

Livelihood and Food Security Assessment of Tharu Ethnic People, Dang District, Nepal

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Abstract

In Nepal, the national and district level cereal production does not reveal adequately food security problem of the people. Although the Dang district, mid western part of Nepal is food sufficient, food security is still a major problem for backward ethnic and caste groups. This study has as its objectives to assess major factors influencing household food security of Tharu ethnic people. A total of seventy two households were randomly selected comprising of twelve villages of Tharu communities. Cereal production, consumption, use and some variables related to food security were among the data collected. Underemployed labor force, dependency on outsiders land, low income and poor access to the education and employment were found to be their main characteristics of Tharu ethnic people. Tharus' existing production systems were not sufficient for sustaining their livelihoods. The study showed that 32% of the Tharu households were food secure, 35% marginally secure while 33% food insecure. Using ordinary least square regression analysis, the factors influencing food security were found to be access to agricultural extension, adoption of modern rice varieties, higher income sources and reduction of the traditional alcohol making. Understanding potentials and drawbacks of Tharu ethnic cultural system is a prerequisite for improving livelihood and food security.

Keywords: *Food security, livelihood, Tharu ethnic people, alcohol making, Nepal*

Introduction

About 85% of the population in Nepal lives in rural areas and 66% of rural people depend on agriculture for employment and income generation (Central Bureau of Statistics, 2001). Twenty seven percent of population at household level are food insecure (World Food Program, 2006), despite the fact that the national supply of food is adequate for all (Agri Business Promotion and Statistics Division, 2006). For the Tharu people who live in Terai region of Nepal a rice basket region where 71% of total rice production in the country is produced (Agri Business Promotion and Statistics Division, 2006). Low income, unproductive labor, lack of autonomy, landlessness, illiteracy etc are still main identity of Tharus ethnic people (Sharma, 2006). Tharu ethnic community has a traditional practice to make alcohol from cereal grain which leads perhaps to their food insecurity. Alcohol consumption is common, particularly among men and people of a lower caste and tribal group making them vulnerable to poverty and food insecurity (Food and Agriculture Organization, 2004). In order to improve the Tharu peoples' livelihood and food security,

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a study is needed to understand and assess the range of vulnerable factors that interact with performance of food production and their availability, access to food and food utilization. Thus, the objectives of this study are to assess the degree of food security and to identify and analyze key factors affecting food security among Tharu ethnic communities in study area.

Materials and methods

The survey sites and data sources

The data for the study were collected among sampled households of Tharu farming households conducted in 2007 in the Dang district of Nepal. Stratified random sampling technique was applied to select seventy two households from twelve sites of Tharu community under ten Village Development Committees (VDCs) and one municipality of study area. Figure 1 shows the conceptual framework of this study.

