

CHAPTER VI

HOUSEHOLD CONDITIONS AND FOOD SECURITY PATTERN

This chapter describes household food security status and variability of food security of households among Tharu ethnic communities. After that, household economic, social, institutional and ecological conditions by food security status are discussed which are important to identify factors affecting the food security pattern of households.

6.1 Household food security

Household data was collected by using questionnaire during field survey for the study. The quantity of food eaten on the day of field survey with respondents is not same in year round. Except cereal, the quantity of different types of food eaten in a day is not similar in every day of whole year. One day of field survey can not represent exact average calorie intake for the whole year due to diversified food consumption every day. Consequently, the household survey only records quantities of cereals eaten within whole year to represent calorie intake of respondents because of regular and heavily use of cereal food in every day of their food consumption. As a result, surveyed data do not cover all types of food quantities consumed. The household survey only records quantities of cereals accessed within whole year to represent calorie intake of respondents. Degree of food security was identified only based on household level cereal grain availability and requirement in this study. There was an assumption that eighty five percent of the cereal as the percentages of total required calorie intake.

The degree of food security of each household was based on household food adequacy percentage (HHFAP) which was calculated by finding the percentage of household cereal food requirements that was met from food available to households. Based on HHFAP, degree of food security of households were categorized into food secure, marginally food secure and food insecure households and if HHFAP is ≥ 100 , 80-99 and ≤ 79 respectively. Twenty three households of the total sample were found food secure households while 35 per cent and 33 per cent were marginally food secure and food insecure households (Figure 6.1). The marginally food secure households are characterized as those households with transitional food security status occur when households tolerate a temporary decline in the ability to meet food needs for a limited time because of unforeseen and unpredictable circumstances and have face only food insecurity during poor harvest time. However, food insecure households are those who face food insecurity every year as chronic food security situation.

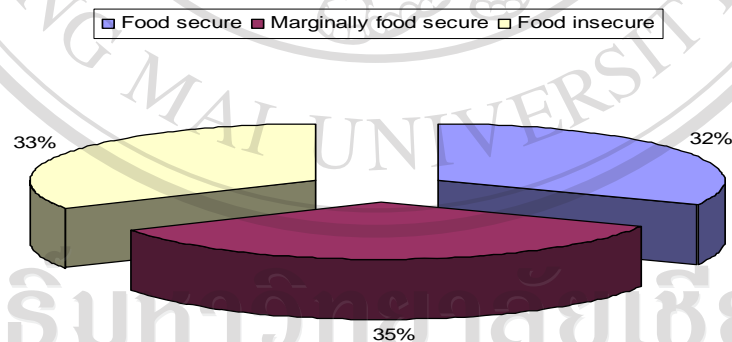


Figure 6.1 Degree of food security by households
Source: Computation from survey data, 2007

6.2 Household food security status by villages of Tharu ethnic communities

The variation in household food security status was found among surveyed twelve Tharu ethnic communities. Two third (67%) households were food secure in Satabariya, Sisaniya and Syanigaun while one third (33%) households were food

secure in Falkapur, Ambapur and one sixth (17%) households were food secure in Surkedangi and Shreegaun and Motipur . Nil (0%) households were food secure in Budhagaun, Dubichaura and Jhigne Tharu communities (Table 6.1). Different pattern of their own resource, household condition and livelihood strategies can be causes of variation in household food security status among Tharu ethnic communities.

Table 6.1 Household food security status by villages of Tharu communities

Tharu communities	Food secure households	Marginally food secure households	Food insecure households
% of households.....		
Satbariya	67	0	33
Shreegaun	17	50	33
Sisaniya	67	33	0
Falkapur	33	33	33
Ambapur	33	33	33
Kachila	50	50	0
Syani Gaun	67	17	17
Dubichaura	0	17	83
Motipur	17	33	50
Surkedangi	33	50	17
Jhigne	0	33	67
Budha Gaun	0	67	33

Source: Workshop and survey, 2007

6.3 Variability of household food security among Tharu ethnic communities

Twenty three households representing 32 per cent of the sample were found food secure households with average HHFAP of 112 while 35 per cent and 33 per

cent were marginally food secure and food insecure households (Table 6.2) with an average of HHFAP of 88 and 64 respectively.

Table 6.2 Food security status by households

Food security status	HHFAP (% of food requirement)	No of Household	% of household	Average HHFAP (%)
Food secure	≥ 100	23	32	112
Marginally food secure	80-99	25	35	88
Food insecure	≤ 79	24	33	64

Source: Computation from survey data, 2007

6.3.1 Variability of household food security within each category of households

Food adequacy ranges from 44 to 135 per cent of requirements met by households. The household food adequacy for whole sample as mean adequacy is 88 per cent. This means that overall the whole sample meets 88 per cent of their calorie requirements from which variability of food security of households among Tharu ethnic communities can be assessed. The variability of food secure households is 100 to 135 per cent while 80 to 99 per cent for marginally food secure households and 44 to 79 per cent for food insecure households (Figure 6.2).

