<b>100.0</b>	<b>87.0</b>	<b>100.0</b>	<b>3530.0</b>	<b>100.0</b>

Source: National Planning Commission, HMG, "The Fourth Plan (1970-75)," Singha Durbar, Kathmandu, July 1970, p. 2-(6).

The transport and communication and agriculture share of public sector expenditures were increased in comparison with the Third Plan with the industry and power and social services share being reduced somewhat. Agricultural production targets call for an annual increase of cereal crop production of 3 percent and a 40 percent increase in cash crop production during the Plan period.

With respect to the College of Agriculture, the Plan has a target for the end of the Plan period as follows: I.Sc. certificate holders, 225; B.Sc., 25; field training, 500; upgrading training, 340; and JTA training, 700. The estimated outlay is Rs 3,500,000.<sup>6</sup>

<sup>6</sup> National Planning Commission, HMG, "The Fourth Plan (1970-75)," Singha Durbar, Kathmandu, July 1970, pp. 5-77.

During the decade and a half of experience with agricultural planning in Nepal, progress has unquestionably been made in the planning process itself, in setting realistic targets, and in implementation. Nevertheless, there is much to be done in bringing agriculture into proper perspective in terms of plan priority, in establishing investment criteria within the agricultural sector, and in judging performance in terms of the established criteria. Agricultural expenditures are unduly scattered and emphasis is on projects, too often those that are externally aided and internally unplanned. "Topmost priority" for agriculture seems to mean one-fifth to one-fourth of public sector expenditure and lower priority than transport and communication and industry and power.<sup>7</sup> This is hardly consistent with such indicators of importance of agriculture as the share of people engaged in this sector, its share of gross domestic production, or its importance as a producer of exports and earner of foreign exchange.

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<sup>7</sup> The Fourth Plan, 1970-75, states that "agricultural development was accorded topmost priority in the Third Plan" (p. 5-2). Third Plan share of estimated expenditure for agriculture was 21.6 percent; transport and communication, 35.4 percent; and industry and power, 22.1 percent.

**B. MANPOWER DEVELOPMENT FOR AGRICULTURE**

The National Education System Plan and the Tribhuvan University Act charge the Institute of Agriculture and Animal Science with the responsibility of imparting higher education to meet the needs of the Kingdom's agricultural development. The Plan clearly charges that "higher education will be organized to meet the manpower requirements of the country based on nation-wide estimates."<sup>8</sup>

What are the "nation-wide estimates" of manpower needs for the agricultural sector at present and in the future? The Plan indicates that "higher education will be correlated to the job opportunities of the future" and lodges the responsibility for determining manpower needs with the Ministry of Education working with the National Planning Commission.<sup>9</sup>

Although an Agency for International Development-supported Team recommended in May, 1970 that "before the program of the College (now Institute) is developed, a careful analysis of the agricultural manpower needs of Nepal should be made,"<sup>10</sup> little progress has been made in coming to grips with this difficult task.

Recent papers reporting on partial analysis of agricultural manpower needs contain statements referring to the surplus trend of agricultural

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<sup>8</sup> Ministry of Education, His Majesty's Government of Nepal; The National Education System Plan for 1971-76, 1971, p. vii.

<sup>9</sup> Ibid., pp. 9 and 22.

<sup>10</sup> USAID "Report of University of Illinois Team to Study Agricultural Education in Nepal," USAID Contract NESA-484, May 1970, p. 8.

graduates (B.Sc. and above) in the face of plans to initiate a B.Sc. level program in the Institute of Agriculture and Animal Science.<sup>11</sup> Others point to specific needs and express confidence that large numbers of graduates can be employed.

An agricultural manpower study is beyond the assigned task and resources of this Team; nevertheless, a gross analysis of the best available information on the subject was demanded to assure that the newly established Institute was embarked on a course consistent with the objectives of the National Education System Plan.

The Need for B.Sc. (Ag) Producing Capacity: The results of a survey of the gazetted manpower and needs of the Ministry of Food and Agriculture and associated quasi-public corporations for the three years ending in 1975 is shown on Table 6. These show a manpower pool of some 360 degree holders (B.Sc. and above) employed in these organizations.

A November, 1971 USAID paper reported 303 degree holders employed by the Ministry of Food and Agriculture Ph.D., 9; M.Sc. (Ag), 95; other masters degrees, 22; and B.Sc., 197.<sup>12</sup> The Ministry of Education reports 315 agriculture degrees (B.Sc. and above) earned by Nepalese as of 1971.<sup>13</sup>

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<sup>11</sup> National Planning Commission Secretariat, Human Resources Division, "Supply and Demand of Manpower," June 1972, p. 4, and Table 6.

<sup>12</sup> Raymond E. Fort, "Agriculture Sectoral Analysis--Nepal," USAID/Nepal, November 1971, p. 15.

<sup>13</sup> Keshah P. Nepal, Planning, Statistics, and Research Division, Ministry of Food and Agriculture, personal interview, July 30, 1972.

Table 6.

**Gazetted Agricultural Manpower in Nepal**  
**Ministry of Food and Agriculture and Quasi-Public Corporations<sup>a</sup>**

<u>Organization</u>	<u>August, 1972 Gazetted Staff</u>	<u>Additional Requirement by 1975<sup>b</sup></u>
Department of Agriculture Research and Education	200	55
Department of Extension	57	66
Department of Livestock and Veterinary	62	24
Dairy Corporation	12	9
Agricultural Development Bank	20	30
Saving Corporation	4	4
Agricultural Marketing Corporation	7	3
<b>TOTAL<sup>c</sup></b>	<b>362</b>	<b>191</b>

<sup>a</sup> Gazetted staff roughly corresponds to those with B.Sc. or higher degrees.

<sup>b</sup> Last three years of the Fourth Plan period, 1972-73 to 1974-75.

<sup>c</sup> Information was not readily available from the Departments of Horticulture and Fisheries.

The above data refer only to the near future. They do not include needs for agriculture teachers in the secondary schools, nor does it reflect the needs of the private sector or for development of the Institute itself. Insofar as long-range planning for IAAS is concerned, the crucial manpower questions are related to the period in the late 1970s and beyond.

The need for vocational agriculture teachers: The National Education System Plan emphasizes the need for vocational training at the higher secondary level (grades 8, 9, and 10). One estimate places the need at "over 1,000 agriculture teachers" during the five years of implementation of the plan.<sup>14</sup> If one assumes that 60 percent of the 1,296 vocational secondary teachers called for in the Plan (p. 67) are to be agriculture teachers, the estimate is nearly 800.

Information supplied by the Ministry of Education indicates plans to begin vocational agriculture instruction with new work opened annually as follows:

	<u>No. of Schools</u>	<u>Vocational Ag Schools</u>
1971-72	22	18
1972-73	106	63
1973-74	160	99
1974-75	108	83
1975-76	<u>68</u>	<u>62</u>
	464	325

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<sup>14</sup> Furst, Michael J. and Lane Lee Smith, "Developing Agricultural Education in the Secondary Schools of Nepal," a report prepared for the Ministry of Education, HMG, and USAID, Contract AID/Asia-578, July 1, 1972, p. 66.

In the initial year, vocational agriculture subjects are to be offered in grade 8 only, with grades 9 and 10 agricultural instruction to be offered in succeeding years. If one assumes that each school needs a vocational agriculture teacher as agriculture subjects are initiated and a second teacher as grade 10 instruction is started, 650 teachers will be needed by 1977-78. The peak requirement is 161 new teachers in 1975-1976. These rough calculations do not allow for attrition which is likely to be of substantial magnitude.

<u>Year</u>	<u>New Voc. Ag. Depts.<sup>a</sup></u>	<u>Second Voc. Ag. Teachers</u>	<u>New Yearly Needs</u>	<u>Accumulative No. Voc. Ag. Teachers</u>
1971-1972	18	-	18	18
1972-1973	63	-	63	81
1973-1974	99	18	117	198
1974-1975	83	63	146	344
1975-1976	62	99	161	505
1976-1977	-	83	83	588
1977-1978	-	62	62	650
<b>TOTAL</b>	<b>325</b>	<b>325</b>	<b>650</b>	<b>--</b>

<sup>a</sup> Year first vocational agriculture teacher needed.

One may question the best method of estimating needs for vocational agriculture teachers; nevertheless, the need is large. There is an additional need for vocational agriculture supervisors.

To what level should vocational agriculture teachers be trained?

The long-range objective should be to have vocational agriculture teachers with a B.Sc. in agriculture with a teacher preparation component in his training equivalent to a diploma in education.

An important source of Nepalese agriculture degree holders is those trained in Indian agricultural universities as USAID participants. The estimated returnees under the program are as follows:

Table 7.

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Actual and Projected Return of  
B.Sc. Agriculture and Agricultural Engineering Graduates from India

<u>Year of Degree</u>	<u>General Agriculture</u>	<u>Agricultural Engineering</u>	<u>Number of Graduates</u>
1968	12	--	12
1969	16	--	16
1970	27	--	27
1971	39	6	45
1972	92	17	109
1973	49	11	60
1974	30	4	34
1975	35	--	35
1976	15	--	15
1977	7	--	7

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Source: USAID/Nepal

The first 54 returnees from B.Sc. training in India were employed by the Ministry of Food and Agriculture as follows:

Agriculture Research and Education Department	21
Agriculture Extension Department	18
Horticulture	5
Fisheries	4
Agriculture Development Bank	4
Saving Corporation	<u>2</u>
TOTAL:	54

Recently, 103 agriculture degree holders returned from India and the following table shows their employment to date:

Agricultural Development Bank	10
Agricultural Tools Factory	5
Jute Board	3
Industries Department	1
Education Department	2

It is to be expected that it would take some time to absorb these degree holders since they represent a 50 percent increase in the manpower pool with B.Sc. Ag., and since procedures of the Public Service Commission tend to be time-consuming. Interviews with a number of these returnees indicate some frustration while awaiting employment at acceptable pay scales. The agricultural engineers have special problems of

finding employment that will make good use of their recently completed training. Nevertheless, prospects seem good for absorbing those graduates within a few months.

The annual number of returnees from this program declines following the 1972 peak number. It will be negligible after 1977 as no AID participants were sent in 1972; however, seven are being sent for training in India under Colombo Plan scholarships through the Indian Cooperation Mission.

The need for I.Sc. (Ag) holders: The plan emphasizes the need for basic-level (certificate) manpower relative to middle- (diploma, B.Sc.) and high-level (post-B.Sc.). With regard to agricultural education, there is a clear need for certificate holders.

The National Planning Commission has estimated a need for 1,463 junior technicians and junior technical assistants for agricultural projects for the Fourth Plan period. This is in addition to the 1,120 in these categories available at the end of 1970-71. These numbers are for the public sector only and do not include the needs for the private and quasi-public sector, or for the educational system.

A recent survey made by the Team (August, 1972) shows the following needs for non-gazetted personnel in the Ministry of Food and Agriculture and the quasi-public agricultural corporations (Table 8). It is difficult to obtain breakdowns of personnel requirements by levels within the non-gazetted group. However, it is clear that the manpower needs at the I.Sc. (Ag) level, roughly equivalent to junior technician level, are large. There is a recognition of the inadequacy of personnel at the junior technical assistant (JTA) level only a part of which stems

Table 8.

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**Non-Gazetted Manpower, Agricultural Organizations  
Current Staff and Additional Requirements by 1975  
(Three Years)<sup>a</sup>**

<u>Organization</u>	<u>Current Staff</u>	<u>Additional Requirement by 1975</u>
Department of Agriculture Research and Education	851	101
Department of Extension (JT Level)	176	300
Department of Extension (JTA Level)	525	460
Department of Livestock and Veterinary	250	115
Dairy Corporation	75	50
Agricultural Development Bank	85	60
Saving Corporation	260	50
Agricultural Marketing Corporation	<u>10</u>	<u>15</u>
TOTAL <sup>b</sup>	2,232	1,151

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<sup>a</sup> Includes personnel at levels of junior technician, junior technical assistant, field assistant, and fieldman.

<sup>b</sup> Information was not readily available for the Departments of Horticulture and Fisheries.

from the level of training received. Other factors are low pay (beginning at Rs 155, U.S. \$15.50 per month with salary increase at Rs 7 per month per year of service), and inadequate support of many kinds.

It seems likely that agricultural development will demand more and more personnel with I.Sc. level training. The trend toward quasi-public agricultural corporations, with more attractive and flexible salary policies is an example of a force that is leading to better rewards for both training and experience. For example, the Agricultural Savings Corporation provides Rs 325 per month as the basic pay for a junior technician with added 20% technical allowance and 40% field allowance. Thus, this JT draws nearly double the salary of a Ministry of Agriculture JT with a salary of Rs 255 per month.

The strategy for training vocational agriculture teachers and vocational education supervisors: The estimated needs for teachers of vocational agriculture and the numbers of B.Sc. holders to return from training in India indicate that it is not possible to staff each new vocational agriculture school with a B.Sc. (Ag) holder. Therefore, a realistic approach would be to initially staff each school with an I.Sc. (Ag) holder with one additional semester of education training. As more I.Sc. and B.Sc. holders become available, the vocational agriculture teachers with I.Sc. (Ag) and experience of, say, three years could be admitted for the B.Sc. (Ag) and additional education training so ultimately all vocational agriculture teachers would be B.Sc. (Ag) holders with a diploma in education or agricultural education.

Conclusions: The foregoing provides some data and other considerations regarding manpower needs and IAAS. There are many uncertainties

and needed policy decisions bearing on the subject. The capacity of the economy to absorb agricultural technicians depends on many unknowns, particularly the success in setting off the chain of agricultural development processes that lead from a rather static to a truly developing agricultural economy.

The National Planning Commission estimates for the public sector indicate that about 200 degree holders are needed for the 1971-75 period: general agriculture, 174; food technology, 5; and agricultural engineering, 21.<sup>15</sup> This is a rate of about 40 per year. The data in Table 8 suggest that the annual additional public sector needs may be somewhat higher than this. There is the pressing need for teachers of vocational agriculture with the strategy for doing this yet unspecified. Surveys of agricultural organizations indicate the need for basic-level (certificate) manpower and upgrading of those at lower levels (e.g., JTA).

The National Education System Plan emphasizes that "our greatest need is for low-level manpower, followed in order by middle-level and high-level," (p. 75). While the general statistics (which are dominated by the large number of arts and unapplied science certificate and degree holders) support this general conclusion, it does not apply to agricultural education. Trained manpower at all levels are needed for the agricultural sector of the economy. This arises from:

1. The paramount importance of the agricultural sector, more clearly reflected in written statements of policy than in implementation of sustained and coordinated programs.

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<sup>15</sup> National Planning Commission Secretariat, Human Resources Division, "Supply and Demand of Manpower," Table 6.

2. The virtual neglect of higher agricultural education relative to arts and general sciences.

3. The expediency in recent years of relying on foreign countries to produce all post-I.Sc. manpower for agriculture, a course no longer acceptable.

4. The urgent need to produce high quality vocational agriculture teachers in support of the policy of improvement of the secondary schools.

B.Sc. training in other countries for Nepalese: What is to be the future of B.Sc. level agriculture training in other countries? The answer to this question is a crucial determinant of the size and rate of growth of the IAAS. The policy of HMG and foreign governments supporting Nepal agricultural development that would be consistent with developing a strong IAAS would be that of encouraging all B.Sc. level training in agriculture at the Institute. Similarly, it is important to know now whether and when it is anticipated that the IAAS might be initiating degree programs beyond the B.Sc. Until this time, external training in agriculture should be concentrated at M.Sc. and Ph.D. levels.

Who will teach the education component to vocational agriculture teachers? There are at least two alternatives: (1) the Institute of Education, or (2) the Institute of Agriculture and Animal Science. The Institute of Education currently has some capacity to do this which could be augmented. Students could complete a particular level of agriculture training and then have the education work "layered" on top. The alternative recommended is to have the necessary education training provided by IAAS. Assuming staff capability, this option will

result in a better vocational agriculture teacher as it permits integration of the agriculture and education training throughout the curriculum, and will have a stronger orientation toward applied agriculture. There is also the possibility of shortening the total time needed to prepare the teacher. Furthermore, it would centralize the responsibility for carrying out the important task of preparing teachers for the vocational agriculture schools.

Will this second option result in undesirable staff duplication between the Institute of Education and IAAS? Probably not, as IAAS will need staff members qualified in educational principles and methods to prepare those for non-formal education, particularly those for the Department of Extension. Insofar as the IAAS is concerned, there could well be complementary benefits and staff economies through providing the educational component for both formal and non-formal educators in agriculture.

### C. POTENTIALS FOR CHANGE IN AGRICULTURE

Nepal has all of the problems normally associated with an under-developed agricultural country. These are compounded by the late start toward modernization, the land-locked position, and a harsh combination of topography and climate. One could emphasize the problems or take the more optimistic view and look at them in terms of potentials for improvement. The following is a brief treatment of some of the agricultural potentials.

The resourceful farmers: One has only to observe the manner in which Nepal's farmers have adapted their farming systems and practices to the ecologic and economic conditions to have confidence that they will accept improved methods that are in their economic interest.

The natural advantages: The soils and climate provide the opportunity for multiple cropping, particularly with development of shorter season crop varieties. The variable seasonal rainfall and terrain present tremendous challenges for improved farm use of water. The environment provides potential both for greater production of present crops and for more specialized production of crops such as: tea, cardamon, pineapple, herbs, and spices.

The structure of farm units: Encouragement of farms of economic sizes and types, given the pressure of people on the land, along with a tenure pattern that provides incentives to both owners and tillers of the soils has considerable productive potential.

Price and cost incentives: Past economic incentives have been more consumer-oriented than producer-oriented. A reorientation of the

incentive system toward the individual producer would bring forth increased production that would benefit all as consumers, provide foreign exchange, and add to price stability.

The known improved technologies: The results of production research indicate that there are technologies currently available worthy of farmer adoption. Field and production data show possibilities for more widespread use that is dependent upon spread of knowledge to more farmers and making new inputs available at reasonable costs at the proper time.

The research results to be adapted: There is a large body of physical, biologic, economic, and social science research knowledge awaiting adaptation to the specific needs of the different farm conditions within Nepal. Carefully selected, planned, and conducted research projects, concentrating on those endeavors that promise the greatest economic benefits to farmers and their families, are likely to pay large returns relative to costs.

Marketing (including transport) improvements: The special geography and topography of Nepal call for special attention to improved facilities for communication and movement of people, ideas, and things. Provision for storage and preservation of farm commodities and improvement of such market functions as grading, weights and measures, and market information takes on special significance, especially for products to be exported. There is also potential for growth in processing. Special attention is needed to provide the structure and incentives for an efficient system of input distribution to farmers.

The agricultural organizational infrastructure: A number of government and quasi-public organizations have been created to serve the agricultural sector through various programs and projects. There is abundant evidence suggesting considerable potential for greater service to farmers, both within each organization and through coordination and complementarities among organizations. Opportunity is needed for new and innovative organizations that can provide farmer services more efficiently.

The educated manpower: There is a cadre of well-trained manpower at intermediate and high levels available to serve the needs of a more modern Nepal agriculture. In general, this group is small relative to the needs suggested by the rates of population growth and agricultural production increase and the needs of the above-listed potentials. Many are undertrained and not well supported for the tasks to be accomplished. Others have had limited experience. A combination of conditions results in lack of commitment and dedication to solving the problems of rural people, the solution of which will provide benefits to the entire society. It is through finding the keys that will unlock the potentials of this group of people that rests the solution of the many problems of agricultural and general economic and social development.

D. ALTERNATIVE INSTITUTIONAL MODELS

There are many ways in which a nation may organize and develop its educational resources to further the development of its agricultural sector. In most rural societies, the bulk of education is not formal; parents and grandparents teach their children how to till the soil, how to save seed from one year to the next, how to conserve organic matter as plant food, and many, many other practical aspects of applied agriculture.

Formal education tends to be academic, literary, and unrelated to the concepts, principles, and practices of agriculture. Even in very rural places, where most children are in formal schools less than three years and devote the remainder of their lives to practical agriculture, the curriculum bears little relationship to the world of work. The focus tends to be on reading and writing and arithmetic--not necessarily useful skills in terms of the work of the rural world.

As indicated above, the formal school system of Nepal, whose processes and content can be traced through India to Victorian Britain, is wrestling with the shackles of irrelevant standards, and trying to become a resource and utility to a dynamic nation.

At this stage, there is a tendency for formal education to sift out those who love the soil, who delight in the growth of plants, and who take pride in the health and vigor of their livestock. Those who continue in the system tend to be more inclined to the written word, to rote memory, and to the reproduction of lecture notes in examinations. The latter proceed through the steps of formal education, each being

primarily a preparation for the next, pointing toward university degrees or lives of frustration. The former group tends to leave the formal education system, since they will learn more about agricultural production, agricultural supply, agricultural marketing, and even the governance of rural society through the natural, non-formal educational system.

But the last hundred years has witnessed the application of the scientific method to agriculture. Throughout the world scholar-farmers have shown their soil-tilling brothers how to make two blades of grass grow where one grew before. One hundred years of education and research at the highest levels in agriculture have changed, in some parts of this world, the peasant into a business executive, the farmer into a respected professional agriculturalist, and brought prestige and dignity to rural life.

But this transformation has not been world-wide. In those places where scholarship at the highest levels was reserved for the sons and daughters of wealthy classes; where the curriculum emphasized the arts and letters, and learning for its own sake; where the only professions were considered to be law, medicine, and religion--in these places agriculture remains primitive, a large portion of the populace is required just to produce food for themselves and a few others, and human life fails to approach its potential quality.

In response to these phenomena, His Majesty's Government of Nepal has adopted the National Education System Plan, and in response to these phenomena and the pressing needs of rural Nepal, those who will

lead higher education in Nepal through the next crucial decade must make some difficult choices.

One paramount set of alternatives is found at every level of the educational system. It is the choice between the "practical and applied," on the one hand, and the "pure and literary" on the other.