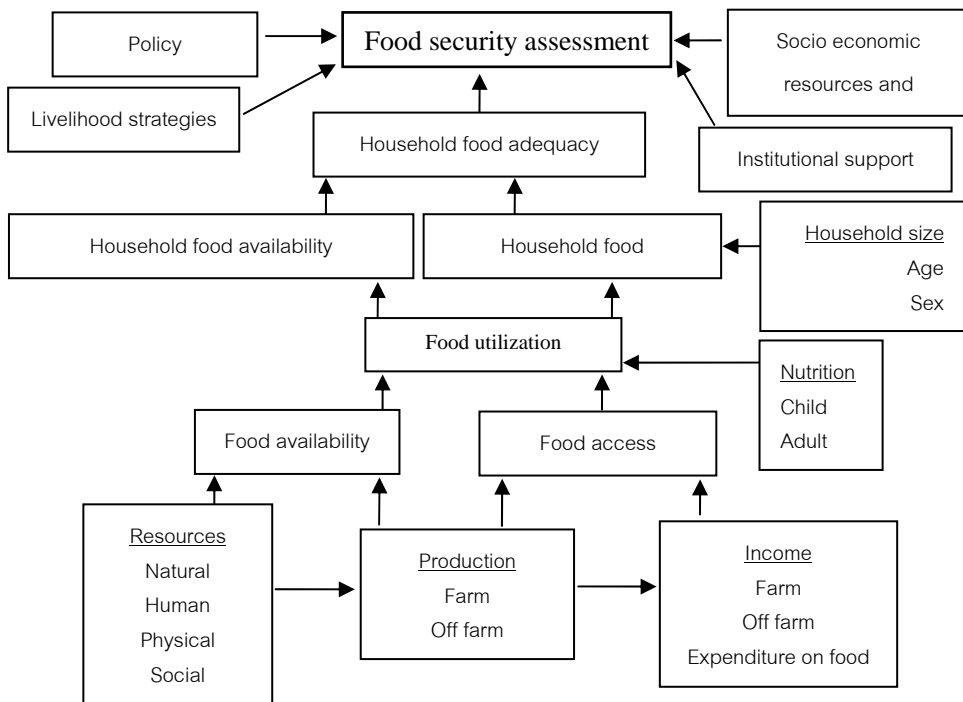


Figure 1 Conceptual framework for studying food security in this study

This framework provides a way of looking at food availability, food access and food utilization where household food security is determined by household food adequacy. USAID (1995) defines food security as a situation “when all people at all times have both physical and economic access to sufficient food to meet their dietary needs for a productive and healthy life”. Achieving food security requires that the aggregate



availability of physical supplies of food is sufficient, that households have access to those food supplies through own their production through the markets or thought other sources and that utilization of those food supplies is appropriate to meet their dietary needs (food requirements) of the households. It is dependent upon the level of household factors namely income, production, resources, consumption and nutritional behavior and household size along with other factors namely national policy, institutional support, livelihood strategies and socio economic resources and context.

Analytical technique and variable measurement

This study focused on food security analysis at the household level. Collected data were compiled and different variables related to food security were grouped, classified, quantified and analyzed through descriptive and inferential statistics. Two types of analyses were carried out: first, household food adequacy percentage was employed to assess degree of food security status and second, ordinary least square regression analysis were used to analyze factors affecting food security as a function of a set of independent determinants. For the purpose of food security analysis in this study, food security is defined with reference to cereal food grains. The minimum energy requirement for an average person of 2,250 kcal per day is used in Nepal (Central Bureau of Statistics, 2004). Eighty five percent of the cereal and 15% of non cereal food is assumed as the percentages of total required calorie intake in Terai region of Nepal (World Bank, 1979). Food requirement of household was compared with household food availability to find out household food adequacy percentage (HHFAP) for assessing degree of food security status of Tharu ethnic communities (Equation 1)

$$HHFAP = HFC/HFR * 100 \dots \dots \dots (1)$$

Where HHFAP =household food adequacy (percentage)

HFC= Household food availability

HFR= Household food requirement

Household cereal availability index (HFC) was calculated from different sources of food available for consumption which was converted into kilograms rice equivalent per household per year. Household food requirement (HFR) was calculated through the number of people multiplied by the quantity of cereal required by that age/gender categories into kilograms rice equivalent per household per year to meet 85% of their minimum cereal needs.

Based on household food adequacy percentage (HHFAP) households were categorized into food secure, marginally food secure and food insecure households and if HHFAP is ≥ 100 , 80-99 and ≤ 79 respectively. The marginally food secure households are characterized by those households who are under transitional food security status 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. Based on household food adequacy percentage as dependent variable, the relationship and expectation of independent variables was analyzed by using ordinary least square food adequacy regression model to assess the factors affecting food security at household level. Along with these analyses, general information about livelihood pattern of Tharu ethnic people was collected.

Ordinary least square regression analysis

Based on household food adequacy percentage as dependent variable, the relationship and expectation of eight independent variables namely adoption of modern rice variety seed, access to extension office, household income, proportion of alcohol making from total cereal consumption, household head age, household adult equivalent members, yield stability and the farm size was analyzed by using ordinary least square food adequacy regression model to assess the factors affecting food security at household level (equation 2)

$$\text{HHFAP} = \beta X_i + e \dots\dots\dots(2)$$

β = vector of parameter estimates

X_i = vector of parameter estimates (socio-economic variables)

e = error term

Results and discussion

Livelihoods of Tharu ethnic people

Diversified caste/ethnic groups are available where majority groups are Tharu (32%) and Chhetri (23%) followed by Magar (12%) and Brahmin (11%) of total population of Dang district. The Tharus live in compact nucleated settlements. The household is the basic of the Tharu's social, economic and ritualistic life. Tharu ethnic people were found to be agricultural-based with bare subsistence livelihood in which more than 90% depended on agriculture. They had extended families with sometimes three to four generations in a household. The 54% of heads of total households had education and only nine percent of total economically active population had good employment. The average household size was approximately 8 and about 35% of households had more than 9 members in their household.