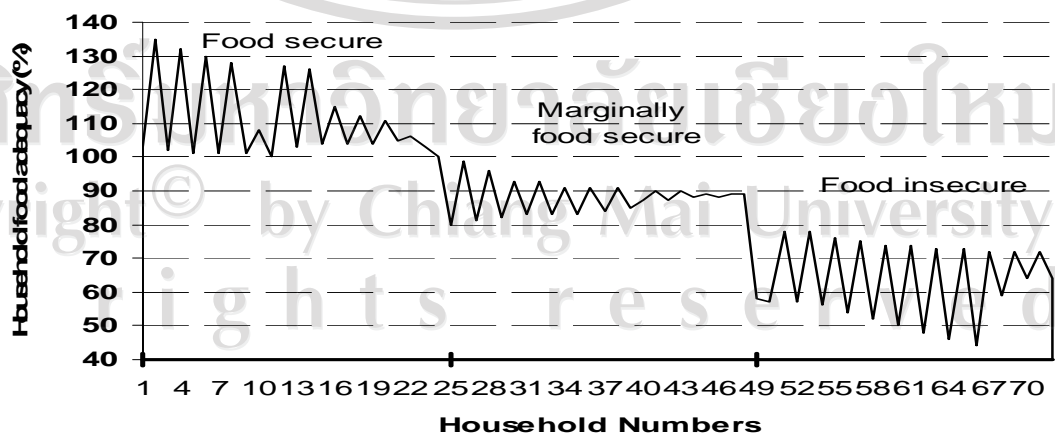


Figure 6.2 Variability of household food security within each category of households
Source: Survey, 2007

The standard deviation, variation and coefficient of variation of household food adequacy as percentage of energy requirement met by household are 21.9, 0.5 and 30.3 respectively.

6.3.2 Households distribution by household food adequacy

The household food adequacy ranges from 44 to 135 as percentage of requirements met by the households within whole sample households. The Figure 6.3 shows the household distribution by household food adequacy percentage into nine groups.

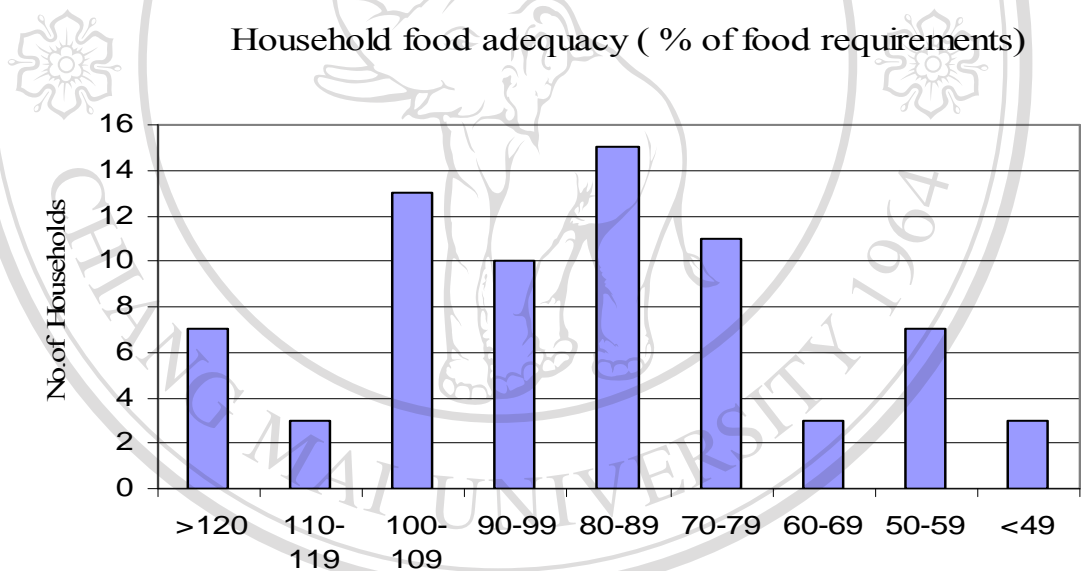


Figure 6.3 Households distribution by household food adequacy percentage

Source: Survey, 2007

As mentioned above variation of household food security status among Tharu ethnic communities, household economic, social, institutional and ecological conditions or factors namely consumption pattern, income source, resource availability, use of modern variety seed, access to extension services and irrigation facility etc can be factors affecting food security situation of households in those communities. It is essential to identify those factors affecting food security situation

of households among Tharu ethnic communities for improving food security status of those communities.

