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A PROPOSAL FOR TEACHING FARM MANAGEMENT AT THE
INSTITUTE OF AGRICULTURE AND ANIMAL SCIENCE
TRIBHUVAN UNIVERSITY, RAMPUR NEPAL

By

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1. BACKGROUND AND NEED FOR THE STUDY

1.1. Introduction

This paper is concerned with farm management teaching needs in Nepal. It is intended to assist the author in the preparation of appropriate teaching materials as he assumes teaching and research responsibilities in the area of farm management when he returns to Tribhuvan University, Institute of Agriculture and Animal Science.

It was selected as a research topic because of the need to think through the development needs of Nepal and to evaluate those aspects of farm management education traditionally taught for their contribution to agricultural development in Nepal.

1.2. Background

1.2.1. Tribhuvan University, Institute of Agricultural and Animal Science. The only National University of Nepal - Tribhuvan University was established in 1959. Tribhuvan University act of 1971 (October 22, 1971) was responsible for implementing the higher education directives of the new National Education System Plan for 1971-1976.¹ The objective of higher education under the new plan is to produce trained manpower. In this regard, the University has programs in a number of subjects that are organized as 13 institutes,

¹MUCIA, "Higher Education in Agriculture in Nepal." The Report of a Pre-Feasibility Study, 1972. p. 21.

each offering varying levels of certificate and degree work.² 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 & Animal Science	(Up to diploma)
Institute of Forestry	(Up to diploma)
Institute of Engineering	(Up to certificate)
Institute of Medicine	(Up to certificate)
Institute of Applied Science & Technology	(Up to certificate)
Institute of Humanities & Social Science	(Up to research)
Institute of General Science	(Up to research)
Institute of Business Administration Commerce and Public Administration	(Up to degree)
Institute of Fine Arts	(Up to certificate)

The principal institution in Nepal set up to develop manpower for the agricultural sector is the Institute of Agriculture and Animal Science (IAAS), which is being established at Rampur. This Institute of Agriculture and Animal Science came into being in 1972 as an integral part of Tribhuvan University under the New Education System Plan.

²Ibid., p. 22.

The Institute of Agriculture and Animal Science was started by the Department of Agriculture, His Majesty's Government as a School of Agriculture in 1957. The purpose was to train Junior Technicians required by the Department to carry out all the developmental works in the country. This was later upgraded into the diploma and degree granting Institute of Tribhuvan University.

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 Kingdom's Agricultural development. The plan clearly charges that higher education will be organized to meet the manpower requirement of the country based on nation-wide estimates.³

In order to make it more practical, effective and responsive to the New Education System Plan, the need for sufficient land and a rural environment was felt. As such, according to the decision of His Majesty's Government, the Institute was shifted from Jagdamba Bhawan Kathmandu to Rampur Chitwan during Baisakh 2030 (April/May 1973) and the classes were started from Srawan 25, 2030 (August 9, 1973).⁴

The Institute acquired approximately 110 hectares of land, of which 70 hectares of land are cultivatable. Prior to 1975 the whole farm area was rented to the farmers of the locality on a

³Ibid., p. 45.

⁴Annual Report, IAAS, Rampur Nepal 1976-1977, pp. 1-4.

50/50 share basis. The entire cultivatable area of the Institute was brought under cultivation in summer 1976 for the first time in its history.⁵ Early in 2035 (mid 1978) IAAS acquired additional nearby land in the amount of 122 hectares.

Since the Institute is committed to helping its students learn the practical aspects of agriculture, great emphasis has been placed on classes in the field itself and on student project work in the field.

1.2.2. Aims and Objectives of the IAAS.

The 1972 MUCIA report (page 69-70) recommended the following "specific aims and objectives" for IAAS:⁶

1. To provide well educated, trained, committed, and dedicated manpower to fulfill both the immediate and long term need of the entire agriculture sector.
2. To bring the benefits of the modern scientific agriculture to the different communities of the kingdom through cooperation with appropriate branches of His Majesty's Government and other organizations.
3. To fulfill the needs of the vocational agricultural graduates, which would be required to serve the secondary vocational school of the country.
4. To conduct research efforts complementary to the teaching functions which will also provide knowledge needed for agricultural development and improved level of living.
5. To serve as the Kingdom's major academic resource for knowledge of agriculture sectors.
6. To gather, store, and disseminate knowledge regarding agricultural development in the academic and professional community.

⁵Ibid., p. 21.

⁶Op. cit., MUCIA Report.

Similar aims and objectives of Institute of Agriculture and Animal Science Rampur given in the Annual Report of 2033 (1976) are as follows:

1. To provide immediate and long-term manpower needed to take up agricultural development activities in both the private and the public sectors of Nepal.
2. To provide agricultural teachers to teach in the secondary vocational schools.
3. To conduct research on farmer-oriented agricultural problems so as to bring about a change in production patterns. In addition, the results should help to produce teaching materials generated in Nepalese conditions.
4. To maintain linkage with the Department of Agriculture and the Ministry of Education by providing trained manpower of different levels in accordance with their needs.
5. To provide short duration training to the semi-commercial farmers in different aspects of agriculture, and to others in agricultural work.

To achieve these objectives IAAS is action oriented and innovative, has a problem solving orientation, with practical application to the agriculture of Nepal and with an increasing depth in principles as education progresses to higher levels.

The USAID Report of Progress (PROP) for IAAS lists "functions" of IAAS which are more modest, and include:⁷

1. Training for agricultural Institutions in Nepal of
 - a. Junior Technicians and Junior Technical Assistants
 - b. Degree Personnel
 - c. Present staff of Ministry of Food, Agriculture and Irrigation and commercial personnel through short course and in-service programs.
2. Meeting national agricultur[e]l education manpower needs through:

⁷ His Majesty's Government, Ministry of Food, Agriculture and Irrigation, A Study of Hill Agriculture in Nepal by the Rockefeller Foundation Team, April 1976, Annex VII, p. 6.

- a. Training vocational agriculture teachers
 - b. Non-formal training of out of school youth and adults
3. Meeting needs of the farming community through:
- a. Short courses on campus and off
 - b. Pilot programs with model village
 - c. Training programs with other institutions, such as Agricultural Development Bank

The USAID Report stresses the concept of the so called "upside down" curriculum.⁸ This term or concept means that a student is first exposed to the practical aspects of a problem and then studies the scientific principles that lead to solving the problems. In agriculture while a student is learning how to physically grow a crop he is also studying the principles of crop production, how seeds germinate, the nutrient requirement of plants, limiting factors of diseases, pests, etc. The "upside down" method improperly used can be ineffective and downright harmful, if the student mechanically and without understanding is forced to perform as a laborer in growing a crop and then at a later point sits through a long series of lectures of theory that to him have no relation to growing the crop.

1.2.3. The Clientele of the Institute of Agriculture and Animal Science

The main clientele of the Institute of Agriculture and Animal Science are students of pre-professional programs, certificate

⁸Ibid., Annex VII, p. 5.

in Agriculture program, Diploma in Agricultural education, Diploma in Agriculture and local farmers.

The students of pre-professional programs are trained in campuses located at six different sites. The purpose of the pre-professional program is to prepare Junior Technical Assistants (JTA's). The Junior Technical Assistants can be attached to several government departments, ministries or private corporations. The organizations which employ Junior Technical Assistants are such as:

1. Department of Agriculture
2. Department of Resettlement and Rehabilitation
3. Agricultural Development Bank
4. Agricultural Input Corporation
5. Agricultural Marketing Services Department
6. Food corporations
7. Agri-industries in the private sector including sugar factories, jute factories, tobacco factories, animal and poultry feed plants, and others.

The number of these Junior Technical Assistants and Junior Technicians assigned for daily contact with farmers are increasing. They are becoming better known to farmers in all parts of Nepal.