If agricultural education is treated from a "pure and literary" posture, then emphasis will be on meeting a set of artificial academic standards. This is the easy way. Textbooks can be imported from abroad, the content needs no local relevance, and progress can be measured by borrowed standards. The main goal at each level is to prepare students for the next level. Such a system is not likely to have much impact upon rural development in Nepal, but that question does not arise with this approach. Paper credentials become the measure of the system.

The alternative is much more difficult. The alternative is much more expensive. The alternative is usually condemned by worshippers of out-moded standards.

The alternative is to make agricultural education practical and applied. The alternative is to measure achievement on the basis of the applications of agricultural knowledge to increased productivity--to availability of higher quality foods at lower costs to ever-increasing numbers of people. Success is judged by the utility of what is learned, not the type of package in which it is dispensed.

But this alternative cannot be achieved by import. Even textbooks and professors from abroad cannot deliver this type of an agricultural education. Like the trees of Kathmandu Valley, the seed may be imported,

but each one must put its roots down here, drink of the nourishment of this soil, and then grow tall and strong--here in Nepal.

Practical and applied agricultural education requires courses with names like rice production, wheat production, and growing poultry in the Terai--not courses with names like physical chemistry, plant taxonomy, and animal physiology. The principles must be included, of course, but they should be selected insofar as they relate to production or marketing of the food crops and livestock of Nepal. This means designing the curriculum--each course, and each lecture or practical--to use Nepalese examples, data, and case materials. It takes time. It requires local research. It requires the teaching staff to interact with farm people and professional practicing agriculturalists. It requires amendment and localization of textbooks and lectures. It requires commitment to Nepal and appreciation of its rural people. It requires acknowledgement that a man with a kodali in his hand, bending his back over a terraced paddy, built by his father's father, may know more about how to grow rice on that hillside than the professor with his Ph.D., and the professor must be humble in his presence, and listen carefully.

The practical and applied alternative promises a generation of scientific agriculturalists, who understand the plants and animals of Nepal, and how to make them flourish. But its cost is high. The pure and literary alternative costs much less. It can be done by present staff with no additional training. Textbooks could be purchased abroad, and no farms, laboratories, or applied research would be needed. And what does it promise? It offers a generation of well-dressed graduates who

can sit behind the desks of various government departments and pass each other reports of the declining production of the "peasantry."

\* \* \* \* \*

The other alternatives in higher education in agriculture tend to relate to this first and major question of philosophy.

The pure and literary can be carried out in any building. The practical and applied requires land where learners and teachers may grow crops together, and tend to livestock.

The "high-priced" essentials are not physical things--the real difficulties usually lie in the attitudes of staff, students, and those responsible for policies, plans, and their implementation.

Another set of alternatives relates to the inclusion of agriculture in the total educational system. Should this subject be reserved for higher (post-secondary) education? Should it be included in the higher schools? Or should reading and writing be taught in the very first grade, in rural areas, in the context of how to help plants grow and how to keep livestock healthy? Although that question is somewhat beyond the scope of this study, the different levels of formal education are related. To the extent that higher education opts for the practical and applied, it will also be concerned with the teaching of agriculture throughout formal and non-formal education--with the preparation of books and other study aids, and with the preparation of teachers at all levels.

A pure and literate agricultural education can be offered anywhere in Nepal. A practical and applied agricultural education, which really

fits Nepal's multiple ecological zones and difficult transportation and communication system, probably needs to be offered in a variety of places: some in the Terai; some in the hills; and some in the valleys. Moreover, for any of them to be adequate over time, good communication would have to connect them so that the practical problems and solutions at one location would be known to all others.

The staff of an institution focused on the pure and literary needs only technical knowledge. A staff which takes the practical and applied approach must have appropriate skills and abilities as well as high technical knowledge.

In the pure and literary, successful students are qualified for further study. In the practical and applied, successful students must have ability and willingness to participate actively in the country's system of services to agriculture, in addition to their preparation for further study.

These are some of the alternatives. There are others. To achieve any choice among these alternatives in higher education in agriculture, resources of staff, facilities, and financial support must be brought together with appropriate leadership, organized, programmed, and instilled with a doctrine (or philosophy) around which they can rally. These, if they are to survive and perform their functions over time, must build linkages which will enable them to avoid rejection, secure support, function with other organizations, become looked upon as normal in the society, and diffuse an appreciation of themselves. To the extent that these various components are successfully put together, the

organization will become an institution, and will grow in strength, stature, and prestige.

It is clear that the chances for success of a practical and applied agricultural education will also be affected by forces not completely under the control of the agricultural education sector. For example, improvement in the pay scales and working conditions of agricultural extension workers would probably contribute to the morale of personnel and the effectiveness of field operations. There are probably general changes in the modus operandi of intragovernmental process--particularly regarding assignment, promotion, recognition, etc.--which could lead to dramatic improvements in morale and efficiency. Improved coordination of such agencies as the Extension Department, the Agricultural Marketing Corporation, the Agricultural Development Bank, etc., could be expected to have a positive impact on the effectiveness of each. Further development of transport and the marketing and storage systems would probably enhance the payoffs from research and extension work. An upgrading of the image and reputation of the agricultural services resulting from such changes might prove to be crucial.

The above alternatives and institutional requirements tend to be true of any organization serving agricultural education anywhere. The following set of recommendations, found in the next chapter, are specifically designed for Nepal. They are an attempt to take the best of world experience, as known to the authors, and fit it to the uniqueness of Nepal's culture and ecology.

## CHAPTER III

### RECOMMENDATIONS FOR HIGHER EDUCATION IN AGRICULTURE IN NEPAL

The following recommendations emerge from the study and deliberations of a joint team with representation from Tribhuvan University, the Ministry of Food and Agriculture, the Ministry of Education, and MUCIA (see Appendix A for a list of the members of the joint team).

While these recommendations cover a broad spectrum of the considerations associated with higher education in agriculture in Nepal, the intent was not to downgrade those which have been omitted. For example, there is no discussion of home economics, forestry, or fisheries. At some future date, consideration might well be given to these fields and others.

The suggestions in this chapter are not intended as legislation or operating procedures for any organization. Instead, they are merely the best thoughts of one group of individuals at one point in time with respect to the subject at hand.

A. DOCTRINE

1. Basic Philosophy

As a rationale for further institutionalizing higher education in agriculture in Nepal, several broad goals are enunciated:

- a. To develop, preserve, and extend scientific knowledge, technology, and skills necessary for the development of the agricultural sector of the Kingdom and improve the level of living of rural people.
- b. To contribute toward building an action-oriented citizenry with high standards of habits of work, powers of appreciation, aesthetic awareness, cosmopolitanism, self-reliance, creativity, and scientific approach.
- c. To contribute to national development through helping improve all segments of the agricultural sector of the economy.
- d. To serve as an integral part of the system of services functioning in support of the agricultural population.
- e. To serve as an integral part of the overall system of education of the Kingdom.

In pursuance of the aims of the new national system of education, it is imperative to further develop the Institute of Agriculture and Animal Science as an integral part of the Tribhuvan University with the following specific aims and objectives:

- a. To provide well educated, trained, committed and dedicated manpower to fulfill both the immediate and long-term needs of the entire agriculture sector.

- b. To bring the benefits of modern scientific agriculture to the different communities of the Kingdom through co-operation with appropriate branches of His Majesty's Government and other organizations.
- c. To fulfill the need for vocational agricultural graduates, which would be required to serve the secondary vocational schools of the country.
- d. To conduct research efforts complementary to the teaching function, which will also provide knowledge needed for agricultural development and improved levels of living.
- e. To serve as the Kingdom's major academic resource for knowledge of the agricultural sector.
- f. To gather, store, and disseminate knowledge regarding agricultural development in the academic and professional community.

To achieve these objectives, the Institute of Agriculture and Animal Science should be action-oriented and innovative, have a problem-solving orientation, and be practically applied to the agriculture of Nepal, with increasing depth in principles as education progresses to higher levels.

It should be an integral part of the University, and function cooperatively in association with the Ministries of Food and Agriculture and Education, as well as other units of HMG, and become an integrated, coordinated and cooperative part of the system of services supporting agriculture, both private and public.

It should assist in developing and strengthening all other elements directly related to agricultural development. It should use internal assessment as a tool in the teaching-learning process as a means of evaluating student progress and attainment. And it should be committed to flexibility in organization and methods of operation to facilitate attainment of goals and objectives.

## 2. Teaching and Learning Styles

To quote Dr. Rajbhandary, Dean of the Institute, with respect to agricultural education in general: "Unless and until the teacher does the practical work himself, with his own hands, he should not teach."

Similarly, unless and until the student does the practical tasks himself, with his own hands, he is not likely to learn.

The style of teaching and learning at the Institute of Agriculture and Animal Science should be based on the above two fundamental concepts.

It follows that the learners and teachers, the students and the staff, should have close proximity to plant and animal production, should have continuous access to farming activity. Thus, the hostels, lecture rooms, laboratories, staff offices, Institute farm land, and other facilities should be near to each other-- preferably within walking distance.

There should be adequate land and livestock facilities so that each point of instruction can be illustrated with real, live, local examples, so that students themselves, with their own hands, can try each practice, each principle, and each theory. Theory and practicals are not separate classes in different places at different times, but are part and parcel of the same learning experience, to the extent feasible.

Teaching of basic scientific principles should be done through agricultural practices, included in a curriculum organized around important Nepalese plants and animals. For example, mathematics could be taught to students whose goal is to learn how to feed poultry to yield a product worth more than the production costs. The same students could reinforce their learning of mathematics in the study of egg prices. (In consideration of appropriate poultry rations, there is ample opportunity for teachers to help students learn mathematics.)

Similarly, botany could be taught to students whose goal is to learn how to grow rice. (In consideration of the important rice plant, there is ample opportunity for teachers to help students learn botany.)

This approach is desirable at the B.Sc. level; necessary at the I.Sc. level. It is consistent with the philosophy and objectives of IAAS, with the National Education System Plan, and the pronouncements of His Majesty with respect to agricultural education.

Beyond this basic approach, much more can be done to make instruction effective. The best of pedagogical techniques should be employed, supplementing live plants and animals with audio-visual instructional devices as appropriate. Attention to learning conditions should be a part of building design, equipment selection, curriculum planning, and most other aspects of the development of IAAS.

B. LINKAGES

1. Relationships To Other Organizations

The Institute can effectively serve agricultural and educational development only by functioning in a cooperative and complementary way with many organizations and individuals--from the level of the individual farmer and his family to the centers of higher education, to the topmost levels of His Majesty's Government. The concept of working as an integrated, coordinated, and cooperative part of the system serving agriculture and rural Nepal is to be reflected through the Institute's leadership, staff, programs of teaching, research and service, and its certificate and diploma holders.

The relationships (linkages) of a service-oriented agricultural institute such as IAAS are varied and complex. They change as agriculture changes, as the Institute grows, and as other organizations change; but attention to these relationships is as important as internal programs and activities of the Institute itself.

The following two tables serve to illustrate the types of linkages and the organizations to which the IAAS will be related.

One set of relationships are those to HMG and Tribhuvan University as provided for by the National Education System Plan and the Tribhuvan University Act, 1971 (Gazette, October 22, 1971). These provide the legal framework for the Institute and give a degree of autonomy to each Institute within the University, an

autonomous body. Some functions are restricted to the University while others are to be carried out by the institutes as provided by the Tribhuvan University Act and rules promulgated under its authority. The process of determining the relationships between institutes and the University is underway. The items at the top of the following table illustrate some of the joint concerns of IAAS and Tribhuvan University.

TABLE 9

	POLICY	PERSONNEL	FISCAL & PROP'Y	EXAMINATIONS	RECORDS	CURRICULUM	RESEARCH	STUDENT WELFARE	COORDINATION	EVALUATION
National Education Committee	X	X								X
Ministry of Education		X								
Tribhuvan University:										
University Council	X		X							
Vice-Chancellor	X	X	X	X	X	X	X	X	X	X
Rector--Academic Affairs						X	X	X	X	X
Registrar--General Admin.			X	X	X					
University Service Comm'n.		X								
Technical Council	X					X	X	X	X	X
Curriculum Development Ctr.						X	X			

The relationships to organizations beyond the University are shown in five broad groups at the top of Table 10 and 11.

- (1) Those supplying students to IAAS
- (2) Those providing assistance in teaching
- (3) Users of the products and services of IAAS
- (4) Those with whom the IAAS has joint programs
- (5) Those with joint concerns in determining manpower needs

The broad categories of organizations are other Tribhuvan University institutes; HMG ministries, with the Ministries of Food and Agriculture and Education of predominant importance; Government boards and factories directly related to agriculture; quasi-public corporations; and agri-business firms and farms.

Among all linkages, however, some are more critical than others. For the IAAS, linkages with producers of agricultural products (farmers) are essential. To the extent that these linkages function, the Institute will be relevant and its products will be useful. But other linkages are also very important. Linkages with organizations carrying out agricultural research constitute a basic knowledge resource. And linkages with organizations carrying out agricultural extension education can provide guidance to the programs of the Institute as well as a consumer for the information it generates and packages. Linkages with organizations which supply inputs to farmers and organizations which market their products also deserve priority.

In addition to giving attention to the development of a network of functional linkages with other units in the educational system and the agricultural system of Nepal, participation in the larger world-wide community of higher education and research is also appropriate. An example of this would be early affiliation with the Asian Association of Agricultural Universities and Colleges.

TABLE 10

Type of Relationship	Source of Students				Teaching Assistance			Users of Products and Services					Joint Programs				
	For I.Sc. Students	For B.Sc. Students	For Ext. (Temporary)	For Upgrading Information	Lecturers	Field Visits, Etc.	For I.Sc. Holders	For B.Sc. Holders	For Ext. (Temporary)	Upgraders	Research	Non-Formal Findings	Teaching Education	Teaching Materials	Research	Non-Formal	Manpower Needs
<b>ORGANIZATION</b>																	
Other Tribhuvan Univ. Institutes																	
Education	X	X			X								X	X			X
General Sciences	X	X			X								X	X			
Forestry													X	X			
Engineering	X	X															
Medicine														X	X		
Applied Science & Technology														X	X		
Arts, Humanities, Social Sci.	X	X															
Commerce & Business Admin.	X	X									X					X	
Panchayat Training Institute							X			X			X	X	X		X
<b>HMG</b>																	
National Planning Commission																	X
<b>Ministry of Education</b>																	
Secondary Schools (Voc. Agr)	X		X		X	X	X	X	X	X	X	X				X	X
Secondary Schools (Other)	X										X						
Primary Schools													X	X			
Adult Literacy													X	X			
Manpower Division																	X
<b>Ministry of Food &amp; Agriculture</b>																	
Dept. of Agric. Extension	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Technical Departments	X	X		X	X	X	X	X	X	X	X	X	X	X	X		X
Economic Analysis & Planning	X	X		X	X	X	X	X	X	X	X	X	X	X	X		X
<b>Ministry of Forestry</b>																	
					X	X	X									X	

TABLE 11

Type of Relationship	Source of Students			Teaching Assistance			Users of Products and Services					Joint Programs			
	For I.Sc. Students	For B.Sc. Students	For Ext. (Temporary)	For Upgrading Information	Lecturers	Field Visits, Etc.	For I.Sc. Holders	For B.Sc. Holders	For Ext. (Temporary) Upgraders	Research Findings	Non-Formal Education	Teaching Materials	Research	Non-Formal	Manpower Needs
<b>ORGANIZATION</b>															
Ministry of Industry				X	X	X								X	
Food Research Laboratory				X	X	X	X	X		X			X		X
Department of Resettlement				X	X	X	X	X		X	X		X		X
Department of Cooperatives				X	X	X	X	X		X	X		X		X
Government Boards & Factories															
Jute Development Board				X	X		X	X		X					X
Sugar Factory				X	X	X	X	X		X					X
Agri. Tools Factory				X	X	X	X	X		X					X
Quasi-Public Corporations															
Land Reform Savings Corp.				X	X	X	X	X	X	X	X		X		X
Agric. Marketing Corp.				X	X	X	X	X	X	X	X		X		X
Dairy Corporation				X	X	X	X	X	X	X	X		X		X
Agric. Develop. Bank				X	X	X	X	X	X	X	X		X		X
Rehabilitation & Resettlement Corporation				X	X	X	X	X	X	X	X		X		X
Private Firms, Agri-Business	X	X		X	X	X	X	X	X	X	X				X
Farms	X			X		X	X	X		X	X				X

C. TIME PHASED DEVELOPMENT PLAN

The following is suggestive and illustrative only:

First Year

Intensive overall planning

I.Sc. Ag first batch, new approach (after six months' preparation) (25 students)

Begin site development, central campus

Second Year

Continue general planning

Continue site development--construction phases

I.Sc. first batch (25 students) in second-year program

I.Sc. second batch (50 students) in first-year program

Third Year

Continue site development, central campus

Begin site development, first satellite campus

I.Sc. second batch (50 students) in second-year program

I.Sc. third batch (50 students) in first-year program

B.Sc. first batch (40 students) in first-year program

Fourth Year

Complete first phase of site development, main campus

Complete site development, first satellite campus

I.Sc. third batch (50 students) in second-year program

I.Sc. fourth batch (50 students) in first-year program

B.Sc. first batch (40 students) in second-year program

B.Sc. second batch (40 students) in first-year program

Fifth Year

Begin site development, second satellite campus

I.Sc. fourth batch (50 students) in second-year program

I.Sc. fifth batch (50 students) in first-year program

B.Sc. first batch (40 students) in third-year program

B.Sc. second batch (40 students) in second-year program

B.Sc. third batch (40 students) in first-year program

I.Sc. first satellite, first batch (25 students) in first-year program

Sixth Year

Complete site development second satellite campus

I.Sc. fifth batch (50 students) in second-year program

I.Sc. sixth batch (50 students) in first-year program

B.Sc. second batch (40 students) in third-year program

B.Sc. third batch (40 students) in second-year program

B.Sc. fourth batch (40 students) in first-year program

I.Sc. first satellite, first batch (25 students) in second-year program

I.Sc. first satellite, second batch (25 students) in first-year program

Seventh Year

Begin site development, third satellite campus

I.Sc. sixth batch (50 students) in second-year program

I.Sc. seventh batch (50 students) in first-year program

B.Sc. third batch (40 students) in third-year program

B.Sc. fourth batch (40 students) in second-year program

B.Sc. fifth batch (40 students) in first-year program

I.Sc. first satellite, second batch (25 students) in second-year program

I.Sc. first satellite, third batch (25 students) in first-year program

I.Sc. second satellite, first batch (25 students) in first-year program

Eighth Year: Complete site development, third satellite campus

I.Sc. seventh batch in second-year program

I.Sc. eighth batch in first-year program

B.Sc. fourth batch in third-year program

B.Sc. fifth batch in second-year program

B.Sc. sixth batch in first-year program

I.Sc. first satellite, third batch, second-year program

I.Sc. first satellite, fourth batch, first-year program

I.Sc. second satellite, first batch, second-year program

I.Sc. second satellite, second batch, first-year program

Ninth Year: Begin site development, fourth satellite campus

I.Sc. eighth batch in second-year program

I.Sc. ninth batch in first-year program

B.Sc. fifth batch in third-year program

B.Sc. sixth batch in second-year program

B.Sc. seventh batch in first-year program

I.Sc. first satellite, fourth batch, second-year program

I.Sc. first satellite, fifth batch, first-year program

I.Sc. second satellite, second batch, second-year program

I.Sc. second satellite, third batch, first-year program

I.Sc. third satellite, first batch, first-year program

Tenth Year: Complete site development, fourth satellite campus

I.Sc. ninth batch, second-year program

I.Sc. tenth batch, first-year program

B.Sc. sixth batch, third-year program

B.Sc. seventh batch, second-year program

B.Sc. eighth batch, first-year program

I.Sc. first satellite, fifth batch, second-year program

I.Sc. first satellite, sixth batch, first-year program

I.Sc. second satellite, third batch, second-year program

I.Sc. second satellite, fourth batch, first-year program

I.Sc. third satellite, first batch, second-year program

I.Sc. third satellite, second batch, first-year program

D. PROGRAM

1. Formal Instruction

a. Curriculum Design

To serve Nepal as indicated above, this Institute will need to produce a variety of types of trained manpower to meet differing needs. This will include certain "upgrading" courses for junior technicians, an Intermediate Science Certificate in Agriculture, and a Bachelor of Science in Agriculture Diploma Program. It may also include programs at the M.Sc. and Ph.D. levels at some future date, as well as many different types of short courses, seminars, and special classes. Estimates of future needs for manpower with various levels of training are included in the section of this report on manpower (page 45. See also Appendix C.)

The curriculum is envisioned at three levels:

(1) Certificate Program (two-year I.Sc.)

To provide action-oriented basic level agricultural technicians, some of whom may teach in secondary schools, particularly in early years.

(2) Diploma Program (three-year B.Sc.)

To produce well-educated and well-trained middle-level technicians for agricultural teaching (secondary schools), research, and extension.

(3) Non-Formal (Upgrading) Professional Improvement Program

For varying periods of time and for specific purposes.

Certificate Level Curriculum -- I.Sc.  
(Two-Year Training Program)

The two-year I.Sc. Certificate curriculum is proposed to be offered in a sequence of educational experiences extending over a period of four semesters oriented to practical experiences, applied courses, study of principles, and theory, in that order. This educational approach is aimed at developing skills as well as providing lower-level technicians with opportunities for further study. It is designed to fit Nepal's needs and is consistent with the National Education System Plan for 1971-76, with the philosophy and objectives of IAAS, and the pronouncement of His Majesty with respect to agricultural education. It is more than a curriculum--rather, a new and innovative approach to teaching and learning in agriculture.

In terms of educational philosophy, the proposed two-year I.Sc. curriculum is based on two proven educational theses: (1) Unless and until the teacher does the practical work himself, with his own hands, he should not teach; and (2) unless and until the student does the practical tasks himself, with his own hands, he is not likely to learn.\*

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\*See above, Teaching and Learning Styles, p. 71.