6.4 Household economic conditions and food security pattern

6.4.1 Household income by sources and food security status

This refers to the sum total of the earning of the household in a year from farm and off farm sources. The income is expected to heighten agricultural production of household and also access to more quantity and quality food. Household income is primarily used for expenses of production inputs and consumption (both food and non food) and slightly for services in surveyed community sites. Cash income of sample households can be divided into farm income and off farm income and farm income further divided into income from crop and livestock. Existing agricultural production system of Tharu community sites is largely subsistence production system even though they sell their products to meet their basic needs and to buy production inputs for agriculture. Sale of live animal like goat, sheep and local chicken, sale of live pig meat, pork and milk are the sources of livestock income. Live animal like goat, sheep and local chicken are sold in the market and pork is sold within community. The food secure households were found more cash income from crop and livestock due to higher land resources than the food insecure households. Contribution of farm income covers 48 per cent in aggregate of total income where as 69, 39 and 43 per cent for food secure and the marginally food secure and the food insecure households respectively (Table 6.3).

Along with the sale of agricultural products, wages, remittances, salary from services were found main sources of off farm income. Off farm work was available as labor within communities during season and outside community during off season

period. Moreover, remittance received by household members from gulf countries was found major sources of off farm income which occupied major portion in some households. Small shops for sale of daily consumption items within community, fishing and netting baskets and mattress items from bamboo and straw, carpentry and mason were found other important sources of off farm income in community sites. Off farm income cover 54 per cent in aggregate of total income where as 41, 61 and 75 per cent for food secure and marginally food secure and food secure households respectively. Income of marginally food secure and food insecure households from off farm income was higher due to higher percentages of seasonal labor done by those households. Total annual income of food secure household was found almost two times more than the marginally food secure while three times more than the food insecure households.

Table 6.3 Annual average household incomes by sources and food security status

Status	Farm income						Total income	
	Income from				Off farm			
	Income from crop		livestock		income		NRs	%
	NRs	%	NRs	%	NRs	%		
Food secure	40,665	47	10,629	12	35,704	41	86,998	100
Marginally food secure	15,664	32	3,409	7	30,395	61	49,468	100
Food insecure	6,218	36	2,325	7	25,863	75	34,406	100
Average	20,502	36	5,353	9	30,580	54	56,436	100

Note: 65 Nepalese rupees (NRs) = 1 \$ dollar

Source: Survey, 2007

6.4.2 Farm income sources by different crops and food security status

Income from crops is derived from cereal crop, pulse crop, vegetable and oil crop which are main source of crop income in study sites. Additionally, sugarcane and potato was also found as source of crop income. The contribution of cereal, vegetable and pulse crop was found main sources of crop income (Table 6.4).

Table 6.4 Average farm income sources from crop by food security status

Status	Cereal	Pulse	Vegetable	Oil	Other	Crop income
..... Nepalese Rupees (NRs).....						
Food secure	20,000 (49)	5,024 (12)	9,965 (25)	2,122 (5)	3,554 (9)	40,665 (100)
Marginally food secure	6,444 (41)	2,404 (15)	4,400 (28)	529 (3)	1,888 (12)	15,664 (100)
Food insecure	3,035 (49)	1,195 (19)	1,345 (22)	230 (4)	413 (7)	6,218 (100)
Average	9,638 (47)	2,838 (14)	5,159 (25)	938 (5)	1,928 (9)	2,0502 (100)

Note: 65 Nepalese rupees (NRs) = 1 \$ dollar, figures in parenthesis indicates the percentages of total sample in each category.

Source: Survey, 2007

The vegetable growing households in commercial scale were found mainly food secure and some of them as marginally foods secure households. Crop products are sold to trader and land lords based on cash requirements and level of production.

Selling of crop especially rice was found immediately after harvest to pay the cost of production inputs to their land lords by tenant farmers. The cost of production inputs are shared half by tenant farmers after harvest of the crop.

6.4.3 Sale quantity of domestic cereal product by food security status

Most of the communities were found sold their surplus product in market nevertheless some of Tharu households sold their cereal product without calculation of their actual their food requirement from their own production which is one cause

for them to become food insecure. The study has shown that average sale of food insecure household was 216 kilogram cereal grain with 61 per cent of rice and 26 per cent of maize and 13 per cent of wheat (Table 6.5). Sale quantity of cereal was found five times more in food secure households than food insecure households.