Training and background of these JTA's varies. At present, JTA's have ten years of high school education plus one year of general agricultural training. They are young, generally without direct experience of running a farm themselves and usually posted in areas distant from their home community. As a good part of the

extension staff is posted in the Terai* and the Kathmandu Valley, the majority of the hill districts are poorly staffed with JTA's. Lack of housing facilities, low pay, lack of transport facilities and other incentives, especially lack of opportunities for advancement because of low level basic qualifications result in poor utilization of even this depleted extension staff. In areas where bank managed cooperatives exist, the JTA's are engaged in farm plans and arranging for supply of inputs. In many areas, they are used mainly for collection of statistical data.

JTA's can be effective in situations where they are able to (1) deliver something the farmer wants, such as improved variety of seed, (2) suggest a solution to a farming problem that already exists, or (3) be a willing "instrument" for farmers in obtaining goods and services they want from the government (a sprayer for the Panchayat, credit from a bank-managed cooperation), and (4) assist farmers to organize for group action.

The JTA can thus respond to felt needs, but at the present time he appears less suited for flexible, sensitive, and credible introduction of genuine agricultural innovation.

The training and posting of vocational agriculture teachers to village schools can potentially complement the JTA's as a second, although somewhat different reciprocal channel between government development policies and programs, and rural communities. The

* Plain river belt of the Southern Nepal.

vocational agriculture teachers emerging from the IAAS will have ten years of education plus four years up to the Diploma level in Agriculture. While they too will probably not have had direct experience of running a farm, they will find themselves occupying an already established role of teacher within an established local institution, the school. Although not doing it now, the vocational agriculture teacher could be encouraged to use this position to reach out with farmers. Perhaps if he is so encouraged, he should be able to use his position and prestige, and his greater knowledge of agriculture to draw farmers to the school to learn new skills. He may also be able to adopt and introduce agricultural innovations in the farming community. Unlike the JTA, the vocational agriculture teacher will not be tied to target achievement and to the systematic process for field test and farm demonstrations of new technology to be guided by the proposed subject matter specialists. The important questions of how to motivate and encourage vocational agriculture teachers to become agricultural activists, and how to involve them in the agriculture research/extension system while leaving them in the education system, have to be explored further.

Students, after completing Diploma in Agriculture program, become professional agriculturists. They can choose any profession such as teaching, research, and extension. They can also join any organization mentioned earlier as middle level technicians.

Finally, the farmers from local area participate in various agricultural programs organized by the Institute of Agriculture and Animal Science. Agricultural field days and various Result Demonstrations have been organized by the Institute to give the farmers new information and knowledge about agricultural production. According to a Report by Mid-West University Consortium for International Activities, Inc. (1972), the Gazetted* and Non-Gazetted** manpower in the Ministry of Food, Agriculture and Irrigation and Quasi-Public corporations as of 1972 is shown in Table I, and Availability of Trained Manpower in the Agricultural Section of Nepal, with projections to 1975 and 1985 is shown in Table II.

1.2.4. Organization of IAAS

The Institute is presently organized in three main academic divisions by subject area and supported by two administrative sections. Each academic division is devoted to teaching, research and extension activities. The three academic divisions and the different academic disciplines under each division are as follows:⁹

Plant Science:	Agronomy, Horticulture, Soil Science, Agricultural Chemistry, Agricultural Botany & Plant Breeding, Agricultural Engineering, Agricultural Physics, Entomology, and Plant Pathology.
Animal Science:	Animal Husbandry, Poultry, Veterinary, Fishery, Dairy Development, and Agricultural Zoology.

⁹Annual Report, Institute of Agriculture & Animal Science, Rampur, Nepal, 1976-1977, p. 5-32.

Table I.--The Gazetted* and Non-Gazetted** manpower in the Ministry of Food, Agriculture and Irrigation and Quasi-Public Corporations as of 1972.

Organizations	Gazetted*	Non-Gazetted**
Department of Agricultural Research and Extension	200	851
Department of Extension (51-DADO, 6-RADO)	57	
JT Level		176
JTA Level		525
Department of Livestock and Veterinary	62	250
Dairy Corporation	12	75
Agricultural Development Bank	20	85
Saving Corporation	4	260
Agricultural Marketing Corporation	7	10
TOTAL	362	2,232

Source: Higher Education in Agriculture in Nepal, The Report of a Pre-Feasibility Study, MUCIA, 1972, p. 27, p. 47.

*B.Sc. Degree or higher

**JT and JTA

Table II.--Availability of Trained Manpower in the Agricultural Sector of Nepal, with projections to 1975 and 1985.

Category	Available in 1973/1974	Added by 1975	Required by 1985
A. High Level	463	85	882
1. Ph.D. Standard	14	3	12
2. Post Graduate Standard	106	11	100
3. Agriculture Graduates	249	40	600
4. Agriculture Engineers	17	15	50
5. B.V.Sc.	30	6	50
6. B.E. (Irrigation)	47	10	70
B. Medium Standards	1,768	490	5,180
1. JT and JTA	1,310	300	3,000
2. Oversear and Sub- oversear	300	65	600
3. Food Inspector	10	10	40
4. Agricultural Marketing Assistants	8	10	40
5. Credit Cooperative Manager	140	105	1,500

Source: Albert R. Hagan. The Agricultural Development of Nepal: Analysis of Agricultural Sector, Agricultural Experiment Station, Special Report 189. Columbia, University of Missouri, August 1976, Appendix Table XXII.

Rural Development: Nepali & Nepal Studies, Agricultural Extension, Agricultural Education, Agricultural Economics & Farm Management, Rural Sociology, Agricultural Information, Audio Visual, Mathematics, and Statistics.

Early in Shrawan 2033 (1976) the professional staff at IAAS, Rampur consisted of the Dean and 21 faculty members. Eleven were in Plant Science, five in Animal Science and five in Rural Development (which included Agricultural Extension, Agricultural Education, Agricultural Economics and related subjects). But since that time there has been a tremendous development in staff recruiting at the Institute. By Bhadra 2034 (1977) there were 45 faculty members at the IAAS, exclusive of visitors, National Service teachers and the Dean.¹⁰ Staff numbers have increased significantly, and a long range manpower development program had been designed and put into operation. Further, a long range academic staff development program was designed called for an academic staff in the year 1985 of 93. Of those, 32 will be in Plant Science, 18 in Animal Science, 25 in Rural Development, and 18 at Branch Campuses.¹¹

1.2.5. Academic Program and Curriculum Design

The academic programs offered during 2034 (1976-1977) by the Institute of Agriculture and Animal Science were the one-year

¹⁰Annual Report, Institute of Agriculture & Animal Science, Rampur Nepal, 1976-1977, p. 46.

¹¹Ibid., p. 48.

pre-professional agriculture course (first year of certificate); the one-year Certificate in Agriculture (second year of certificate); the two-year Diploma in Agricultural Education (D.Ag.Ed.) and the three-year Diploma in Agriculture (B.Sc.Ag.).¹²

1.2.5.1. Pre-Professional Agriculture

The pre-professional Agriculture Program is designed with two purposes. First, it prepares agricultural technicians for services to the rural people of Nepal in posts such as Junior Technical Assistant (JTA). Second, it is the first step after high school for persons desiring to become a professional agriculturist, and to receive further higher education in agriculture.

The one-year (two semester) pre-professional Agriculture program is offered only at IAAS Branch Campuses. At present the branch campuses are located in the following six locations:

1. Khumaltar
2. Tripureswar
3. Parwanipur
4. Janakpur
5. Nepalgunj
6. Lumjung, Sundarbazar

¹²Academic Programs of the Institute of Agriculture and Animal Science, Tribhuvan University, Rampur, 1976-1977, p. 2-26.

Table III.--Academic Staff Members of IAAS (1976)¹³

	Plant Science	Animal Science	Rural Development	Total
Permanent Staff	11	3	8	22
On Study Leave	7	4	6	17
National Service	4	1	2	7
Part-Time	2	1	0	3
Department of Agriculture	2	0	0	2
Temporary	0	0	1	1
Contract	0	1	0	1
Visitors (PCV, MUCIA, etc.)	1	2	3	6
TOTAL	27	12	18	59
Total presently at IAAS	20	8	12	42

Exclusive of Visitors, National Service Teachers and the Dean, the academic staff at this time includes:

Readers	6
Lecturers	4
Assistant Lecturers	35
Instructors	<u>3</u>
TOTAL	48

¹³Source: Annual Report, Institute of Agriculture & Animal Science, Rampur Nepal, 1976-1977.