The two-year I.Sc. program is envisioned as having two goals: The major goal is to prepare students to be able to apply the principles of scientific agriculture to the farms of Nepal. A secondary goal is to provide the necessary academic foundation to enable such certificate holders, if they qualify, to continue their studies at the B.Sc. degree level.

(1) First Semester--Practical Agriculture

- (a) Instruction will be oriented to the concept of "learning by doing."
- (b) The focus would be on timely teaching and learning experiences through agricultural practice, organizing the curriculum around selected aspects of Nepalese plants, animals, tools and machines, and rural society; e.g., focusing on wheat or rice, whichever is most timely.
- (c) The first semester's program would be designed for students without previous agricultural field experience.
- (d) The content will focus on plant production, animal production, use of tools and implements, and agricultural management and marketing, bringing scientific knowledge to bear on these subjects.

**(2) Second Semester--Applied Agriculture**

- (a) Instruction to be oriented to applied agricultural courses--developed, designed and selected from the plant, animal, engineering, and social sciences.
- (b) There should be adequate facilities and instructional aids so that each point of instruction can be illustrated with real, live, local examples and each student can make practical applications.
- (c) The allocation of time between lecture and practice needs to be further discussed, but there will be heavy emphasis on practicals.
- (d) The assignment of credits to individual courses is a matter needing further discussion and eventual decision.

**(3) Third Semester--Principles of Agriculture**

- (a) Instruction to be oriented to courses dealing with principles of agriculture--developed, designed and selected from the plant, animal, engineering and social sciences.
- (b) The teaching of basic scientific principles should be carried on in conjunction with practice.
- (c) Questions dealing with the allocation of time between lecture and practicals as well as course credits need to be discussed further and decided upon.

(4) Fourth Semester--Theory of Agriculture

- (a) Instruction to be oriented to courses dealing with agricultural theory--developed, designed and selected from the plant, animal, engineering and social sciences.
- (b) Although the fourth semester program is envisaged to be more theoretical in nature and scope, it will derive theory from practice. Theory and practice are not separate entities.

A sample curriculum designed to illustrate this four-semester program is found in Appendix B.

Diploma Curriculum -- B.Sc.  
(Three-Year Program)

- (1) The Diploma Program, like the I.Sc. program, should reflect the expressed manpower needs for Nepal.
- (2) Curricula should be sufficiently flexible to meet changing needs.
- (3) For the beginning, at least, a B.Sc. curriculum is suggested which devotes four semesters to general agricultural courses selected from the plant, animal, engineering, and social sciences, as well as global and supporting courses, required of all students followed by two semesters of major fields of study selected by each student.

Table 12 suggests a curriculum for the full six-semester program.

Non-Formal, Upgrading Programs

- (1) To be arranged as needs are identified and expressed.
- (2) To be offered for varying periods of time, depending upon nature of upgrading needed.
- (3) To be offered at the Institute's main campus, satellite campuses and other locations in Nepal.
- (4) To be designed in cooperation with relevant ministries, other agencies, quasi-government groups, and/or institutions representing the private sector.
- (5) Teaching methodology and course content will vary depending upon nature of needs.

TABLE 12  
Suggested Curriculum Guideline\*  
(Three-Year B.Sc. Degree)

Basic Studies

Major Field

1st SEMESTER	3rd SEMESTER	5th SEMESTER
<ul style="list-style-type: none"> <li>1. Agricultural courses-----</li> <li>2. Supporting courses-----</li> <li>3. Student practical farm experiences</li> <li>4. Global courses-----</li> </ul>	<ul style="list-style-type: none"> <li>-----Selected from plant, animal, engineering &amp; social sciences</li> <li>-----Mathematics, statistics, chemistry, botany, zoology, etc.</li> <li>-----Arts and humanities</li> </ul>	<ul style="list-style-type: none"> <li>1. Students to select one <u>major</u> field from plant, animal, engineering or social sciences, or in extension and vocational agricultural education.</li> <li>2. Courses to be selected within major fields.</li> <li>3. Student group field experiences.</li> <li>4. Vocational agricultural majors to receive special education course training</li> </ul>
2nd SEMESTER	4th SEMESTER	6th SEMESTER

\*Does not include specific courses by name, content, or credit; such decisions must await further discussion and deliberation on part of IAAS.

b. Admission Criteria

(1) All candidates seeking admission to the Institute should have following qualifications:

- (a) Be of sound health
- (b) Be 16 years of age, or above
- (c) Be a Nepalese citizen (according to Tribhuvan University policy as may from time to time be amended)
- (d) Be from a farmer's family (preferably)

(2) For one-year certificate course (J.T.A.)

- (a) Pass the S.L.C. examination\*\*, and
- (b) Entrance examination\*\*
- (c) Preference to students from rural areas and remote areas, especially those who have worked in agriculture with their own hands, and field assistants who work in the Department of Agriculture

(3) Two-year certificate course (I.Sc.Ag.)

- (a) S.L.C.; and
- (b) Entrance examination\*\*

(4) Three-year diploma course (B.Sc. Ag.)

- (a) Pass I.Sc. Agriculture,\* and
- (b) One year of national service work; and
- (c) Entrance examination (written and practical)

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\*Students from ordinary I.Sc. programs (non-Ag) may be admitted to B.Sc. Ag. course after successful completion of practical portions of I.Sc. Ag. course.

\*\*In hopes that there will be considerable improvement in the quality and relevance of these examinations.

c. Transferability of Credit

Students who have passed I.Sc. Ag and who have had at least one year of service to the nation, and who pass a written and practical entrance examination could be admitted to B.Sc. Ag course.

Students who have passed I.Sc. (non-Ag) may be admitted to the B.Sc. Ag only after passing the practical agricultural portion of the I.Sc. Ag course, as well as having at least one year of service to the nation and passing the written and practical entrance examination.

Students who have passed S.L.C., either from a vocational or general school of agriculture, could get admission in an I.Sc. Ag course after passing an entrance examination.

Students who have worked as JTA for three years or more, and who are released from their assignments for this purpose, should be given preference in admission for the I.Sc. Ag course; and, after passing the entrance examination, could be given one semester credit. (Experience substitutes for the first semester of practical agriculture.)

Since students who have passed S.L.C. from vocational schools with agriculture as one of their principle subjects may be employed directly as JTA's and other similar posts: (See also Appendix D -- Admission of I.Sc. Agriculture Certificate Holders to B.Sc. Programs Outside Nepal.)

- (1) Students who have passed S.L.C. from a general school of agriculture may be admitted (by examination) to a special one-semester course at IAAS to prepare them for employment as J.T.A.'s; and
- (2) Students who have passed S.L.C. from a general school without agriculture may be admitted (by examination) to a special two-semester course at IAAS to prepare them for employment as J.T.A.'s.
- (3) Both items (1) and (2) above are considered to be temporary arrangements until such time as there are sufficient programs of the vocational higher schools to supply the needed number of J.T.A.'s directly.

The above plan of transferability may be outlined as follows:

S.L.C. General (no agriculture)...  
Two-semester special course  
(equal to 400 marks in vocational ag)

S.L.C. General (with agriculture)...  
One semester of item 2 above special  
course (equal to 200 marks in vocational agriculture)

S.L.C. Vocational Agriculture ...  
Employable as J.T.A.

Fresh S.L.C. ...  
Admissible to four-semester I.Sc.  
Ag course (if all entrance requirements met)

Experienced J.T.A. ...

Admissible to four-semester I.Sc. Ag course (if all entrance requirements met)

BUT, first semester (practical agriculture) not required because of field experience--thus making it a three-semester I.Sc. Ag course

I.Sc. Agriculture ...

Admissible to B.Sc. Ag after one year of service to nation and entrance examination

I.Sc. (Non-Agriculture) ...

Admissible to B.Sc. Ag after one year of service to nation and entrance examination, AND after passing the practical semester of the I.Sc. Ag course

## 2. Non-Formal Education

a. For the IAAS to offer successful non-formal education, there is a need to identify the clientele (such as J.T.A.'s Ag, Development Bank personnel, various corporation personnel, etc.).

b. The IAAS may conduct upgrading training for fieldmen, field assistants, and J.T.A.'s of the various agencies. Special staff members will be assigned to plan, implement, evaluate and record such training. There will be cooperation with the Ministry of Food and Agriculture, Ministry of Education and other such organizations.

c. In the future such training may also be offered for higher grades.

d. IAAS staff members will collaborate with the officers of the various agricultural departments (especially Agriculture Extension Department) in giving farmers, junior technicians, and J.T.A.'s non-formal education at the field level wherever feasible.

e. The IAAS will have a nearby pilot project for conducting agriculture extension activities of its own for the purpose of keeping its students and staff up to date with the problems at the farmer's field level.

f. Staff members of the IAAS must be given an opportunity to exchange information, in teaching or discussion or seminar type situations, with personnel of agro-related agencies of the Kingdom to keep in touch with various research findings and their application and practicability in the farmer's fields.

The need for upgrading training: The Institute is responsible for all training in agriculture except for short-term in-service training that is the responsibility of the employing organization. Large numbers of agricultural technicians at all levels are under-trained for the tasks being performed. Thus, the Institute is faced with a nearly overwhelming task of upgrading training complicated by strong pressures for training as a means to obtaining a higher salary. Pressures from individuals and cooperating agricultural organizations demand that the Institute have a large program of upgrading. One of the difficult problems will be the strategy for doing this concurrently with building for strong I.Sc. and B.Sc. level instructional programs. (See Appendix II for related comment.)

### 3. Research Programs

a. Research and teaching are complementary to each other. It is through carrying out research that the professional competence of the teaching staff can be augmented.

b. 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.

c. Though the Institute should concentrate on those research activities which lead towards finding practical solutions to problems and have a direct bearing upon the growth and development of the agricultural sector as a whole, research of a more basic nature should not be neglected. This is essential to attract talented persons as teachers in the Institute.

d. In the IAAS, different levels of research should be recognized:

- (1) Research of a type which helps to obtain data and information which are essential for successful teaching. This is especially true in the case of Nepal, with its varying topographical conditions, prevalence of different soil and climatic zones. All of the campuses would be involved in the type of research under this category.
- (2) Research which could contribute towards teaching of those skills which are required for carrying out research.
- (3) Research of an advanced type which contributes to the professional growth and morale of the teaching faculty.

e. Research projects might be of three kinds:

- (1) Projects that would originate within the Institute itself--at the department level.
- (2) Projects in association with an external agency, such as the Ministries of Food and Agriculture, Forestry, etc.
- (3) Projects which would be carried out in collaboration and consultation, and with the support of various corporations and private organizations.

f. The Institute should have freedom to solicit research funds from outside sources.

g. In the Institute, there should be a Research Committee to collect information about all research projects, encourage initiation of new ones, and make recommendations to the Dean for allocation of funds.

h. To ensure that there is appropriate coordination of the activities of the Institute and the various technical agencies (including the Departments of Agriculture, Extension, Fisheries, Horticulture, etc.), the Institute should eventually have a Research Division. It might carry out the following functions:

- (1) Coordinate, initiate, and support all research activities in the Institute.
- (2) Secure assistance for supporting research activities and disburse it according to needs and interests.
- (3) Make periodical evaluation of all research projects.
- (4) Publicize the results for wider dissemination.

i. It is the expressed desire that there will also be some University-wide coordination and collaboration in research. See Appendix F for an example.

#### 4. Library

It should not be necessary to emphasize the importance of an excellent and dynamic library to the future of IAAS and agricultural development in Nepal. Everyone undoubtedly would agree on the necessity of a good library. However, it is oft times not quite so easy to translate this into hard financial support needed by a library when other equally pressing needs are present.

The optimum development of a library should take into consideration the need for a library, particularly the increasing needs due to growth and development of the Institute. Development of a library should also take into consideration the resources available or the resources which can be made available for library facilities. The scope and variation of the curriculum is also a factor which should be considered. Each of these components requires the accumulation of as much objective data as possible, while at the same time it is recognized that a large element of subjective judgment must enter into the picture.

Not only will instruction itself require sound library facilities, but the other auxiliary functions of IAAS will place additional responsibilities on a library.

Presently the library is located in one room of very inadequate size, has no card catalog system, and is not directed by a qualified librarian. The number of present volumes is estimated at 1,543.

TABLE 13  
Needs As Illustrated by Student Enrollment and  
Faculty Size Over the Next Five Years

Year:	I	II	III	IV	V
Students	<u>25</u>	<u>50</u>	<u>75</u>	<u>100</u>	<u>150</u>
I.Sc.	25	50	50	50	50
B.Sc.	0	0	25	50	75
Satellite	0	0	0	0	25
Faculty	<u>18</u>	<u>25</u>	<u>39</u>	<u>46</u>	<u>52</u>
I.Sc.	18	25	29	34	24
B.Sc.	0	0	10	12	18
Satellite	0	0	0	0	10

Projections

The IAAS has made the following five-year projections:

TABLE 14  
Number of books, journals, and staff projected  
for the IAAS library for five years

Year:	I	II	III	IV	V	Total
Books <sup>a/</sup>	450	450	600	750	750	2900
Journals <sup>a/</sup>	25	25	40	50	50	190
Staff <sup>b/</sup>						
Librarian	1	1	1	1	1	1
Asst. Libr.	2	2	2	2	2	2
Cataloger	1	1	1	1	1	1
Binder	1	1	1	1	1	1

<sup>a/</sup> Extrapolated from financial figures supplied by IAAS.

<sup>b/</sup> No additional staff each year.

TABLE 15  
Projected growth of IAAS by fifth year and tenth year

Year:	1a/	10a/	X
Students	25	150	225
Faculty	18	52	77
Library Volumes	1,543 <sup>b/</sup>	4,633 <sup>c/</sup> (10,000) <sup>d/</sup>	N/A <sup>e/</sup>
Library Professional Staff	0	5	N/A
Library Space (in sq. ft.)	500	13,500 <sup>b/</sup>	N/A

a/ From data gathered by NUCIA/AID Team.

b/ From IAAS.

c/ Add 2,900 volumes from Table 14 to 1,543.

d/ Minimum of 10,000 volumes in five years is recommended.

e/ Not available.

Table 14 indicates that the growth of the library in terms of the number of volumes projected by the IAAS may be quite inadequate, since during these years the Institute will take on quite a bit of sophistication even though the numbers of students and faculty remain relatively small. We would recommend a minimum of 10,000 volumes by the end of the fifth year; preferably up to 25,000 volumes.

The projected space of 13,500 square feet seems adequate and probably will be up through the tenth year. The library should be constructed with the possibility of adding new wings when needed.

In addition to the main library, the several satellite campuses will need small library facilities with at least one librarian each. These campuses will offer the I.Sc. degree and the resident faculties will need books, journals and other library facilities.

The minimum expected number of volumes of each satellite library may be around 3,000 volumes. These may be concentrated on books which are comprehensive in each subject matter area involved. One scientific journal and at least one trade journal in each field may also be included.

An arrangement between the library on the main campus and the satellite libraries could provide for book loans to the satellite libraries which would augment each of the satellite facilities. If transportation and communication proves to be a significant obstacle, then arrangements could be made for each staff member to travel to the main campus at least once per term to conduct personal library study, as well as other professional improvement.

Book Rental: It is suggested that rentals of books to students may be one method whereby students could be insured of an adequate book supply. Both satellite and main libraries could perform this service. A small rental fee plus a deposit to insure return of the book would be charged the student. The rental fees would be used as a source of funds for book replenishment. This would also tend to insure that each student would have access to the classroom text, overcoming the tendency of many not to purchase the text at full cost.

The projected growth of the library seems adequate and consonant with the projected growth of the faculty. Based on student body alone,<sup>a/</sup> the library is more than adequate for the first five years.

The library should be developed with the aim of making it the prime literary resource for agriculture in Nepal. It will be serving extension and research personnel outside of IAAS as well as the students and faculty. It should serve well various clientele in regulatory work, vocational agricultural education, the agricultural industry, as well as extension and research.

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<sup>a/</sup> If IAAS remains in the Kathmandu Valley, attention should be given to continuing the close liaison between MFA and IAAS, particularly as it concerns library facilities. The MFA library facilities, which are accessible to the IAAS faculty, seem to have five to ten times the volumes held by IAAS. This affords a broader base to start with.

This approach would provide for a joint IAAS-MFA library which would be developed along the lines mentioned in the earlier part of this section.

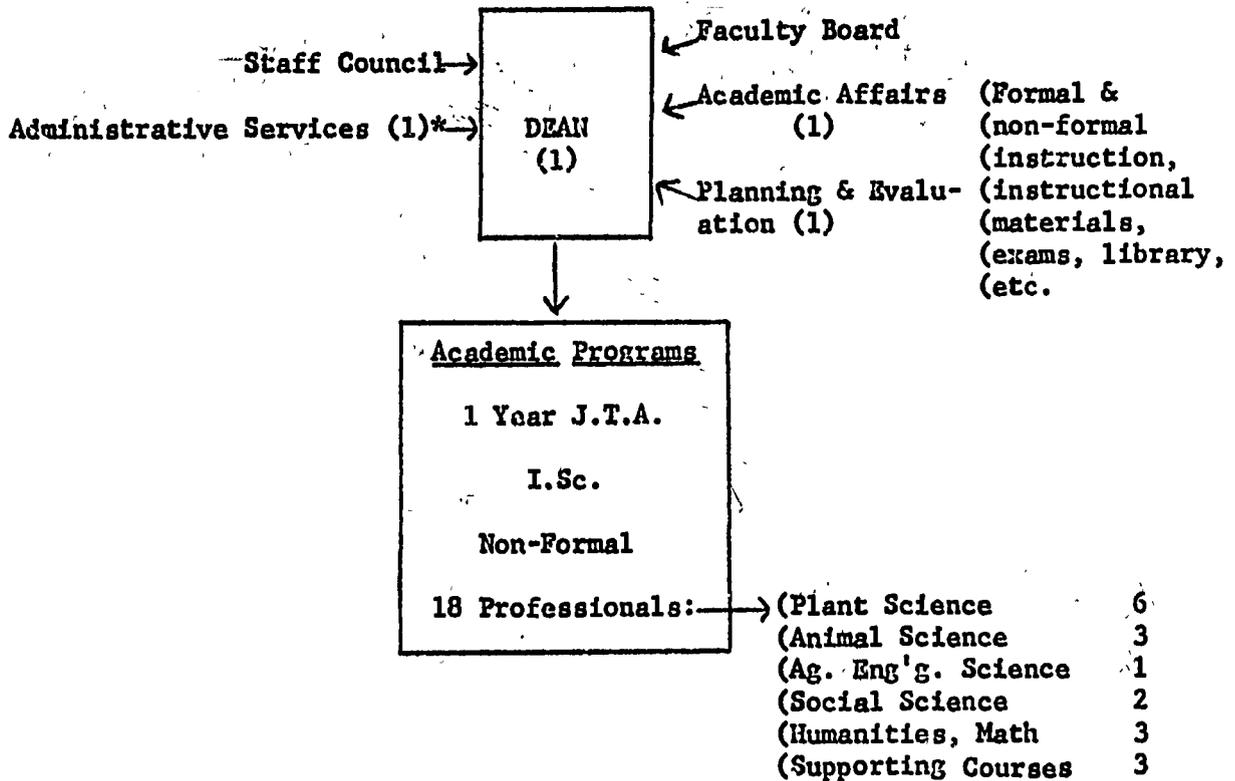
**E. ORGANIZATION AND STRUCTURE (for purpose of illustration only)**

**Phase I--First Year**

**1. Assumes:**

- a. Continuance of one-year JTA training program
- b. Continuance of I.Sc. program
- c. A continuing shortage of professional staff; the staff will probably not exceed 22 persons
- d. The addition of three key professionals--for academic affairs, general Institute administration, planning and evaluation

**2. Suggested organizational structure based on above assumptions:**



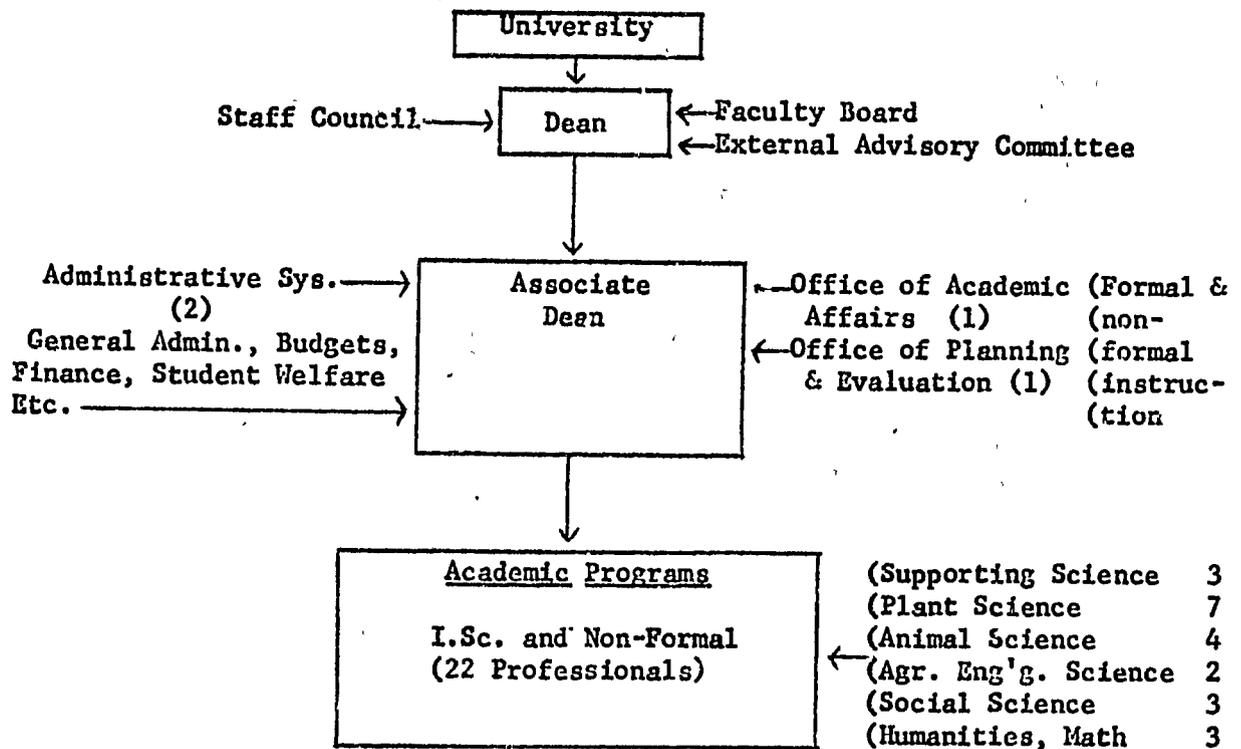
\* (1) Denotes number of suggested professional staff. (See also Appendix E -- Concepts and Principles of Organization and Administration Applied to Organizational Phasing Plan)

Phase II--Second Year

1. Assumes:

- a. Discontinuance of J.T.A. training; continuance of I.Sc. curriculum as modified.
- b. That main campus will have been established and in operation but lacking in optimum physical and human resources.
- c. A professional staff of about 30
- d. That B.Sc. program plans will be well developed, but curriculum not yet offered
- e. That because new campus is physically located away from main University campus, there will be need for (1) an Associate Dean who would play role of "inside" man while the Dean is essentially the "outside" man; and (2) addition of certain personnel to provide certain services formerly performed by University when the Institute was located in Kathmandu.