Table 6.5 Sale quantity of domestic cereal product by food security status

Status	Rice	Maize	Wheat	Total
 Kg per average household.....			
Food secure	818 (73)	168 (15)	139 (12)	1,125 (100)
Marginally food secure	258 (72)	60 (17)	41 (11)	359 (100)
Food insecure	132 (61)	55 (26)	29 (13)	216 (100)
Average	395 (71)	93 (17)	68 (12)	556 (100)

Note: Figures in parenthesis indicates the percentages of total sample in each category.

Source: Survey, 2007

6.4.4 Household income distribution by food security status

The higher income shows positive symptoms to the food security situation.

The study has shown that four percent of sample households having less than NRs 25,000 per household annually, 75 percent of sample households having more than

NRs 150,001 per household annually were found food secure households (Table 6.6).

It shows that the higher income better the food security status. About only 21 household representing 29 per cent of households had more than Nepali rupees 50,000

per year per household and this translate to an average income of \$ 0.27 per day, even

lower than the \$ 1 international poverty line.

Table 6.6 Distribution of households by annual total income and food security status

Total income in NRs	Food secure	Marginally food secure	Food insecure	Total
.....Number of households (per cent).....				
Up to 25,000	1 (4)	11 (42)	14 (54)	26 (38)
25,001-50,000	8 (32)	10 (40)	7 (28)	25 (35)
50,000-150,000	11 (64)	3 (18)	3 (18)	17 (24)
>1,50001	3 (75)	1 (25)	0	4 (6)
Total	23(100)	25(100)	24(100)	72(100)

Note: 65 Nepalese rupees (NRs) = 1 \$ dollar, figures in parenthesis indicates the percentages of total sample in each category.

Source: Survey, 2007

6.4.5 Access to market by food security status

Market can make availability of food who can purchase easily and also sell their product easily consequently, improves the household food security status. 52 per cent of household and 48 per cent of household were found food secure household who have access to market and no access to market (Table 6.7). It can be less effect of access to market due to low purchasing capacity of Tharu people.

Table 6.7 Distribution of households by access to market and food security status

Access to market	Food secure	Marginally food secure	Food insecure	Total
.....Number of households (per cent).....				
Access	12(52)	13 (52)	11 (46)	36 (50)
No Access	11 (48)	12 (48)	13 (54)	36 (50)
Total	23(100)	25(100)	24(100)	72(100)

Note: Figures in parenthesis indicates the percentages of total sample in each category.

Source: Survey, 2007

6.4.6 Expenditure on food by food security status

Most of Tharu households depend upon food from their own production. They mainly use their money to buy additional food items especially in festival time. Meat, fruit, oil and milk are more needed on festival period than normal period. Chilli and salt are used as spices. It was found that majority of Tharu community can not produce chilli due to wilt disease problem which covers 10 percent of total expenditure on food. Tea/snack was found less popular in Tharu community. The proportion of expenditure on food was found similar on three types of food security status households but the amount of expenses on food items was found higher in food secure household except purchase of cereal while expenses on purchase of cereal was found higher in food insecure households and slightly lower in marginally food secure households due to their low own production (Table 6.8).

Table 6.8 Average expenditure on food by food security status

Food items	Food secure		Marginally food secure		Food insecure		Average	
	NRs	%	NRs	%	NRs	%	NRs	%
Meat	4,389	52	2,758	43	2,682	35	3,276	43
Cereal	0	0	780	12	1,115	14	632	8
Vegetable	259	3	432	7	871	11	521	7
Fruit	809	9	476	7	671	9	652	9
Salt	683	8	439	7	427	6	516	7
Oil	313	4	584	9	612	8	503	7
Milk	241	3	134	2	146	2	174	2
Chilli	842	10	636	10	883	11	787	10
Tea/snack	983	12	146	2	288	4	472	6
Average	8,519	100	6,385	100	7,695	100	7,533	100

Note: 65 Nepalese rupees (NRs) = 1 \$ dollar

Source: Survey, 2007

6.5 Household social condition and food security pattern

6.5.1 Food consumption pattern of cereal by food security status

Food consumption in Tharu community sites was found mainly cereal based mentioned earlier in Table 5.9. Rice was found the main food of Tharu ethnic communities for all food security status household which covers 86 per cent of total cereal where as 9 per cent for maize and 5 per cent for wheat (Table 6.9). It was found that slightly higher consumption of maize by residents of rainfed area due to higher production of maize on their field.