1.2.5.2. Certificate in Agriculture

Students, after completing the pre-professional program, take one additional year to complete a Certificate in Agriculture. Such students are prepared for higher middle level technicians posts (JT's). At the same time this certificate is one of the main entrance requirements for further higher education in agriculture. At the IAAS, this program may be followed by three additional years leading to the Diploma in Agriculture (B.Sc.Ag.). It was formerly followed by two additional years leading to the Diploma in Agricultural Education.

1.2.5.3. Diploma in Agricultural Education as of 1977*

This was a two year educational program for students holding Certificate in Agriculture and Certificate in General Science. This program was intended to produce agricultural teachers for the secondary vocational schools in Nepal. The courses were offered only at the central campus of IAAS at Rampur, but it included field experience and practice teaching in various locations throughout Nepal.

1.2.5.4. Diploma in Agriculture

This is a three year course after completing Certificate in Agriculture or Certificate in General Science amounting to a four year

*This program has been discontinued since July 1978. At present, 51 students are in the third semester Agricultural Education. They will be the last batch.

program after pre-professional courses. Students with a Diploma in Agricultural Education may complete the Diploma in Agriculture by taking one additional year of course work. The main purpose of Diploma in Agriculture Program is to produce professional agriculturists and to produce well educated and well trained middle level technicians for agricultural teaching (secondary schools), research, and extension. Diploma in Agriculture Program trains an agricultural generalist, not a specialist. The students, after completing this diploma, can go for further higher studies.

1.2.6. Rural Development Division

In addition to the Plant Science and Animal Science Divisions, the Rural Development Division was recently organized. This division includes academic work in ten different disciplines. Farm Management is one of them. Presently fourteen different courses are offered in this division. The Institute seriously lacks teaching staff in the field of Agricultural Economics and Farm Management. Four teaching staff of this discipline are studying in the USA and in India, and are planning to teach these courses after they return. The writer is one of them with plans to return in December of 1978 and teach farm management courses at the IAAS.

At present one farm management course (RD 002-Farm Management Practices) is offered to pre-professional agriculture program and another (RD 303-Agricultural Economics and Farm Management) course offered to Diploma in Agricultural Education and Diploma in

Agriculture program. The Course Description of RD 002 and RD 303 as given in the academic program of the IAAS are as follows:¹⁴

Course Number: RD 002
Course Title: Practice of Farm Management
Credit Hours: 5 (3+2)
Objectives: The students will be able to set up, keep and summarize basic farm records, to use farm records to plan farming operations, and to understand the application of basic economic theories to farm management.

Course Description:

Lectures: Agricultural economics, farm management and their scope. Sources of farm credit and types of loans. Functions of Agricultural Development Bank. Farm records and their maintenance. Decision making and farm planning. Marketing of agricultural commodities through Sajha Cooperative Societies. Computation of cost of production of different agricultural products. Role of agriculture in Nepalese economy.

Practicals: Field visits to farmers who are keeping records. Farm credit survey, visits to rural credit institutions, developing farm plans, collecting farm records, analyzing farm records. Making enterprise analysis, using farm records for management decisions, etc.

¹⁴Academic Programs of the Institute of Agriculture and Animal Science, Tribhuvan University, Rampur, 1976-1977, p. 79.

Course Number: RD 303

Course Title: Agricultural Economics & Farm Management

Credit Hours: 4 (3+1)

Objectives: Students gain insight into economic and business management aspects of farming, emphasizing cost/benefit analysis at farm level, and students develop ability to survey farms, use farm records, ¹⁵ and analyze management problems.

Course Descriptions:

Lectures: Lectures describe the various agricultural situation in Nepal, developing students' knowledge of such economic concepts as supply, demand, price, wealth, goods, utility and scale and applying those concepts to the farm of Nepal, students learn factors of productions, how to analyze inputs, calculate cost-benefit ratios for individual crops, livestock, and combinations, how to develop and use farm records, and basic principles of management and decision making.

Practicals: Practical offer each student the chance to study the operations of one or more farmers, to develop farm plans, calculate cost and benefits, and gain competence in keeping and using farm records.

¹⁵Academic Programs of the Institute of Agriculture and Animal Science, Tribhuvan University, Rampus, 1976-1977, p. 92.

1.3 Need for Study

1.3.1. Problem Statement. Measurement and evaluation of the efficiency of the farm business becomes increasingly important as agricultural technology increases and as more agricultural services and functions are performed off the farm. However, the application of the principles to a farming situation is complicated if the large number of variables involved. It becomes very important to find out what to teach and how to teach in these farm management courses and what additional teaching materials should be prepared in order to make these courses more useful to the students in their future career development. Many students, after completing pre-professional and certificate in agriculture, will be working with farmers as JTA and JT in extension activities. They become of key importance in processes of decision making and making relevant choices as the farmers have limited resources. The ability to allocate and utilize efficiently the limited resources such as land, labor and capital for maximizing the economic returns is called management. This is intangible but essential.

It is the managerial abilities of the farmers which, in a substantial way, will determine whether they will accept or reject changes. Agricultural improvement must begin at this farm level.

Farm Management should incorporate a technical approach which stresses changes in individual enterprises or activities. Farmers profit more when technical and management approaches are combined. Therefore it is extremely important for the agricultural workers to realize the need of this balanced farm-oriented approach.

1.3.2. Objective of Study

The main objective of this study is to develop appropriate teaching materials in the area of farm management and to suggest the teaching activities, techniques and procedures. The teaching materials will be developed for two separate courses: one in the pre-professional curriculum and one in the diploma curriculum.

Specifically, the study will include:

1. Development of general and unit objectives for each course;
2. Development of major topics and a calendar for each course, and
3. Development of the instructional units for each course, including suggested teaching activities, students' activities, and resources.

1.4. Plan and Organization of Report

1.4.1. Procedures. While preparing this report the existing farm management courses will be fully reviewed. To make it more practical and relevant to farming situation of Nepal the course outline is carefully prepared and a sample teaching unit is also prepared. Before developing the syllabus for farm management course at IAAS, the Nepalese farm management problems are studied and discussed.

1.4.2. Organization of the Report

This paper is divided into four main chapters. The first chapter has discussed the Tribhuvan University and the Institute of Agriculture and Animal Science; their objectives, functions, and organizations. The academic program and curriculum design of the

Institute of Agriculture and Animal Science was also briefly discussed in this chapter. The first chapter also discussed the Rural Development Division and the two Farm Management courses presently offered in this Division.

The second chapter discusses the Farm Management problems in Nepal, Regional Farm Management Problems, Farm Management and Economic Development, Farm Management-Meaning and Purposes, Farm Management Education.

The third chapter discusses the Basic Tools and Economic Principles of Farm Management which the author deemed important for the Nepal situation. This chapter also discusses the basic tools of farm management like Farm Planning and Budgeting, and Farm Records.

The fourth chapter discusses the syllabus for Farm Management course at the IAAS. Course objectives and course outlines are prepared separately for pre-professional level and Diploma level students. A sample teaching unit is also prepared. A list of selected readings is also given in this chapter.

2. FARM MANAGEMENT PROBLEMS IN NEPAL

2.1 The Farmers of Nepal

The farms of Nepal are small and the farmers are usually very poor with limited access to modern agricultural inputs, either because of a lack of knowledge concerning them or because of the difficulty of transporting them from the point of sale to the farms or because they would be inappropriate. According to a sample survey conducted in 1971,¹ the average farm size in Nepal is 1.39 hectare with the smallest farmers (63.5% of the total) having holdings averaging .36 hectares each and the next largest group (19%) of the total farmers having holdings averaging 2.01 hectares in size. In the same survey, it was found that in the hills, the farm size tends to run much smaller than in the Southern plain river belt area (Terai). In Kathmandu Valley, the average cultivated holding is 0.66 hectare, in the eastern hill it is 0.59 hectare and is only 0.82 hectare in the western hills. On the other hand, the average cultivated holding in the eastern terai is 3.19 hectare and 7.36 hectare in the western Terai. In general, hills are food deficit area while terai is food surplus area. But most of the surplus food is exported to India.

