

REGIONAL SETTING AND SOCIOECONOMIC PROFILE OF THE STUDY AREA

Physical Setting

The study area covers two VDCs located in the south central part of Mustang District (Map 2.1). Mustang borders the Tibetan region of China to the North. The geographical area of the district is 366,958 hectares of which about two thirds lie in the Himalayan Range and only 3,946 hectares (1.1%) are under cultivation.

Mustang is one of the most sparsely populated districts of Nepal. Density on agricultural land is 3.7 persons per hectare. The total population of the district was 14,319 according to the 1991 Census. The main crops grown are *ooa* (naked barley), buckwheat, mustard, potatoes, and wheat. Mustang is a food deficit district. Sheep, mountain goats, *yak*¹, *chauri*² bullocks, cows, *jhopa*³, and mules are the main livestock in the district. In recent years, the cultivation of vegetables and temperate fruits (mainly apples and apricots) has been increasing.

Mustang can be divided into two distinct physiographical regions, namely, the southern and northern regions. The northern region covers 10 of the total 16 VDCs of the district. This region lies in the rain shadow area and is characterised by very low precipitation, low temperature, bare rocky mountains, and almost no natural forest. The southern region covers six VDCs, mostly inhabited by the *Thakali* ethnic group. This region has a cool to warm temperate climate.

The Kali Gandaki River flows through this district in a north-south direction and passes through the Marpha-Jomsom VDCs. Jomsom, which is also the district headquarters, is situated on the banks of the Kali Gandaki. The study area holds about 20 per cent of the district population and is largely dominated by *Thakalis* (55%). Strong winds are characteristic of the area. They commence in the early afternoon and continue for most of the day. Most houses are single-storeyed with mud walls and mud roofs. There is a custom of piling fuelwood on the roofs, and the quantity of wood piled is considered to be a sign of prosperity.

Tourism-related trade and businesses are the major sources of off-farm income and employment for the people of this area.

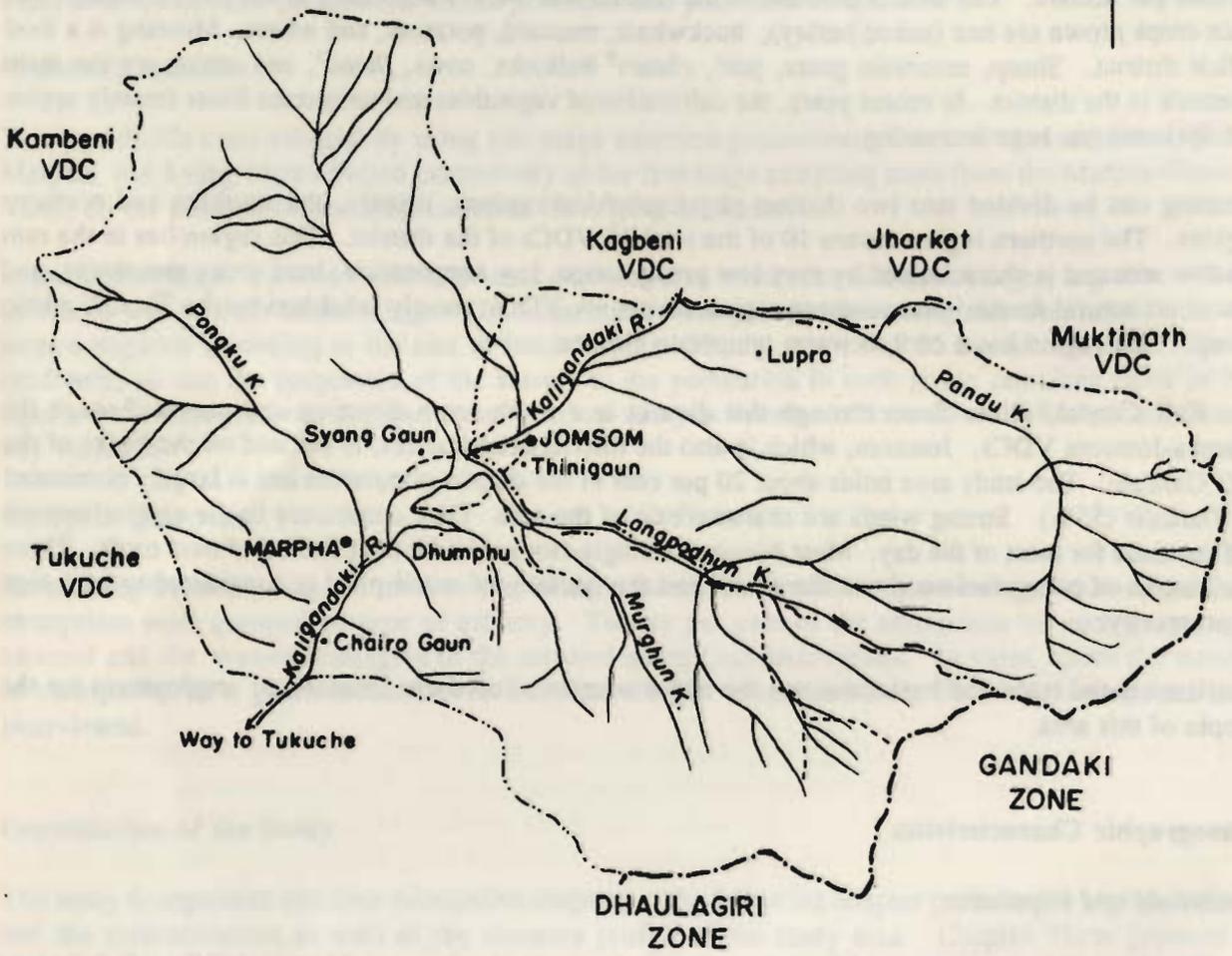
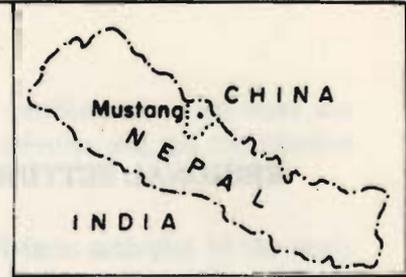
Demographic Characteristics