2. With these assumptions in mind, the IAAS organizational structure can be conceptualized as follows:

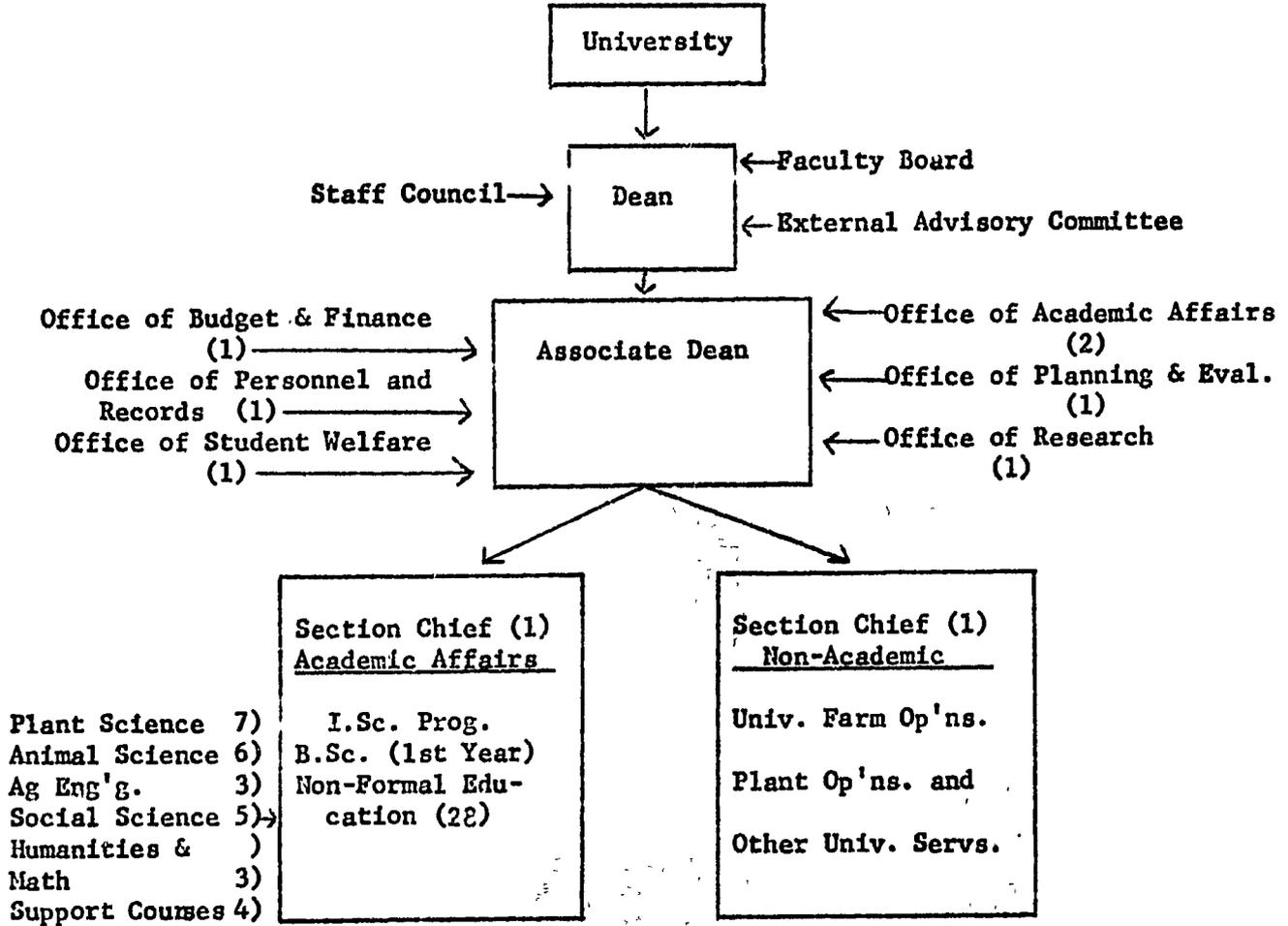


Phase III--Third and Fourth Years

1. Assumes:

- a. Continuance of I.Sc. curriculum and addition of B.Sc. curriculum
- b. Further development of new campus facilities
- c. Limited number of additional professional staff (probably 5-8)
- d. Consideration for a focus on research, thus addition of Office of Research (for planning and coordination)

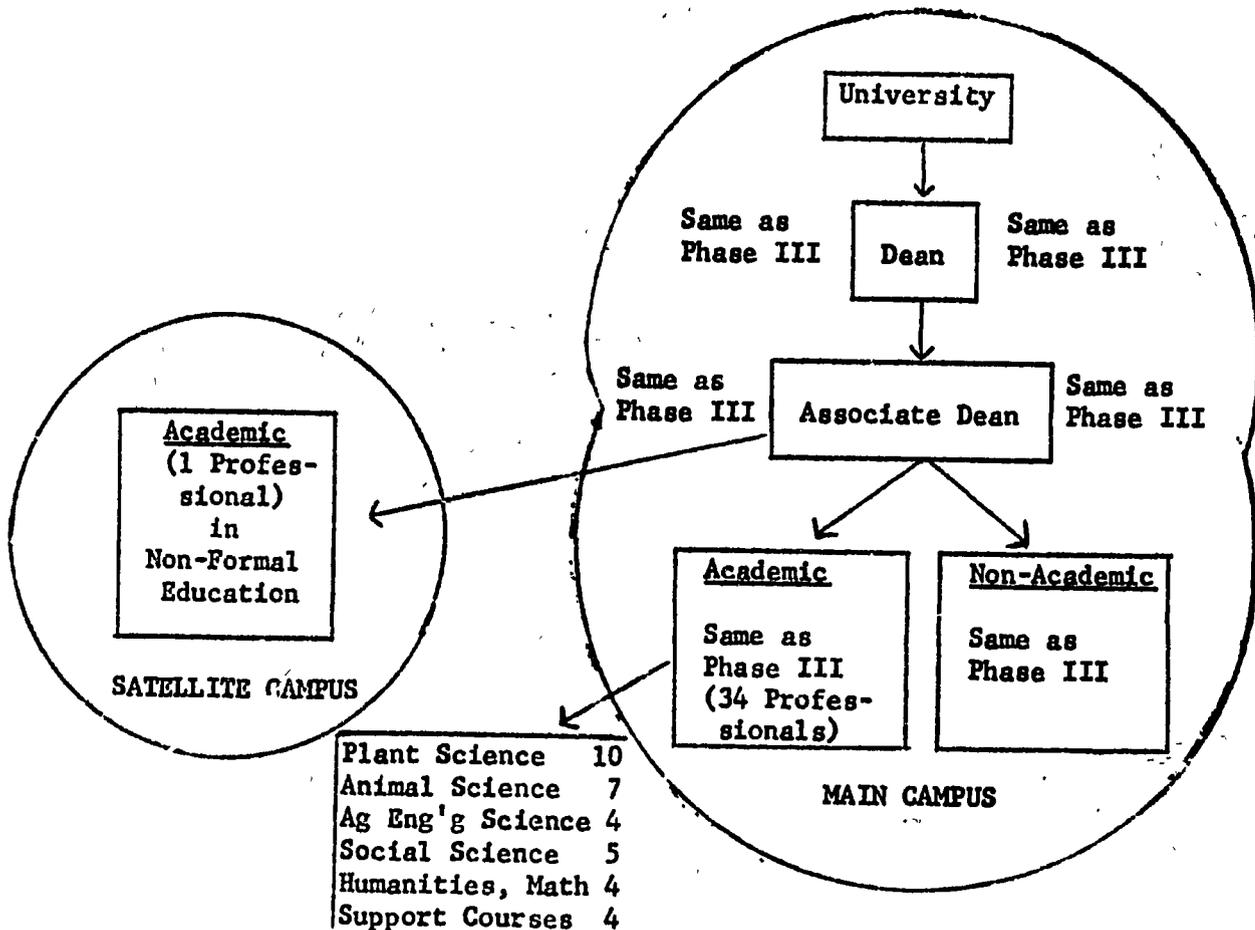
2. With these assumptions in mind, the Institute structure can be viewed as follows:



Phase IV--Fifth Year

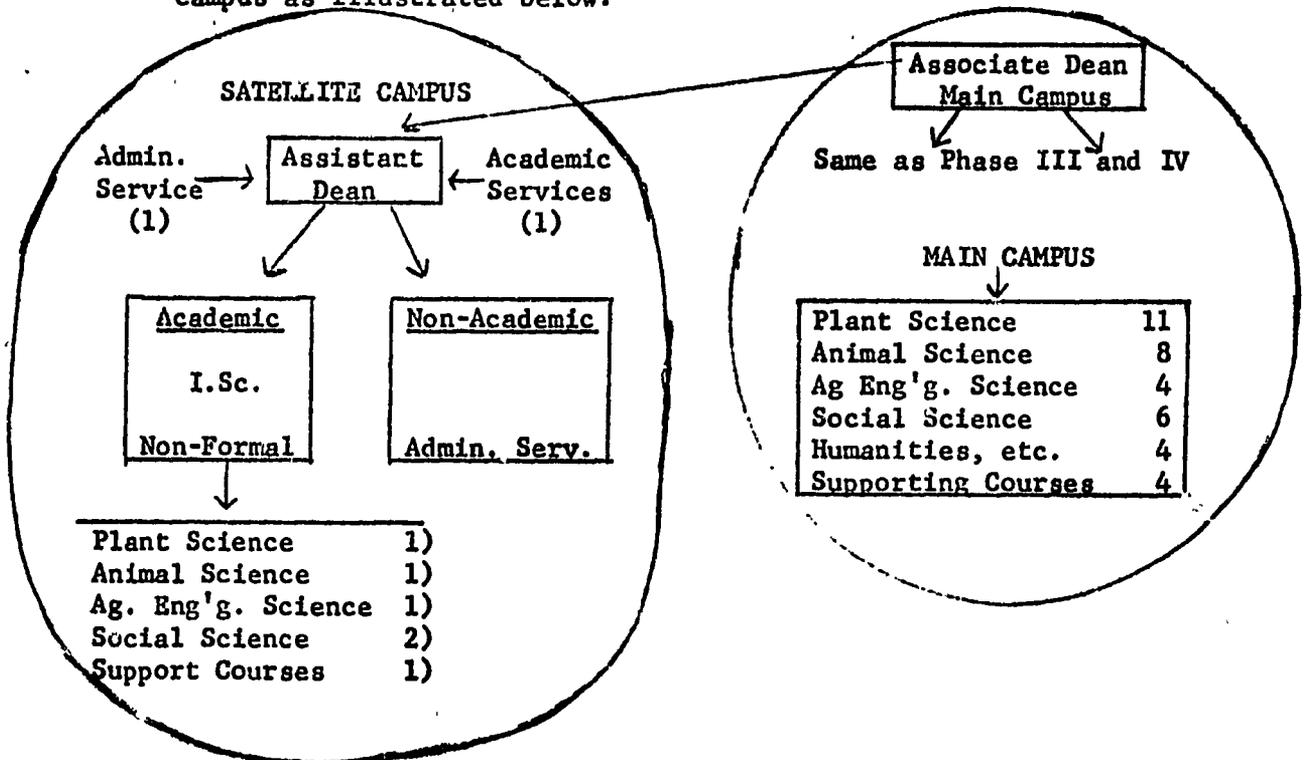
1. Assumes:
  - a. Continuance of main campus developments (academic and non-academic)
  - b. Initial establishment of IAAS satellite campus through the assignment of a single professional (probably in non-formal education)
  - c. That Institute's programs will be gradually expanding, thus the need for more professional staff, probably two to three more for a total of approximately 35-38.

2. The IAAS structure might look something like the following:



Phase V--Sixth Year

1. Assumes the same basic organizational structure and style as on the main campus and as illustrated in Plan IV.
2. Considers further developments on the newly established campus as illustrated below:



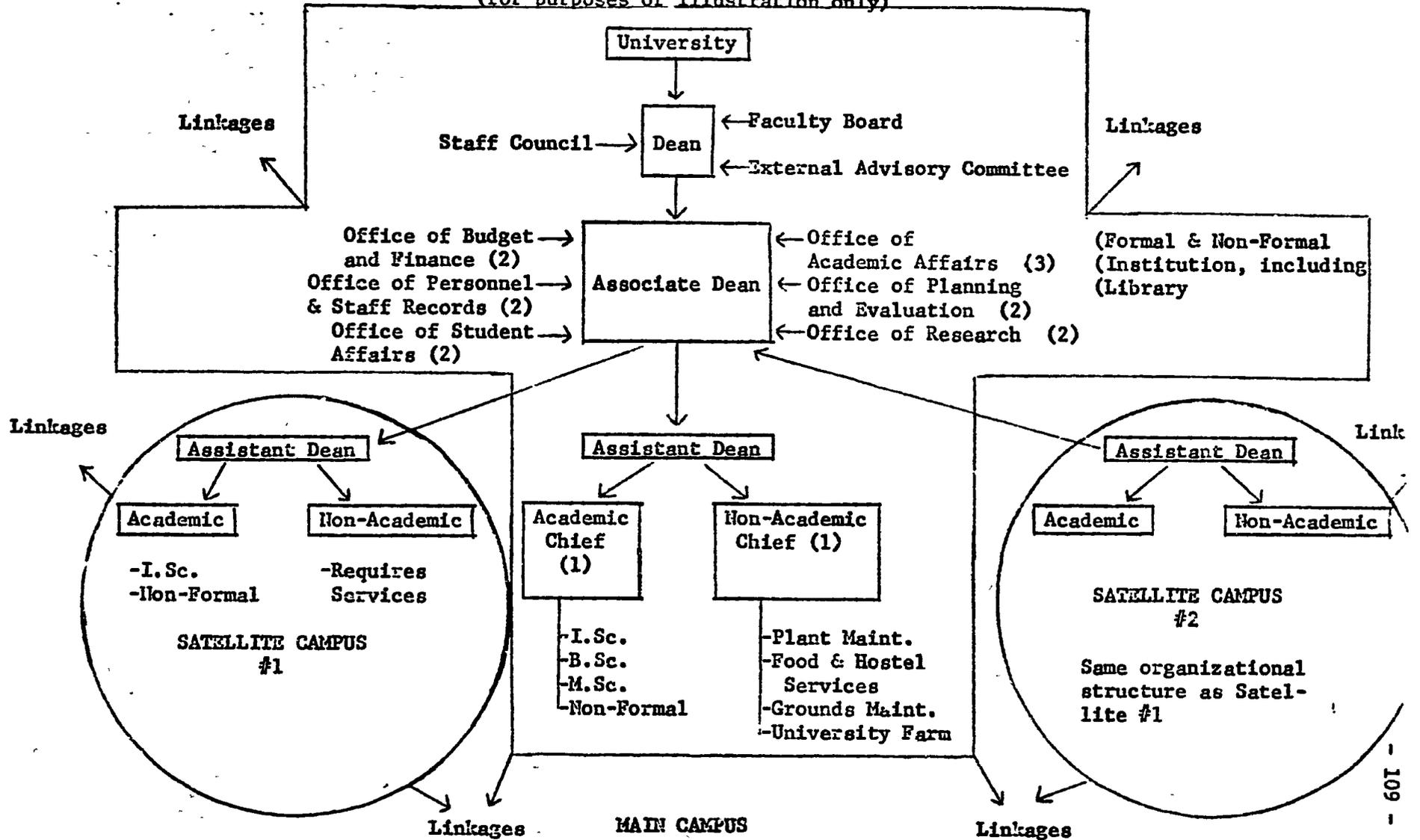
Phase VI--Seventh and Eighth Years

1. Considers the advisability for the establishment of a second satellite campus, step by step, as needs arise, as resources become available, and as the Institute is able to perform well in the first campus satellite educational endeavor.

Phase VII  
Seventh and Eight Year

ULTIMATE ORGANIZATIONAL GOAL MODEL  
(IAAS)

(for purposes of illustration only)



F. RESOURCES

1. Personnel

Personnel policies and practices will be of paramount importance in determining the degree of success of the Institute of Agriculture and Animal Sciences. The National Education System Plan points out that "it is essential that talented people be attracted to the teaching profession and be induced to stay in order to reform and improve the quality of education." (p. 38) It is only with attractive salary scales and other conditions of service that Institute personnel can be expected to be attracted and discharge their responsibilities with dedication and creativity.

The University Service Commission of Tribhuvan University is responsible for appointing and upgrading staff. The Institute will function within the policies and guidelines of the University Service Commission and be responsible for recommending those personnel policies, practices, and procedures that are necessary and desirable to insure a high level of staff morale and productivity and sustained growth and service of the Institute.

Such personnel considerations should provide guidance to the recruitment process, selection, pre-service training and orientation, in-service professional improvement, and the organizational structure and administration procedures to accomplish these functions.

General Staff Qualifications:

As minimum qualifications laid down by the IAAS Faculty Board, IAAS staff members will be expected to have professional and personal qualities that are consistent with the doctrine and objectives of the

Institute. These include such qualities as commitment to improvement of agriculture and living levels of rural people; willingness to support the innovative programs that the Institute has undertaken; ambition to acquire knowledge and techniques leading to self-improvement and greater productivity; and willingness to work on a problem-solving, inter-disciplinary basis.

Minimum qualifications in terms of educational attainment and experience should be established for each rank (professor, reader, lecturer, assistant lecturer, research fellow) with provision of some substitution of academic and other experience for the higher levels of education.

Qualifications For a Particular Post:

A job description might well be prepared for each post. It would include both the minimum and those additional desirable qualifications. Upon approval by the Faculty Board, it would serve as the basis for advertising for applications.

Staff Selection Procedure:

Within the existing policies and procedures of Tribhuvan University, and as a suggestion for giving added weight to the professional aspects of personnel selection, for each post to be filled, the Institute might appoint a committee of not less than five members for the purpose of making a recommendation to the Dean regarding the best qualified applicant (with reasons for the recommendation). Each committee would have at least one person from the Institute staff qualified to judge professional competence of persons

for the post under consideration and at least one person who is directly interested in, but not employed by the Institute. The Dean would appoint the committee and be an ex-officio member, but might or might not serve as chairman of the committee. As the institution grows, a personnel officer might facilitate these activities.

Criteria For Promotion and Salary Increases:

The Institute rank and salary policy might well emphasize reward for performance and productivity of such quantity and quality that leads to attainment of Institute objectives. While qualifications, experience, and length of academic and other prior service are to be heavily weighed in determining the initial rank and salary; performance after joining the Institute should be heavily weighed in allocating promotions and salary increases. Salary increases based on length of service alone can lead to dampening of incentives, low morale among most productive staff, and institutional mediocrity.

The Institute should develop procedures for evaluating individual performance in teaching, research, non-formal education, and public service.

Rank and Salary:

As the number of staff needed for each teaching area are determined, there is great advantage in not designating academic rank. That is, instead of specifying, for example, one professor one reader, and three lecturers for a particular area, it is ad-

vantageous to merely designate five teaching staff. With the latter arrangement, rank can be a property of the individual scholar, rather than his post, and individuals can progress from one rank to the next higher rank, over time, according to merit of performance. Similarly, there is an advantage to overlapping range in salary schedules, so that different individuals can advance at different rates, and for example, the highest paid lecturer might earn more than the lowest paid reader.

Campus Location and Personnel Amenities:

If one or more campuses of the Institute is located outside of the Kathmandu Valley, special measures will be needed to make service beyond the Valley attractive. These measures will include provision for housing (at little or no rental), high quality primary and secondary schools, medical facilities and services, cultural activities, communication services, and food, household, and personal supplies.

Supporting Staff:

A nearly universal weakness of educational institutions is inadequate attention to supporting staff. The quantity and quality of this support is an essential determinant of professional staff productivity. Therefore, it is imperative that attention be given to those personnel policies, procedures, practices, and amenities that will maximize the contribution of supporting staff to the Institute.

Special Provisions for Foreign Staff Members:

New educational institutions often must rely on staff resources from foreign countries, particularly in the early years. In view of the strong orientation of the Institute to providing manpower and knowledge for Nepal's agricultural economy and rural people, special provisions are needed for foreign staff members in order to (1) make these resources available and maximize their contribution, and (2) insure that the Institute is developed with the leadership and institutional style that is appropriate to serve the long-term needs of the Kingdom.

The Staff Needs:

The personnel requirements of the Institute at different stages in its development are yet to be determined and cannot be fully foreseen.

Staff/Student Ratio:

With the special need for research and non-formal education for any agricultural institute, it is likely that the average teacher/student ratio of 1/15 suggested in the National Education System Plan for higher educational institutions will be inadequate. Such a ratio should be applied only to the teaching function, with reduced teaching loads so that staff have time for research and non-formal education. The 1/15 ratio is also inadequate because of the special needs for practicals in laboratories and fields. This will be especially true in the early years when there will be heavy staff demands for institutional development and innovations. Furthermore, during this time the level of enrollment will preclude class sizes that will maximize efficiency in use of teaching staff resources.

