CHAPTER II

RESEARCH METHODS

2.1 Scope of the study

This study mainly deals with impact of private tree planting program initiated by PAC since 1987 in Salle village of eastern Nepal. Actually, PAC has encouraged the farmers for planting fodder and fuelwood trees on their private land since 1977 as there is increasing rate of deforestation and in turn increasing demand of fodder and fuelwood trees.

PAC is one of the multidisciplinary semi-governmental organizations located in eastern hills of Nepal. At the present, this project is assigned to be part of NARC (National Agricultural Research Centre). This project is responsible for the improvement of agricultural, livestock and forest situations of eastern hills. There are several working groups organized by the project for assessing needs and problems of farmers. Women development working group with multidisciplinary personnel in particular is studying about gender issues in order to reveal needs, priorities and problems regarding agricultural development from women farmers. Since 1990, it has also started involving women farmers in the selection of recommended crop varieties.

2.2 Selection of the study area

After reviewing literature and talking with the technicians working in this area, the Salle village was selected as a study site for the research. This village was suggested to be a possible research site by staff of PAC, an agricultural research and extension center supported by British technical aid. This village is one of target areas for extension and research work of PAC. PAC began implementing Private Tree Planting Program in Salle in 1987 and it has been supporting the village through technical knowledge for the past 15 years. This village is located in Hattikharkha Village Development Committee in the eastern Nepal.

The village has sufficiently large population to permit effective analysis of research data. Most of the households plant fodder and fuelwood trees on the edges of crop land and also on stream banks, barren land near farming area. Farmers are very much interested in tree planting on their private land. They also made committee for seedling arrangement and all those concerning with tree management by themselves.

2.3 Conceptual framework

There is a complete integration of crop, animal and tree production. These components are equally important. Integration of which, has made the agroforestry system more sustainable and improve the status of small resource holders.

Household is the centre in the utilization of crop, livestock and tree products, thereby all labor required for the maintenance of primary components are necessarily from the household. A complete relationship among these components and two way flow of materials and information is normally found for the very existence of agricultural practices (Figure 2).

Furthermore, these relationships manifest the nature and degree of regenerative processes (involving diversification, recycling, etc.) that are central to the sustainability of farming system in the hills (Jodha, 1990). However, despite their widespread presence, the existing agroforestry system and their linkages with respect to gender dynamics have not been examined so far.

In this given circumstance, gender analysis was applied as an analytical framework that examines male and female roles and responsibilities in a given society. It starts with a series of questions related to "who" (Banu *et al.*, 1990). The answers of the following questions were sought in this study.

Who performs each agroforestry activities?

What resources are available and who has access to and control of them?

Who makes decision?

