

CHAPTER VI

FOOD SECURITY SITUATION, INCOME, CONSUMPTION AND EXPENDITURE PATTERNS

This chapter discusses food security situation of the study area in general and household level food security in particular. After a general overview of the food security situation of study area, household's income, food consumption and expenditure pattern are discussed.

6.1 The aggregate food security index of the study area

Since, aggregate food security analysis gives an overview on food security situation of the study area, it is important for preliminary identification of food security problem of an area. The aggregate food security index combines per capita food availability for consumption (in terms of dietary energy supply) with the information on distribution pattern. FAO has developed an aggregate index for analyzing overall food security situation of nation. The same method was applied in this study incorporating all three elements of food security, namely availability, stability and access to food (Thomson and Metz, 1997), explained in Chapter III, p.36)

The value of index ranges from 100, which represent complete risk free food security situation to 0, which represent total famine. The index less than 65 is accounted critical level of food security, between 65 to 75 categorized as low level of food security, between 75 to 85 medium, and over 85 represents high level of food security (ibid.).

So far as the average dietary energy requirement per capita per day for the hills of Nepal is concerned, no concrete recommendations are available so far. Gautam (1990) has mentioned 2,250 Kcal per capita (i.e. 2,744 Kcal per AE) per day on the basis of National Planning Commission, which he argued, might have based on Nutritional

Advisory Committee (NAC) of India (1958) or derived from FAO (1957). He further argued that the above mentioned subsistence calorie requirement is much more than requirement for an average Nepalese to do full economic activities. Therefore, for the purpose of this study the general recommendation of FAO, 2,500 Kcal per adult (cited in Trairatvorakul, 1984) was taken as basis for calculation. In order to identify food insecure households, household dietary energy adequacy ratio (HDEAR)¹ was used to setting a cutoff point of 0.8 HDEAR. A household was then defined as food-insecure if it provides less than 80 per cent of calorie requirement for its total members expressed in terms of adult equivalent scale (Armar-Klemesu *et al*, 1995, Maxwell, 1995). Employing the above equation (3.6) AHFSI was calculated, which came out to be 63, suggesting that at present, food security status of the study area is at critical level according to FAO classification, as discussed earlier.

6.2 Household food security status

Three levels of household food security status were defined based on the HDEAR, which was computed from the mean total household dietary supply and mean total household requirement in terms of adult equivalent scale. As mentioned earlier, a subsistence requirement of 2,500 calorie per AE per day was taken as a basis for calculation and households were classified as food-secure, marginally food-secure and food-insecure if HDEAR is ≥ 1.0 , 0.80-0.99 and less than 0.80 respectively. Thirty-six percent of the total sample households were found food-secure satisfying more than subsistence energy requirement (i.e. HDEAR ≥ 1.0) with an average HDEAR of 1.37. Furthermore, 22 percent and 42 percent households were found marginally food-secure and food-insecure with an average HDEAR of 0.89 and 0.67 respectively. The average calorie available for consumption per AE/day among the three food security categories was 3,429, 2,223 and 1,660 Kcal per AE per day for food-secure, marginally food-secure and food-insecure households respectively. The 'marginally food-secure households' are

¹ Ratio between average calorie available for consumption per AE per day to calorie requirement per AE per day

defined as those households with transitional food security status in the sense that they could enjoy food security in the normal harvest year, and may face transitory food insecurity if the harvest is poor. In contrast, the food-insecure households are those who face food deficit every year and are in the situation of almost chronic food insecurity.

6.3 Indicators of households food security status

Various indicators are used to identify the household food insecurity status based on the specificity of concerned study area (Maxwell, 1995). Since the study site is located in the remote hills with subsistence production systems where the household economy is entirely agriculture based, indicators used in this study were access to land and livestock resources; demographic resources etc. Analysis of variance shows that household size, cultivating land holding, livestock holding, dependency ratio, income (both on-farm and off-farm), ratio of economically active female household member are significantly different between the household food security status groups (Table 6.1). The result implies that those indicators are by far more important to identify households' food security status in rural area with subsistence economy.