Farming systems of Tharu ethnic communities

Crops and livestock are both important components of Tharu farming communities which are used for both consumption and cash income. Physical and climatic conditions are generally favorable for tropical agriculture in the district. However, crop and livestock productivity was low due to traditional management practices. Organic manure, improved variety seed and other modern production inputs were not much in use in most of the Tharu communities. Less involvement in agricultural extension services was found here compared to other communities



Resources and its pattern of Tharu ethnic communities

The number of family members was identified ranges from 3 to 21 with 8.1 as the average of household members. Tharu population were earning from services (1%), remittance (3%), skilled labor (6%) and wage labor (14%) and remaining (76%) in agriculture. The owned farm land of each household varies from nil to six hectare per household. The majority of the landholdings (79%) are less than one hectare which makes them dependent on outsiders' land. The irrigation facility covers only about 51% of total land.

Rich picture of food insecurity situation of Tharu ethnic people

The performance of existing production systems and their factors, income, expenditure and consumption patterns of every household determines the food security or food insecurity situation of particular household. The objective of this rich picture was to find out different responsible factors for food insecurity of Tharu ethnic communities which helps to better understand and select appropriate means of intervention with an aim for improving food security on Tharu ethnic communities. Household food inadequacy was taken as core problem for food insecurity of Tharu ethnic communities. All these responsible factors were documented on each community workshop and described on the rich picture (Figure 2)

Low productivity, low land holding, traditional consumption practices, subsistence agriculture, low income, were found factors which caused household food inadequacy for food insecure households. Low productivity was caused by lack of quality fertilizer, inadequate irrigation facilities, low input use and negligible use of organic manure. Low land holding was caused by higher household size and low purchasing capacity of land and sharecropping was caused by dependency on outsiders land. Household food inadequacy was caused by traditional consumption practices due to higher use of food on ceremony and festival as well as alcohol making. Food inadequacy was also caused by low income and low income was caused by low price of agricultural produce, lack of employment opportunity and lack of productive assets moreover, lack of employment opportunity was caused by lack of skill of knowledge, lack of vocational training and lack of mobility. Bad climate condition was also found factors responsible for food insecurity due to flooding, draught and excessive rainfall where as human disease due to poor sanitation, poor health, and lack of knowledge about nutrition.