Household and Population

Small and marginal categories of farm households dominate the Jomsom-Marpha VDCs. Subsistence farming is typical of the area (Table 2.1).

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1. *Yak - *Phoepagus grunniens** - a heavily built, long-haired mammal related to the bison and adapted to life at high altitudes
 2. *Chauri* - a cross between a *yak* and a cow
 3. *Jhopa* - a cross between a female *yak* (*nak*) and a bull

MARPHA-JOMSOM VDCs, MUSTANG



LEGEND

Zonal Boundary	--- --
VDC Boundary
VDC	•



Table 2.1: Distribution of Sample Households by Farm Strata

Ethnicity	Farm Strata*			Total	
	Marginal	Small	Medium & Large	No.	%
<i>Thakali</i>	11	19	10	40	74.07
<i>Gurung</i>	2	2	5	9	16.67
Others (<i>Bhotia, Kami, Damai</i> , etc.)	3	2	-	5	9.26

* For analytical purposes, the households have been classified into marginal, small, medium, and large groups, based on operated landholdings (a proxy for income) as follows:

marginal-up to 0.2095 ha;
 small - 0.2096 to 0.5230 ha;
 and medium and large - above 0.5230 ha.

The *Thakali*, the native people of this area (Thak Khola), account for the majority of sample households, although they are not the dominant group in the Mustang District. *Gurungs*, who are a major ethnic group in the district, constitute a minority in the study area. There is a great deal of cultural and social interaction.

Age and Sex Distribution and Dependency Ratio

The sample households had a population of 271, about 16 per cent were below the age of 10, and the dependency ratio was 40, i.e., there were 40 persons dependent on every 100 adults in the working population. The sex ratio was almost even. It may be noted that the dependency ratio for Nepal as a whole is higher than that found in the study area and the sex ratio until 1981 was in favour of males (Table 2.2)

Average Family Size by Ethnicity and Farm Strata

The average household size (5.2 persons) in the study area was found to be slightly higher than the district average (4.8) (Table 2.3). Although the usual trend of a positive relationship between the household size and the farm groups was found, it was also observed that the *Gurungs* have the highest (9.2) average household size, followed by the *Thakalis* (5.0) and other occupational castes (4.8).

Migration Patterns

Migration, as in other mountain areas, plays an important role in the economy of the study area. Three types of migration; seasonal, temporary, and permanent; have been noted.

Seasonal Migration. Seasonal migration in Mustang is motivated by trade and business. According to key informants, the active earning members of about 30 per cent of the households of the study area were reported to have been migrating each year from December to March in search of trade and business opportunities.

Table 2.2: Distribution of Sample Population by Broad Age Groups and Dependency Ratio

Age Groups	< 10			10-59			> 59			Total			Child Depend-ency	Age Depend-ency	Total Depen-dency
Farm Groups	M	F	T	M	F	T	M	F	T	M	F	T			
Marginal	9	7	16	26	21	47	2	3	5	37	31	68	37	12	49
Small	6	8	14	41	37	78	4	4	2	51	49	100	22	13	35
Medium and Large	11	8	19	34	46	80	3	1	4	48	55	103	32	07	39
Total	26	23	44	101	104	205	9	8	17	136	135	271	30	10	40

Table 2.3: Average Family Size by Ethnic Group and by Farm Strata

Ethnic Group	Farm Strata			Average
	Marginal	Small	Medium & Large	
<i>Thakali</i>	4.36	4.21	7.20	5.00
<i>Gurung</i>	3.00	5.00	6.20	5.22
Others	4.67	5.00	-	4.80
Total	4.25	4.35	6.87	5.02

However, within the sample households, about 10 per cent of the household members were found to be migrating seasonally. The main reason for migration was reported to be the lack of off-farm employment opportunities in the region in winter. The major destinations of migrating households were the urban areas of Pokhara and the market centres of Baglung, Parbat, Syangja, Chitwan, Rupandehi, Tanahu, Kathmandu (within the country), and some Indian cities.