Table. 6.1 Indicators of household food security status

Indicators	Food security status		
	Food-secure (N=48)	Marginally Food-secure (N=30)	Food- insecure (N=57)
Households size (No.) **	5.27	5.66	6.68
Dependency ratio *	0.44	0.39	0.65
Proportion of economically active female household member *	0.41	0.42	0.34
Age of household head (years) ^{NS}	50.67	46.60	45.96
Cultivated land holding Per AE (ha) **	0.50	0.29	0.22
Land ownership (proportion of own land to total cultivated land) ^{NS}	0.97	0.96	0.96
Livestock holding Per AE (LSU) **	1.10	0.79	0.68
Livestock density (LSU/ha) ^{NS}	2.85	3.04	3.78
Total on-farm revenue (Rs per AE)*	3,741.48	2,873.99	1,892.84
Total off-farm revenue (Rs Per AE)*	7,364.08	4,204.63	3,909.07
Proportion of <i>Khet</i> land to the total land cultivated ^{NS}	0.43	0.41	0.40
Household dietary energy adequacy ratio **	1.37	0.89	0.67
Calorie availability for consumption (Kcal Per AE/day) **	3,429.00	2,223.00	1,660.00

Significant group differences * $p < 0.05$; ** $p < 0.01$

NS = Non-significant

(Sources: Survey data, 1998)

6.4 Food consumption pattern

Food consumption in the study area was found basically derived from own on-farm production and heavily cereal-based. Cereal consumption comprising rice maize and millet contributes more than 90 percent of the total calorie consumption irrespective of the household food security status (Table 6.2.). Importance of livestock and horticultural produce appeared after the cereals, however, their contribution to the total calorie consumption was found obviously lower. The share of grain legume in the total dietary intake is of immense importance to enhance dietary quality particularly when aggregate food consumption is mostly cereal based. But the survey results revealed that contribution of grain legume to the total calorie consumption in the study area was at miniscule contributing less than 0.5 per cent to total dietary energy supply. Nevertheless, almost every sample households produced grain legume more or less for their household requirement.

Table. 6.2 Calorie available for consumption by sources and household food security status

Sources	Food security status			Sample mean (N=135)
	Food-secure (N=48)	Marginally food-secure (N=30)	Food-insecure (N=57)	
	----- (Kcal/AE/day) -----			
Cereals*	3,197(93.2)	2,075(93.3)	1,525(91.8)	2,242(92.8)
Vegetables	91(2.9)	52(2.3)	45(27.1)	63(2.6)
Fruits	40(1.2)	33(1.5)	23(1.4)	32(1.3)
Dairy milk	56(1.6)	49(2.2)	49(2.9)	51(2.1)
Meat	42(1.2)	32(1.4)	33(1.9)	36(1.5)
Legumes	8(0.3)	5(0.3)	5(0.3)	6(0.3)
Other minor crops (tuber, oilseeds etc)	36(1.1)	27(1.2)	41(2.4)	36(1.5)
Total	3,429	2,223	1,660	2,414

* Rice, maize, millet and wheat

NB: Figures in the parenthesis are the percentage of total calorie supply

(Source: Survey data, 1998)

6.5 Sources of food supply

The study identified three major sources of food supplies in the study area; they are own farm production, wage received in kind, and purchase (either within the community or from nearby market). Own on-farm production was found by far the most important source of food for consumption contributing more than 80 percent of the total food supply (Figure 6.1). Contribution of wages received in the kind was also found important amongst the food insecure households. Although, contribution of grain received as the wage payment was found less than 10 per cent to the total food available, it has time specific importance, as it is generally received during the food shortage season starting from March to June when there is high demand of agricultural labor for maize and rice plantation.