TABLE No. 16  
**TIME PHASED ACTION PLAN\***  
 (Certificate and Diploma Programs)

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10**
<b>1. Operate Model I.Sc. 2-year Agric. Program</b>  (425 Enrollees)		← Batch 1 (25) →			← Batch 5 (50) →					
		← Batch 2 (50) →				← Batch 6 (50) →				
			← Batch 3 (50) →				← Batch 7 (50) →			
				← Batch 4 (50) →				← Batch 8 (50) →		
									← Batch 9 (50) →	
<b>2. Operate Model B.Sc. 3-year Agric. Program</b>  (280 Enrollees)			← Batch 1 (40) →							
				← Batch 2 (40) →						
					← Batch 3 (40) →					
						← Batch 4 (40) →				
							← Batch 5 (40) →			
								← Batch 6 (40) →		
									← Batch 7 (40) →	
<b>3. Expand I.Sc. 2-year Program to Satellite Campuses</b>  (225 Enrollees)					← Batch 1 (25) →					
						← Batch 2 (25) (1st Satellite) →				
							← Batch 3 (25) (1st Satellite) →			
							← Batch 1 (25) (2nd Satellite) →			
							← Batch 4 (25) (1st Satellite) →			
							← Batch 2 (25) (2nd Satellite) →			
							← Batch 5 (25) (1st Satellite) →			
							← Batch 3 (25) (2nd Satellite) →			
							← Batch 1 (25) (3rd Satellite) →			

\* As an illustration, assumes:

1. Commencement of B.Sc. program in Year Three
2. Commencement of I.Sc. program on Satellite Campus No. 1 in Year Five
3. Commencement of I.Sc. program on Satellite Campus No. 2 in Year Seven
4. Commencement of I.Sc. program on Satellite Campus No. 3 in Year Nine

\*\* Illustration not complete for years 10 and beyond.

TABLE 17  
ESTIMATED ACADEMIC PERSONNEL NEEDS  
TO MEET TIME PHASED ACTION PLAN

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
<b><u>I.Sc. (2-yr) Main Campus</u></b>										
Plant Sciences	8	10	11	13	10	10	9	8	8	8
Animal Sciences	6	8	9	10	8	8	7	6	6	6
Ag. Eng. Sciences	2	3	4	5	3	3	2	2	2	2
Social Sciences	2	4	5	6	3	3	2	2	2	2
<b><u>B.Sc. (3-yr) Main Campus</u></b>										
Plant Sciences			2)	3)	4)	5)	6)	6	5)	6)
Animal Sciences			1)	2)**	3)	4)	5)	5	5)	5)
Ag. Eng. Sciences			1)**	1)	2)**	2)	3)	3	4)	4)
Social Sciences			1)	1)	3)	4)**	5)**	5	6)**	6)**
Humanities/Math etc.			2)	2)	3)	3)	3)	3	3)	3)
Supporting Sciences			3)	3)	3)	3)	4)	4	4)	4)
<b><u>Expanded I.Sc. (Satellite)</u></b>										
Plant Sciences					3	5	7	8	10	10
Animal Sciences					2	3	5	6	8	8
Ag. Eng. Sciences					2	2	3	4	5	5
Social Sciences					3	3	6	7	8	8
<b>TOTALS</b>	<b>18 *</b>	<b>25 *</b>	<b>39 *</b>	<b>46 *</b>	<b>52 *</b>	<b>58 *</b>	<b>67 *</b>	<b>69 *</b>	<b>77 *</b>	<b>77 *</b>
	of which 5 are Part.T.	of which 8 are Part.T.	of which 10 are Part.T.	of which 11 are Part.T.	of which 10 are Part.T.	of which 15 are Part.T.	of which 14 are Part.T.	of which 12 are Part.T.	of which 11 are Part.T.	of which 10 are Part.T.

\*See accompanying Table for suggested strategies.

\*\*B.Sc. academic staff expected to also serve needs of I.Sc. training program.

THE ABOVE TABLE IS FOR PURPOSES OF ILLUSTRATION ONLY.

Trends Illustrated by Table 17

- a. Required increase in staff in early years to 1) meet increasing instructional needs on main campus, 2) to fill vacancies created by out-of-country participant training, and 3) to prepare staff for offering of instructional programs on satellite(s) as well as main campus.
- b. Decrease in staff needs on main campus for I.Sc. program from years 6-10 with corresponding increase on Satellite campus(es) 1 and 2 for extension of same training program.
- c. Gradual increase in staff members for B.Sc. program consistent with: (1) Initiation of program in Year Three; (2) Expansion of program to 3 simultaneous groups; (3) Need for some involvement in research by senior staff members.
- d. Consideration for a heavy emphasis on participant training programs, beginning in Year One--and consideration for various kinds of participant training.
  - (1) Out-of-country (where best suited).
  - (2) Formal and non-formal experiences.
  - (3) Master's and Ph.D. degrees.
- e. The number of staff responsible for B.Sc. degree curriculum should reach their maximum numbers by Year Seven.
- f. Staff members responsible for B.Sc. program should not view their responsibilities as restricted to B.Sc. programs only. They should continue to be involved in I.Sc. programs throughout.

Suggested Strategies (for purposes of illustration only)

Year One

- a. Recruit and select additional staff (B.Sc. degree holders) providing them with pre-service training experiences in preparation for teaching assignments in I.Sc. program proposed for Year Two. Suggest the following "overstaffing:"
  - Plant Sciences - 3
  - Animal Sciences - 2
  - Agriculture Engineering Sciences - 2  
(No present personnel in IAAS)
  - Social Sciences - 2
- b. Recruit two agriculture engineers, one for immediate participant training at M.Sc. degree level and one for Institute programs.
- c. Recruit one social scientist (probably an agriculture economist) for participant training.
- d. Select two plant and one animal scientists from staff for participant training.
- e. Recruit and select three professionals to assume leadership for the following functions:
  - (1) Academic affairs.
  - (2) Planning and evaluation.
  - (3) Administrative services (general)
- f. Consider the services of three long-term "outside" advisors (consultants) to assist IAAS to plan and implement its academic programs, physical plant development and other identifiable needs.

Year Two

a. Evaluate performance of those new staff members selected and trained in Year One, eliminating the non-performers and those who have not demonstrated potential.

b. Continue "overstaffing" with B.Sc. degree holders; such persons could be expected to assume some of the responsibilities associated with I.Sc. programs, thus relieving regular senior staff of some of their duties to devote more time in preparation for B.Sc. degree programs planned to begin in Year Three.

c. Select more participant trainees.

(1) One in social science

(2) One in plant science

(3) One in animal science

d. Add an Associate Dean whose role would be the "inside" man thus allowing for the Dean to perform more of "outside" duties.

e. Continued "outside" technical assistance, primarily in academic affairs, planning and evaluation, and campus developments.

f. Focus on planning and evaluation activities, most essential in early stages of Institute development.

Year Three

a. Continue thorough evaluation of work performances of new B.Sc. degree holders selected in Year Two, eliminating those who are non-performers and exhibit little potential.

b. Continue "overstaffing" with B.Sc. degree holders to assist with ever increasing I.Sc. "load" and to fill vacancies left by staff engaged in participant training.

- c. Select more participant trainees.
  - (1) Two from plant sciences
  - (2) One from animal sciences
  - (3) One from social sciences
  - (4) One from agriculture engineering sciences
- d. Senior staff commitments will be increased, divided between B.Sc. and I.Sc. programs.
- e. With the establishment of an Office of Institutional Research and the expectation that senior staff will become involved in such activity, the need will exist for a slight increase in the number of teachers to handle the I.Sc. program.
- f. Add one professional to provide leadership for Institutional research.
- g. Two or three additional administrative positions will need to be created and filled because of added Institute programs and its out-of-Kathmandu location.
- h. Rather substantial staff increases suggested in the social sciences (begins with Year One) are based on the following:
  - (1) Need to build this academic dimension.
  - (2) Need for agriculture economics training, so far minimized.
  - (3) More attention to sociological considerations.
  - (4) Expected increased non-formal education programs.

Year Four

a. Another period of overstaffing with B.Sc. degree holders is suggested to prepare for the establishment of I.Sc. program on Satellite Campus No. 1 in Year Five.

b. Five new participant trainee selected.

(1) Two in plant science.

(2) One each in social, agricultural engineering, and soil sciences.

c. Use the I.Sc. training program on main campus as a "staging" area (the preparation of a cadre) for the initiation of I.Sc. program at Satellite #1 Campus.

d. With the establishment of Satellite Campus No. 1 in Year Five, there will be need for an Assistant Dean and other administrators; use Year Four as the period of recruitment, selection, and pre-service training.

e. Continued outside technical assistance in areas identified, based on need.

Year Five

a. Ten of staff on main campus in Year Four will be moved to Satellite No. 1 for the beginning of the expanded I.Sc. training program.

b. Expected need for slight increase in number of staff members needed to handle B.Sc. degree program which in Year Five will comprise 3 batches of 25 each.

c. Heavy emphasis should be continued in upgrading staff competencies through participant training programs.

d. Less need to overstaff since one can expect an increasing number of returned participant trainees.

e. Continued external advisory (technical) services.

Year Six

a. Minimal overstaffing to be continued to compensate for 15 staff members expected to be out-of-country on participant training programs and to prepare further for greatly expanded I.Sc. programs on Satellite Campus(es).

b. Select another five academic staff for participant training programs, selected on the basis of need as identified by Year Six.

c. By Year Six, personnel needs for the I.Sc. main campus program can expect to be lessened while those of Satellite Campuses No. 1 and 2 increased, as illustrated on accompanying Table 17.

d. By Year Six the number of staff to handle the B.Sc. three-year program should be nearly adequate.

e. By Year Six, a substantial number of staff will be out-of-country on M.Sc. and Ph.D. degree programs. (Some of these 15 may be on non-credit training programs).

f. With the establishment of Satellite Campus No. 2, there will be a need for more administrative staff--namely an Assistant Dean and probably two sub-chiefs whose responsibilities would be supportive in nature.

g. By Year Six, it would be expected that an increasing number of staff would be engaged in some kind of research.

Years Seven, Eight, Nine, & Ten

a. Continued reduction and eventually leveling off of staff members for the I.Sc. main campus program.

b. No additional staff should be needed for the several B.Sc. degree offerings from years 7-10.

c. Continued increase in numbers of staff required for expanding I.Sc. Satellite programs until Year Nine, and then, leveling off.

d. No lessening of participant training inputs, but expected increased numbers of returning participants with advanced degrees and non-formal education experiences.

e. There should not be any substantial need for increased numbers of administrative personnel in Years 7-10.

Note: Although the accompanying Table 17 is designed for academic personnel needs, consideration should be given to participant training needs of administrative staff.

## 2. Physical Plant

The physical plant, equipment, and general site for an educational institution, ideally, should be designed to facilitate achievement of the educational objectives of that institution. Thus, decisions of the location, size, and type of physical plant should be designed in relation to and on the basis of the nature of the academic programs.

While most of this section deals with a new physical plant, it should be pointed out that the basic philosophy, teaching and learning style, and curriculum described above could be implemented by IAAS in the present building, Shri Mahal. However, this would be extremely difficult. It would be easier to develop the desired type of learning experiences in any of a number of other buildings which might become available in less urban settings. That which is suggested below is much more ideal, is highly functional, and is not expensive or plush by world standards, but would probably require foreign or international financial support.

To achieve the purposes of the Institute of Agriculture and Animal Science, it seems appropriate that there be one central campus location, and several additional campus sites located in different sections of Nepal. Each, in order to fulfill the philosophy and style described above, will require a sufficient land and animal housing facility that students and teachers can have regular and frequent access to the crops and livestock of Nepal,

so that these can provide the examples from which the applications, principles, and theories of agricultural science may be learned.

The main central campus should be located in a rural atmosphere with ample agricultural land. It needs to be tied to the administration of Tribhuvan University and to the several satellite campuses with a functional network of communication and transportation. There is further discussion of some of the issues involved in choosing campus sites below and in Appendix G.

Once an appropriate site is selected, investment in careful professional site planning and development will return great dividends. Thus, before any particular buildings are designed or fields and roads are laid out, a total site plan should be drawn. Anticipating that institutions of higher education tend to live for hundreds of years, this plan might be divided into a first phase, second phase, third phase, and later phases.

For the first phase, it would be desirable to work from concrete forecasts of the numbers of students, by year and program, numbers of academic staff, numbers of supporting staff, courses to be taught, types of practicals desired, types of student agricultural projects anticipated, research requirements, and facilities needed for non-formal educational activities. Beyond this, some approach to the organization or groupings of functions will guide the site planners.

Once a preliminary site plan is accepted, architectural and design work can proceed on buildings while roads and such services as water, electricity, telephone, sewerage, drainage, and others

are being installed for the first phase. Actual building construction can then be phased over time to fit academic program needs, as well as availability of financial support.

For example, the Institute might wish to include only its central campus site development in the first five-year period. During that time a site plan would be made for the central campus which might indicate actual construction plans for the first five years, anticipated construction during the second five years, and tentative locations for additional buildings and facilities during later periods. Design should provide maximum flexibility.

The Institute might plan for facilities adequate for the I.Sc. Ag. program, the B.Sc. Ag. program and certain non-formal programs in the first site development plan. However, actual construction might be phased so that only those buildings, roads, agricultural production facilities, etc. which are required by the administration and the I.Sc. program are started in the first year. As these near completion, then additional facilities required for the B.Sc. program might be started. And other buildings and grounds, needed for additional academic activities, might follow in a third construction phase, all part of the first round of site development.

As for the satellite campuses, after the site has been planned and developed for the central campus, and preferably after it has been tested by some period of use, then site development plans can be drawn for each satellite. These might

be quite similar to each other, functionally, while differing according to different climate and topography requirements.

The physical plant development sequence might be something like the following:

- Phase I - Decide location and develop site plans for main campus.
- Phase II - Construct facilities for I.Sc. program and administration on main campus (classrooms, hostels, laboratories, staff housing, farm buildings, roads, drainage, irrigation, etc.)
- Phase III - Construct additional facilities required for B.Sc. program on main campus, and  
Decide locations and develop site plans for one or more satellite campuses.
- Phase IV - Begin construction on one or more satellite campuses and add required facilities on main campus (as additional staff housing, student hostels, teaching laboratories, demonstration facilities, classrooms, libraries, etc.)
- Phase V - Revise general site plan for central campus and proceed with additional development.

As a minimum for Phase II above, it is assumed that the main campus will require:

Lecture rooms

Laboratories

Library

Field Demonstration Facilities

Teaching Staff Offices

Administrative Staff Offices

Student Hostels (and catering facilities)

Staff Housing

Student Recreational Facilities

Medical Clinic

School for Staff Children

Plant Maintenance Shop

Water Supply and Sewers

Electricity

Roads

Choosing campus sites: The following is a suggested check list of criteria to be considered in selecting the location of campus(es) for the Institute. The criteria may be different for the main campus and "satellite" campuses, or may be weighted differently. Once the relevant criteria for a particular type of campus are identified, number weights could be assigned to each criteria and each site under consideration scored on each point. In this way, appropriate consideration can be given to various factors in carrying out the extremely important and difficult task of choosing a campus site.

Criteria For Campus Location(s)  
Check Sheet

Criterion	<u>Main Campus</u> B.Sc., I.Sc. & Non-Formal	<u>"Satellite" Campus</u> I.Sc. & Non-Formal
Decentralization from Kathmandu	_____	_____
Density of population	_____	_____
Conformity to regional development	_____	_____
Proximity to rural areas	_____	_____
Agricultural development strategy (e.g., serve both Terai & hills)	_____	_____
Agricultural potential of area	_____	_____
Proximity to central government headquarters	_____	_____
Proximity to Tribhuvan University headquarters	_____	_____
Proximity to other Institute I.Sc. campuses	_____	_____
Proximity to other Institute B.Sc. campuses	_____	_____
Proximity to agric. organization headquarters	_____	_____
Proximity to MFA extension centers	_____	_____
Availability of land for campus	_____	_____
Availability of land for commercial farm	_____	_____
Availability of buildings for classes, lab., etc.	_____	_____
Availability of housing for staff	_____	_____
Availability of medical facili- ties and services	_____	_____
Availability of hostels for students	_____	_____
Availability of primary & secondary schools	_____	_____
Proximity to marketing (shopping) facilities	_____	_____
Availability of cultural services (movies, art, etc.)	_____	_____
Access to main highway, public transport availability	_____	_____
Telephone & telegraph services	_____	_____
Water availability for campus	_____	_____
Water availability for irrigation	_____	_____
Availability of labor	_____	_____
Possibilities of mechanization	_____	_____

3. Recurrent Cost Estimates

Cost estimates for developing and operating a system of agricultural colleges in Nepal over a ten-year period are set forth in the following pages. Two separate sets of projections were made, the first of which estimated the costs of developing the physical facilities on one main and three satellite campuses under high, medium, and minimum cost assumptions. These aggregated, respectively, 4.59, 3.57, and 2.81 crores (or 4.59, 3.57, and 2.81 million U.S. dollars assuming a rough 10 to 1 conversion rate). The second set projected the operating costs including salary and related items, recurring expenses, and non-recurring items of tools, furniture, equipment, and vehicles at 3.06 crores over the ten years. No land costs were included in either schedule on the assumption that land would be donated or acquired separately by His Majesty's Government. These data are combined and summarized below. Separate explanations of each projection follow.

<u>Year</u>	<u>Construction*</u> (In Rs 000's)	<u>Operating</u>	<u>Yearly Total</u>
1	47,47	19,34	66,81
2	47,48	16,87	64,35
3	38,97	24,24	63,21
4	38,98	19,93	58,91
5	<u>68,19</u>	<u>30,21</u>	<u>98,40</u>
Subtotal, years 1-5	2,41,09	1,10,59	3,51,68
6	68,19	35,84	1,04,03
7	46,04	34,05	80,09
8	46,04	37,59	83,63
9	28,87	45,26	74,12
10	<u>28,87</u>	<u>43,06</u>	<u>71,93</u>
Total, years 1-10	<u>4,59,09</u>	<u>3,06,39</u>	<u>7,65,48</u>

\*Assumes (a) the use of the second or medium range of construction estimates; (b) that each 2-yr. projection was divided equally among the yrs.; & (c) that building construction payments will fall within the yrs. indicated rather than in earlier periods.

Site and Construction Cost Estimates of Agricultural Institute  
Campus Development

The following data summarize the estimated costs of developing the physical facilities for a main campus and three satellite campuses along the lines suggested by the pre-feasibility study. Thus, provision is made for a main campus serving a 300-student enrollment and three satellite campuses serving 50 students each, for a total of 450 students, assuming full-time enrollees. The main campus training program has scheduled 220 full-time students (100 I.Sc. and 120 B.Sc.), thus, providing additional space for short-term training programs, temporary staff housing and guest housing.

Construction to meet the time phased action plan (Page 80), calls for main campus phasing over four biennia with the first to be completed in time for the inception of the Year One instructional program. Satellite #1 is to be completed during the third biennium of construction activity preceding Years Five and Six, and Satellite #2 is scheduled for the following two years, etc.

The initial building complex on each of the campuses is envisioned as providing two lecture halls, four laboratories, and office, storeroom and other ancillary facilities to permit initial operation. The four laboratories are to reflect the study team's recommendations that in general there should be stress on a divisional grouping of departmental specialties to reflect (1) the plant related discipline; (2) animals; (3) agricultural engineering; and (4) the social sciences. In the case of the Main Campus, it is assumed

that the earlier buildings will be designed with flexibility and later convertability in mind as other structures are available and the overall utility as an integrated campus is established.

Caution:

All figures are highly tentative and gross approximations, and are intended only to be of general advisory value. In fact, square footage requirements are costed out at three rate levels reflecting three prevailing views of construction costs in Nepal.

These are:

**Highest:** Rate includes an override of Rs 20 to Rs 25 above the medium rate. This reflects a highly cautious provision for cost increases due to inflation, delays, and unforeseen contingencies.

**Medium:** These rates are essentially those of the National Construction Corporation of Nepal (NCCN) which are reported to be Rs 20, more or less, higher than standard construction rates.

**Lowest:** These rates are used by the Public Works Department of His Majesty's Government for preliminary construction estimates and apply to the Kathmandu Valley and the Terai. Construction in the hills adds 10% to the cost, subject to additional regional variations of 10% to as high as 100% in the higher mountain areas. Brick, cement, and mortar construction is assumed, but stone would be used in the hills.

Data are presented in three stages. First, the costs by campus are given. Next, the accumulated costs for campus construction over the five two-year periods are summarized. The third phase gives a more explicit analysis of the costing of the individual campuses.