The percentage distribution of seasonally migrating population among the sample households by ethnicity and by purpose is presented in Table 2.4.

Ethnicity and occupation play an important role in determining seasonal migration. Whereas more than one third of the people from occupational groups migrated seasonally (mainly to find a market for their metal utensil products), relatively few *Thakalis* moved out. *Thakalis* were mainly occupied in trade and business activities (like hotels/lodges and retail trade in foreign goods) in their home towns. *Gurungs* migrated for carpet-weaving and wage-earning activities. The percentage of female migrants was found to be higher (11.1%) than males (8.1%), probably due to the higher participation of women in catering and carpet-weaving activities.

A seasonal in-migration trend was also observed in the study area. This has a bearing on farm as well as off-farm activities in the study area. The in-migrants mostly consist of trekking porters and vendors from other districts. The vendors from Pokhara, Baglung, Dhading, Beni, and Kusma bring with them consumable goods (clothes, shoes, utensils, and food items) and sell these items in the Marpha and Jomsom areas by visiting door to door.

Table 2.4: Percentage Distribution of Seasonally Migrating Household Members by Sex, Ethnicity, and Purpose

Ethnicity	Thakali			Gurung			Others			Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
<u>For Trade/Business</u>												
- Metal Utensil Business	-	-	-	-	-	-	33.33	25.00	29.41	4.41	2.96	3.69
- Foreign Goods' Business	0.97	1.04	1.00	-	-	-	-	-	-	0.74	0.74	0.74
- Hotel Business	0.97	3.13	2.01	-	-	-	-	-	-	2.22	2.22	1.47
<u>For Wage-earning</u>												
- Carpet-weaving	-	-	-	6.67	8.70	7.89	-	12.50	5.88	2.96	2.96	1.84
- Wage-earning	-	-	-	6.67	4.35	5.26	-	-	-	0.74	0.74	0.74
<u>Others</u>												
- To Meet Relatives	-	2.08	1.00	-	-	-	-	-	-	-	1.48	0.74
- For Medical Treatment	0.97	-	0.50	-	-	-	-	-	-	0.74	-	0.37
Total	2.91	6.25	4.51	13.34	13.05	13.15	33.33	37.50	35.29	8.11	11.10	9.59

While returning they carry apples from Marpha and Jomsom for sale in Pokhara. Thus, the vendors conduct a "two-way business system". This business has been increasing in the area in the last decade or so. Most of the low income groups were found to be involved in this business. A survey conducted by Marpha Farm in the FY 1989/90 reveals that, in a period of nine months, almost 2,204 persons were involved in this activity and about 123 mt of apples were exported during that period. This activity has helped in the marketing of apples and contributed positively to apple production in the study area.

Temporary Migration. Persons who resided outside the study area for more than 6 months were considered to be temporary migrants. About 10 per cent of the family members were found to be in this category (Table 2.5). Females migrated for trade/business purposes, whereas male migration was associated mostly with study.

Permanent Migration. For obvious reasons, it was not possible to determine the number of households moving away permanently from the study area. However, key informants were not aware of any households or members moving away permanently in the last five years. They said that some entrepreneurs had moved into the study area in the last ten years to start hotel/lodge businesses by marrying local *Thakali* women. The household survey shows that two *Gurung* households moved into the area in the last ten years and one *Thakali* household in the last five years. It was noted that the local community was generally not cooperative with any outsider trying to settle permanently in the area for trade and business purposes.

Educational Status

Educational status very often tends to be related to the economic status of the population. In Nepal, ethnicity also influences the level of educational attainment. People with higher educational attainment also tend to be involved in more gainful off-farm activities.

Literacy Status. The literacy rate has been derived as the ratio of literate members to the corresponding population aged six years and above. The literacy rate in the study area was found to be quite high

Table 2.5: Percentage Distribution of the Members of Sample Households Who Migrate Temporarily from the Household by Years of Migration, Sex, and Purpose

Purpose	6 Months to 1 Year	1 - 5 Years	5 - 10 Years	10 Years Above	Total		
					Male	Female	Total
<u>Trade/Business</u>							
Hotel Services	1.85	0.37	0.74	1.48	3.68	5.19	4.43
Study	-	0.37	0.74	-	1.47	0.74	1.11
Total	1.11	1.85	1.48	-	5.88	2.96	4.43
	2.96	2.59	2.96	1.48	11.03	8.89	9.97

compared to the national average (23.5 per cent) reported by the Population Census of 1981 (Table 2.6). A household survey conducted in this study area in 1980 had also reported a high literacy rate: 62.4 per cent for males and 28.3 per cent for females (APROSC 1981).

Table 2.6: Percentage Distribution of Literate Population by Sex and Farm Strata

Farm Groups	Male	Female	Total
Marginal	51.72	33.33	42.86
Small	70.83	40.00	55.91
Medium and Large	80.95	52.94	65.59
Total	69.75	43.90	56.61

Furthermore, both male and female literacy rates appear to have a direct relationship to the farm strata. The total literacy rate for marginal, small, and medium and large farm groups is 42.86, 55.91, and 65.59 per cent respectively.