¹Op. cit., MUCIA.

According to the 1971 census, it is estimated that there are about 1,500,000 farm families in Nepal (60 to 65% of them in the hills) farming about 2,000,000 cultivated hectares or 1.33 hectare each with an average of over 7 members per family, or about 0.19 hectare per capita nationwide. In the hill districts, the cultivated area per capita is considerably less, about 0.13 hectare and in the terai, the cultivated area per capita is about 0.22 hectare.²

Rice, maize and wheat are the major crops with average yields below two tons per hectare for maize and rice and less than 1 ton per hectare for wheat. Most farmers do not have access to any markets except local barter markets. They are largely illiterate and most social infrastructural facilities are several days' walk away from their farm.

The topography in the hills is such that most of the residents are isolated from the outside world. Few, if any, known raw materials exist for chemical fertilizer, which is a necessary but not sufficient ingredient for a Green Revolution, and imported fertilizer is unusually costly because Nepal is landlocked.

Many hill farms, a high percentage of the total number, are on terraced hillsides which have slopes ranging from 10 to 40 percent, sometimes steeper.

²Ibid.

Most hill farms are isolated in small, micro-settlements because of the rugged terrain. Through hard work and ingenuity, hill farmers have attained a high level of efficiency in land use.³

From the standpoint of land use intensity, the hill farms have progressed much closer to the intensive margin than those in the Terai.⁴ In a study conducted by staffs of IAAS in five different locations in the Central part of Nepal, the average farm size is found to be less than 1 1/2 hectares in size, and was a mixed farm with grains, livestock, fruits, and vegetables, with an average of about seven people living on it. The study was done in the year 2033 (1976-1977). See Table IV.

Livestock is an integral part of a Nepalese farm. Cows and buffaloes are kept not only for milk purposes, but for manure, transportation, fuel from dungcakes, plowing the field and for religious purposes. A substantial amount of labor is used in the care of livestock in Nepal.

Hill farmers seem to place a higher value on some assurance of family survival than on making a small, and perhaps uncertain, gain in cash income. They have more confidence in attaining the

³Albert R. Hagan, *The Agricultural Development of Nepal: Analysis of the Agricultural Sector*, University of Missouri, Columbia, 1976, p. 4-10.

⁴Ibid.

Table IV.--The Typical Farm in Nepal (A Numerical Description)

	Lamjung	Kaski	Baglung	Bhairawa	Chitwan	Average
1. Number of Farms	34	29	27	38	69	39.4
2. Average Size (hectare)	0.97	1.26	0.29	1.65	- .87	1.38
3. Average Number Livestock	7.68	7.41	3.67	11	6.45	7.30
4. % with three or more grain crops	100.00	100.00	92.6	100.00	86.9	94.33
5. % growing some fruit	34.2	88.5	100.00	57.9	--	68
6. % growing some vegetables	52.9	88.5	100.00	86.84	5.80	54.12
7. Average size of farm household	7.38	6.96	6.89	6.6	7.0	6.96
8. % who purchase seeds	41.2	48.3	40.7	36.8	23.19	34.8
9. % who purchase feed	3.0	24.1	55.6	23.7	2.9	17.1
10. % who purchase fertilizer	58.8	72.4	74.1	34.2	--	55.5
11. % using credit	29.4	13.8	51.9	26.3	--	29.7
12. % marketing commercially	73.5	57.7	85.2	78.9	--	74.2
13. Average Age Farmer	44.6	47.4	44.9	38.1	47.6	44.9
14. % Working off Farm	50.0	38.5	63.0	52.6	--	50.0
15. % ever visited by JTA	26.5	34.6	37.0	26.3	5.8	21.8

Source: Compiled by G. H. Axinn,

survival goal through time tested traditional methods and, hence, are very reluctant to make any major changes which might jeopardize this position.⁵

2.2. Regional Farm Management Problems

The variations in farm management problems of Nepal depend upon the availability of local resources. The following problems are most common in farm management:

1. Small size of farm business

As indicated above, the average size of farms in Nepal is about 1.33 hectare. The land area is also fragmented and scattered in many places. An excess of farm population creates unfavorable man/land ratio in most parts of the country; thus resulting in small farms, and low productivity per man. This, combined with surplus labor supply, has weakened the financial position of the farmers and limited the scope of business expansion.

2. Difficulty in applying technology

The family type of farm perpetuates the traditional combinations of crops and livestock and methods of cultivation. The culture and traditions of these family farms resist the change to new technology. They are not only suspicious of new technology, they believe that they cannot afford to take any risk due to their poor economic condition.

⁵Ibid., p. 14.

3. Lack of access to adequate capital

Inadequacy of farm credit is a serious deficiency everywhere in the country. The small size of farms and low prices have forced the farmers to borrow each year. Thus, farmer's debts accumulate through no fault of their own. The problem under these circumstances is to increase income and encourage savings. These savings must then be channeled to farmers as loans at reasonable rates of interest to improve farm productivity.

4. Problem of under-employment

Large family labor supply in relation to land and small farm business is the main reason of under-employment in the hill regions. Besides, there are very few rural industries to absorb and employ the rural labor. Due to seasonal production, the laborers have nothing to do in off growing season.

Under-employment not only reduces efficiency and productivity of manpower but also brings economic and social evils of laziness and social unrest.

5. Problems of adequate amount of supplies and materials

The farmers in the hilly region have always faced problems in obtaining the needed materials and supplies. Difficulty in obtaining these materials and supplies in proper quantity, quality and at required time has been a serious constraint in agricultural development. Most of the supplies and materials are imported from foreign countries. Nepal does not produce enough supplies and materials to meet the demand of the farmers. Besides, the country

lacks either raw materials, skills, capital, or combination of these, to manufacture the needed materials.

Higher yields per hectare can likely be accomplished by expanding the use of improved technologies, fertilizer, pesticides, higher yielding varieties, etc. The Terai has an advantage over the hills for such expansion because of the accessibility of inputs and at lower costs. For example, in many hill areas the cost of transporting fertilizer may exceed the purchase price.

The primary need in the hills is to explore and to test the adaptability of a wide variety of farming systems, practices, technologies, new crops, and other adjustments which offer promise.

6. Others: communication, markets, illiteracy, etc.

Poor system of communication, weak organization of markets and high rate of illiteracy retard the improvement of farm management. Substantial investments should be made on roads, marketing systems, schools, and hospitals. More important, it requires investment in people who must learn new technical and management skills.

Education of the masses is the most important need. Even illiterate people can be taught through demonstrating the application of new techniques and better ways of using materials available for production. New agricultural technology cannot be imported and used on the farm like new and useful machinery. It must be locally developed in accordance with specific local needs.⁴

⁴Op. cit., MUCIA.

2.3. Farm Management and Economic Development

The talk in Nepal today is of economic development. It means:

a. Increase in the national income at a faster rate than population (assuming prices remain the same). In other words, it is an increase in the amount of goods and services available for each person.

If we consider agricultural economic development we will see that to increase yield per acre and to increase each farm family's income, full utilization of farm labor, adequate capital for agricultural production and water and soil management to fit each particular crop cannot be overlooked. These problems are very close to farm management for the reason that if the problems were solved, the aim of most profitable farming would be accomplished.

b. More people at work, or at work for more months in the year. The increase in farm output must be achieved without a proportionate increase in the number of people working on farms. The figure of more than 90% of the population engaged in agriculture is very high. Very few countries have such a high proportion of population engaged in agricultural activities. Such a high figure as in Nepal shows not only that the farmers have low productivity and low incomes, but also that the whole population have relatively low income. This is because not enough people are working at producing things other than farm products. Economic

growth means a larger proportion of workers engaged in non-agricultural production, and they must come from farms and villages.

c. Increase in earnings from exports in order to pay for the imported goods needed for economic development.