Summary of Costs by Campus

MAIN CAMPUS

		Rupees		
		High	Medium	Low
<u>Phase I:</u>	Site development, building cluster #1, hostel for 100 students, and staff quarters for 20 professionals and 40 non-professional staff	94,94,600	76,08,200	62,84,000
<u>Phase II:</u>	Building cluster #2, hostel for additional 100 students and staff quarters for 60 professional and non-professional staff	77,94,600	59,08,200	44,40,000
<u>Phase III:</u>	Building cluster #3, administration building, library (or auditorium), hostel for 100 students, and 30 additional staff quarters	78,64,700	59,08,500	43,05,000
<u>Phase IV:</u>	Building cluster #4, auditorium (or library), cafeteria and miscellaneous construction	34,34,800	26,00,000	18,49,000
<b>TOTAL MAIN CAMPUS:</b>		<b>2,85,88,700</b>	<b>2,20,24,900</b>	<b>1,68,78,000</b>
<u>SATELLITE CAMPUS #1</u>				
	Main Campus, but with site costs reduced 50% and other reductions reflecting accommodations for 50 students, 10 professional and 20 non-professional staff	57,73,300	45,57,700	37,57,000
<u>SATELLITE CAMPUS #2</u>				
	Same as Satellite Campus #1	57,73,300	45,57,700	37,57,000
<u>SATELLITE CAMPUS #3</u>				
		57,73,300	45,57,700	37,57,000
<b>TOTAL SATELLITES</b>		<b>1,73,19,900</b>	<b>1,36,73,100</b>	<b>1,12,71,000</b>
<b>TOTAL ALL CAMPUSES</b>		<b>4,59,08,600</b>	<b>3,56,98,000</b>	<b>2,81,49,000</b>

**Cumulative Costs by Phase Combining  
MAIN AND SATELLITE CAMPUSES**

	Rupees		
	High	Medium	Low
<u>Prior to or concurrent with Years 1 and 2</u>			
Main Campus Phase 1	94,94,600	76,08,200	62,84,000
<u>Prior to or concurrent with Years 3 and 4</u>			
Main Campus Phase 2	<u>77,94,600</u>	<u>59,08,200</u>	<u>44,40,000</u>
Cumulative, 4 years	<u>1,72,89,200</u>	<u>1,35,16,400</u>	<u>1,07,24,000</u>
<u>Prior to or concurrent with Years 5 and 6</u>			
Main Campus Phase 3	78,64,700	59,08,500	43,05,000
Satellite #1	<u>57,73,300</u>	<u>45,57,700</u>	<u>37,57,000</u>
Sub-Total Years 5 & 6	<u>1,36,38,000</u>	<u>1,04,66,200</u>	<u>80,62,000</u>
Cumulative through Year 6	<u>3,09,27,200</u>	<u>2,39,82,600</u>	<u>1,87,86,000</u>
<u>Prior to or concurrent with Years 7 and 8</u>			
Main Campus Phase 4	34,34,800	26,00,000	18,49,000
Satellite #2	<u>57,73,300</u>	<u>45,57,700</u>	<u>37,57,000</u>
Sub-Total Years 7 and 8	<u>92,08,100</u>	<u>71,57,700</u>	<u>56,06,000</u>
Cumulative through Year 8	<u>4,01,35,300</u>	<u>3,11,40,300</u>	<u>2,43,92,000</u>
<u>Prior to or concurrent with Years 9 and 10</u>			
Satellite #3	<u>57,73,300</u>	<u>45,57,700</u>	<u>37,57,000</u>
Cumulative through Year 10	<u>4,59,08,600</u>	<u>3,56,98,000</u>	<u>2,81,49,000</u>



4. Hostel

Rooms for 100 students, kitchen, dining hall, storerooms (2), bathrooms (3), toilets (5), servants rooms (2), gatekeeper, commons, and clinic plus 20% for hall and wall space

24,120 sq. ft. @ Rs 95. . . . .Rs 22,91,400

(Rs 75 + Rs 20 for inflation & contingencies)

(Medium: 24,120 sq. ft. @ Rs 75 = Rs 18,09,000)

(Minimum: 24,120 sq. ft. @ Rs 50 = Rs 12,06,000)

5. a. Staff quarters for 20 professional administrative and academic staff

24,000 sq. ft. (units of 1,000 sq. ft. + 20%)  
@Rs 80. . . . .Rs 19,20,000

(Rs 60 + Rs 20 cushion)

5. b. Staff quarters for 40 non-professional staff

18,000 sq. ft. @ Rs 80 per item 5.a. . . .Rs 14,40,000

(Medium: 18,000 sq. ft. @ Rs 60 =  
Rs 10,30,000)

(Minimum: 18,000 sq. ft. @ Rs 50 =  
Rs 9,00,000)

TOTAL:

Rs 94,94,600

(Total Medium: Rs 76,08,200)

(Total Minimum: Rs 62,84,000)

Detailed Description of Building Program Phasing:

MAIN CAMPUS PHASE II

By beginning of Year 3: To provide space for additional 100 students in B.Sc. program plus allowance for enrollment expansion, and facilities for 20 additional academic and administrative staff, and 40 non-professionals.

Possibly more specialization in Animal Division.

See also Building Phase III.

1. Building a Building Cluster #2 to include 2 lecture halls, 4 laboratory-classrooms, and other facilities similar to Building #1 but substituting one 20x40 staff work room for temporary library space; office space for 20 academic/administrative staff.

Square footage including 20% hall/wall allowance  
22,560 sq. ft. @ Rs 95 (Rs 70 + Rs 25 extra) . . . . . 21,43,200

(Medium: 22,560 @ Rs 70 = Rs 15,79,200)

(Minimum: 22,560 @ Rs 50 = Rs 11,28,000)

2. Hostel rooms for 100 more students, kitchen, cafeteria, etc. Same as Phase I

24,120 sq. ft. @ Rs 95 . . . . . 22,91,400

(Medium: 24,120 @ Rs 75 = Rs 18,09,000)

(Minimum: 24,120 @ Rs 50 = Rs 12,12,000)

3. a. Staff quarters for 20 administrative/academic staff. Same as Phase I

24,000 sq. ft. @ Rs 80 (Rs 60 + Rs 20 extra) . . . . . 19,20,000

(Medium: 24,000 @ Rs 60 = Rs 14,40,000)

(Minimum: 24,000 @ Rs 50 = Rs 12,00,000)

3. b. Staff quarters for 40 non-professionals. Same as Phase I.

18,000 sq. ft. @ Rs 80 . . . . . 14,40,000

(Medium: 18,000 @ Rs 60 = Rs 10,80,000)

(Minimum: 18,000 @ Rs 50 = Rs 9,00,000)

TOTAL:

77,94,600

(Total Medium: Rs 59,08,200)

(Total Minimum: Rs 44,46,000)

Detailed Description of Building Program Phasing:

MAIN CAMPUS PHASE III

By beginning of Year 6: To provide more special purposes facilities for animal and possible plant divisions, administration building, library or auditorium, and completion of student hostel and staff housing quarters.

1. Building of Building Cluster #3 to include such facilities as:

Livestock, including dairy, poultry, fisheries, piggery, and animal science facilities. Might phase with agricultural engineering. See Phase IV.

22,560 sq. ft. @ Rs 95 as before . . . . . 21,43,200

(Medium: 22,560 @ Rs 70 = Rs 15,79,200)

(Minimum: 22,560 @ Rs 50 = Rs 11,28,000)

2. Administrative Building, including:

Dean's office, conference, reception, and PA's rooms (3,780 sq. ft.); administration offices & work rooms (4,860 sq. ft.)

8,640 sq. ft. including 20% H/W allowance @ Rs 95 as before. . . . . 8,20,800

(Medium: 8,640 sq. ft. @ Rs 70 = Rs 6,04,800)

(Minimum: 8,640 sq. ft. @ Rs 50 = Rs 4,32,000)

3. Library or auditorium. May be in conjunction with administrative building (above)

15,600 sq. ft. including 20% H/W allowance @ RS 95 . . . . . 14,82,000

(Medium: 15,600 @ Rs 70 = Rs 10,92,000)

(Minimum: 15,600 @ Rs 50 = Rs 7,80,000)

Detailed Description of Building Program Phasing:

MAIN CAMPUS PHASE III (Continued)

4. Hostel rooms for 100 more students, kitchen, cafeteria, etc.  
Same as Phase I, but omit gatekeeper, commons, and clinic/sick  
room facilities; including 20% for H/Walls

18,300 sq. ft. @ Rs 95 . . . . .Rs 17,38,500

(Medium: 18,300 sq. ft. @ Rs 75 = Rs 13,72,500)

(Minimum: 18,300 sq. ft. @ Rs 50 = Rs 9,15,000)

(May cut to 50 students in  
which case square footage  
will be 10,800, costing out  
as follows):

10,000 sq. ft. @ Rs 95 = Rs 10,26,000

10,800 sq. ft. @ Rs 75 = Rs 8,10,000

10,800 sq. ft. @ Rs 50 = Rs 5,40,000

5. a. Staff quarters for 10 administrative/academic staff.  
Same basis as Phase I.

12,000 sq. ft. @ Rs 80 . . . . .Rs 9,60,000

(Medium: 12,000 @ Rs 60 = Rs 7,20,000)

(Minimum: 12,000 @ Rs 50 = Rs 6,00,000)

5. b. Staff quarters for 20 non-professional staff.  
Same as Phase I.

9,000 sq. ft. @ Rs 80 . . . . .Rs 7,20,000

(Medium: 9,000 @ Rs 60 = Rs 5,40,000)

(Minimum: 9,000 @ Rs 50 = Rs 4,50,000)

TOTAL:

Rs 78,64,700

(Total Medium: Rs 59,08,500)

(Total Minimum: Rs 43,05,000)

Detailed Description of Building Program Phasing:

MAIN CAMPUS PHASE IV

By beginning of Year 8: To provide agricultural engineering, social sciences and other auxiliary buildings to complete campus instruction.

1. Building Cluster #4 to include such facilities as:

(a) additional lecture hall, staff offices, audio-visual, and storage space for agricultural extension, economics, and engineering, 11,800 square feet; and

(b) carpentry, tinsmith, blacksmith and other shops required for agricultural engineering.

a. 11,800 sq. ft. including 20% for halls/walls @ 95. . . . . Rs 11,21,000

(Medium: 11,800 sq. ft. @ 75 = Rs 8,85,000)

(Minimum: 11,800 sq. ft. @ 50 = Rs 5,90,000)

b. 7,800 sq. ft. (no hall/wall allowance) @ 50 . . . . . Rs 3,90,000

(Medium: 7,800 sq. ft. @ 30 = Rs 2,34,000)

(Minimum: 7,800 sq. ft. @ 20 = Rs 1,56,000)

2. Auditorium or library--whichever not provided under Phase III.

15,600 sq. ft. including 20% H/W allowance @ 95. . . . . Rs 14,82,000

(Medium: 15,600 sq. ft. @ 70 = Rs 10,92,000)

(Minimum: 15,600 sq. ft. @ 50 = Rs 7,80,000)

3. Cafeteria: 2,640 sq. ft. including halls/walls allowance @ 95 . . . . . Rs 2,50,800

(Medium: 2,640 sq. ft. @ Rs 75 = Rs 1,98,000)

(Minimum: 2,640 sq. ft. @ Rs 50 = Rs 1,32,000)

Detailed Description of Building Program Phasing:

MAIN CAMPUS PHASE IV (Continued)

4. Miscellaneous facilities not provided previously, such as:

teachers' lounge, students' commons,  
sports and games room, farm manager's  
room, property custodian room, garages  
and cycle storage.

3,820 sq. ft. @ Rs 50, all levels. . . . Rs 1,91,000

TOTAL:

Rs 34,34,800

(Total Medium: Rs 26,00,000)

(Total Minimum: Rs 18,49,000)

Detailed Description of Building Program Phasing (concluded):

SATELLITE CAMPUS

1. Land: Not costed.
  2. Site Development: 50% of Main Campus cost . . . . . Rs 8,50,000
  3. Buildings: Same as Building Cluster #1, Main Campus cost.  
22,560 sq. ft. @ Rs 95 . . . . . Rs 21,43,200  
(Medium: 22,560 sq. ft. @ Rs 70 = Rs 15,79,200)  
(Minimum: 22,560 sq. ft. @ Rs 50 = Rs 12,78,000)
  4. Hostel rooms for 50 students (7,500 sq. ft.); kitchen, dining hall, storerooms (2), bathrooms (3), toilets (5), servants rooms (2), commons, and clinic plus 20% for corridors and walls.  
11,580 sq. ft. @ Rs 95. . . . . Rs 11,00,100  
(Medium: 11,580 sq. ft. @ Rs 75 = Rs 8,68,500)  
(Minimum: 11,580 sq. ft. @ Rs 50 = Rs 5,79,000)
  5. a. Staff quarters for 10 administrative and academic staff. Same as Main Campus, Phase I.  
12,000 sq. ft. @ Rs 80 . . . . . Rs 9,60,000  
(Medium: 12,000 sq. ft. @ Rs 60 = Rs 7,29,000)  
(Minimum: 12,000 sq. ft. @ Rs 50 = Rs 6,00,000)
  5. b. Staff quarters for 20 non-professionals. Same as Main Campus, Phase I.  
19,000 sq. ft. @ Rs 80 . . . . . Rs 7,20,000  
(Medium: 9,000 sq. ft. @ Rs 60 = Rs 5,40,000)  
(Minimum: 9,000 sq. ft. @ Rs 50 = Rs 4,50,000)
- TOTAL** Rs 57,73,300
- (Total Medium: Rs 45,57,700)  
(Total Minimum: Rs 37,57,000)

Cost Estimates of Operating Budget for Agricultural College System

With the exception of the costs of site development and building construction, the other costs anticipated are included in the operating budget projections. This includes the costs of furnishing and equipping the various campuses.

Again, there are three sets of supporting data. The first schedule summarizes the ten-year costs figures on an item basis, divided between the Main Campus and the Satellites with 2.39 crores (78%) going to the Main Campus and .67 crores (22%) of the 3.06 total going to the Satellites. It should be noted that the Satellite Campuses were not started until the fifth year and only in Year 9 and 10 are all Campuses assumed to be operating. Thus, any projections beyond Year 10 should assume an increased proportion going to the Satellites, perhaps approximating a 70% - 30%, Main Campus/Satellite allocation.

Secondly, a year-by-year summary is given with no distinction between campuses. However, the increase in the operating budget from 19 lacs in Year 4 to 30 lacs in Year 5 and further increases beyond this level in subsequent years clearly reflects in part the additional costs of the Satellites. With the exception of the salary item, the projections were prepared by the staff of the IAAS.

Thirdly, because salaries comprise roughly one-third of the overall operating budget, a summary break-down of the salaries is given showing separately for the Main Campus and the Satellites as a group, the salary costs of "Professional" and "Support" personnel, subdivided further by functions of Administration, Academic,

TABLE 18

Institute of Agriculture and Animal Sciences

Summary of 10-Year Operating Budget

Main and Satellite Campuses

(In Rs 000's)

<u>Item</u>	<u>Main Campus</u>	<u>Satellites</u>	<u>Combined</u>
1. Salary	71,55	28,97	1,00,52
2. Allowances	61	24	85
3. T.A./D.A.	<u>4,80</u>	<u>85</u>	<u>5,65</u>
	76,96	30,06	1,07,02
<u>Recurring Expenses</u>			
4. Stationery	1,70	79	2,49
5. Books	12,50	3,70	16,20
6. Rent			
7. Repair & Maintenance	3,35	1,50	4,85
8. Transportation	6,15	1,20	7,35
9. Feed	5,80	1,30	7,10
10. Expendable Goods	34,60	9,00	43,60
11. Miscellaneous	<u>1,90</u>	<u>65</u>	<u>2,55</u>
Total 4-11:	<u>66,00</u>	<u>18,14</u>	<u>84,14</u>
Total 1-11:	<u>142,96</u>	<u>48,20</u>	<u>1,91,16</u>
<u>Non-Recurring Expenses</u>			
12. Tools/Spare Parts	4,05	1,96	6,01
13. Furniture	20,28	2,70	22,98
14. Non-Expendable Goods	55,39	5,00	60,39
15. Vehicles	<u>16,25</u>	<u>9,60</u>	<u>25,85</u>
16. a. Land (Not estimated)			
b. Construction			
(See separate schedules)			
Total Non-Recurring	<u>95,97</u>	<u>19,26</u>	<u>1,15,23</u>
<b>GRAND TOTAL</b>	<u><u>238,93</u></u>	<u><u>67,46</u></u>	<u><u>3,06,39</u></u>

and Hostel-Health-Cafeteria services. These projections were based on existing Tribhuvan University salary scales and made no allowances for attrition. Detailed projections of personnel requirements by employer and salary categories were provided by the staff of the IAAS as a basis for the salary projections.

TABLE 18  
Institute of Agriculture and Animal Sciences  
Projected 10-Year Operating Budget (Combined)  
Main and Satellite Campuses  
(In Rs 000's)

Item	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Total
1. Salary	3,97	4,91	6,51	7,35	9,34	10,36	12,42	13,27	15,66	16,73	1,00,52
2. Allowances	3	3	3	3	9	10	12	12	15	15	85
3. T.A./D.A.	30	30	45	50	60	60	65	70	70	85	5,65
<b>Total 1-3:</b>	<b>4,30</b>	<b>5,24</b>	<b>6,99</b>	<b>7,88</b>	<b>10,03</b>	<b>11,06</b>	<b>13,19</b>	<b>14,09</b>	<b>16,51</b>	<b>17,73</b>	<b>1,07,02</b>
<u>Recurring Expenses</u>											
4. Stationery	10	10	15	15	24	23	32	35	40	40	2,49
5. Books	75	75	1,00	1,00	1,50	1,10	2,00	2,50	2,10	3,50	16,20
6. Rent											
7. Repair & Maint.	15	20	30	30	30	40	60	70	95	95	4,85
8. Transportation	25	30	40	45	60	85	90	1,10	1,20	1,30	7,35
9. Feed	30	30	40	40	80	80	90	90	1,05	1,25	7,10
10. Expendable Goods	1,20	2,00	2,40	3,00	4,00	4,50	5,50	6,00	7,00	8,00	43,60
11. Miscellaneous	10	10	15	15	25	25	30	35	40	50	2,55
<b>Total 4-11:</b>	<b>2,85</b>	<b>3,75</b>	<b>4,80</b>	<b>5,45</b>	<b>7,69</b>	<b>8,18</b>	<b>10,52</b>	<b>11,90</b>	<b>13,10</b>	<b>15,90</b>	<b>84,14</b>
<b>Total 1-11:</b>	<b>7,15</b>	<b>8,99</b>	<b>11,79</b>	<b>13,33</b>	<b>17,72</b>	<b>19,24</b>	<b>23,71</b>	<b>25,99</b>	<b>29,61</b>	<b>33,63</b>	<b>1,91,16</b>
<u>Non-Recurring Expenses</u>											
12. Tools/Spare Parts	80	40	90	40	64	80	44	50	40	73	6,01
13. Furniture	2,61	1,92	2,50	2,00	2,50	3,50	1,70	2,25	2,75	1,25	22,98
14. Non-Expendable Goods	4,38	4,01	5,50	4,00	7,00	8,50	6,00	6,50	10,50	4,00	60,39
15. Vehicles	4,40	1,55	3,55	20	2,35	3,80	2,20	2,35	2,00	3,45	25,85
16.a. Land (Not est'd.)											
b. Construction (See separate sched.)											
<b>Total 12-16:</b>	<b>12,19</b>	<b>7,88</b>	<b>12,45</b>	<b>6,60</b>	<b>12,49</b>	<b>16,60</b>	<b>10,34</b>	<b>11,60</b>	<b>15,65</b>	<b>9,43</b>	<b>1,15,23</b>
<b>Total 1-16:</b>	<b>19,34</b>	<b>16,87</b>	<b>24,24</b>	<b>19,93</b>	<b>30,21</b>	<b>35,84</b>	<b>34,05</b>	<b>37,59</b>	<b>45,26</b>	<b>43,06</b>	<b>3,06,39</b>

TABLE 19  
Institute for Agriculture and Animal Sciences  
Projected 10-Year Salary Budget (In rupees)  
Main and Satellite Campuses

<u>MAIN CAMPUS</u>	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>	<u>Year 5</u>
<u>Administration</u>					
Professional	67,200	79,260	1,07,880	1,11,828	1,15,776
Administrative Support	52,680	61,752	81,580	88,476	93,972
Total Administration	<u>1,19,880</u>	<u>1,41,012</u>	<u>1,89,460</u>	<u>2,00,304</u>	<u>2,09,748</u>
<u>Academic</u>					
Professional	1,53,600	1,86,984	2,65,068	3,14,652	2,85,139
Support	85,440	1,11,228	1,34,895	1,55,772	1,67,307
Total Academic	<u>2,39,040</u>	<u>2,98,212</u>	<u>3,99,963</u>	<u>4,70,424</u>	<u>4,52,446</u>
Hostel, Clinic, Cafeteria	<u>38,160</u>	<u>51,582</u>	<u>61,740</u>	<u>64,602</u>	<u>67,464</u>
TOTAL MAIN CAMPUS:	<u>3,97,080</u>	<u>4,90,806</u>	<u>6,51,163</u>	<u>7,35,330</u>	<u>7,29,658</u>
<u>SATELLITE CAMPUSES</u>					
<u>Administration</u>					
Professional					24,000
Support					<u>24,480</u>
Total Administration					<u>48,480</u>
<u>Academic</u>					
Professional					75,797
Support					<u>54,840</u>
Total Academic					<u>1,30,637</u>
Hostel, Clinic, Cafeteria					<u>25,680</u>
TOTAL SATELLITES:					<u>2,04,797</u>
GRAND TOTAL, ALL CAMPUSES:	<u>3,97,080</u>	<u>4,90,806</u>	<u>6,51,163</u>	<u>7,35,330</u>	<u>9,34,455</u>

NOTE: Calculations based on Tribhuvan University salary scale.  
No allowance for attrition of employees.