Similarly, the literacy rates calculated on the basis of ethnic group (Table 2.7) show a higher percentage for *Thakalis* (61.36%), followed by *Gurungs* (46.51%), and other occupational castes (39.13%). The ethnic bias in literacy rate also holds true by sex. It may be noted that, unlike other mountain areas in Nepal, the Jomsom-Marpha VDCs have a pretty high literacy rate - a rate that is at par or better than the literacy rate in most urban areas in Nepal.

Educational Attainment

The level of formal educational attainment has been grouped into three categories; viz, primary level (up to class five), secondary level (class six to ten), and above secondary level. The percentage distribution of sample population by levels of educational attainment and ethnicity is presented in Table 2.8.

Table 2.7: Percentage Distribution of Literate Population by Sex and Ethnicity

Ethnicity	Male	Female	Total
<i>Thakalis</i>	73.33	48.83	61.36
<i>Gurungs</i>	61.11	36.00	46.51
Others (<i>Bhotia</i> & other occupational castes)	54.55	25.00	39.13
Total	69.75	43.90	56.61

Table 2.8: Percentage Distribution of Sample Population by Levels of Educational Attainment by Sex and Ethnicity

Ethnicity	Primary Level (Up to Class 5)			Secondary Level (Class 6 to 10)			Above Secondary			Total		
	M	F	T	M	F	T	M	F	T	M	F	T
<i>Thakalis</i>	22.22	24.42	23.30	31.11	17.44	24.43	8.89	2.33	5.68	62.22	44.19	53.41
<i>Gurungs</i>	18.67	8.00	11.63	38.89	24.00	30.23	-	-	-	55.56	32.00	41.86
Others	45.45	16.67	30.43	9.09	-	4.35	-	-	-	54.55	16.67	34.78
Total	23.53	20.32	21.90	30.25	17.07	23.55	6.72	1.63	4.13	60.50	39.02	49.59

It is quite evident from the above table that about 50 per cent of the total sample population aged six and above had formal education. The corresponding figure was reported to be 26 per cent for rural Nepal by the Nepal Rastra Bank (NRB) Survey (NRB 1988). The percentage of males having some formal education was found to be 60.5 per cent while the female percentage for the same was only 39.0. Formal education by ethnicity shows a higher percentage for *Thakalis* (53%), followed by *Gurungs* (42%), and other occupational castes (35%). About six per cent of *Thakalis* had college level education. There were no *Gurungs* and other ethnic groups in this category.

Economic Characteristics

Labour Force and Main Occupations

The economically-active population is defined as those persons who are ten years or over and who have worked in one or more of the principal occupations during the survey year. The total number of the economically-active population in the sample households was found to be 166 which is 75 per cent of the total population aged 10 or over. The refined activity rate (RAR), therefore, is lower (75.8) than the 83.1 reported by the NRB survey (NRB 1988).

The female activity rate was found to be higher than the male activity rate (Table 2.9). This was also shown in the case of the mountains and hills in the NRB Survey.

Table 2.9: Distribution of Economically Active Population and Its Refined Activity Rate by Sex and Farm Groups

Farm Groups	Economically Active Population			Refined Activity Rate		
	Male	Female	Total	Male	Female	Total
Marginal	23	20	43	82.14	83.33	82.69
Small	28	35	63	62.22	85.37	73.26
Medium and Large	22	38	60	59.46	80.85	71.43
Total	73	93	166	66.36	83.04	74.77

The percentage of economically active population engaged in agriculture as the main occupation was 77.1 per cent in the sample households, which is lower than that for rural Nepal (82.2 per cent) as reported by the NRB Survey. Non-agricultural activities (viz., trade/business, services, and cottage industries) engage 22.9 per cent of the economically-active population (Table 2.10). The proportion of females was found to be higher in agriculture and trade/business occupations, whereas the proportion of males was higher in service-related occupations.

Table 2.10: Percentage Distribution of the Members of Sample Households by Major Occupations and by Farm Strata

Farm Strata	Agriculture			Non-agriculture						Total		
				Services		Trade/ Business		Cottage Industry				
	M	F	T	M	F	M	F	M	F	M	F	T
Marginal	65.2	85.0	74.4	13.0	-	4.3	5.0	17.4	10.0	34.0	15.0	25.0
Small	75.0	88.5	82.5	14.2	-	7.1	8.6	3.1	2.6	25.0	11.4	17.5
Medium and Large	81.8	68.4	73.3	13.6	10.5	4.5	13.1	-	7.1	18.2	31.1	26.7
Total	73.97	79.57	77.11	13.70	4.30	5.48	9.68	6.85	6.45	26.03	20.43	22.89

Note: Services include employment as government servants or as school teachers.

Trade/Business includes Hotels/Shops/Jhopa Transportation.

Cottage Industries include Metal Utensil Making/Tailoring/Carpet-weaving/Liquor production.

Land Ownership Patterns

The medium and large farm group accounted for 28 per cent of the sample households but owned 53 per cent of the total land. The average landholding in the sample households was found to be 0.38 ha. Land distribution by type of land shows that 72.5 per cent of the land owned by the households is under crop cultivation. Horticulture was found to be the second dominant land use among the households (Table 2.11).