Since agriculture employs about 93% of the labor force in Nepal, providing 67% of the Gross Domestic Product, and 80% of the national export earnings, the improvement of the agricultural sector is of concern to officials in many branches of His Majesty's Government.

The Terai, with about 40 percent of the country's population, produce approximately 62 percent of the food grains. A substantial portion of this is exported to India. The hill regions vary in degree of self sufficiency in food grains, with deficits in the western hills to be expected more frequently than in the eastern hills.

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. 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. The production of commercial

crops during the 1960's was more encouraging, largely as a result of increase in yields of oilseeds and acreage of jute and sugarcane; 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.⁵

Agriculture is Nepal's largest primary industry. It is not always appreciated, however, that farming is in some ways different from any other industry or business and that farmers have some special difficulty which cannot be overcome by farmers individually, but which must be solved by cooperation of farmers and farm organizations with the government and in which the whole population, on farms and in cities, has a stake.⁶

In a developing country like Nepal the process of economic development must start with agricultural development, since no genuine revolution in economic growth can be achieved without a radical improvement in farming and funds for development must be generated in the countryside, because the bulk of the population lives on the lands, and the bulk of the wealth comes from agriculture.⁷

⁵Op. cit., Hagan.

⁶Ibid., p. viii.

⁷Ibid., p. 40.

Increased farm productivity can produce the output needed to be transferred to other growing sectors of the economy and will raise the level of farm income. Prosperity also enables the farming population to provide a growing market for industrial goods. If the countryside is stagnant, the farmers cannot buy the new goods, and the cycle of interdependent growth in both industry and agriculture is arrested. Without agricultural development there can be no significant economic development in a developing country like Nepal.

There are two highways to increased agriculture production; the cultivation of hitherto unused land, and the better utilization of land already in use. But the extent to which the unused land can be brought into cultivation is limited.

The main methods of increasing crop yields can be summarized under the following headings: use and control of water, building up of soil, fertility, plant breeding and seed improvement, better equipment, reducing losses caused by pest and diseases. For all these, proper farm management knowledge, well organized educational and advisory services are indispensable. Only when the need for scientific methods has been realized and modern techniques developed at the farm level can progress be transformed from potentiality into reality.

2.4. Meaning and Purpose of Farm Management

There can be found many definitions of farm management. Nowadays farm management is considered as a science. It is a

practical aspect of the applied science of agricultural economics concerned with the process of decision making by the farmer.⁸ The farmer in his day to day business is responsible for the management of a wide range of resources of factors of production - land, either owned or rented; capital, either owned or borrowed; and labor including personal, family or hired labor. The function of management is one of continuous decision making and of choosing among alternatives.

Farm management may be looked at from the point of view of the farmer, or of the teacher and extension worker, or of the research worker.

Farm management from the farmer's viewpoint consists essentially of choosing between alternative uses of scarce resources and of operating his farm so as to achieve maximum net returns.

The farm management task of extension workers is one of giving organized guidance to increase the managerial skills and ability of farmers by helping farmers to see their problems, to analyze them, to weigh risks against benefits, and to make soundly based management decisions. The extension worker must rely upon research for knowledge which will help farmers make profitable decisions in organizing and operating their farm.⁹

⁸FAO, Farm Management Manual, for the use of Agricultural Extension Workers in Asia and the Far East, Bangkok, Thailand, 1965, pp. 13-15.

⁹Ibid., p. 4.

Research work in farm management involves identification of management problems, development and refinement of principles, and drawing management conclusions which will help individual farmers in the decision-making process. Research on resource use and productivity of individual farms will also be helpful for policy makers.

The field of farm management is concerned not only with maximizing production vis-a-vis the income from all enterprise for the farm as a whole but also with returns to and income from single enterprises.¹⁰

The purpose of farm management study is to help farmers solve one or more of the following problems:

1. Selecting the most profitable combination of enterprises.
2. Determining the most profitable size of business in relation to the level of management and availability of physical resources.
3. Determining the most profitable level of production.
4. Deciding on the most profitable methods and practices of production.
5. Timing of production.
6. Marketing problems.
7. Proper use of credit.
8. Family expenditure.

¹⁰Ibid., p. 13.

2.5. Farm Management Education

Improving the quality of life of rural people depends upon the decisions made by the farmers. The farmers have limited resources of land, labor and capital. The key question is how will this farmer and his family manage these resources?

Extension education concentrates on educating the farmer to adopt improvements in farming through two different approaches:

1. The first approach is purely a technical-teaching new and/or improved methods of growing better crops and raising livestock, by using fertilizer, controlling water supply, using machinery, immunizing against diseases, etc. A subject matter specialist under each item develops the necessary information. This approach of farm management education is on the part of Plant Science and Livestock Division. Farm management education gives more emphasis on second approach.

2. The second approach is Technical and management combined-teaching how to take advantage of all possible technical helps, but also emphasizing the organization and the operation of all farm resources in such a way that a maximum of production and income is obtained at least cost. This profit incentive approach creates a favorable attitude for adopting more technological innovations.

3. BASIC TOOLS AND ECONOMIC PRINCIPLES OF FARM MANAGEMENT

It is necessary to know some of the basic tools and economic principles of farm management in order to achieve goals from farm operation. The existing economic condition of the farmers can be improved only through obtaining higher economic return from the farm operation. It is this researcher's belief that the knowledge of economic principle and tools of farm management can help increase economic return.

Each year, a farmer will have to make decisions on several matters. These include: the kind of crops to be grown to favor the market condition, the kinds and number of livestock to keep, the kinds and amount of seed and fertilizer to be used, the amount of labor needed, the best estimates of cost and selling prices, etc.

In solving operational and organizational questions, the farmer must have a firm grasp of at least the most elementary guiding principles useful in determining "best" enterprise combination, production practices, intensity of resource application to fixed factors and best factor combinations. These involve the principles of comparative advantage, diminishing returns, opportunity cost and substitution.

3.1. Tools of Farm Management

3.1.1. Record Keeping

One of the important tools of farm management is farm records. Farm records can be of great help both to the farmers as well as research workers. Very few farmers in Nepal keep farm records. What they have done and what they have got, everything is kept in their memory, not in paper. Memories can deceive sometime and the accuracy becomes questionable. The farmers should be encouraged to keep farm records, but to start with the farm record should be as simple as possible.

The students in farm management course at the Institute of Agriculture and Animal Science, and other branch campuses have a project work in their practical class to help farmer keep records. The follow-up of this project is carried through the succeeding group of junior students.

The farm record should help the farmer in the following ways:

1. Source of information: The farmers can know where, when and how much inputs they have used, cost and expenditure, quantity produced and profit earned, inventories of his supplies. The farmer can have many other information from farm record.

2. Basis for Planning: Every year farmer has to decide what crops to grow, where to grow and when to grow and how much to grow. He also needs to know different supplies and materials needed - their sources, quality and quantity. Farm records can solve these problems.

3. Knowledge on Prices: Changes in prices received and paid is important information in determining production, costs and market results, and to adjust production plans. The only dependable way to collect such information is to keep records.

4. Obtain Credit and Loan: To obtain loan and credit from Agriculture Development Bank and Cooperatives, farm records can help the farmer decide how much loan and credit he needs and how much it will cost him.

5. Better Home Management: In Nepal, where farm and home management are integrated, findings of record analysis can be used to guide the allocation of funds between production improvement and immediate family welfare.

Farm records can be most helpful to extension and research workers as well. It may not be reliable data if collected from farmers who do not keep records. Guessing is not uncommon.

But to a research worker and other farm advisors who are responsible for making different farm plans and policies, the data collected from the farmers must be accurate. There is no doubt that farm records can provide such accurate data.

Immediate benefits from the farm record may not be seen. But after a couple of years it will start giving valuable information. Farm record may not be of any value if it is not used properly. Farm record should not be just for the sake of keeping record. Rather it should be used as a tool for solving farm management problems.