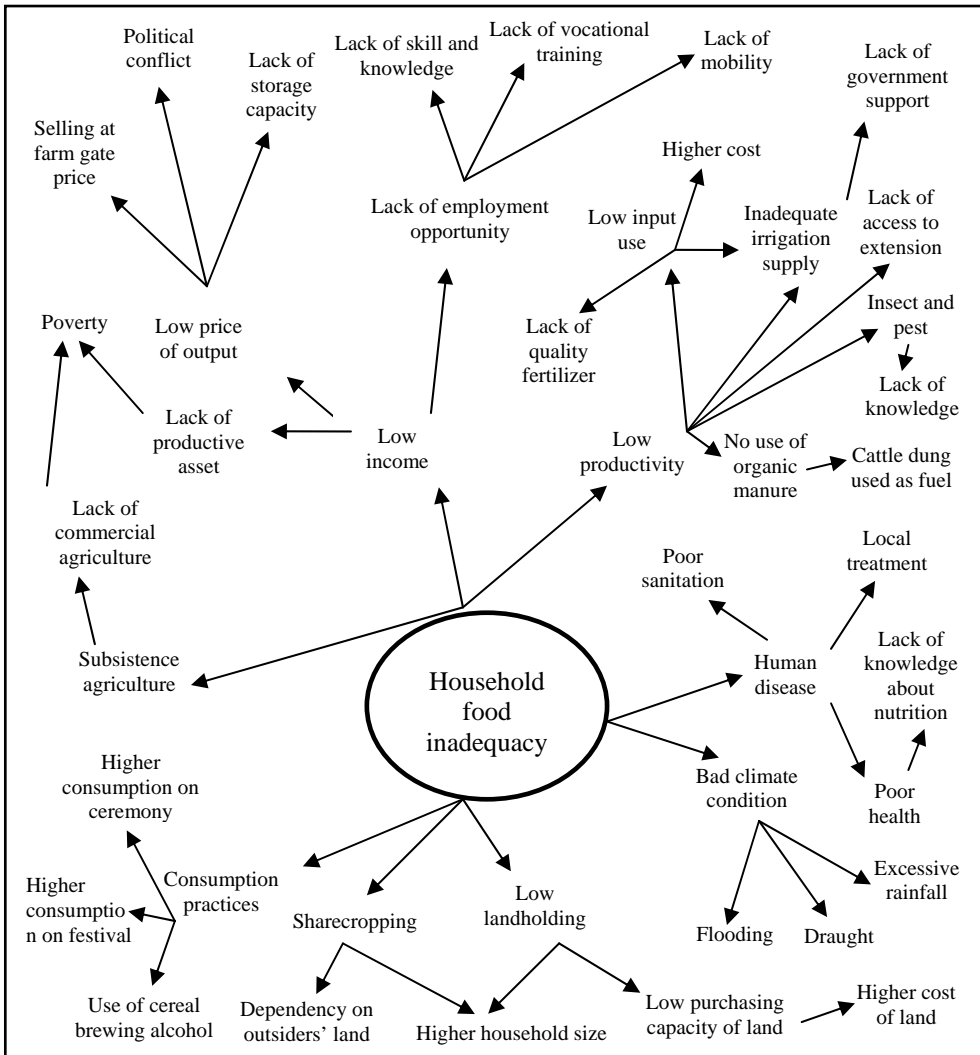


Figure 2 Rich picture of household food inadequacy of Tharu ethnic people

Food consumption pattern of Tharu ethnic people

Food consumption in Tharu community sites was found mainly cereal based which covers 86% of total cereal where as 9% for maize and 5% for wheat. It was found that slightly higher proportion of maize was consumed by residents of rainfed area due to higher production of maize on their field. The food consumption pattern depends upon production of their farm. Food is consumed more than three times during festivals than during normal days. Tharus are rich in their culture and festivals. Tharu people use 28% of cereal for brewing alcohol ranging from 0 to 49% of total consumption of household. The alcohol consumption habit pattern especially for their festivals and ceremony being



practiced by Tharu communities leads high rate of food insecurity which can be improved by discouraging those practices among Tharu communities. The community leader and traditional institutional role can be effective to discourage for making alcohol and use it as food within their community.

Farming livelihood condition of Tharu ethnic people by food security status

Based on household cereal food adequacy on the recommended daily calorie intake of 2,250 kcal, it was observed that 32% of the household were food secure and 35% and 33% of the household were marginally food secure and food insecure respectively. The household food adequacy ranges from 44 to 135 as percentage of requirements met by the households with 88% mean adequacy within whole sample households.

Higher farm size, the higher income, full ownership and mixed ownership farm holder farmers, access to irrigation and mixed irrigated lands of Tharu household was found better food security status. However, from the analysis of the households, it appears that education status, access to market, household size distribution does not effect food security situation of Tharu ethnic people. 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. The food secure households were found to have 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 to sell their surplus product in the nearby market. Nevertheless, some of the households sold their cereal product without calculation of their actual their food requirement from their own production. The proportion of expenditure on food was found similar in all households but the amount of expenses on food items was found higher in food secure household except the 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 levels of own production.

Determinants of the food security status

The analysis of the survey data showed four out of the eight variables included in the OLS regression model were significant in explaining variation in the food security status of household in the study sites given in Table 1.

Adoption of modern variety of rice

The adoption of modern rice variety seed by farmer is positively related to household food adequacy at the 0.01% level. The adoption of modern rice variety seed is important to boost production and productivity of rice and ultimately improve food



security status where share of rice for household consumption is more than 86% of total cereal consumption.