Table 2.11: Percentage Distribution of Average Landholdings by Land Use and Farm Strata
(in ha)

Farm Groups	Residential Area (1)	Area Under Horticulture (2)	Cultivated Land by Irrigational Status		Total Land (1+2+3+4)	Average Land-holding
			Irrigated (3)	Non-irrigated (4)		
Marginal	18.7	16.7	60.4	4.2	100.0	0.15
Small	8.0	14.2	74.8	3.0	100.0	0.32
Medium and Large	7.3	22.1	68.8	1.8	100.0	0.72
Average % of Total Land	8.9	18.6	70.0	2.5	100.0	0.38

Operational Landholdings and Land Tenure

The average operational landholding within the sample households in the study area has been computed as 0.3 ha. The distribution of operational land by farm strata reveals that on an average a marginal farmer cultivates a little less than one third of the land cultivated by an average medium and large farmer (Table 2.12). Most of the land operated was owned by the farmer and only a small portion was rented in and rented out. Some of the small and medium farmers rented out some of their land while, at the same time, they also rented in other's land. The main reason for this arrangement was reported to be the convenience of cultivation due to locational factors.

It was also found that the small farm group category had a higher percentage of owner-cultivators, while the medium and large farm group constituted a higher percentage of owner-cum-tenants. Only the marginal farm group (18.8 per cent) had pure tenants (Table 2.13).

Tenurial Arrangements. The tenurial arrangements in the study area are characterised by the payment of a predetermined amount of crops or cash instead of sharing the crop output. About 84 per cent of the tenants reported paying a predetermined amount of crops. The amount of payment varied by crops and tenants. The average annual payment in kind of naked barley was 45 kg for 0.05 ha of land. Tenants involved in cash-paying arrangements were paying Rs 1,000.00 on an average as yearly rent for 0.05 ha of land.

Area, Production, and Yields of Major Crops

The yields of most crops in the study area are better than district and national average yields. In spite of the limited agricultural area, most of the land is irrigated and fertile.

The major crops grown in the study area are naked barley, buckwheat, barley, potatoes, maize, and wheat. All crops except wheat are of local varieties. The use of pesticides and chemical fertilizers was also minimal. The yield levels of naked barley (2,660 kg/ha), maize (2,587 kg/ha), barley (2,069 kg/ha), wheat (1,900 kg/ha), and buckwheat (1,572 kg/ha) in the study area are higher than the district average of 1,500 kg/ha, 1,070 kg/ha, 1,090 kg/ha, 1,550 kg/ha, and 1,010 kg/ha (Table 2.14). In the total cropped area, buckwheat and naked barley occupy 40 per cent and 38 per cent respectively of the cropped area.

Table 2.12: Distribution of Average Operational Land by Land Tenure and Farm Strata

(in ha)

Farm Groups	Own Land (1)	Rented In (2)	Rented Out (3)	Average Operational Land (1) + (2) - (3)
Marginal	0.10	0.06	0.0	0.16
Small	0.25	0.04	0.03	0.26
Medium and Large	0.51	0.03	0.02	0.52
Total	0.28	0.04	0.02	0.32

Table 2.13: Percentage Distribution of Sample Households by Owner-Cultivator and Tenurial Status

Farm Strata	Percentage of Households		
	Owner-Cultivators	Owner-cum-Tenants	Pure Tenants
Marginal	50.00	31.25	18.75
Small	56.52	43.48	-
Medium and Large	53.33	46.67	-
Total	53.70	40.70	5.56

Crop productivity shows a negative relationship to farm size. This may be due to the fact that marginal and small farmers have a more intensive farming system than medium and large farmers.

Cropping Patterns and Cropping Intensity

The cropping patterns in the study area are determined by climatic conditions. Naked barley, which is the main crop in the area, takes nine months to mature and buckwheat, the other major crop of the area, takes about three months. There are few alternative crop combinations. The cropping patterns are potatoes/wheat/buckwheat, naked barley/maize, naked barley/potatoes/wheat, and naked barley/buckwheat. In general two major crops are grown in a year. The average cropping intensity is computed to be 180 per cent. According to the farm strata, the highest cropping intensity is found to be 183 per cent in the case of the marginal farm group. It is 172 per cent in the case of the medium and large farm groups.

Input Use Pattern

Almost all the sample households reported using local varieties of home-stocked grain seeds. In the case of vegetables, some households reported using improved seeds obtained from Marpha Horticultural Farm.

The use of pesticides/insecticides on cereal crops was insignificant among the sample households. Compost manure was the major fertilizer used in the study area. Only about 31.5 per cent of the households reported using chemical fertilizer; mostly on naked barley, buckwheat, and potatoes (Table 2.15).