**TABLE 19 (Continued)**  
**Institute for Agriculture and Animal Sciences**  
**Projected 10-Year Salary Budget (In rupees)**  
**Main and Satellite Campuses**

	<u>Year 6</u>	<u>Year 7</u>	<u>Year 8</u>	<u>Year 9</u>	<u>Year 10</u>	<u>Total Years 1-10</u>
<b><u>MAIN CAMPUS</u></b>						
<b><u>Administration</u></b>						
Professional	1,19,724	1,51,272	1,61,748	1,79,376	2,23,884	13,17,948
Administrative Support	98,088	99,492	1,00,578	1,00,800	1,00,860	8,00,278
<b>Total Administration</b>	<b>2,17,812</b>	<b>2,50,764</b>	<b>2,62,326</b>	<b>2,80,176</b>	<b>3,24,744</b>	<b>21,96,226</b>
<b><u>Academic</u></b>						
Professional	3,12,975	2,92,695	2,94,302	3,20,635	3,35,445	27,61,495
Support	1,74,282	1,76,985	1,78,557	1,79,535	1,79,775	15,43,776
<b>Total Academic</b>	<b>4,87,257</b>	<b>4,69,680</b>	<b>4,72,859</b>	<b>5,00,170</b>	<b>5,15,220</b>	<b>43,05,271</b>
Hostel, Clinic, Cafeteria	70,326	71,286	72,245	77,710	78,576	6,53,692
<b>TOTAL MAIN CAMPUS:</b>	<b>7,75,395</b>	<b>7,91,730</b>	<b>8,07,431</b>	<b>8,58,056</b>	<b>9,18,540</b>	<b>71,55,189</b>
<b><u>SATELLITE CAMPUSES</u></b>						
<b><u>Administration</u></b>						
Professional	25,080	50,160	52,320	78,480	81,720	3,11,760
Support	25,704	51,408	53,856	80,784	84,456	3,20,688
<b>Total Administration</b>	<b>50,784</b>	<b>1,01,568</b>	<b>1,06,176</b>	<b>1,59,264</b>	<b>1,66,176</b>	<b>6,32,448</b>
<b><u>Academic</u></b>						
Professional	1,04,325	1,57,605	1,96,202	2,41,883	2,53,055	10,28,367
Support	77,400	1,35,834	1,58,832	2,20,512	2,43,036	8,90,454
<b>Total Academic</b>	<b>1,81,725</b>	<b>2,93,439</b>	<b>3,55,034</b>	<b>4,62,395</b>	<b>4,96,091</b>	<b>19,19,321</b>
Hostel, Clinic, Cafeteria	27,918	54,924	58,488	86,320	91,710	3,45,540
<b>TOTAL SATELLITES:</b>	<b>2,60,427</b>	<b>4,49,931</b>	<b>5,19,698</b>	<b>7,08,479</b>	<b>7,53,977</b>	<b>28,97,309</b>
<b>GRAND TOTAL, ALL CAMPUSES:</b>	<b>10,35,822</b>	<b>12,41,661</b>	<b>13,27,129</b>	<b>15,66,535</b>	<b>16,72,517</b>	<b>1,00,52,498</b>

**NOTE:** Calculations based on Tribhuvan University salary scale.  
No allowance for attrition of employees.

G. LEADERSHIP AND MANAGEMENT

1. Assessment of Effectiveness

The National Education System Plan indicates that "planning, implementation, and evaluation will go hand in hand in the educational administration," (p. ix). This valid concept applies at the level of the Institute as well as to the overall educational system. It is particularly applicable for the newly developing IAAS that is committed to service the rural society and to flexibility in its programs and means of attaining objectives. These call for continuous internal review of all aspects of the Institutes in order that adjustments can be made to meet the changing needs for higher educational agriculture services in Nepal.

A special office of planning and evaluation should be established, attached to the Office of the Dean of the Institute. The following items are suggestive of the concerns of such an office.

a. In the teaching/learning process, evaluation is the link between these two. It should be integrated into the whole system.

b. The system of evaluation and detailed methodology would vary from component to component and hence is a matter of detail which could be worked out individually.

c. There would be a need to evaluate program at each stage of implementation so that direction rectification can be made quite early--instead of waiting until the very end.

d. There would be a need for an active "follow up" programmed to modify activities in accordance with the requirements of the sectors which the products of the Institute would serve.

e. In the process of evaluation, the following are but a few of the major considerations: the numbers and types of certificate and degree holders; organizational structure of the Institute and its flexibility to meet the changing situation; the relationships with other institutes and organizations; the commitment of graduates to a philosophy of service to agriculture and the rural community; the adequacy of personal policies and procedures in terms of encouragement of a high level of staff morale and productivity; and whether the Institute has helped rural people to become more productive and attain a higher level of living.

## CHAPTER IV

### RECOMMENDATIONS FOR INTERNATIONAL ASSISTANCE

#### A. STRATEGY OF ASSISTANCE

Assuming that the institutionalization of an agricultural education capability at the highest levels in Nepal, competent to apply science to the life and work of rural Nepal, is a task requiring from two to three decades, the appropriate strategy of international participation should be carefully designed.

It should, for example, lead to Nepalese independence, over time, from any foreign cooperator, rather than dependence upon that foreigner. It should lead to a system which is uniquely Nepalese in form and function, rather than a copy of some foreign model. It should take from the best and most successful prior experience in all other parts of the world, sift out that which is inappropriate for Nepal, mix in that which fits the culture and life style of the various peoples of the country.

Technical cooperation with professional agricultural educators from other countries should be in the spirit of reciprocity, rather than the mood of donors and recipients. That is, each partner should contribute something to the relationships, and each partner will gain something from it. This does not imply that the monetary value of the inputs from all partners in any given year would be equal. It does imply that the participants look upon each other as equals, each having something of value to contribute to the other, and each needing something which the other has to offer.

As the years go by, such an academic relationship can be of increasing value to all of the participants, as well as to the countries they represent. Thus, while the early stages, tentatively described below, should be of some value in and of themselves, they should also be viewed as the strands upon which firmer bridges will later be built.

Exchange of academic personnel, training of each other's staff and assistance with buildings and equipment, books and biological materials may be among the early building blocks. In the long run, however, it is anticipated that enduring academic linkages will have been established. Through such relationships the flow of learning can be nurtured and encouraged. Partners on each side can contribute to the knowledge of the other, and thus to mankind's understanding of the phenomena being studied. And since such relationships should not be exclusive, but include academic institutions in many parts of the world, each linkage is a part of the world-wide network of higher education and research which holds such great promise for future generations.

The time-phased development plan, mentioned on page 80 above, suggests the following pattern of international assistance for the Institute of Agriculture and Animal Sciences of Tribhuvan University in Nepal:\*

#### First Year

##### 1. Technical Assistance Team

It is suggested that several individuals, either from one cooperating overseas agricultural institution or from a group of such institutions (consortium), come to Nepal and be attached to the

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\*It is emphasized that the following pattern is not expected to be followed in detail; sufficient flexibility should be provided to meet specific institutional development needs as they are identified.

staff of the Institute of Agriculture and Animal Science. One of these might serve as an associate of the Dean, be concerned about general design and implementation of programs which would achieve the philosophy enunciated above, and serve as leader of the international technical cooperation team.

In addition to these persons (who might stay for approximately two years), it would probably be appropriate for several other individuals to come as shorter-term consultants, with assignments of varying length from three to six weeks. They would represent both academic fields, such as plant science, animal science, agricultural engineering, and social science field; and service fields such as students' welfare, academic finance, site development and campus planning and college farm development.\*

## 2. International Tours

Early in this program, and perhaps at later intervals, both Nepalese and international cooperation teams or individuals might well travel to one or more other countries where there have been different types of approaches to education in agriculture. They would inspect models which have been highly successful and those which have been less than successful. The purpose would be to bring back to Nepal as many useful ideas as feasible, and to learn from the experience of others who have tried to cope with similar problems.

Other third-country travel might also be included.

## 3. Participant Training

Approximately four persons would be identified in this first

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\*A rapid upgrading program for preparation of teachers of vocational agriculture to be conducted by IAAS will require additional vocational agricultural education.

year who have the B.Sc. degree in agriculture, and who have demonstrated ability to teach effectively, to go on for further degrees in their own fields abroad. These might represent the four main curricular areas of plant science, animal science, rural social studies, and agricultural engineering.

4. Books, Teaching Aids, and Other Commodities

Certain equipment might be ordered from overseas during the first year in anticipation of later classroom needs and long periods of time required for procurement and shipping.

5. Other

Second Year

1. Technical Assistance Team

- a. Team Leader (general development and curriculum)
- b. Plant science
- c. Animal science
- d. Rural social studies
- e. Agricultural mechanization
- f. Such short-term personnel as are needed

2. Participant Training\*

Eight additional persons overseas at the M.Sc. level

3. Books, Teaching Aids, and Other Commodities

4. Faculty Research Fund

This small fund would be available to the staff of the Institute and their Technical Cooperation colleagues for applied research projects designed to produce data, case studies, and other teaching

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\*At a point in the technical cooperative effort there will be a need for participant trainees at Ph.D. level.

materials which would be used to provide locally relevant instructional aids. It would not provide staff salaries, but would cover such items as travel, research assistance, data processing, data collecting equipment, etc. It would be administered by a joint IAAS/Technical Cooperation team and committee.

5. Joint Research Projects

This fund would provide for return to Nepal of participants to do their research prior to completion of overseas degrees, and for graduate students from the cooperating foreign university(ies) whose thesis research is pertinent to rural development in Nepal, and particularly those whose major professors are involved as either long-term or short-term members of the technical assistance teams mentioned above, to be based at the IAAS while doing that research.

6. Capital Projects -- as planned during first year.

Third Year

1. Technical Assistance Team

- a. Team Leader (general development and curriculum)
- b. Plant science
- c. Animal science
- d. Rural social studies
- e. Agricultural mechanization
- f. Such short-term personnel as are needed

2. Participants

Four return  
Eight go out

3. Books, Teaching Aids, and Other Commodities

4. Faculty Research Fund
5. Joint Research Projects

Fourth Year

1. Technical Assistance Team  
Composition to be determined.
2. Participants  
Eight return.  
Four go out.
3. Books, Teaching Aids and Other Commodities
4. Faculty Research Fund
5. Joint Research Fund

Fifth Year

1. Technical Assistance Team  
Composition to be determined.
2. Participants  
Eight return.  
Two go out.
3. One Exchange Professorship  
In this aspect of the program, the governments might provide the costs of travel and other incidental expenses, but the educational institutions would continue to provide salaries, while one instructor and family from Nepal changes places with one instructor and family from the cooperating foreign university(ies)...for one semester or for one year, as arranged.
4. Faculty Research Fund
5. Joint Research Projects

Sixth Year

1. Technical Assistance Team
  - a. Linkage representative
  - b. Short-termers
2. Participants

Four return.

Two go out.
3. Books, Teaching Aids, and Other Commodities
4. Faculty Research Fund
5. Joint Research Fund

Seventh Year

1. Exchange Professorship
2. Participants

Two return.

Two go out.
3. Joint Research Projects

Eighth Year

1. Exchange Professorship
2. Participants

Two return.

Two go out.
3. Joint Research Projects

Ninth Year

1. Exchange Professorship

2. Participants

Two return.

Two go out.

3. Joint Research Projects

Tenth Year

1. Exchange Professorship

2. Participants

Two return.

Two go out.

3. Joint Research Projects

From the point of view of the receiver of international technical cooperation, some comment may be appropriate.

Many different bilateral sources are available. The consequences of affiliation with any one, or any group, may have long-term implications. Careful study of the alternatives before commitments are made can be highly fruitful.

In higher education, if a donor nation offers to provide expertise, the recipient might consider the extent to which particular individuals are affiliated with appropriate institutions in their own country; the extent to which those foreign institutions are committed to the enterprise and share its doctrine; the time frame of any such commitment; and the extent to which the foreigners are willing to enter into the relationship in the spirit of reciprocity.

In addition to the bilateral donors (such as foreign governments or

foundations), there are increasing numbers of multilateral donors. International agencies are cumbersome and time-consuming, and have their own problems and constraints. On the other hand, they have financial and other resources. The International Bank for Reconstruction and Development, the United Nations Development Program, the Food and Agriculture Organization of the U.N., the Asian Development Bank are among these.

A multiplicity of foreign "helpers" on any one project could lead to chaos. One team is usually a better approach. Members of that team might be supported from more than one source.

Table 20  
FINANCIAL REQUIREMENTS  
Ten Year Program

	<u>First Year</u>	<u>Second Year</u>	<u>Third Year</u>	<u>Fourth Year</u>	<u>Fifth Year</u>
Long-term staff (65M/yr)	[3] \$195,000	[5] \$325,000	[5] \$325,000	[4] \$260,000	[3] \$195,000
Short-term staff (7M/trip)	[4] 28,000	[4] 28,000	[3] 21,000	[4] 28,000	[5] 35,000
International tours (2.3M/trip)	[4] 9,200				
Participant Trainees (7M/man year)	[4] 28,000	[12] 84,000	[16] 112,000	[12] 84,000	[6] 42,000
Books, aids, commodities	4,000	12,000	12,000	12,000	10,000
Faculty research fund		15,000	20,000	30,000	30,000
Joint research projects		30,000	40,000	40,000	40,000
Exchange professorship (20M/year)					[1] 20,000
Capital projects (developmental)	5,000	*			
Home office backstopping	51,500	51,500	51,500	51,500	51,500
<b>TOTAL</b>	<b>\$320,700</b>	<b>\$545,500</b>	<b>\$581,500</b>	<b>\$505,500</b>	<b>\$423,500</b>
	<u>Sixth Year</u>	<u>Seventh Yr.</u>	<u>Eighth Yr.</u>	<u>Ninth Year</u>	<u>Tenth Year</u>
Long-term staff (65M/yr)	[1] 65,000				
Short-term staff (7M/trip)	[5] 35,000				
International tours (2.3M/trip)					
Participant Trainees (7M/man year)	[4] 28,000	[4] 28,000	[4] 28,000	[4] 28,000	[4] 28,000
Books, aids, commodities	8,000	1,000	1,000	1,000	1,000
Faculty research fund	20,000				
Joint research projects	30,000	30,000	30,000	30,000	30,000
Exchange professorship (20M/year)	[1] 20,000	[1] 20,000	[1] 20,000	[1] 20,000	[1] 20,000
Capital projects (developmental)					
Home office backstopping	51,500	26,000	26,000	26,000	26,000
<b>TOTAL</b>	<b>\$257,500</b>	<b>\$105,000</b>	<b>\$105,000</b>	<b>\$105,000</b>	<b>\$105,000</b>

**TOTAL TEN YEAR PROGRAM \$3,054,200**

\*Total cost of construction over ten year period estimated at \$4.6 million.  
( ) Unit cost average, see following pages.  
[ ] Units used per year

UNIT COST AVERAGES

Long-term Staff

Average costs per year for  
two-year assignments.

Salary (including incentive)	\$26,100	
Staff benefits - 17.5% of salary	4,568	
Differential - 15% of salary	3,915	
Indirect costs - 36% of salary	<u>9,396</u>	
	43,979	\$44,000
Plus:		
Housing - 12 months	2,700	
Temporary lodging - 30 days @ \$30 (4 people)	900	
Education allowance \$850 + \$3150	4,000	
Air fare, one way - 4 people @ \$750	3,000	
Excess baggage, one way - 10 kilo @ \$15 (4 people)	600	
Air freight, one way - 100 lb. @ \$2.50 (4 people)	1,000	
Sea freight, one way - 4150 lb. @ \$1.00	4,150	
Storage, 12 mo. - \$59.36/cwt @ \$9/mo.	535	
handling-in - \$59.36/cwt @ \$2	119	
Auto shipment, one way	1,800	
Preparation - 4 people @ \$100	400	
Language training - 4 people @ \$200	800	
Local travel	<u>1,000</u>	
	21,000	<u>21,000</u>
Total average cost per year		\$65,000

UNIT COST AVERAGES

Short-term Staff

Average cost per week

Salary (including incentive)	485	
Staff benefits - 17.5% of salary	86	
Indirect costs - 36% of salary	175	
Per diem - 7 days @ \$20	<u>140</u>	
Average variable cost per week	886	
Cost for average 4.5 week assignment		\$3,987
Plus:		
Air fare, round trip	1,500	
Excess baggage, round trip - 10 kilos @ \$15	300	
Preparation (medical, inoculations, passport, visa)	100	
Air freight, round trip - 100 lb. @ \$2.50/lb.	500	
Local travel	<u>600</u>	
	3,000	<u>3,000</u>
Total cost for average 4.5 week assignment		<u>\$6,987</u>
Rounded off		\$7,000

UNIT COST AVERAGES

Exchange Professorship

U.S.A. to Nepal

Air fare, round trip - 4 people @ \$1,500	\$6,000
Housing - 12 months	2,700
Air freight, round trip - 100 lbs. @ \$2.50 (4 people)	2,000
Preparation @ \$100 (4 people)	400
Sea freight, round trip - 4150 lbs. @ \$1.00	<u>8,300</u>
Total cost per year per professor	<u>\$19,400</u>
Rounded off	\$20,000

UNIT COST AVERAGES

Participant Trainees

Per year costs - two year tours

Tuition - 4 terms @ \$400	\$1,600
Book allowance - 12 mo. @ \$15	180
Thesis allowance	75
Subsistence - 20 days @ \$23, 345 days @ \$9	3,565
Travel	250
Travel per diem, 30 days	420
Other	150
Air fare, one way - Nepal/U.S.A.	<u>750</u>
Total average cost per year	<u>\$6,990</u>
Rounded off	\$7,000

International Tours

Per person, per trip

Round world air fare	\$1,500
Per diem - 30 days @ \$25	<u>750</u>
Total cost per person, per trip	\$2,250

UNIT COST AVERAGES

Backstopping

Per year

<b>Salaries</b>		<b>\$25,500</b>
Coordinator - half-time	\$12,000	
Admin. Officer - half-time	9,000	
Secretary - half-time	4,500	
Staff benefits - 17.5% of salaries		4,463
Indirect costs - 69% of salaries		17,595
Office expenses (communications, supplies)		2,400
Advisory committee (3 meetings)		<u>1,500</u>
Total yearly costs		<u>\$51,458</u>
Rounded off		\$51,500

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ILLUSTRATIVE SAMPLE OF I.Sc. AGRICULTURE CURRICULUM

FIRST SEMESTER: Practical Agriculture

Plant Science

Practice of Rice or Wheat Production

Practice of Vegetable Production

Practice of Fruit Production

Animal Science

Practice of Livestock Production

Practice of Poultry Production

Agricultural Social Studies

Practice of Agricultural Development

Agricultural Engineering

Use of Tools and Implements

Layout of Land (Including Water)

SECOND SEMESTER: Applied Agriculture

Languages

Applied Plant Science

Agricultural Botany

Applied Animal Science

Agricultural Zoology

Applied Social Studies

Agricultural Economics/Rural Sociology

Applications of Tools and Implements

Agricultural Physics

THIRD SEMESTER: Principles of Agriculture

Languages

Principles of Plant Science

Principles of Animal Science

Principles of Agricultural Social Studies

Principles of Agricultural Engineering

FOURTH SEMESTER: Theory of Agriculture

Theory of Plant Science

Theory of Animal Science

Theory of Agricultural Engineering

Theory of Agricultural Extension

Theory of Farm Economics

## SOME SUGGESTIONS FOR STUDENT PRACTICAL FIELD EXPERIENCE PROGRAMS

As indicated in the sections above on both Curriculum and Teaching and Learning Styles, practical field experience for each student is necessary. However, there are many ways in which to achieve this experience, and these will have to be developed by the staff and students, in the actual environment, and as appropriate for the immediate situation.

Some of the most successful agricultural colleges and universities in other lands build field practice experiences independently of regular class assignments. Others integrate them with course work. Another possibility is to have practical field activities tied closely to practical courses in the early year(s) of a program, and have it more independent as the student moves toward the end of his total course.

One such plan calls for each student doing particular field tasks on his own plot of land (or group of animals) in the first year, while he is learning basic skills. Later he is given more responsibility for organizing the work in various stages around a particular crop or animal. Finally, in his last year, he might do something like the following:

1. A practical field experience program is designed to provide experience in both technical and economic aspects of agricultural production and marketing. This might be a separate portion of the student's work in that year, requiring 10 to 15 percent of the student's time and effort.
2. Each student is required to participate in the program for one full year.

3. Teams of six to eight students assigned to farm a set acreage. The land ideally should include two or more soil classes.
4. Poultry or livestock projects might be utilized in place of crop production projects.
5. Students plan cropping system, cultural operations to be followed, etc., under general supervision of a faculty member.
6. Financial resources are made available to students for seed, fertilizer, pesticides, power, etc., but not for labor.
7. All labor to be done by students themselves.
8. Records kept of costs and returns and students allowed to keep net profit.
9. Course credit to be given and grade to be dependent on basis of plans, records, report and net return produced. Team report should document experience and recommend changes team would make if program were repeated.

**ADMISSION OF I.Sc. AGRICULTURE CERTIFICATE HOLDERS  
TO B.Sc. PROGRAMS OUTSIDE NEPAL**

An important consideration for any educational institution is the admissibility of those who complete its courses of study to the next higher level in other institutions, both within and outside the country.

I.Sc. certificate holders of the College of Agriculture (now IAAS) have been admitted to the agricultural universities in India. Their performance in B.Sc. programs in these universities has been very good, in fact the Nepalese rightfully take pride in the fact that they have taken a number of the top places in recent graduating classes.

Some are uneasy that those who complete the proposed I.Sc. curriculum will not be admissible to the agricultural universities in India. To illustrate the nature of the problem, let us look at the current admission requirements at the G. B. Pant University of Agriculture and Technology, Pant Nagar, Uttar Pradesh.

Admission to G.B.P.U.A.T. can be obtained after completion of (1) Intermediate Agriculture/Intermediate Science (12 years), or (2) completion of Higher Secondary or equivalent with Mathematics/Biology/Agriculture (11 years) with higher marks, or (3) first year of three-year degree program or pre-professional program, or university examination, or (4) B.Sc. examination with Mathematics/Biology/Agriculture. I.Sc. certificate holders from Nepal would have completed ten years of primary and secondary education plus the two-year I.Sc. program.

Upon completion of the two-year I.Sc. Agriculture program proposed, a student would have been in practice, principles and theory of agricultural science. He would probably have had fewer courses in science,

especially biology and mathematics than the majority of Indian students who apply for admission to G.B.P.U.A.T. If, however, the I.Sc. courses are taught such that the needed science principles are included in them, then a student from this program might have an advantage over those who lack classroom, laboratory, and field experience in application of principles and theories to agricultural problems.

There will undoubtedly be questions raised in getting credential of Nepalese I.Sc. Ag students evaluated favorably by Indian institutions. Until they have experience with such students in Indian universities, they will not know how well they will perform. Admission may be secured on the basis of examinations.

The proposed I.Sc. curriculum is designed to produce certificate holders with two objectives: (1) those who are to meet low-level (among higher educated) manpower requirements upon completion of I.Sc.; and (2) those who will proceed to the B.Sc. program either in IAAS or in a university outside Nepal. Nepal's agricultural manpower requirements dictate that the number in the first category be much larger than those in the second.