3.1.2. Farm Planning and Budgeting

Farm Planning is the process of considering what crops to grow, in what quantity, and in what order. It includes also what and how many animals of various classes to keep, what building equipment, labor and power to be acquired, etc.

Basically, farm planning will help the Nepalese farmers in the following ways:

1. It helps him identify clearly the various supply needs for his plan, how much and what kind of seed, fertilizer, plant protection materials, improved implements and the like he will need to buy, when they are needed, their cost and where to get them.

2. It gives him a clear idea of the yield and production he can reasonably expect. From this, he can estimate the amount needed to pay off his loan and how much he will have left to pay expenses and for other uses.

3. It helps him identify the credit he will need, both short and medium term.

4. It helps him decide how to use new ideas in relation to the crops he will grow, how many acres of each and how he will grow them.

Farm budgeting is the process of estimating farm inputs or expenses, outputs or production and net earnings. This is both in physical and monetary terms.

A budget is used to evaluate a plan, and plan is the basis of a budget. Farm planning and budgeting are so interlinked that they are essentially inseparable.¹

Whole farm budgeting refers to efforts to consider all aspects of the farm organization at the same time. This includes all crops, all animals, all resources, etc. Partial farm budgeting normally relates to attempts to estimate income and expense for a single farm enterprise.

¹Op. cit., FAO.

4. SYLLABUS FOR FARM MANAGEMENT

4.1. Philosophy of Teaching

To achieve aims and objectives, the Institute of Agriculture and Animal Science is action-oriented and innovative, has a problem-solving orientation, and is practically applied to the agriculture of Nepal, with increasing depth in principles as education progresses to higher levels.¹

Much emphasis should be given on problem solving approach rather than discussing whole lot of subject matter of the course. The teacher should be able to use the local examples in the subject matter discussion to make it more relevant to the Nepalese situation.

Continuous emphasis should be placed on practical training utilizing the "Learning by Doing" philosophy.

As a "plan of Learning" program we must ask ourselves:

- a. What are the objectives of the curriculum?
- b. What are we intending that our students learn?
- c. How do our students act, think and feel?
- d. Is our approach to emphasize and understanding of facts, principles and generalizations or is it the immediate use of particular material?

As a "plan of Teaching" program must make very clear to our students what it is that he is trying to learn.

¹Op. cit., MUCIA Report.

4.2. Methods of Instructions (How to Teach)

There are two common arrangements in the instructions. First is the learning arrangement by giving regular lectures in the classrooms and second is the application arrangement by assigning special problems for students to work with the farmer. A plan of using one or more case farms as a basis of instructional program should be followed.

4.3. Method of Organizing the Course

In order to make this farm management course more practical, efforts should be made to bring the farm problem to the classroom discussion. The students should be required to identify the activity and problem related to farm management. The sequence of the course should be arranged in such a way that the topical outline and farming operation coincide at the same season. This course, however, might differ from one location to another due to local situation.

4.4. RD-002: Practice of Farm Management

4.4.1. Course Objectives

The overall purpose of the course is to help the students gain proficiency in the use of economic tools of analysis as applied to practical farm management decisions and to develop ability to plan,

organize, and operate a farm business so as to maximize returns to the resources employed.²

In light of these objectives students should, by the end of the course, be able to:

- a. Identify and understand problems faced by farmers
- b. Describe the role of agriculture in Nepalese economy
- c. Describe the economic principles underlying what to produce, how to produce and how much to produce
- d. Collect, analyze and summarize cost of production data for different agricultural enterprises
3. Demonstrate how to keep and use farm records
- f. Describe farm planning and budgeting
- g. Describe the functions of Agricultural Development Bank and Sajha Cooperative Society and the procedures of obtaining credits and loans

4.4.2. Topical Outline and Time Allocation

Week	Topics	Hours	
		Lecture	Practice
1	I. Introduction to the course	1	
	II. Role of Agriculture in Nepalese Economy and Farm Management Problems		
	a. Food and Fiber		
	b. Foreign exchange	2	4
	c. Implication for farm operations and management		

²Op. cit., IAAS.

Week	Topics	Hours	
		Lecture	Practice
2	III. Basic Concepts and Scope of Farm Management		
	a. Meaning of farm management		
	b. Objectives of farm management	3	4
	c. Scope of farm management		
3	IV. Basic Concepts of Some Important Economic Terms	3	4
	a. Demand		
	b. Supply		
	c. Price		
4-5	V. The Economic Principles of Farm Management	6	8
	a. Production function		
	b. Input-output combination		
	c. Cost analysis		
6-7	VI. Farm Operation Planning	6	8
	a. Farm planning		
	b. Farm layout		
	c. Farm budget		
	d. Concepts of complete and partial budget		
8-9	VII. Farm Management Information	6	8
	a. Farm records, their importance and maintenance		
	b. Types of farm records		
	c. Collecting farm records and analyzing farm plans		
10-11	VIII. Sources of Credits and Loans	6	8
	a. Functions and organization of Agricultural Development Bank and Sajha Cooperative Society		
	b. Types of credits and loans		
	c. Farm credit survey		

Week	Topics	Hours	
		Lecture	Practice
12-14	IX. Study of Main Enterprises Management a. Crop management b. Livestock management	6	8
15	X. Review of Course		

4.5. RD-303: Agricultural Economics and Farm Management

This course is offered to diploma students at the Institute of Agriculture and Animal Science, Rampur.

This is a four credit hour course with a 3-hour lecture and 2-hour practical work. Only those students coming from certificate in Agriculture will have a course in farm management in their pre-professional agriculture program. The students from Certificate in Basic Science will not have any background in agricultural economics and farm management.

The purpose of Diploma in Agriculture program is to produce agriculture middle level technicians and professional agriculturist. The students, after completing this program, can go for higher studies or work as a vocational agriculture teacher, assistant research worker, assistant agricultural development officer or work in different private agricultural organizations.

This course is prepared to introduce the students to some of the principles of management and decision making useful in managing farm and to develop some skills in applying these principles and tools to management situations. This course involves the study

of the farm business from the standpoint of maximizing net returns over time. Major emphasis is given to the fundamental principles underlying sound farm organization, operation and management. The principles and techniques that are developed are general enough to have validity throughout a wide geographic area under any conditions. On the other hand, they are specific enough to be applied to an individual farm at a given time.³

4.5.1. Course Objectives

Students completing this course will be able to:

1. Describe the role of agriculture in Nepalese Economy, illustrate the Nepalese farm characteristics and identify the problems faced by Nepalese farmers.
2. Develop ability to plan, organize, and operate a farm business so as to maximize returns to the resources employed.
3. Enter all income, expense, and physical data from an operating farm, with both crop and livestock enterprises, into a standard farm account book.
4. Summarize a farm record into a Net Worth Statement, and then, using these statements, construct whole-farm business performance measures and conduct a farm business analysis.
5. Summarize the enterprise accounts from a farm record, and apply enterprise performance measures in conducting and enterprise analysis.

³Ibid.

6. Given sufficient accounting data, construct an income statement, a balance sheet, and a fund flow summary.

7. Define and describe the economic terms like demand, supply, price, etc.

8. Describe Factor-Factor Relationship, Factor-Product Relationship and Product-Product Relationship.

9. Derive an understanding of the economic principles necessary for the successful operation of a farm.

10. Given a specific farming situation, make a list of potential expansion alternatives, make a list of the data needed to evaluate each alternative, collect the data, select an analytical tool (partial, complete and/or capital budgeting), and apply that tool or tools to analyze the alternatives.

To further illustrate the specific course objectives, the students should be able to answer the following:

1. How do we determine the most profitable combination of crops and livestock on a given farm? (consider both procedures and concepts)

2. What effect does the size of the farm operation or size of the farm enterprise have on cost of production of a particular product?

3. How can we determine the most profitable level of yield or output of a particular product? (involves questions of fertilization, feeding level, etc.)