Horticulture and Vegetables

Horticulture. Commercial fruit farming in the study area began after the establishment of the Horticultural Farm at Marpha. At present, most farmers in the study area are involved in fruit farming on a commercial basis. Out of the total land owned by the sample households, about 19 per cent was used for fruit farming. About 40 per cent of the medium and large farmers were involved in fruit farming on an organised basis, i.e., had an orchard. The percentage distribution of total reporting households having fruit trees, by type and average holding per reporting household, has been presented in Table 2.16.

From the table, it is evident that the principal fruits grown in the study area are apples, apricots, and peaches. Walnuts, grapes, and almonds are also grown by small and medium and large farmers.

The average annual income of households from fruit sales was estimated to be Rs 5,250 in the survey year. The percentage of households reporting the sale of fruits (and average income from sale of fruits) increases with the size of landholding.

Vegetables. The growth in the number of tourists visiting the area has brought about an increase in vegetable farming in the study area. This has been more noticeable in the last six years. The gradual increase in the number of hotels and lodges has changed the traditional cropping pattern. The principal vegetables grown in this area are potatoes, carrots, cabbages, radishes, cauliflowers, tomatoes, and garlic. Nearly 67 per cent of the sample households were vegetable growers and 58.3 per cent were commercial producers (irrespective of their scale of production).

About 40 per cent of the households reported the sale of vegetables (Table 2.18). The average annual income from vegetable sales was estimated to be Rs 1,936 in the survey year. As many as 73 per cent of the households in the medium and large landholding category reported selling their vegetables, whereas only 30 per cent of the small and 19 per cent of the marginal farmers reported the same. The average annual income from vegetables also significantly increases with the size of landholding.

It therefore appears that the farmers give priority to growing basic cereals as a food security measure. Vegetables are grown basically for cash income. It is also possible that farmers with small landholdings cannot grow enough vegetables to be sold after home consumption.

Table 2.14: Area, Production and Yield of Major Crops by Farm Strata

Farm Strata	Area in ha Production in mt Yield in kg/ha					
	Naked Barley	Buckwheat	Barley	Wheat	Maize	Potatoes
<u>Marginal</u>						
Area	1.60	1.73	0.62	0.05	0.15	0.26
Production	4.81	2.91	0.82	0.14	0.29	1.00
Yield	3006	1682	1323	2800	1933	3846
<u>Small</u>						
Area	4.12	4.12	0.92	0.10	0.57	0.59
Production	10.75	6.91	1.90	0.27	1.20	2.33
Yield	2609	1677	2065	2700	2105	3949
<u>Medium and Large</u>						
Area	5.29	5.80	1.22	0.25	1.00	0.72
Production	13.73	8.50	2.99	0.35	2.96	2.67
Yield	2595	1466	2451	1400	2960	3708
<u>Total</u>						
Area	11.01	11.65	2.76	0.40	1.72	1.57
Production	29.29	18.32	5.71	0.76	4.45	6.00
Yield	2660	1572	2069	1900	2587	3822

Table 2.15: Number of Sample Households Using Chemical Fertilizers by Farm Strata

Farm Group	Households Reporting Use of Chemical Fertilizers	
	No.	%
Marginal	3	18.75
Small	9	39.13
Medium and Large	5	33.33
Total	17	31.48

Table 2.16: Percentage Distribution of Total Reporting Households and Average Holdings by Type of Fruit Trees and by Farm Strata

Farm Strata	Marginal		Small		Medium and Large		Total	
	% of Reporting HHs	No. of Trees per HH	% of Reporting HHs	No. of Trees per HH	% of Reporting HHs	No. of Trees per HH	% of Reporting HHs	No. of Trees per HH
Apples	50.00	18.63	73.91	21.59	93.33	58.64	72.22	34.28
Apricots	43.75	2.86	65.22	4.80	80.00	5.00	62.96	4.47
Peaches	31.25	3.80	56.52	1.46	66.67	2.60	51.85	2.29
Walnuts	-	-	4.35	1.00	26.67	3.25	9.26	2.80
Grapes	-	-	4.35	2.00	13.33	4.00	5.56	3.33
Almonds	-	-	-	-	6.67	2.00	1.85	2.00
Pears	6.25	1.00	-	-	-	-	1.85	1.00

Table 2.17: Households Reporting Sale of Fruits and Annual Income Per Reporting Household by Farm Strata

Farm Strata	Household Reporting Fruit Sales (NRs)		Average Annual Income from Fruit Sales (NRs)
	No.	%	
Marginal	5	31.3	3,745.00
Small	10	43.5	4,538.00
Medium and Large	12	80.0	6,913.00
Total	28	51.8	5,252.00

Table 2.18: Households Reporting Sales of Vegetables and Average Annual Income from Vegetable Sales Per Reporting Household by Farm Strata

Farm Strata	Households		Average Annual Income from Vegetable Sales (NRs)
	No.	%	
Marginal	3	18.7	648.00
Small	7	30.4	1,400.00
Medium and Large	11	73.3	2,628.00
Total	12	38.90	1,936.00

Livestock and Livestock Products

Livestock rearing is found to be an important activity in the study area. While *jhopa* and *bullocks* are extensively used for agricultural operations, such as ploughing and transporting compost manure, other livestock, such as cows, goats, and poultry, are kept for milk and meat. Since the use of chemical fertilizers is almost insignificant in the study area, livestock-rearing is also important to provide manure for agricultural production. Similarly, livestock, such as mules and *jhopa*, are used for transporting goods and are seen as a major source of cash income. The percentage distribution of total reporting households and average holdings per reporting household by types of livestock are presented in Table 2.19.

