METHODOLOGY

General Background

The State of Himachal Pradesh came into existence as Union Territory on 15th April, 1948, consequent to the amalgamation of 30 Punjab and Shimla Hill states into the Indian Union. Its total area at that time was 27,168sq.km., which subsequently increased to 28,335sq.km. in 1954 with the merger of neighbouring Bilaspur State. The State's territorial area again increased substantially in 1966 when, as a result of the reorganisation of Punjab State, four more hill districts, viz., Shimla, Kangra, Kullu, and Lahaul-Spiti, along with other areas such as the Nalagarh *tehsil* of Ambala district, some parts of the Una *tehsil* of Hoshiarpur district, and Dalhousie of Gurdaspur district, were merged with Himachal Pradesh. The State attained full statehood on 25th January, 1971. It is located between 30° 22' 44" and 33° 12' 40" latitudes north and 75° 74' 55" and 79° 04' 22" longitudes east. Situated in the heart of the western Himalayas, the State has boundaries with Jammu and Kashmir in the north, Punjab in the west, Hariyana in the east, and Uttar Pradesh in the southeast. Its altitude ranges from 350 metres to 6,975 metres above mean sea level (masl).

The State has undergone rapid economic transformation, particularly since 1971, when it attained full statehood. The most remarkable development has occurred in the field of horticulture; the area and production of fruit crops have increased manifold; while the area under fruits between 1960/61 and 1993-94 increased from 6,004 hectares to 1,82,304 hectares, the production increased from 18,710 metric tonnes to 3,25,477 metric tonnes. The State has adopted a cropping pattern that is compatible with the mountain specificities and which has far-reaching implications for environmentally benign and ecologically sustainable development (Tiwari 1990; Rana 1990). The districts of Shimla, Kullu, and parts of Chamba and Kinnaur, which fall in the mid-hill, sub-humid zone and the high hill temperate belt, are the leading producers of fruit, apples accounting for 90 per cent.

Study Area Selection

A multistage, stratified sampling technique was used to select the study areas. After reconnaissance, field visits to the districts of Shimla and Kullu and discussions with informants in Kullu District were chosen as methods of study. This area falls in the greater Himalayas and lies between 31° 21' and 32° 59' latitudes north and 76° 49' and 78° 59' longitudes east and is mountainous with lofty snow-clad peaks. Its elevation varies from 350 to 6,500masl. The total geographical area of the district is 5,503sq.km. The peculiar physical setting gives the district a unique character that greatly influences its climatology, ethnography, and cultural ecology. Administratively, the district is divided into five development blocks, namely,

Kullu, Naggar, Banjar, Nirmand, and Anni. Guided by the methodology evolved by ICIMOD to conduct regional comparative studies on sustainable mountain agriculture, and also after having detailed discussions with district-level officials and researchers at the Agro-Centre Shimla; two development blocks, namely Naggar and Banjar, were selected to represent transformed and non-transformed areas respectively. Thereafter, the list of *Panchayat(s)* (a *Panchayat* is a group of villages) falling into the two development blocks was procured from the block headquarters and one *panchayat* from each of the two blocks was selected with a view to capturing the contrasts in the levels of development. The selected *panchayat(s)* were Katrian from the Naggar block and Plaich from the Banjar block.

Study Site Background

Katrian Panchayat is situated on National Highway No. 21 between the towns of Kullu and Manali, about 20km from each place. It is very well connected by road and by air with Shimla and Delhi; the airport is at Bhuntar, which is 30km from the study site. On the basis of altitude, the panchayat falls in upper Kullu Valley and its altitude ranges from 1,500 to 2,000masl. The average annual rainfall is 50 to 75cm distributed throughout the year, though most of it comes in the rainy and spring seasons. The average maximum and minimum temperatures range from 27.3°C in June to 0.6°C in February. The climate is temperate, characterised by abundant snowfall, frost, and severe winters. It is suitable for the cultivation of horticultural crops and vegetables. While wheat and paddy are the main cereal crops, apples, plums, apricots, and peaches are the dominant fruit crops. The soil texture is sandy loam to clay loam. The population of the *panchayat* (1991 census) is 2,920, out of which 1,552 are male and 1,368 are female. The literacy rate is 45.42 per cent; 48.61 per cent for males and 42.33 per cent for females. The total number of households is 474. The distribution of households according to land ownership status is given in Table 1.

Table 1: Farmers of the Study Areas: Households Arranged According to Land Ownership

Category	Size Class (ha)	Katrian		Plaich		Total	
		No	%	No	%	No	%
Up to 1	Small	359	75.74	191	63.45	550	70.97
1-2	Medium	61	12.87	76	25.25	137	17.68
Above 2	Large	54	11.39	34	11.30	88	11.35
Total		474	100.00	301	100.00	775	100.00

Source: Prepared in consultation with *Panchayat* officials

Plaich *Panchayat* is located about six to seven kilometres from Banjar, which is the block headquarters. The town of Banjar is located at a distance of 24km from National Highway No. 21. It is located at an altitude of 2,000 to 2,500masl and has a temperate climate. The average annual rainfall is 1,034mm, mostly falling in the

monsoon season from July to September. While the maximum temperature ranges from 14.2°C in February to 32.80°C in June, the minimum varies from 0.3°C in December to 20.8°C in August. Corn and wheat are the main agricultural crops, whereas apples, plums, and apricots are the major fruit crops in the area. The population is 1,776 (1991 census), of which 888 are male and the rest female. The total number of villages is 21 and that of households is 301. The distribution of households according to their land ownership status is provided in Table 1.

Sample Size

A sample size of 60 households from each *panchayat* was considered adequate. Since households are predominantly small, owning less than one hectare of land, they were classified into three categories: those owning less than one hectare were called small, those owning one to two hectares, medium, and those owning more than two hectares were designated as large. Finally, 125 sample households, 62 from the transformed areas and 63 from the non-transformed areas, were selected using the proportional allocation method. The number of households selected from each category is given in Table 2. In addition, 35 key informants, 20 in the transformed areas and 15 in the non-transformed areas, were also interviewed.

Table 2: Sources of Information: Households Selected for the Study

Farmers	Size Class (ha)	Transformed Areas	Non-transformed Areas	Total
Small Farmer	Up to 1	47	40	87
Medium Farmer	1- 2	8	16	24
Large Farmer	Above 2	7	7	14
Total		62	63	125

Source: Field Survey 1995

Data Collection

To accomplish the objectives of the study, both primary and secondary data were collected. The secondary data were collected from published and grey material, i.e., journals and so on. Primary data were collected through canvassing with a well-structured, pre-tested questionnaire. The data were collected on various aspects of the household economy, such as demographic features, literacy, occupational structure, cropping patterns, input use, crop yields, consumption patterns, and so on, for the agricultural year 1993/94. Community level data were collected with the help of key informants with the aim of studying the temporal changes in the process of substitution, replacement and addition to livelihood options and changes in the natural resource base, quality of life, and equity aspects.

Analysis of Data

Following the broad framework evolved by ICIMOD, it is conceptualised that the sustainability or unsustainability of a system is ultimately manifested in the various livelihood options practised by the households. Data on the household

options were, therefore, analysed and screened for their range and quality. The option screening framework was followed in order to analyse the sustainability implications of diverse options in terms of quality of life, equity aspects, and constancy or improvement in the natural resource base.