4. What provisions can we make to maintain competency and improve the functioning of management?

5. What provisions are made for growth and development of the farm business through time? (and how risky is it?)

6. What are some of the opportunities and requirements for success in farming as an occupation (income expectations, capital requirement and personal characteristics needed for success)?

7. How do we determine the least cost technique or combination of inputs to produce a particular output level? (rice and corn, machine and labor, livestock, land, etc.)

4.5.2. Topical Outline and Time Allocation

Week	Topic	Hours	
		Lecture	Practice
1	I. Introduction to Course	3	2
	a. Course objectives		
	b. Definition of Farm Management and relation of farm management to other area of study		
	c. Characteristics of a successful farm manager		
2	II. Role of Agriculture in Nepalese Economy and Farm Management Problems	3	2
	a. Food and fiber		
	b. Foreign exchange		
	c. Implication for Farm Operation and Management		
3-4	III. Economic Principles Applied to Farm Management	6	4
	a. Diminishing physical output		
	b. Diminishing economic returns		
	c. Fixed and variable cost		
	d. Equimarginal returns		
	e. Opportunity cost		

Week	Topic	Hours	
		Lecture	Practice
5-6	IV. Framework for Making Decisions (using economic principles)	6	4
	<ul style="list-style-type: none"> a. What to produce (Product-Product Relationship) b. How much to produce (Factor-Product Relationship) c. What combination of inputs (Factor-Factor Relationship) d. Cost and revenue relationship 		
7-8	V. Tools for Decision Making	6	4
	<ul style="list-style-type: none"> a. Farm record keeping: financial records for measuring business, purposes of components, types b. Using farm records for management decisions: <ul style="list-style-type: none"> i. measure of position, size, efficiency ii. using record data for production, market, and financial planning c. enterprise records 		
9	VI. Budgeting	3	2
	<ul style="list-style-type: none"> a. Complete budgeting b. Partial budgeting c. Enterprise budgeting 		
10-11-12	VII. Farm Organization and Planning	9	6
	<ul style="list-style-type: none"> a. Inventory of farm resources b. Principles and guides for developing a profitable cropping system c. Principles and guides for developing a profitable livestock system d. Integrating the crop and livestock system 		

Week	Topic	Hours	
		Lecture	Practice
	<ul style="list-style-type: none"> i. long range budgeting ii. transition budgeting and cash flow 		
	<ul style="list-style-type: none"> e. machinery and labor management decisions 		
13	VIII. Planning the Crops to Produce	3	2
	<ul style="list-style-type: none"> a. Principles of comparative advantage b. Comparison of income above direct cost for different crops c. Break-even prices and yield for different crops 		
14	IX. Acquisition of Capital	3	2
	<ul style="list-style-type: none"> a. Basis for credit b. Sources of credit c. Functions of Agricultural Development Bank and Sajha Cooperative Society 		
15	X. Linear Programming-Graphic Presentation of Linear Programming	3	2
	XI. Risk and Uncertainty		
	XII. Review		

4.6. Sample Teaching Unit⁴

Course: Practice of Farm Management

Unit Number: 7

Unit Title: Farm Management Information

⁴Donald O. Meaders, "Instructor's Guide to Teaching Farm Management." (Unpublished report), IAAS, Rampur, (mimeograph).

Major Objectives of the Unit:

The students will be able to describe in writing the different farm record systems and demonstrate how to keep and use farm records.

Key Points:

1. Farm records: meaning and importance
2. Types of farm records: inventory, expense, receipts, labor, production, enterprises, and household items
3. Farm records for planning, analyzing, securing farm credit, comparing production, etc.; value for district-wide, regional and national planning
4. Problems encountered when keeping records
5. How to make entries in records

Suggested Student Activities:

1. The students will have practice in deciding the proper entries of several items in farm record.
2. The students will select the farmer and guide him in keeping farm records.
3. Students should prepare reports about their success and problems in helping farmers keep records.

Suggested Teacher Activities:

1. Prepare an exercise sheet for students in one practical class: sample entry items which may be typical on a farm. Then ask the students to individually decide where and how each item should be entered in the Record Book.

2. Secure sample farm records used by farmers.
3. Prepare a checklist of procedures for making entries in the Farm Record, including an inventory at the beginning.
4. Check the progress made during the first semester by each student for keeping records.

Evaluation:

1. Evaluate the correctness and completeness of the entries made in Farm Records.
2. Give oral quiz.

Special References:

1. Efferson, J. Norman. Principles of Farm Management.
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3. Hopkins and Turner. Records for Farm Management.

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5. SUMMARY AND CONCLUSIONS

The main objective of this paper has been to develop appropriate teaching materials in the area of farm management and to suggest teaching activities, techniques and procedures.

The U.S. and other western farm management educational systems cannot be simply transferred to the Nepalese situation because agriculture in Nepal is markedly different. The Nepalese farmers are poor and farms are small. The average farm holding is less than two acres in the hills and they constitute more than 65% of the total farming population. The majority are subsistence farmers.

There are numerous physical, social, economic constraints to developing Nepalese agriculture. However, the Ministry of Food, Agriculture and Irrigation, His Majesty's Government and the Institute of Agriculture and Animal Science, Tribhuvan University are making every effort to improve agricultural conditions of Nepal. The Institute of Agriculture and Animal Science is responsible for producing required manpower for agricultural development. It is engaged in teaching, research and extension activities. The Institute of Agriculture and Animal Science produces Junior Technical Assistants, Junior Technicians, Vocational Agricultural Teachers and other middle level agricultural technicians. The Institute also trains the local farmers in new agricultural technology.

With many new agricultural enterprises coming up and new agricultural technologies being introduced, it becomes very important to find out what to teach and how to teach the farm management courses at the Institute because the students, after leaving the Institute, will be working closely with the farmers in solving their farm problems. It is very important that what the students learn about farm management be relevant to the local farm situation. One of the major emphasis in this paper has been to implement a problem solving approach rather than excessive theoretical discussion in the classroom. This paper has been concerned that the farmer receive the knowledge of farm management principles and tools as a consequence of the training provided to the students from their studies at IAAS. It becomes very necessary to study the farm management problems and local farming situation.

This paper has developed a syllabus for teaching farm management course for pre-professional and diploma students. The syllabus as such is not so important because it is only a subject matter to be taught. The most important thing is to develop a procedure and technique to make it more practical and relevant to Nepalese situation. The farm management teacher should be able to use the local examples to a great extent while demonstrating farm management principles.

5.1. Implication for Short Term Program

The main assumption while preparing this report is that the current academic program of the Institute of Agriculture and

Animal Science will continue for the time being without any remarkable changes. The other assumptions are that the clientele of the Institute will remain the same as before and the country will not be using the sophisticated computer model and equipment for solving farm management problems for the time being.

This paper was developed such that it will be of immediate use to the author in teaching farm management when he returns to the Institute in December 1978.

The teaching material prepared in this paper is obviously for short term and to meet the immediate need. At present there are only two farm management courses offered to pre-professional and diploma students. The Institute at present lacks both teaching staff and teaching facilities. Not much work has been done in the area of farm management so far.

5.2. Implications for Long Term Program and Area for Further Study

This report is sufficiently flexible to meet the need of changing times. The Institute of Agriculture and Animal Science is extending and expanding its educational programs to reach many rural sectors of the country. The Institute plans to open new branch campuses at different sites and is also increasing the number of farmer participants on training them on various agricultural fields. Every year, new agricultural development projects and programs are being conducted. Under such circumstances, the objectives and course outlines of farm management are subject to change. A

further study in this area is possible with the availability of more manpower and facilities. Research on effective farm management practices can be conducted in the farmers' fields and at the Institute later on.

5.3. Evaluation of the Paper

There are weaknesses in this paper as a consequence of being developed in the United States rather than in Nepal. There has been no opportunity to ascertain from farmers what they need most. Much of the proposal is a paper plan. The actual implementation has yet to take place. In this paper, more emphasis is given towards subsistence farmers who are in majority. The commercial farmers who are in lower percentage are not discussed in this paper. Because the study could not be done in Nepal, the paper lacks feedback from the students and the farmers. However, the author has received wonderful guidance and suggestions from professors of agricultural economics, sociology and education who have many years of valuable experience of a developing country like Nepal. That input would not have been available in Nepal.