The livestock-holding pattern is guided by climatic conditions and tourism activities in the study area. Since poultry is in great demand by the hotels/lodges, most households (87%) reported having some chickens. The average holding of goats per household was found to be the highest (39). This also has implications on the overgrazing of pastures.

Furthermore, except for mules, which are primarily kept for transportation, the other livestock holdings are positively correlated to the farm strata. The highest percentage of households keeping mules is, however, found in the small farm group (30.4%). About one third of the sample households had milch cows. None of the households reported income from the sale of milk.

Rural Small-scale and Cottage Industries

Small-scale cottage industries are important rural household activities in the study area. The major cottage industries found within the study area are production of dried apple slices, liquor (home-made), woollen goods, and metal utensils. Most of the cottage industries are seasonal in nature and are linked to tourism activities. Improvements in cottage industries are important, especially in the context of gainful employment of the female labour force.

The lack of infrastructural development in the region seems to be a major hindrance to the development of different cottage industries. Proper training, extension, and other technical support also seem inadequate. The development of existing and potential cottage industries can curtail the growing trend towards seasonal out-migration in search of employment opportunities.

Cash Income and Expenditure

Income. The average household annual cash income (Rs 31,805) estimated for the study area is relatively higher than in other mountain areas (Table 2.20). The average annual income increases with the size of landholding from Rs. 24,498 in the case of marginal farmers to Rs 42,822 in the case of medium and large farmers. About 90 per cent of the cash income is generated from off-farm activities, including the commercial production of fruit and vegetables. The percentage share of the total cash income from the sale of foodgrains is only seven per cent for an average farmer.

For all categories of household, wages outside agriculture and salaries accounted for the largest source of cash income (almost 40 per cent). Cottage industries and liquor sales were important sources of income for the marginal farm category of households. Trade/business, liquor sales, and fruits together were important cash income sources for the small farm-sized category of household. For the medium and large farm-sized households, sales of fruit and foodgrains and trade and business accounted for almost 30 per cent of the cash income.

Table 2.19: Percentage Distribution of Reporting Households and Average Holdings by Type of Livestock and by Farm Strata

Types of Livestock	Marginal		Small		Medium and Large		Total	
	% of Reporting HHs	Average Holdings per HH	% of Reporting HHs	Average Holdings per HH	% of Reporting HHs	Average Holdings per HH	% of Reporting HHs	Average Holdings per HH
Cows	37.50	1.00	60.87	1.29	80.00	2.08	59.26	1.53
Jhopa	56.25	2.33	73.91	2.76	73.33	3.18	68.52	2.78
Bullock	-	-	26.09	1.17	13.33	3.00	12.96	1.86
Mules	18.75	8.00	30.43	7.57	26.67	7.25	25.93	7.57
Donkeys	-	-	-	-	6.67	9.00	1.85	9.00
Goat	31.25	18.40	21.74	41.20	26.67	61.25	25.93	38.79
Calves	12.50	1.00	26.09	1.00	20.00	1.67	20.37	1.18
Kids	6.25	5.00	17.39	6.50	20.00	15.00	14.81	9.50
Horses	12.50	1.00	26.09	1.00	13.33	2.00	18.52	1.20
Chicken	100.0	2.31	86.96	4.25	86.67	5.08	87.04	4.00

Expenditure. The average annual expenditure of the sample households is found to be slightly lower than the average annual income in all farm groups. However, if we exclude loans, the annual expenditure exceeded annual income, apart from in the case of the medium and large farm groups. The first three expendable items, accounting for more than forty per cent of the total expenditure, were the purchase of food grains, livestock products, and clothing. It may be noted that the average household in the medium and large farm groups generates 11.3 per cent of all cash income from sale of food grains but also spends 16.4 per cent of its total expenditure on food grain purchases. The reason is that the main cereal grain produced in the area is naked barley which is consumed less by medium and large farmers as a staple food. They consume rice and other food grains imported from Pokhara and other areas. It appears that the share of expenditure, on items such as animal feed, health, transport and communications, and cigarettes and alcohol, to the total expenditure decreases with the increase in farm size. In most items, the share of expenditure increases with farm household size.