Table 6.9 Average food consumption pattern of cereal by food security status

Status	Rice		Maize		Wheat	
	kg	%	kg	%	kg	%
Food secure	1,804	88	147	7	105	5
Marginally food secure	1,057	84	119	9	78	6
Food insecure	774	86	94	10	33	4
Average	1,201	86	119	9	72	5

Source: Survey, 2007

6.5.2 Farm size by food security status

The farm size is total farm land cultivated by the households. The larger farm size means the higher production level. It is thus expected that the households with larger farm sizes are more likely toward better food security status than those with smaller farm size. Before discussing farm size, it is necessary to understand land tenure system in the study area. A major portion of the total farm land cultivated by the households belonged to rented land of cultivators in the study area. At that condition, the cultivators gave 50 per cent of total produce to land owners as a rent

and received remaining produce with contributing 50 per cent expenses of production inputs and whole labor forces until harvest. Their relationship was informal based on verbal agreement between tenant farmer and land owner which had no legal basis between them. The land owners can withdraw his land from tenant farmer at any times which create a major dilemma to tenant farmers' future.

6.5.2.1 Farm ownership by food security status

Farms were divided in full ownership farm, mixed ownership farm and tenant farm. Mixed ownership farm was that farm of household who had no sufficient land for cultivating and use some of land as rent from land owner. It was found that 21 household representing 29 per cent, 32 household representing 44 per cent and 19 household representing 26 per cent were found full ownership, mixed ownership and fully tenant households respectively. Out of total food secure households, 52 per cent, 43 per cent and 4 per cent were full ownership, mixed ownership and full tenant household respectively. Out of total marginally food secure households, 24 per cent, 52 per cent and 24 per cent were full ownership, mixed ownership and full tenant household respectively (Table 6.10).

Table 6.10 Distribution of farm ownership by status of food security

Status	Full ownership		Mixed ownership		Full tenant	
	No HH	%	No HH	%	No HH	%
Food secure	12	52	10	43	1	4
Marginally food secure	6	24	13	52	6	24
Food insecure	3	13	9	37	12	50
Total	21	29	32	44	19	26

Source: Survey, 2007

Out of total food insecure households, 13 per cent, 37 per cent and 50 per cent were full ownership, mixed ownership and full tenant household respectively. It

reflects that full ownership and mixed ownership farm holder farmers with better food security status.

6.5.2.2 Farm use pattern by food security status

Size of own land for food secure, marginally food secure and food insecure households were found 67, 12 and 10 *kattha* with average of 30 *kattha* (1ha) where as 67, 38 and 30 *kattha* total cultivating land, 17, 1 *kattha* and nil land rent out land and 19, 26 and 21 *kattha* rent in land respectively (Figure 6.4). The study has shown that higher land resources indicate better food security status.

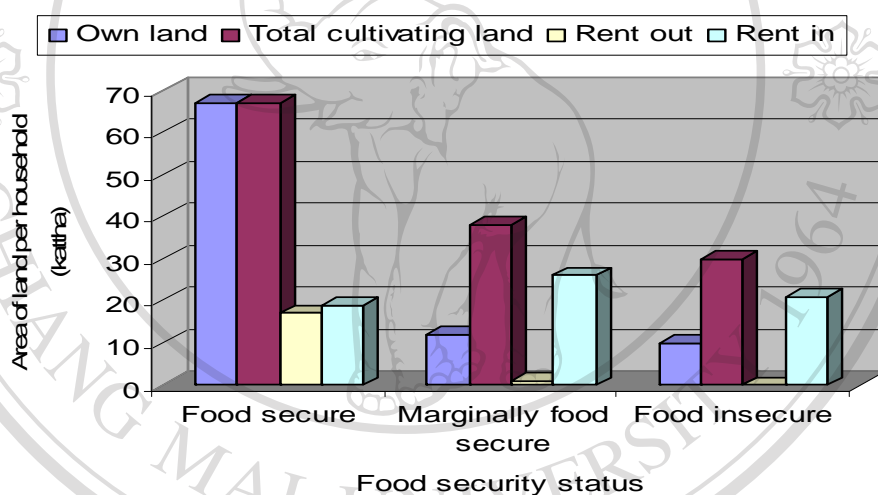


Figure 6.4 Farm use pattern by food security status
Source: Survey, 2007

6.5.2.3 Farm size distribution by food security status

The larger cultivating land shows positive symptoms to food security situation. The study has shown 17 per cent having own less than 10 *kattha*, 22 per cent having 10-30 *kattha*, 43 per cent having 31-81 *kattha* and 17 per cent having more than 81 *kattha* total own land per household were found food secure households (Table 6.11) where as four per cent having less than 10 *kattha*, 26 per cent having 10-30 *kattha*, 48 per

cent having 31-81 *kattha* and 22 per cent having more than 81 *kattha* total cultivating land per household were found food secure households (Table 6.12).