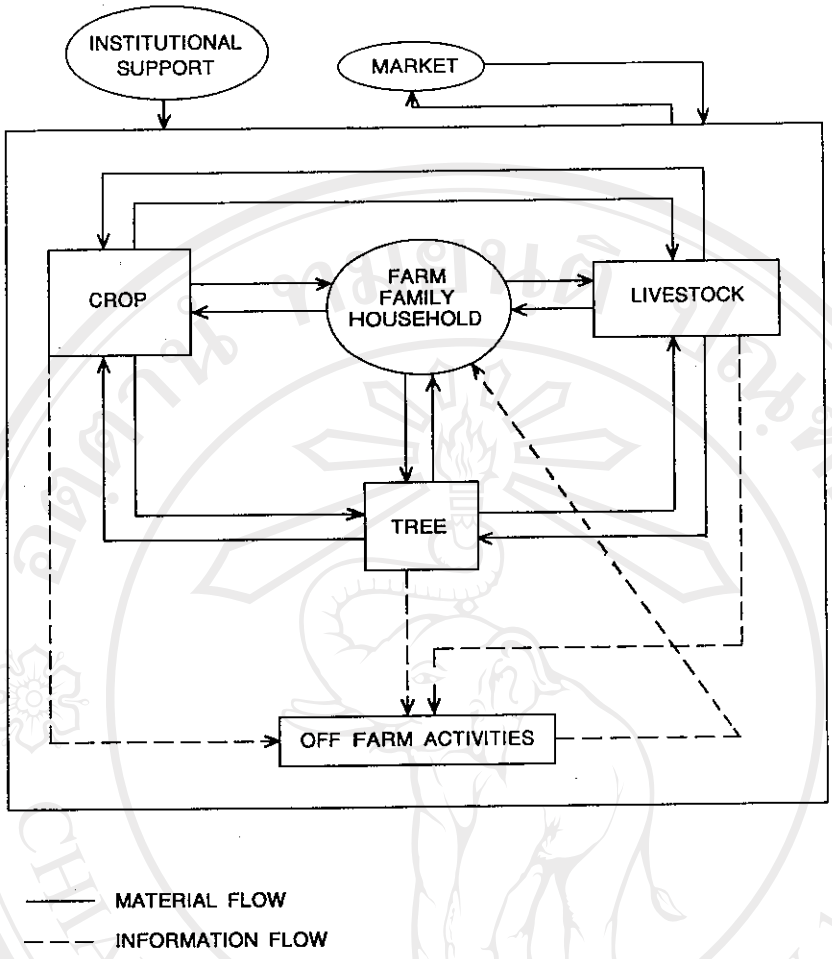

Figure 2 Conceptual model of Nepalese hill farm production system

Based on Beets (1990)

The following questions concerning patterns of agroforestry management practices were examined.

1. Among male and female farmers, who have greater role in tree management? What do they do differently?

2. Do women in high economic status groups involve less in crop, tree and livestock activities than those in low economic status groups?

3. Do Magar/ Gurung women have stronger decision making role in their households than Brahmin/ Chhetri women?
4. Do male and female farmers have different tree preference criteria?
5. For the villagers who do not have *nagi*land, are they benefitted in term of fodder, bedding materials than those having *nagi*land?
6. Is there an increase in work burden of women farmers because of the tree planting program?

Such activities are important for the national policy as they have effects on the nation's ability to improve agricultural productivity and the well being of the farm families. Understanding the gender division of responsibility for labor, management and disposal of production is crucial for understanding how and why households allocate their resources as they do. Understanding decision making process, the nature and degrees of men's and women's access to productive resources permits intelligent efforts to release constraints on their increased productivity.

2.4 Data Collection

Data collection was done using a combination of methods as follows:

1) Pre-diagnostic description

Selection of the site and an initial understanding of agroforestry system of the area was done through the review of existing sources of information. Available literature and other sources of information on secondary data such as climate, soil types, topography etc. were collected, examined and incorporated for the study.

The biophysical data for analyzing cropping systems, livestock and forestry components and also the knowledge on ethnic groups and livelihood system as crucial information for understanding clear picture of village as well as its agroforestry situation, were acquired from PAC.

The other supporting literature and information were sought for gaining more knowledge and confidence from FRP (Forestry Research Project), APROSC (Agricultural Project Services Centre), Winrock International, NARC (National Agricultural Research Centre), SATA (Swiss Development Project) and ICIMOD (International Centre for Integrated Mountain Development).

2) Participatory rural appraisal (PRA)

PRA was executed for one week with the help of PAC staff, as PRA is increasingly being recognized as a data collection method which increases farmers'

participation and focusses more on the farmers' decision making process than conventional methods do.

It offers a way in which both researchers and villagers try to discover the situation through the process of joint observation and interaction in considerably short time period, villagers are then no longer seen as informants, but as participants in a development process.

The following data collection methods were employed with PRA.

i) Wealth ranking

A list of households was obtained from the local primary school, it was made possible as the teachers had recently noted every household for collecting donation in order to repair school building. Every household is different in a true sense. These differences are due to natural factors (environmental) and socioeconomic conditions. Those households which fall under the same environment and economic situations will have similar farming practices and may have similar needs and priorities for farming.

The wealth ranking exercise was to group the households into different strata of wealth assessed by farmers' own opinion. This avoids assessment being made by an outsider using single or simplified criteria. Three farmers and three school teachers were chosen as informants and were asked how they assess wealth and poverty. The ideas of respondents were noted down. The list of

households was shown to farmers and they were asked to put each and every household in different three strata based on ethnic group and economic status.

ii) Agroecosystem mapping (resource mapping)

Two groups of farmers, one consisted of six male farmers and the other of three female farmers were asked to describe about the map of topography, hydrology, enterprises and social groups. The participants were requested to indicate spatial distribution of roads, forests, water resources and different social groups on the map made by stones and grasses on the ground. This map was then copied on the paper. This map is important to know the access of different ethnic groups to land areas and other important resources.

iii) Matrix scoring

This method was applied separately with the male and female group to establish farmer preferences for fodder trees and the criteria upon which those preferences are based. Firstly, the species of fodder trees in question were established and written along the top of the table.