Table 2.20: Average Annual Cash Income of Sample Households by Different Sources

Sources	Marginal		Small		Medium and Large		Total/Average	
	Amount (Rs)	% of Total	Amount (Rs)	% of Total	Amount (Rs)	% of Total	Amount (Rs)	% of Total
1. Foodgrains	361	1.47	1757	5.92	4846	11.32	2201	6.92
2. Livestock and Livestock Products	244	1.00	326	1.10	1533	3.58	637	2.00
	121	0.49	426	1.43	1913	4.47	749	2.35
3. Vegetables	1064	4.34	1747	5.88	4891	11.42	2418	7.60
4. Fruit	2506	10.23	1323	4.45	780	1.82	1523	4.79
5. Cottage Industries	994	4.06	814	2.74	133	0.32	678	2.13
6. Wages within Agriculture	2958	12.07	6130	20.64	6433	15.02	5274	16.59
7. Wages outside Agriculture	6525	26.63	4579	15.42	12827	29.95	7447	23.41
8. Salary (Services)	2356	9.63	3597	12.11	3333	7.78	3156	9.92
9. Trade and Business	4944	20.18	5797	19.32	3633	8.48	4918	15.46
10. Loans	1612	6.58	2004	6.75	2200	5.14	1943	6.11
11. Liquor Production	750	3.06	1000	3.37	-	-	648	2.04
12. Fuelwood Sales	63	0.26	261	0.87	300	0.70	213	0.68
13. Rent								
Total/Average	24498	100.00	29703	100.00	42822	100.00	31805	100.00

Table 2.21: Average Annual Expenditure of Sample Households by Major Headings

Sources	Marginal		Small		Medium and Large		Total/Average	
1. Food and Beverage	3342	15.31	4291	15.29	6380	16.44	45.90	15.72
2. Ghee and Oil	1409	6.45	1576	5.61	2780	7.16	1861	6.37
3. Salt and Spices	434	1.99	549	1.96	873	2.25	605	2.07
4. Meat and Fish	2384	10.92	2435	9.03	4533	11.68	3045	10.43
5. Milk, Tea, and Sugar	948	4.34	1157	4.12	1640	4.23	1229	4.21
6. Vegetables	170	0.78	148	0.53	107	0.28	143	0.49
7. Clothing and Shoes	3575	16.37	4965	17.69	7133	18.38	5156	17.66
8. Modern Inputs	128	0.59	215	0.77	417	1.07	245	0.84
9. Animal Feed	2061	9.44	2565	9.14	2641	6.81	2437	8.34
10. Education	1649	7.55	2126	5.75	3546	9.14	2379	8.15
11. Health	712	3.26	591	2.11	580	1.49	624	2.14
12. Fuel	504	2.31	659	2.35	703	1.81	625	2.14
13. Transport and Communications	981	4.49	1039	3.70	1407	3.63	1124	3.85
14. Cigarettes and Alcohol	719	3.29	691	2.46	607	1.56	676	2.31
15. House Maintenance and Donations	800	3.66	1200	4.28	1700	4.38	1220	4.18
16. Social Ceremonies	831	3.81	1239	4.40	2760	7.11	1541	5.28
17. Loan Repayment	1188	5.44	2522	8.99	1000	2.58	1704	5.82
Total/Average	21835	100.00	28068	100.00	38807	100.00	29204	100.00

Natural Resources and Infrastructural Development

The geographical area of the study area (Marpha-Jomsom VDCs) covers 31,005 ha (estimated from the LRMP map). The total cultivated land is estimated to be only 369 ha. The household survey shows that most of the cultivated land is irrigated. The major crops are naked barley, buckwheat, wheat, potatoes, and mustard. Different kinds of vegetables and temperate fruits, especially apples, apricots, and peaches are grown in the area. A special breed of cows (locally known as the *lulu* cow), *jhopa*, mules, and sheep are the main livestock in the area.

The forest and pasture/grazing lands are estimated to be 1,120 ha and 414 ha respectively or less than four per cent of the total land area (Agricultural Development Section, Jomsom). Forests are a major source of fuelwood for cooking and heating, construction timber, fodder for livestock, and compost for farms. However, forests close to the villages are already depleted. The rapid increase in tourism activity is accelerating forest depletion in the area. The number of tourists now exceed the total native population during the tourist season.

Deforestation and soil erosion, especially around Jomsom itself, are distinctly noticeable. There is enough potential for generating alternative sources of energy to meet local demands. The strong southern winds during summer and northerly winds during winter can be exploited for generating power. This was tried in Kagbeni VDC, was not operating well due to faulty design, but is being repaired. Because of the strong winds, the area receives enough sunlight with no clouds most days and is suitable for solar energy. There is also scope for generating hydropower in the vicinity of the study area. At present a micro-hydro project at Tukuche generates 240 kW of hydro-energy and provides electricity to the study area and its vicinity.

The Kali Gandaki River and a number of streams and rivulets pass through the study area. The latter are used for irrigation and drinking water purposes. The average annual rainfall is about 160 mm. The winters are very cold but summers are mild, due especially to the wind. No mineral resources have yet been discovered in this area.

The study area has no motorable road. The nearest major urban centre is Pokhara, six to eight days' walk to the south-east. There is a postal service and some government offices have a wireless service system. Jomsom is the district headquarters, and there are about 25 district level development offices. The major institutions functioning in this area are the Agricultural Development Bank, a commercial bank, a District Hospital, a District Agricultural Development Section, Marpha Horticultural Farm, a

District Livestock Development Section (including a Veterinary Hospital), a District Forestry Office, a District Soil Conservation Office, and a NGO (Care/Nepal). Seven schools operate in the study area and four are primary level schools.

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