6. BIBLIOGRAPHY

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7. APPENDIX A

ACADEMIC PROGRAMS

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ACADEMIC PROGRAMS

Pre-professional Agriculture Program

<u>First Semester</u>		<u>Second Semester</u>	
Course	Credit	Course	Credit
PS 001	Prac. of Agronomy 5(3-2)	PS 002	Prin. of Agronomy 5(3-2)
PS 005	Prac. of Vegetable 5(3-2)	PS 006	Prin. of Fruit Prod. 5(3-2)
AS 001	Prac. of Animal Production 5(3-2)	AS 002	Prin. of Animal Pro. 5(3-2)
RD 001	Prac. of Non- Formal Educa- tion in Agric. 5(1-4)	RD 002	Prac. of Farm Mgt. 5(3-2)
PR 001	Project Work Deferred	PR 002	Project Work 5(0-5)

TOTAL - 45 credits

Certificate of Agriculture Program

First Semester

Course	Credits
PS 101	Inorganic Chemistry 3(3-2)
RD 101	Nepal Studies 5(5-0)
RD 103	Algebra & Trigonometry 3(2-1)
RD 105	Rural Social System of Nepal 3(2-1)
PS 103	Intro. to Crop Production 2(1-1)
AS 101	Intro. to Animal Science 2(1-1)
PS 105	Propagation of Hort. Plants 2(1-1)
RD 107	Agricultural English I 3(2-1)
PR 101, 102 or 103	3(0-3) Continued

Second Semester

Course	Credits
PS 102 Organic Chemistry	3(2-1)
RD 104 Calculus & Coordinate Geometry	2(1-1)
PS 106 Vegetable Crop Production	2(1-1)
RS 102 Nepali Language	5(5-0)
PS 108 Anatomy & Biology of Crop Plants	3(1-2)
AS 104 Agricultural Zoology I	3(1-2)
RD 108 Agricultural English	2(1-1)
PR 101, 102 or 103	3(0-3) 3(0-3)
TOTAL	46(23-23)

Diploma in Agricultural Education ProgramFirst Semester

RD 205 Orientation to Agricultural Education	2(2-0)
RD 201 Prin. & Procedures of Teaching & Learning in Agriculture	4(3-1)
PS 205 Intro. to Soil Science	3(2-1)
PS 206 Soil Fertility & Plant Nutrition	3(2-1)
PS 103 Intro. to Crop Production	2(1-1)
AS 101 Intro. to Animal Science	2(1-1)
PS 303 Insect Pest & Rodent Con- trol	3(2-1)
PR 201, 202, 203, 204, 205, 206, or 207	Deferred
TOTAL	19(13-6)

Second Semester

RD 206 Instructional Materials	2(0-2)
PS 208 Crop Production I	3(2-1)
PS 106 Vegetable Crop Production	2(1-1)

Second Semester (continued)

Course	Credits
PS 210 Floriculture & Pomology	3(2-1)
PS 301 Farm Machinery	2(1-1)
AS 202 Dairy Cattle Husbandry	3(2-1)
AS 302 Poultry Husbandry	3(2-1)
PR 20k, 202, 203, 204, 205, 206 or 207	3(0-3)
TOTAL	21(10-11)

Second Year Third Semester

RD 303 Agricultural Economics & Farm Management	4(3-1)
PS 305 Crop Production II	3(2-1)
PS 307 Plant Pathology	3(2-1)
AS 403 Sheep, Swine & Goat Hus- bandry	2(1-1)
AS 405 Domestic Animal Diseases	3(2-1)
PR 201, 202, 203, 204, 205, 206 or 207	Deferred
TOTAL	15(10-5)

Fourth Semester

RD 304 Curriculum Planning	2(0-2)
RD 306 Agricultural Education Review Paper	2(0-2)
RD 308 Practice Teaching	4(0-4)
PR 201, 202, 203, 204, 205, 206 or 207	3(0-3)
TOTAL	11(0-11)

In addition to the classes listed above, which are compulsory for all students in the Agricultural Education Diploma Program, students are expected to select classes in a major field of

concentration (such as agronomy, horticulture or poultry), and do project work each semester, to bring their minimum total credits earned to 72.

Diploma in Agriculture ProgramFirst Year First Semester

Course	Credits
RD 201 Prin. & Procedures of Teaching & Learning in Agriculture	4(3-1)
PS 201 Physics I	2(1-1)
AS 205 Agricultural Zoology II	3(1-2)
PS 203 Introductory Agricultural Entomology	3(2-1)
RD 107 Agricultural English I	3(2-1)
PS 205 Intro. to Soil Science	3(2-1)
PS 207 Floriculture & Gardening	2(1-1)
PR 201	Deferred
TOTAL	20(12-8)

Second Semester

PS 208 Crop Production	3(2-1)
PS 204 Crop Physiology & Biochemistry	4(3-1)
PS 202 Physics II	2(1-1)
RD 108 Agricultural English II	2(1-1)
AS 202 Dairy Cattle Husbandry	3(2-1)
PS 206 Soil Fertility & Plant Nutrition	3(2-1)
PR 201	3(0-3)
TOTAL	20(11-9)

Third Semester

RD 301 Agricultural Statistics	3(2-1)
PS 301 Farm Machinery	2(1-1)
PS 307 Plant Pathology	3(2-1)
RD 303 Agricultural Economics & Farm Management	4(3-1)
PS 305 Crop Production II	3(2-1)
PS 303 Insection Pest & Rodent Control	3(2-1)
PR 202, 203, 204, 205, 206, 207	Deferred
TOTAL	18(12-6)

Second Year Fourth Semester

Course	Credits
PS 306 Fruit Culture	3(2-1)
RD 302 Agricultural Information	2(1-1)
AS 302 Poultry Production	3(2-1)
PS 304 Crop Genetics & Breeding	4(3-1)
PS 308 Fungicides & Their Application	3(2-1)
PR 202, 203, 204, 205, 206, 207	3(0-3)
TOTAL	18(10-8)

Third Year Fifth Semester

PS 401 Weeds & Their Control	2(1-1)
AS 401 Dairy Product Processing	3(1-2)
AS 403 Sheep, Goat & Swine Husbandry	2(1-1)
PS 403 Forage Crops & Pastures	2(1-1)
RD 401 Changes in Rural Life	2(1-1)
PS 405 Preservation of Fruits & Vegetables	2(0-2)
AS 405 Domestic Animal Diseases	3(2-1)
PR 202, 203, 204, 205, 206 or 207	Deferred
TOTAL	16(7-9)

Sixth Semester

RD 402 Non-Formal Education in Agricul.	2(1-1)
RS 402 Farm Structure & Layout	3(1-2)
RD 404 Marketing of Agriculture & Animal Products	2(1-1)
PS 406 Soil & Water Conservation	3(2-1)
PS 408 Farm Irrigation & Drainage	2(1-1)
PS 404 Soil Genesis, Classification, Mapping	2(0-2)
PR 202, 203, 204, 205, 206, 207 or 401	3(0-3)
TOTAL	17(6-11)

Project Works:

Students at all levels should do work on a project as a Compulsory course. They may carry a project work of their major subject. The following project works are listed in the academic Program:

Pre-Professional and Certificate Level

PR 001 and PR 002	Crop Production & Animal Husbandry
PR 101	Field Crop Production
PR 102	Vegetable Production
PR 103	Animal Production

Diploma in Agricultural Education & Diploma in Agriculture

PR 201	Production of Agronomic Crops
PR 202	Production of Horticultural Crops
PR 203	Poultry Production
PR 204	Swine Production
PR 205	Dairy Cattle Production
PR 206	Fisheries
PR 207	Rural Development
PR 401	Farm Management

PR 205, PR 207 and PR 401 are not yet offered in the academic program.