One of the goals of IAAS is to develop the capacity to produce most, if not all, of Nepal's needs for both I.Sc. and B.Sc. holders; therefore, the question of admissibility of I.Sc. holders to external institutions for the B.Sc. decreases in importance as time goes on.

Admittedly, the change in the I.Sc. curriculum raises questions about admission to external institutions, questions that cannot now be finally answered. Nevertheless, the primary purpose of the I.Sc. program, in terms of numbers of students, is to produce manpower for agri-

cultural development, not to produce large numbers to climb higher and higher on the degree-holding ladder. Thus, the objective should be to design courses, within the framework of the proposed I.Sc. curriculum, that are so well taught that all I.Sc. holders can do well in agricultural development jobs. The fewer number who are to proceed to the B.Sc. can be chosen from the most meritorious of these.

CONCEPTS AND PRINCIPLES  
of  
ORGANIZATION AND ADMINISTRATION  
applied to  
ORGANIZATIONAL PHASING PLAN

1. A table of organization is merely a conceptualization--a visualization of the structure ("skeleton") illustrating status-role positions in the hierarchy, lines of authority and responsibility as well as communications, line and staff relationships.
2. Of greater importance are the functions which the organization proposes to perform, the individuals who comprise the organization (the status-roles) and their roles and role expectations.
3. Some basic considerations relating to organization and administration:
  - a. Well defined objectives
  - b. Unity of purpose
  - c. Competent personnel
  - d. "Centers" of decision-making
  - e. Sound leadership
  - f. Clear lines of authority and responsibility and the avoidance of split responsibilities
  - g. Clear lines of communication (inter, intra, horizontal and vertical)
  - h. Flexibility to meet problems and changing needs
  - i. Job descriptions for all personnel
  - j. Line and staff relationships
  - k. Unity of command
  - l. Sound personnel policies

- m. Job security
- n. Adequate control
- o. Division of work
- p. Manageable span of control
- q. Adequate financial resources
- r. Mechanism for continuous planning and evaluation
- s. Consideration for the public(s) which it serves
- t. Linkages (its interface) with other organizations, agencies, etc.
- u. Concern for degree and extent of centralization vs. decentralization
- v. Opportunities for individual member development and growth
- w. System of incentives, promotions, etc.
- x. Administrators and managers who are knowledgeable and skilled in such processes as:
  - (1) organizing
  - (2) planning
  - (3) coordinating
  - (4) cooperating
  - (5) communicating
  - (6) evaluating
  - (7) fiscal management and budgeting
  - (8) policy determination
  - (9) reporting

4. Concepts and principles of organization/administration applied to Organizational Phasing Plan (Phases I-VII)

- a. Adoption of line-staff relationships
- b. A hierarchy in which there are clear lines of authority--vertical in nature and scope
- c. Clear lines of communication
- d. Consideration for linkages with other institutions, organizations, agencies (both public and private as well as quasi-government)
- e. Beginning with Phase II, the Dean is envisioned as being the "outside" man who would be responsible for all programs on the main satellite campuses. (Such a position suggests one trained and experienced in administration/management, as well as agriculture.)
- f. Functions have not been spelled out in detail but are implied in most instances.

5. Other considerations regarding Phasing Plan (Phases II-VII)

- a. The B.Sc. curriculum would be offered only at the main campus, at least until it is necessary to do otherwise.
- b. Once the B.Sc. degree program is well established and the need arises for post graduate courses of study, a master's degree program should be explored and eventually implemented.
- c. The I.Sc. program would be continued, first on the main campus, and eventually extended to one or more satellite campuses.
- d. The present one-year JTA curriculum would be discontinued in a few years.
- e. Non-formal, upgrading programs would become an integral part of the total academic offerings, both on the main campus, at

- satellite campuses and elsewhere in Nepal as needs arise.
- f. A planning and evaluation unit should be established soon.
  - g. Once established, the main campus will have need for more of administrative services currently provided by the University in Kathmandu.
  - h. Discussions, deliberations and decisions must be made in terms of the organizational style for the conduct of instructional programs. Suggested alternatives are: (1) inter-disciplinary task forces oriented to plant, animal, engineering, or social sciences; or (2) inter-disciplinary task forces oriented to agricultural type areas which characterize Nepal; or (3) other patterns.
  - i. The establishment of an office of research should occur in about the third or fourth year.

APPLIED RESEARCH OPPORTUNITY  
AGRICULTURAL EDUCATION

As a special demonstration research project, the Institute may wish to consider a cooperative project with the Extension Department of the Ministry of Food and Agriculture and a number of villages located near the Institute.

After one year of preparation, six (6) groups of three (3) villages each might cooperate in an experiment where there is one JTA working with each village; but JTAs are trained and selected differently. The experiment might run three to five years, and then be subject to comparative evaluations. In addition to the value of the findings for further development of agricultural education in Nepal, the experimental villages would constitute a field laboratory for the practical work of students at the Institute in their courses in extension.

Each of the groups might have three JTAs, as follows:

- Group I. . . . Selected farmers who are illiterate but successful on their own farms—with three months' intensive training.
- Group II . . . . Young men without S.L.C. but with one year of JTA training.
- Group III. . . . Young men with S.L.C. and one year of JTA training.
- Group IV . . . . Young men with I.Sc. Ag.
- Group V. . . . Young men with B.Sc. Ag.
- Group VI . . . . No JTA in the village (control).

## SOME THOUGHTS ON LOCATION

Assuming a Main Campus for the Institute of Agriculture and Animal Science and several Satellite Campuses, located in the various ecological zones of Nepal, the question arises of where to locate the main campus.

Here are some thoughts on the advantages and disadvantages of a rural location for the main campus. The ideal location would maximize the advantages and minimize the disadvantages.

Advantages

1. Facilitates close tie-in of Institute with farming
  - a. in mind of public
  - b. in mind of faculty
  - c. in mind of farmers
  - d. in mind of students
2. May facilitate placement of graduates in agricultural areas
3. Facilitates acquisition of sufficient land area for campus, including area for research
4. May lessen student unrest because of relative isolation from other large student groups
5. May facilitate academic pursuit of students because of reduced distractions
6. May facilitate extension program through accessibility of campus to farmers in vicinity
7. May minimize undue interference from government and other agricultural organizations

Disadvantages

1. Increases difficulty of contact and communication with key policy level personnel in the University, other institutes, ministries, and agricultural organizations
2. Decreases opportunity for complementary programs with other institutes and educational and agricultural agencies
3. Increases difficulty of faculty recruitment and retention:
  - a. Increased difficulty in getting adequate educational facilities for faculty children
  - b. Reduced cultural opportunities
  - c. Generally meager shopping facilities with resulting higher prices and reduced selection
  - d. Generally inadequate medical facilities
  - e. Difficulty in getting public transportation
  - f. Difficulty in communication via telephone and telegraph
  - g. Reluctance of many wives to live in rural area
4. Institute may have to provide many facilities normally available in urban centers, such as utilities, housing, medical, shopping, transportation, communication, cultural
5. Increased difficulty in construction and outfitting of campus --lack of supportive industry and trades in vicinity
6. Faculty may become provincial in attitude over period of years because of social isolation
7. Decreased opportunity for social outlet may increase student unrest and strife

Summary: There are important advantages and disadvantages each way. The experience of new agricultural universities and colleges in other countries shows that a rural location for B.Sc. level and above institutions presents extremely difficult problems. The Nepal National Education Plan policy with respect to campus location provides sufficient flexibility to obtain the advantages of both rural and urban locations. In the case of IAAS, this might be done by locating the main campus (combination of B.Sc. and I.Sc.) in an urban location and the outlying campuses (I.Sc. and non-formal education) in more rural places, or vice versa.

## TO FARM OR NOT TO FARM

The question of a commercial farm associated with an agricultural institute has both advantages and disadvantages. Some of them follow:

Advantages

1. Can provide good practical experience for staff in solving production, harvesting, processing, storage, marketing and other problems.
2. Can provide income for university support.
3. May be important in building confidence of cultivators in the university if they see that the university can do a superior job of farming.
4. Can assure high quality seed production, if this is one of university's commercial operations, because of better level of supervision and know-how.

Disadvantages

1. Can impede university's educational and research programs
  - a. Diversion of staff from academic to problem-solving activity. If university's level of support is threatened seriously, this diversion can be abrupt and extensive.
  - b. Diversion of staff to farm supervisory activities. While these may be temporary, they can be seriously disruptive.
  - c. Diversion of labor and equipment from research to commercial farm in times of peak demand; e.g., land preparation, harvesting, etc.

2. University may compete with private growers
  - a. Seed increase of new varieties is a highly profitable activity and university may tend to retain undue proportion of this for itself.

**GUIDELINES**

for a

**PRE-FEASIBILITY STUDY**

with focus on

**HIGHER EDUCATION IN AGRICULTURE IN NEPAL\***

**GUIDELINES FOR A PRE-FEASIBILITY STUDY\***  
**With Focus on Higher Education in Agriculture in Nepal**

**I. Definitions**

- A. A pre-feasibility study may be defined as that aspect of a feasibility study which focuses more on alternative goals to be achieved than on alternative means which might be used to achieve them. In international technical assistance, a sequence might include a pre-feasibility study, a feasibility study, then negotiation of an international technical cooperation program, and then the carrying out of activities called for in the program.
- B. A pre-feasibility study considers the past and the present in order to forecast the future; identifies alternative courses of action with respect to its specific focus; and then attempts to predict the most probable outcomes of each alternative course of action.
- C. A pre-feasibility study might include focus on problem definition and clarification, and activities considered might be subjected to such questions as whether or not they should be carried on at all. In contrast, a feasibility study might focus on:  
"Given that a particular activity is to be carried out, what particular means are more feasible than other means in achieving the goals of the activity."

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- D. Thus, while at certain stages, it may not be practical to distinguish between a feasibility study and a pre-feasibility study, a pre-feasibility study may be defined to include a component of consideration of alternative strategies for accomplishing stated goals, including alternatives of both ends and means, and attempting to predict both intended and unintended consequences of the actions involved.

## II. Assumptions

- A. The more information a pre-feasibility study team has with respect to the situation in which it is working, the higher the quality its recommendations are likely to be.
- B. It is possible to find people in both the recipient and the donor system who are quite willing to provide answers to questions of pre-feasibility.
- C. The more information a pre-feasibility study team has with respect to alternative possibilities for its recommendations, the higher the quality those recommendations will tend to be.
- D. A pre-feasibility study should consider a time line sufficiently extensive, both with respect to the past and the future, so that forecasts can be made in a variety of time dimensions.
- E. Members of pre-feasibility study teams need to balance allocation of their time between situational analysis, team interaction, synthesis, and a testing of tentative conclusions.
- F. Some degree of specialization among team members, and a high degree of interaction among team members will tend to be associated with effectiveness of total performance.

- G. Members of pre-feasibility study teams who are committed to certain alternative courses of action in the situation are less likely to value alternative courses of action than members who are open to all alternatives.
- H. The greater the degree of specificity which a pre-feasibility study team can develop with respect to each of its tasks, and the earlier the team can develop priorities among them, the greater its chance of evaluating achievement and insuring effectiveness. On the other hand, the greater the degree of specificity which a pre-feasibility study team can develop with respect to each of its tasks, the greater its chances of overlooking alternative strategies, alternative goals, and unintended consequences of the actions involved.
- I. Both the quality of recommendations and the likelihood of their later implementation will be enhanced if the team involves representatives of potential recipient organizations.
- J. Performance of pre-feasibility study teams may be enhanced by field activity not only in the donor and recipient systems, but also in third systems.

### III. Constraints

- A. Selection of representatives of both the donor and the recipient system on pre-feasibility teams may affect the openness, the insights, the range of alternatives, and the eventual acceptability of the recommendations such a team will make.

- B. Prior commitment to particular solutions to situational problems will tend to be a constraint on the effectiveness of pre-feasibility study teams.
  - C. Involvement of representatives of both donor and recipient systems in pre-feasibility studies can be a constraint on quality and quantity of information received by the team. Informants selected on the basis of their commitment may provide different types of information than those selected on the basis of their knowledge. Identifying the degree of commitment and knowledge is difficult.
  - D. The greater the number of options which are open in the recipient system, the greater the utility of pre-feasibility studies.
  - E. Wide diversions in assumptions undergirding the task of a pre-feasibility study team will serve as a constraint on its performance.
  - F. Comportment and behavior of pre-feasibility teams.
    - 1. Local protocol is important.
    - 2. Sensitivity to various levels of information is necessary.
    - 3. An attitude of exploration and discovery will help.
- IV. Areas of Information Gathering for Pre-Feasibility Study Team--Relating To Higher Education in Agriculture in Nepal.
- A. Characteristics of the situation.
    - 1. The educational system--formal and non-formal.
      - a. Clientele.
      - b. Client support systems.
      - c. Doctrine and values.

- d. Syllabi-instruction-examination fit.
  - e. Process and methods.
  - f. Management.
  - g. Sponsorship.
  - h. Accountability and evaluation.
  - i. Relationship to dignity of work.
2. The economic system.
    - a. Generation and distribution of income.
    - b. Government sector.
    - c. Private sector.
    - d. Marketing system and infrastructure.
    - e. Manpower distribution and utilization.
    - f. Transportation support system.
    - g. Resource availability.
3. The structure and function of bureaucracy--formal systems;  
actual power.
    - a. Flow of resources and budgeting process.
    - b. Control of recruitment and assignment.
    - c. Bureaucratic rewards and sanctions.
    - d. Local institutions, field bureaucracy.
    - e. Bureaucratic rules of the game.
    - f. Sets of bureaucratic goals.
    - g. Receptivity to innovation.

4. Cultural factors and linkages.

- a. Patterns of authority.
- b. Multiple sub-cultures.
- c. Rural rules.
- d. Savings and other economic behaviors.
- e. The impact of Hindu social order.
  1. Law of Karma.
  2. Law of Kama.
  3. Concept of time--Pala.
- f. Perceptions of the monarchy.
- g. Other factors relating to the monarchy.
- h. Rural communication systems.
  1. Diffusion of innovations.
  2. Interpersonal communication.
  3. Structure.
  4. Attitude toward the center.
  5. Who speaks to whom, and who listens.
  6. Opinion leaders (priests, teachers, postmen, taluqdars, mukhayas, jimuals, panchayat leaders, pradhan, etc.)
  7. Mass communication.
  8. Village communication.
- i. Goals of rural people.
- j. Willingness and ability to change--receptivity to technology.
  1. Perceptions of technology.

5. Planning and development.
    - a. Knowledge gaps--research needs.
    - b. Goals and strategy of national plans--on paper; in action.
    - c. Available data gathering and access systems.
  6. Agricultural ecology.
    - a. Soil, climate, crops and livestock.
    - b. Rural-urban interaction.
    - c. Land tenure system.
    - d. Technological alternatives.
  7. Dynamics of national unity.
    - a. Awareness and compliance vis-a-vis government programs.
  8. General factors which intersect all of the above.
    - a. Inhibitors to institutional change.
    - b. Facilitators of institutional change.
    - c. Level of desperation.
    - d. Extent of heterogeneity in the system.
    - e. Dominant leadership styles.
    - f. Reward systems.
    - g. The interface between the bureaucracy and rural people?
- B. The need for and feasibility of change in the agricultural/rural system.
1. The production component.
    - a. Types of crops produced.
    - b. Types of livestock produced.
    - c. Types of fibers produced.
    - d. Amounts produced-totals, per acre, per capita.
    - e. Relation of income and employment.

2. The marketing component.
  - a. Storage.
  - b. Transportation.
  - c. Processing.
  - d. Pricing.
  - e. Government policy.
  - f. Standards and market information.
  - g. Other.
3. The supply component.
  - a. Seeds.
  - b. Fertilizers.
  - c. Feeds.
  - d. Equipment.
  - e. Credit.
  - f. Other.
4. The governance component.
  - a. See A-3 and A-7 above.
5. The education/extension component.
  - a. See A-1 and A-4-h above.
6. The research component.
7. Differential political elite perceptions.
8. Alternative institutional arrangements.
9. Effects of tampering with one sub-system--what will happen to other sub-sets of the system?--1960? 1970? 1980?
10. Leadership factors--who are they? Where are they?
11. Kinds and qualities of resources available.

- C. The need for and feasibility of change in the educational component of the agricultural/rural system.
1. To what extent is training of personnel at post-secondary levels a critical variable in further development of the country's agriculture?
  2. Is skilled manpower in demand, in fact?
  3. What skills does skilled manpower have?
  4. What is the relative value of expenditures for the manpower training in agriculture in relation to other potential expenditures?
  5. What differences are there between the demand for such skilled manpower and the needs for such skilled manpower?
  6. What is the relationship between actual skills and paper credentials?
  7. What formal and non-formal organizations are involved in education in agriculture? For each, what is the nature of its:
    - a. Program?
    - b. Organizational structure?
    - c. Leadership?
    - d. Doctrine?
    - e. Resources?
    - f. Linkages with the larger social system?
  8. What are the institutional alternatives, and what is the feasibility of developing each alternative?
  9. What adjustments are desirable to improve the situation in education in agriculture?

10. To what extent can various different foreign experiences be replicated in the recipient system?
11. Which aspects of this educational component are immovable, and which tend to be malleable in the existing organizations and institutions?
12. What patterns are there of careers of persons educated outside the recipient system at various locations and those educated inside the recipient system in various ways?
13. What is the relationship between research activity in agriculture and teaching activity--both in the formal and in the non-formal system?

**D. Identification of institutional roles.**

1. Discovery from recipient points of view.
2. Discovery from donor points of view.
3. Relationship between goals of donor and recipient.

**E. Alternative institutional models.**

1. If present institutional development proceeds at the present pace, what consequences can be anticipated?
2. Which alternative forms of education would be likely to make a more direct and less costly contribution to rural development and other appropriate goals?
  - a. Alternatives of admission policy.
  - b. Alternatives of curriculum (content, process).
  - c. Alternatives of extra-curricular requirements.
  - d. Alternatives of resources.
  - e. Alternative of location(s).

- f. Alternatives of organizational structure.
  - g. Alternatives of relationships with other institutions.
  - h. Alternatives of doctrine.
  - i. Alternatives of certificates or degrees rewarded.
3. What budgetary commitments and recurrent expenditures in the system limit the size and composition of further development of higher education in agriculture?
4. For achievement of goals expressed in D, above:
- a. What seems to be ideal?
  - b. What seems to be practical?
  - c. What seems to be feasible?
5. What change might be made in the functioning of labor markets, and what would its consequences be for rural development?
6. What patterns of relationships among institutions serving agricultural development have been successful elsewhere in similar situations, and to what extent are aspects of them likely to be successful if attempted in Nepal? To what extent would any of these have to be modified to be appropriate for Nepal?
- F. Criteria for institutional success.
1. Will resources consumed yield more than if invested elsewhere with respect to the goals as they are discovered at various levels?

(Examples of such goals, which might be discovered in Nepal are: food productivity, modernity status feedback, employability of product, ability

to attract students, or statements like:

To produce trained personnel who will have ability and willingness to further the welfare of the rural people of Nepal and the dignity of agricultural occupations.)

2. Compatibility with other institutions.
  - a. In the agricultural sector.
  - b. In education.
  - c. Elsewhere in government.
  - d. In rural society.
3. Capability of dealing with significant indigenous problems.
4. Survival and growth potential.
  - a. Evolution of acceptable and highly valued doctrine.
  - b. Effective leadership.
  - c. Appropriate organizational structure.
  - d. Ability to attract resources.
    1. Adequate staff.
    2. Financial support.
    3. Other.
  - e. Program efficiency and effectiveness.
  - f. Extent to which linkages of the institution become normative in the social system.
  - g.
- G. The possible role of foreign assistance.
  1. Expert consultant/advisor personnel.
    - a. Amount.
    - b. Timing.

2. Temporary personnel to carry out specific functions.
  - a. Quantity.
  - b. Timing.
3. Participant training of recipient system personnel outside.
  - a. In donor systems.
  - b. In third systems.
4. Transfer of commodities.
5. Transfer of capital.
6. Strategy of foreign assistance.
  - a. Innovative methods and new approaches to foreign inputs.
  - b. Alternative timing of foreign inputs.
7. Consideration of potential scope of donor inputs.
8. Posture of both donor and recipient to choice between low risk, low payoff activities vs. high risk, high payoff activity.

H. Alternative plans for foreign assistance.

1. Bilateral sources.
  - a. The U.S. AID agency.
  - b. Other countries.
  - c. U.S. foundations.
  - d. Others.
2. Multilateral donors.
  - a. World Bank.
  - b. UNDP.
  - c. FAO.

d. UNESCO.

e. UNICEF.

f. Others.

3. The history and experience of the recipient system with various donor systems.

**MUCIA STAFF PARTICIPATION  
PHASES I AND II****Phase I****Planning Seminar, 13-14 June 1972**

George H. Axinn - MUCIA  
Charles F. Doane, Jr. - MUCIA  
William J. Kieffer - Michigan State University  
Harry Raullet - Michigan State University  
Barry N. Stein - MUCIA  
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**Seminar I, 20-21 June 1972 - Development of Guidelines for  
Pre-feasibility Study in Agricultural Higher Education.**

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**Phase II****Seminar II, 28-29 June 1972 - Refinement of Guidelines**

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PHASES III, IV, AND V

Phase III

Pre-Feasibility Study Outside Nepal

Postponed

Phase IV

Pre-Feasibility Study in Nepal

George H. Axinn -	2 August - 2 September 1972
John A. Dettmann -	23 August - 6 September 1972
William Kieffer -	6 July - 2 September 1972
Harry Raule: -	10 July - 31 August 1972
Rupert G. Seals -	17 August - 27 August 1972
Jacob Stern -	10 July - 8 August 1972
William N. Thompson -	10 July - 2 September 1972
Irving R. Wyeth -	7 August - 18 August 1972

Phase V

Final report, 29 September 1972

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