Table 6.11 Distribution of full land ownership by farm size and food security status

Own farm size	Food secure	Marginally food secure	Food insecure
.....Number of households (per cent).....			
0 to 10 <i>kattha</i>	4(17)	16 (64)	16 (67)
11- 30 <i>kattha</i>	5(22)	5(20)	7(29)
31-80 <i>kattha</i>	10(43)	4(16)	1(4)
>81 <i>kattha</i>	4(17)	0	0
Total	23(100)	25(100)	24(100)

Note: 30 *kattha* =1ha, figures in parenthesis indicates the percentages of total sample in each category.

Source: Survey, 2007

Table 6.12 Distribution of households by size of total cultivating land and food security status

Size of total cultivating land	Food secure	Marginally food secure	Food insecure
.....Number of households (per cent).....			
0 to 10 <i>kattha</i>	1 (4)	1 (4)	0
11- 30 <i>kattha</i>	6(26)	8 (32)	13 (54)
31-80 <i>kattha</i>	11 (48)	16 (64)	11 (46)
>81 <i>kattha</i>	5 (22)	0	0
Total	23(100)	25(100)	24(100)

Note: 30 *kattha*=1ha, figures in parenthesis indicates the percentages of total sample in each category.

Source: Survey, 2007

The study has shown that all sample households having more than 81 *kattha* own land or total cultivating land per household were found food secure households.

It reflects that higher farm size makes better food security status.

6.5.3 Sex of head of households by food security status

The head of household is elder male of household and inherited by the eldest son after the death of household head as a traditional culture in Tharu community. As a result, there is less chance for female as head of household. Female can be head of household in one condition, when husband of female go outside the community for jobs more than one year. It was found only one sample representing one per cent of total samples as female head of household (Table 6.13) whose husband went to gulf countries for job. It was the food secure household due to higher income received from remittance. It also shows that most of Tharu people do not go to work outside subsequently we can say mobility is very low in Tharu people.

Table 6.13 Sex of head of households by food security status

Own land	Food secure	Marginally food secure	Food insecure	Total
.....Number of households (per cent).....				
Male	22 (31)	25 (35)	24 (34)	71 (100)
Female	1 (100)	0 (0)	0 (0)	1 (100)

Note: Figures in parenthesis indicates the percentages of total sample in each category.
Source: Survey, 2007

6.5.4 Education of head of households by food security status

The education is a social capital, which could affect household capability for better production and nutritional decisions and ultimately improve food security status. Education of head of household can play role for adoption of new agricultural technology, resource management and food consumption behavior. 46 per cent of total head of households were found to be illiterate. These seem to be no effect of

different level of education on food security status except higher level education holder head of household (Table 6.14)

Table 6.14 Education of head of households by food security status

Education of head	Food secure	Marginally food secure	Food insecure	Total
.....Number of households (per cent).....				
Illiterate	10 (30)	12 (36)	11 (34)	33 (100)
Primary level	10 (33)	9 (30)	11 (37)	30 (100)
Secondary level	2 (25)	4 (50)	2(25)	8(100)
Higher level	1 (100)	0 (0)	0 (0)	1 (100)

Note: Figures in parenthesis indicates the percentages of total sample in each category.

Source: Survey, 2007

6.5.5 Household size distribution by food security status

The individual member of household constitutes household size. Since food requirements increase with the numbers of members in household, expected effect is negative. the higher household size generally indicates food insecurity conversely, in these community, higher household size more than 13 members were found 62 per cent food secure, 13 per cent marginally food secure and 25 per cent food insecure households due to higher percentages of land resources and labor forces in households of surveyed Tharu people (Table 6.15).

Table 6.15 Household size distribution by food security status

HH structure	Food secure	Marginally food secure	Food insecure	Total
.....Number of households (per cent).....				
2-4	4 (40)	2(20)	4 (40)	10 (100)
5-8	7 (20)	15 (40)	15 (40)	37 (100)
9-12	7 (41)	7 (41)	3 (18)	17 (100)
13+	5 (62)	1 (13)	2 (25)	8 (100)

Note: Figures in parenthesis indicates the percentages of total sample in each category.

Source: Survey, 2007

6.5.6 Health status of head of households by food security status

The health status of household head is expected to have better labor supply for food production which could increase food production. Poor health generally indicates food insecurity. The ill health status head of household were found nine percent and 4 per cent the food secure and the marginally food secure households of total households where as 91 per cent of household were food secure who had good health (Table 6.16).

Table 6.16 Health status of head of households by food security status

Health Status	Food secure	Marginally food secure	Food insecure
Number of households (per cent).....		
Good	21 (91)	24 (96)	24 (100)
Ill	2 (9)	1 (4)	0
Total	23(100)	25(100)	24(100)

Note: Figures in parenthesis indicates the percentages of total sample in each category.