Table 1 Results of OLS regression analysis

Variables	T- ratio	Sig. level
(Constant)	8.437	0.000
Household adult equivalent members	0.775	0.441
Household head age (years)	0.168	0.867
Access to extension service	2.600	0.012**
Adoption of modern rice variety	3.382	0.001***
Yield stability in CV	0.425	0.673
Household income per month per AE	1.886	0.064*
Proportion of food grain for alcohol making	-1.719	0.091*
Farm size per AE	1.225	0.225

R = .736, R² = .541, Adjusted R² = .483 * = Significance at the 0.1 level

** = Significance at the 0.05 level and *** = Significance at the 0.01 level

Access to extension service

Access to extension services is positively related to household food adequacy at the 0.05% level. Access to extension services enabled people to develop skills about new agricultural technology through information, training, contact to extension worker and received demonstration package which helps for better production and affect significantly to household food adequacy.

Household income

Household income including both farm and off farm income is positively related to household food adequacy at the 0.10% level. The income determines the level of use of production resources and inputs such as land, improved seed, chemical fertilizer and pesticides and expenditure on food which improve household food adequacy by increasing household access to productive resources and inputs.

Proportion of food grain for alcohol making

Proportion of food grain for alcohol making is negatively related to household food adequacy at the 0.10% level. Higher proportion of food grain for alcohol making as compared to food consumption leads to be food insecure household due to lack of availability of food for consumption.

Other variables

Out of remaining four variables, households headed by younger heads are more likely to meet their household food adequacy due to cultivation of larger-size farm than old people. Large household with more adult equivalent members are likely to meet less of their household food adequacy than households with fewer members. Households with



larger farm size are more likely to be food secure than those with smaller farm size. Higher coefficient of variation of yield denotes to be household food inadequacy. However, household head age, household adult equivalent members, yield stability and the farm size does not affect significantly to household food adequacy.

Sources of total food flows to household food security

Household cereal production covers significant contribution in household food inflows which is utilized for both own consumption and non-consumption use in term of food outflows. For the contribution of food inflow side, 86%, 7%, 4% and 3% of total food was derived from own production, stock of last years, market and others respectively. The Tharu farmers use their food received from food inflows for consumption as well as non consumption use where as non food use is used by selling product for income, preparing alcohol and using seed, feed and others. Food for consumption was found 54% of total their production where as 22% for sale in the market, 13% for preparing alcohol and remaining 11% for seed, animal feed and other uses.

It was found that use of cereal for alcohol and the sale of cereal immediately after harvesting could not meet household food security from remaining portion of their own production. If Tharu household could consume the quantity of cereal made for alcohol as food adding with pervious consumption, it would make 53% and 22% of them to be food secure and marginally food secure households respectively. If Tharu household could consume the quantity of cereal made alcohol plus quantity of sold cereal as food adding with pervious consumption, it would make 68% and 14% of them to be food secure and marginally food secure households respectively. If Tharu household could consume the quantity of all household food outflows as food consumption, it would make 75%, 14% and 11% of them to be food secure, marginally food secure and food insecure households respectively.

The households who are marginally food insecure and food insecure are using cereal for brewing alcohol as a tradition and also some percent selling it immediately after harvesting at lower price to pay price of production inputs used for agriculture especially landlords are important factors affecting food insecurity in Tharu communities. Some awareness programs to minimize the uses of cereal for making alcohol and some additional employment opportunity to minimize selling their product in market may be good instruction toward sustainable food security in these communities.

Conclusion and recommendations

The study has shown only 32% of the Tharu households as food secure households. The adoptions of modern rice variety seed, access to extension service, household income and proportion of food grain for making alcohol were found important determinants of their food security or food insecurity status. About only 29% of



households had more than Nepali rupees 4,000 per month per household and this translate to an average income of \$ 0.26 per day, even lower than the \$ 1 international poverty line. Based on the information collected from this research and analysis, this study concludes low adoption of agricultural technology, lower productivity, lack of education, traditional practices of cereal grains uses for alcohol making and lower purchasing power of the majority of the Tharu people such as food and production inputs may be the causes of food insecurity in Tharu ethnic community.

It is recommended that food security strategies and programs should be designed in a way that would focus on and address the recognized determinants and causes of food insecurity in Tharu ethnic community. To improve food security status of Tharu ethnic people, government should provide special package of development programs and activities and agricultural technology suitable for food insecure households. The community indigenous leader can play major role for the improvement of livelihoods and food security of Tharu community by leading to raise awareness for development and correct conservative practices adopted presently in their community.

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