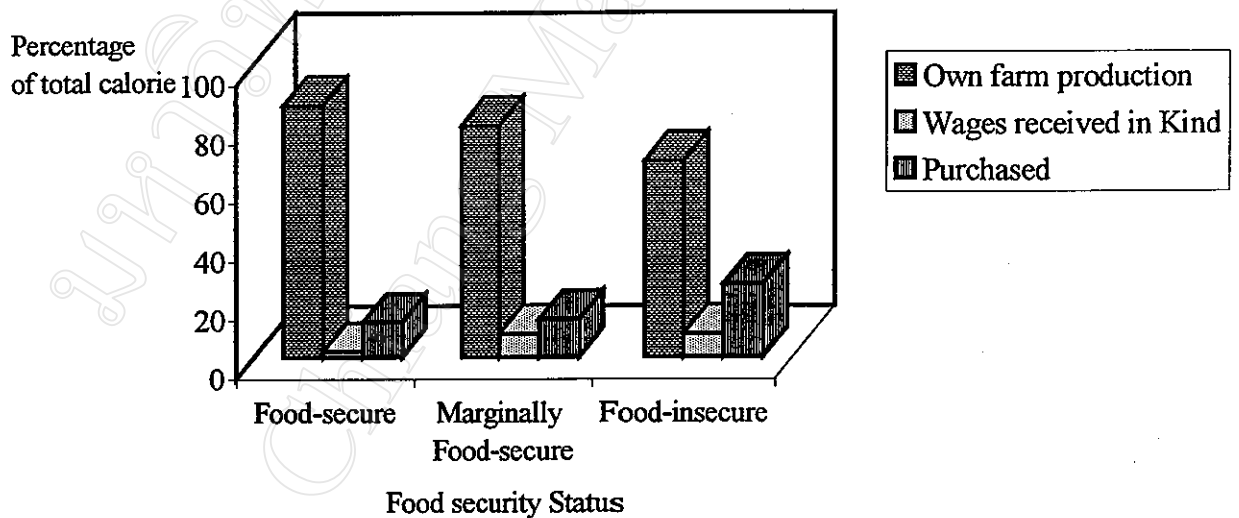


Figure 6.1 Sources of food supply by household food security status

(Source: Survey data, 1998)

The overall contribution of purchased grain to the total dietary energy supply was found very small. Especially food shortage households purchase rice from the nearest

market (Sidhuwa) and or from the surplus-producing households within the community. The overall food supply from purchased grain among the food insecure households was found about 15 per cent.

Gathered food from forest, streams and other areas has also important contribution to the overall household food security as they enrich the variety in the food consumption. Gathered food particularly wild vegetables are significantly important during the dry season when there will be no green vegetables available in the farmyard. Unfortunately, in the recent years, with the declining forest area and animal grazing, availability of those forest foods has been reported sharply declined. The wild leafy vegetables are collected particularly during the pre-monsoon and monsoon period starting from May to August. The important collection areas of wild vegetables are mentioned around agricultural fields, grazing land, stream bank, forest etc. About 80 % of the households respond that they use at least one or two species of wild vegetables as their vegetable relishes, but none of them could quantify the gathered vegetables as they have no any regularities of its collection. Nonetheless, remarkable importance of such gathered vegetables was mentioned particularly during the dry season when there will be no more vegetable supply from their farmyard.

6.6 Cash income and sources

Even though, the production and consumption systems in the study area are basically subsistence in nature, cash earnings is almost indispensable both for production investment and consumption. Despite the fewer opportunities of off-farm works within and outside the community, households in the study area have diversified their sources of cash earnings through different ways. Cash sent by the household member working in foreign countries and the seasonal migrant, pension (collectively defined as remittances), cash earned from wages labor within and outside the communities, and salaries are found the major sources of off-farm cash revenue. Rural cottage industries like bamboo craft,

carpentry, tailoring, black smith, brewing local alcohol etc. were found other importance sources of cash income in the village, even though the amount of earning was reported at minuscule. Cottage industries were found limited within the specific ethnic group as defined by the social systems. Off-farm income aggregates more than 50 per cent to the total cash earnings on an average among the sample households, but the sources are, however, found different among different household's status and ethnicity. Wages labor is the major source of cash earnings among the small farm households, as they mostly involved in agricultural laboring and portering (carrying load manually from one place to another). Since, the small farm size cannot sustain their livelihood, they are mostly involved in selling out their labor to the large farm size holders. In some cases, there is almost patron-client type relationship, where the poor regularly provide labor to the patron households and get food and cash instead. Remittance contributes notable amount to the total cash earnings among the sample households, though the number of households receiving the amounts is only about twelve percent. Since, there is some tradition within *Limbu* community to send sons to the British-Gurkha army, households getting remittances and pensions from the British-Gurkha regiments accrues comparatively higher amount of cash earnings among the *Limbu* ethnic group. However, the recruitment into the British-Gurkha regiment has now been declined sharply. Temporary migration for working in the foreign countries like Middle East, South Korea and Malaysia was also found increasing. But the remittance receiving from those migrants was mentioned uncertain, and sometimes barely enough to pay the debt borrowed to pay to the middleman and to manage other expenses before going to those countries. Moreover, it was mentioned that the amount received as remittances from the foreign countries are used mostly to buy land or pay mortgages. Conlin and Falk (1979) have also found similar result with regard to remittance and had further explained that many middle level households in the mid-hills of Nepal had improved their land holding situation by the investments financed by the remittances particularly from the British-Gurkha army. Although, there is no legal discrimination, the cash earnings from the civil services or so-called white-collar services within the country found mostly accrued to the

well-to-do households, particularly from *Brahmin/Chhetri* ethnic group. This might be particularly due to their higher academic status, as they spend heavily on education for their male children to acquire higher education, which largely determines the entry at various levels of government and non-government services.