Source: Survey, 2007

6.5.7 Distribution of age of household head by food security status

The age of household head in year is related to labor supply for food production and also on ability to seek and obtain better off farm job which could increase food production and household income. Younger people are stronger and expected to cultivate larger farm size than older people. It was found that the head of household aging less than 30 were 17 per cent the food secure households where as nine per cent for aging 31 to 40, 13 per cent for aging 41 to 50, 39 per cent for aging 51 to 64 and 22 per cent aging more than 65 years head of households were food secure households (Table 6.17).

Table 6.17 Distribution of age of household head by food security status

Age of household head	Food secure	Marginally food secure	Food insecure
Number of households (per cent).....		
24- 30	4 (17)	2 (8)	0(0)
31- 40	2 (9)	6 (24)	6 (25)
41-50	3 (13)	8 (32)	9 (38)
51-64	9 (39)	6 (24)	7 (29)
>65	5 (22)	3 (12)	2 (8)
Total	23(100)	25(100)	24(100)

Note: Figures in parenthesis indicates the percentages of total sample in each category.
Source: Survey, 2007

6.6 Household institutional pattern and food security pattern

6.6.1 Household access to extension service by food security status

Agricultural extension service plays important role to adopt improved agricultural technology for better production and productivity of crop and ultimately food sufficiency level where majority of households consume food from their own production. It was found that 96 per cent households having access to extension services were the food secure households whereas 4 per cent households were found food secure household respectively (Table 6.18). It indicates that access to extension services affect positively toward better food security status of the household.

Table 6.18 Household access to extension services by food security status

Access to extension service	Food secure	Marginally food secure	Food insecure
Number of households (per cent).....		
Access	22 (96)	8 (32)	3 (13)
No access	1 (4)	17 (68)	21 (87)
Total	23(100)	25(100)	24(100)

Note: Figures in parenthesis indicates the percentages of total sample in each category.
Source: Survey, 2007

6.6.2 Participation on agricultural group by food security status

Group approach is a vehicle for agricultural development in rural areas. Participation on agricultural groups helps to have access to agricultural technology which could improve agricultural production systems of household. It was found that 78 per cent of households having participation on agricultural group were the food secure households whereas 16 per cent and 13 per cent the marginally food secure and the food insecure households respectively than those with no participation on agricultural group (Table 6.19). It indicates that participation on agricultural group affect food security status of the household.

Table 6.19 Participation on agricultural group by food security status

Participation on agricultural group	Food secure	Marginally food secure	Food insecure
Number of households (per cent).....		
Participation	18 (78)	4 (16)	3 (13)
No participation	5 (22)	21 (84)	21 (87)
Total	23(100)	25(100)	24(100)

Note: Figures in parenthesis indicates the percentages of total sample in each category.
Source: Survey, 2007

6.6.3 Adoption of modern rice variety seed by food security status

The modern rice variety seed increase better production and improve food security situation. It was found that 73 per cent households adopted modern rice variety seed were the food secure households where as 7 per cent and 20 per cent marginally food secure and food insecure households respectively (Table 6.20). It indicates that the adoption of modern rice variety seed influence food security status

of the household. However, only 15 households representing 21 per cent of total households adopted modern rice variety seed.

Table 6.20 Adoption of modern rice variety seed by food security status

Adoption of modern rice variety seed	Food secure	Marginally food secure	Food insecure	Total
.....Number of households (per cent).....				
Yes	11 (73)	1 (7)	3 (20)	15 (100)
No	12 (21)	24 (42)	21 (37)	57 (100)

Note: Figures in parenthesis indicates the percentages of total sample in each category.
Source: Survey, 2007

6.7 Household ecological condition and food security pattern

6.7.1 Yield stability by food security status

Yield stability refers to the year to year fluctuations in production. The magnitude of year to year variation in yield varies widely among crops, localities and types of farming systems. The subsistence farming system has greater stability than others. It was found that mean percentage of CV was approximately 4 per cent in each category of households with 4.03 mean of total samples (Figure 6.5). It shows that every category has higher paddy yield stability under last five years in surveyed Tharu communities.