All species were covered methodologically, identifying all good and all bad points for each, to produce an exhaustive list, which was written down the side of the page. The criteria were then considered one by one. Each of the species was ranked by the farmer in order of preference for that criteria scoring the

highest number for the best and lowest for the least preferred. It was started by asking the farmer to identify the best first, then the second best and so on. When it became difficult for him or her to differentiate, it was moved to identify the least preferred then forward positively till the completion. The table was made with the varied number of chickpea seeds to denote different scores. This allowed final review of the score and chance to change it if desired.

The final table gives a complete picture of how the farmer rates each of the species for all the criteria. It gives a lot of information about how farmers' choices and decisions are made.

iv) Activity profiles and daily routines

"Activity profiles and daily routines" exercise was applied for exploring daily patterns of activity through profiles and routines, time taken for each activities and location of work. This was done in the group of six to seven male and female farmers by noting down the different daily activities done by them. The list of activities along with the time allocation pattern, then, was summarized. This was again confirmed and cross checked through participant observation method.

v) Participant observation

Before formal interviewing, the "participant observation methodology" was utilized for six to seven households to observe both men's and

women's activities while taking part in their tasks and conversations. The problem of access to women as an informant was solved as the researcher became integrated into the domestic activities like preparation of family meals and maize husking. Basically, it entailed the active participation of the researcher in the conduct of research in as many spheres of activities as possible in the community. The objective here is to see the minute details involved in such activities, and to understand their dynamics (Rosario, 1990).

vi) Semistructured interviewing with key informant groups

Village headman, the school teachers, chairman of forest committee and leading male and female farmers were selected as key informants. In this type of interviewing, only some questions and topics were predetermined and questions arose during the interview. The interviews appeared informal and conversational, but were actually carefully controlled and structured using a guide or checklist. The main purpose of this interview was to know the exact situation of the village and to enumerate various problems related to farming.

vii) Group interviews

Group interviews were carried out with six farmers each from different strata e.g., rich Magar Gurung, medium Magar Gurung, poor Magar Gurung, medium Brahmin Chhetri, poor Brahmin Chhetri and female headed households. Based on information and conclusions of "interview with key informant

groups" the issues and questions to be asked were decided. The prepared checklist was used for this purpose.

3) Formal survey

Preliminary testing of questionnaires was conducted in 10 households and any improvements or changes needed were corrected. The number of households to be interviewed was decided on the basis of analytical results of PRA considering ethnic groups and economic status. Two way stratified sampling method (Cochran, 1977) was applied to select 103 households in the following way:

a)	Ethnic Group:	Magar	E1
		Gurung	E1
		Chhetri	E2
		Brahmin	E2

Magar and Gurung were considered under one group E1 likewise Brahmin and Chhetri in the another E2 group on the basis of similar social and cultural behaviour. In the caste hierarchy, Brahmin/ Chhetri are among the top levels. Their participation in politics, social and religious affairs is overwhelming in comparison to that of Magar/ Gurung. Their main occupations are priests, agriculture and government service whereas Magar/ Gurung are also diverted towards Indian and British armies in addition to farming. The concept of marriage among them is basically different and women do not have much say in the family and social

matters as in the Magar/ Gurung community. Marriage custom has its own distinctive features with the Magar/ Gurung and women of this community are very outspoken even with the strangers. Brahmin/ Chhetri do not raise pigs because of their religious belief whereas these animals are important part of Magar/ Gurung's livelihood.

b) Economic status:

Rich	R
Medium	M
Poor	P

Six groups from E1R, E2M,.....,.to E3P were categorized and then number and per cent of each group were calculated. All the households from E2M and E2P; and remaining households from E1R, E1M and E1P were considered and altogether 103 households were chosen in order to represent the whole village.

The corrected formal or structured questionaire was used to obtain quantitative and statistically more precise information such as farm size, family structure, land ownership, farmers' preferences etc. The interview was conducted not only with female farmers but also with male farmers of same household so as to remove sex bias and to get reliable results. Information was collected to identify women's status in the family including age, marital status, family size etc. This also included their farming knowledge with respect to agroforestry, access to and control of resources, skills, and interests and problems in the participation of training activities.

2.5 Data analysis

Data collected using various methods were compiled. Descriptive statistics were used to analyze data. When variables were quantified, classified, checked for consistency and village and household level information was clarified, such knowledge lead to the identification of decision making process of farmers, problems encountered and constraints to solutions to successful agroforestry programs.

Some of the questions concerning pattern of agroforestry management practices e.g., "who have greater roles in tree management ?" and "do women in high economic status groups involve less in crop, tree and livestock activities than those in low economic status groups?" were analyzed through approriate statistical tests of significance ("t test" and "Chi square test") to see differences among different groups of farmers. For other key questions where statistical tests were not possible, descriptive statistics were employed.