Cash from on-farm produce is generated from the trading of on-farm products like cereals, livestock, dairy product (particularly ghee), fruits and vegetables. However, the contribution of on-farm earnings sources except cereals and live animal sales was found virtually smaller. Cereals trading within and outside the village is done based on level of production, type of cereals and cash requirements. Almost all households were found involved in cereal trading in one way or another. The most tradable cereals are millet and rice, as millet is considered inferior grain for staple food and particularly used for making alcoholic beverage, and the rice on the other hand is the most preferred cereal for staple food. Even the most food-insecure households occasionally sell their farm produce; a few eggs, small quantity of ghee, a few number of chicken, one or two goats and so on. Cash earning from the livestock accounts for the highest share to the total on-farm cash revenue. Moreover, relative contribution of livestock sector on the total cash earnings was found highest among the food-insecure households (Table 6.3). This indicates, even under the resource pressure, the poor food insecure households are giving more importance on livestock rearing, which might be their important strategy to cope against food and cash insecurity.

Table 6.3 Cash earnings and their sources by household food security status

sources	Food security status			Sample mean
	Food-secure	Marginally food-secure	Food-insecure	
	----- Earnings in % -----			
On-farm				
• Grain sale	14.0	13.5	6.5	11.3
• Livestock	18.2	19.8	30.6	22.9
• Vegetable sale	2.5	1.6	2.0	2.1
• Fruits sale	2.8	1.2	2.4	2.2
Total on-farm	37.5	36.1	41.5	38.5
Off-farm				
• Remittances and pension	17.6	2.5	32.8	17.7
• Wage payment, services and other off-farm sources	45.2	61.2	25.5	44.1
Total off-farm	62.8	63.4	58.3	61.8
Total cash earnings per AE (NRs)	9,720	6,179	4,988	6,935

NB: NRs= Nepalese Rupees

(Source: Survey data, 1998)

6.7 Cash expenditure

The average cash expenditure was found increasing with the increase in household size. However, the purpose of expenses differed by the household status. With the increasing food security status there is decreasing proportion of household expenses on the stable food items but increases in quality food like meat, dairy products etc (Table 6.4). A large share of expenditure exceeding 50 per cent of the total cash expenditure goes for consumer item like kerosene, soap, oil, clothings etc, which are costly and should carry from the long distance. The average cash expenditure per AE was about 4,000 NRs (equivalent to US \$ 61) per year on an average indicating a minimal cash transaction and higher dependency on own on-farm production for household requirement. When compared the cash expenditure in services like education

and health, there seems a big difference between food-secure and food-insecure households, which implies that the food-insecure households are not able to allocate their household-budget for health and education after the daily consumption expenditure. Since a large proportion of the cash earning has to spend for daily consumption, the food-insecure households are therefore unable to make long-term investment, which has further deteriorated their living creating a situation of low investment- low production- low consumption engulfing them into a vicious cycle of poverty and food insecurity.

Table 6.4 Cash expenditure by household food security status

	Food-security status			Sample mean
	Food-secure	Marginally food-secure	Food-insecure	
	-----Percentage-----			
Food	25.4	31.0	36.2	31.0
• Staple food	9.5	17.0	24.5	18.0
• Meat	13.4	12.5	10.2	11.0
• Vegetable	0.5	0.6	0.4	0.5
• Other food	2.0	0.9	1.6	1.5
Consumer goods	55.4	51.0	53.9	53.2
• Kerosene	4.2	3.5	3.1	3.6
• Clothing	43.3	39.2	40.2	40.9
• Tea, sugar and salt	3.5	3.8	2.5	3.2
• Alcoholic drinks and tobacco	2.0	1.5	4.1	2.5
• Other consumer goods	2.4	3.0	3.2	2.9
Service	19.6	18.0	10.0	15.9
• Health	3.5	3.6	2.9	3.3
• Education	13.2	10.5	4.6	9.4
• Transportation	2.9	3.9	2.5	3.1
Total expenditure per AE (NRs)	4,109	2,715	3,567	4,148

NB: NRs= Nepalese rupees

(Source: Survey data, 1998)