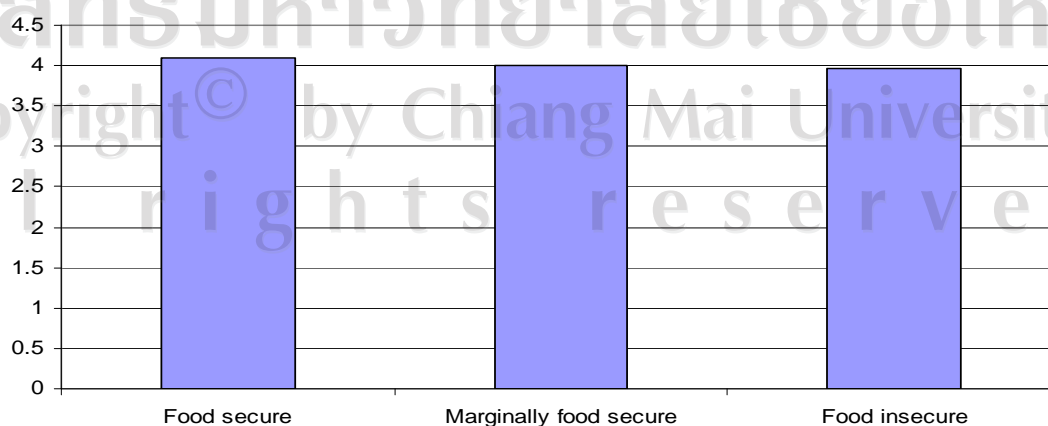


Figure 6.5 Mean per cent of CV by food security status

6.7.2 Access to irrigation by food security status

The access to irrigation leads to increase production, productivity of rice and ultimately improve food security situation where rice covers 86 per cent of cereal demand for household food consumption. The study has shown that 39 per cent of sample households having full access to irrigation facility were found the food secure households where as 36 per cent and 12 per cent mixed and no access to irrigation (Table 6.21). It illustrates that access to irrigation and mixed irrigated lands persuade improved food security status.

Table 6.21 Access to irrigation by food security status

Access to irrigation	Food secure	Marginally food secure	Food insecure	Total
Full	9 (39)	9 (39)	3 (22)	21(100)
Both (mixed)	9(36)	11(44)	5(20)	26(100)
No	4 (12)	26 (25)	26 (63)	25 (100)

Note: Figures in parenthesis indicates the percentages of total sample in each category.
Source: Survey, 2007

6.7.3 Quantity of own production by food security status

This refers to the total quantity of own production of the household from their own farm measured in kilogram grain per year per household. It consists of both food and income outputs. The majority of foods produced are eaten while households sell small amount of the food in the market to earn additional income for household expenses. The study has shown that the food secure households have one and half times more than marginally food insecure household and two times more quantity of food from own production than food insecure households (Table 6.22). It shows that higher own production, the higher the likelihood of food security.

Table 6.22 Quantity of own production by food security status

Quantity of food	Rice	Maize	Wheat	Total
.....Kilogram cereal grain per year per household.....				
Food secure	3240 (82)	389 (10)	302 (8)	3931 (100)
Marginally food secure	1624 (82)	221(11)	147(7)	1992 (100)
Food insecure	999 (81)	164 (13)	68 (6)	1232 (100)

Note: Figures in parenthesis indicates the percentages of total sample in each category.

Source: Survey, 2007

In this chapter, based on household food adequacy percentage, the food security status of each household was calculated by finding the percentage of household food requirements that was met from food available to households. Twenty three households representing 32 per cent of the sample were found food secure households whereas 35 per cent and 33 per cent were marginally food secure and food insecure households. The household food adequacy ranges from 44 to 135 as percentage of requirements met by the households with 88 per cent mean adequacy within whole sample households.

The food secure households were found more cash income from crop and livestock due to higher land resources than the food insecure households. Selling of crop especially rice was found immediately after harvest to pay the cost of production inputs to their land lords by tenant farmers. Most of the communities were found selling their surplus product in the market. Nevertheless some of Tharu households sold their cereal product without calculation of their actual their food requirement from their own production which was one cause for them to become food insecure. It shows that the higher income higher the food security status. The proportion of expenditure on food was found similar on three types of food security status

households but the amount of expenses on food items was found higher in food secure household except purchase of cereal while expenses on purchase of cereal was found higher in food insecure households and slightly lower in marginally food secure households due to their low own production.

Food consumption in Tharu community sites was found mainly cereal based which covers 86 per cent of total cereal where as 9 per cent for maize and 5 per cent for wheat. It was found that slightly higher consumption of maize by residents of rainfed area due to higher production of maize on their field. Tenancy relationship was informal based on verbal agreement between tenant farmer and land owner which had no legal basis between them. The land owners can withdraw his land from tenant farmer at any times which create a major dilemma to tenant farmers' future. It reflects that full ownership and mixed ownership farm holder farmers with better food security status. Most of Tharu people do not go to work outside subsequently we can say mobility is very low in Tharu people. The higher household size was found higher food secure due to higher percentages of land resources and labor forces in households of surveyed Tharu people. 96 per cent households having access to extension service, 78 per cent of households having participation on agricultural group and 73 per cent households adopted of modern rice variety seed were the food secure households. However, 46 per cent of households had access to extension service, 35 per cent of households participated on agricultural group and 21 per cent of households adopted modern rice variety. 46 per cent of total head of households were illiterate who were found lack of awareness toward new agricultural technology.