

Study on food security status and coping strategies of rural households in Myingyan Township, Dry Zone Area

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Abstract

This study was emphasized to estimate the food security status and coping strategies employed to food insecurity and better understanding of major determinants of per capita food expenditure at household level in Myingyan Township. The sample of 120 farm households and 77 landless households were interviewed in 6 villages by using simple random sampling method. Households' daily calorie availability based on minimum capita daily food requirement 2100 kcal/person/day, food poverty line method and coping strategies method were used to fulfill the research objectives. There were 48% of landless and 45% of farm households in food in secure group. Landless and farm households used 90% and 72% of their total income for food consumption respectively. In terms of average capita calorie intake per day, landless and farm households took 2127 kcal and 2181 kcal, respectively. Landless consumed 508 MMK whereas farm households consume 596 MMK as per capita daily food expenditure. Food secure households group was characterized by smaller family size, higher annual income, higher rice and meat consumption and lower migration rate compared to the food insecure group. About half of the landless and farm households were found in low level of coping strategies for food insecurity.

Key words: food security, coping strategies, food poverty

Introduction

Myanmar is a resource rich country, with sufficient food availability at the national level, but a very uneven distribution of resources, lack of investment in key sectors (including water, sanitation and hygiene, health, education, and agricultural research and extension), and government policies that frustrate efforts to ensure household food security. Official statistics suggest that one quarter of Myanmar's households live below the national poverty line, and that one in ten households lives below the official food poverty line. While agricultural development is important for the whole nation, it is especially important for rural areas where some 70% of the country's population reside and depend primarily on agricultural production as their main source of income. Moreover, employment opportunities for landless labor and other rural people depend heavily on agricultural activities (Wilson et al., 2013).

Rice is the major source of the energy for the Myanmar people as it contributes about 73% and

80% of the total daily dietary energy requirement in urban and rural households. Two-thirds of household expenditure is spent on food and rice which carries the largest weight in the Consumer Price Index with 17% on average and with 27% for low income groups (CSO, 2010). The factors affecting household food security are generally economic such as household income, price of food, market access and performance, investment, job opportunities, etc. Therefore, food security assessment not only at household level but also at individual level can enhance the understanding on the real livelihood situation in the Dry Zone.

Background of the study

Dry zone (Mandalay Region) is one of the poverty-stricken area and food insecurity area in Myanmar. Among them, one of the poverty stricken area of Myingyan district is situated in the Mandalay region of central Myanmar. The total area of Myingyan district is about 969.398 sq km and situated between 60- 400 meter of the sea level. The climate is dry and the annual rainfall averages about

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35 inches. The temperature varies between 43 and 11.4°C (DoA, 2014). The rural people in this area are high level of landlessness and low acreage of accessible land for those who do cultivate. Although most irrigation schemes have been focused in the dry zone and in food deficit areas, there were not enough irrigation facilities in this area. The rural people in the study area rely on market purchase for food access in a context of low, undiversified, agriculture-based incomes, high debts and reliance on credit. The ordinary crops are millet, sesame, cotton, maize, rice and a great variety of peas and beans. The major livelihood is agriculture and services and the main cultivated crops such as pulses, oil seed crops and onions are marketed to the lower Myanmar.

There were three main objectives in this study.

1. To study the demographic and socio-economic characteristics of the sample farm and non-farm (landless) households in Myingyan township
2. To estimate the food security status and coping strategies of selected rural farm and non-farm (landless) households by applying food poverty line and the coping strategies index, and
3. To examine the determinant factors of per capita food expenditure of the sample farm and non-farm (landless) households in the study area.

Research Methodology

Both primary and secondary sources of data were used in this study and .The data from 77 non-farm (landless) households and 120 farm households were collected by using simple random sampling method.

Analysis of Food Security Status

Household calorie availability was computed from each food item consumed and commonly consumption of food items in the study area. The net daily calorie availability was divided by household members to obtain the daily calorie availability per adult equivalent of the households. Households with daily calorie consumption greater than or equal to 2100 kcal per day recommended by the World Health Organization (WFP, 1998) were categorized as 'food secure', and those households whose calorie intake fallen below this food security threshold grouped as 'food insecure'.

In order to compute food poverty incidence, Foster- Greer Thorbecke index (1984) was used. The consumption data available from the sam-

pled households were analyzed to compute food poverty incidence including headcount ratio, food poverty gap and food severity.

Headcount Index

The headcount index simply measures the proportion of the population that is counted as poor, often denoted by P_0 . Formally,

$$P_0 = N_p/N$$

Where N_p is the number of poor and N is the total population (or sample).

Poverty gap Index

The poverty gap (G_i) as the poverty line (z) less actual income (y_i) for poor individuals; the gap is considered to be zero for everyone else. Then the poverty gap index may be written as,

$$PG = 1/N \sum_{i=1} G_i/z$$

Squared Poverty Gap (Poverty Severity) Index

Squared the poverty gap index measures implicitly puts more weight on observations that fall well below the poverty line. Formally;

$$PG = 1/N \sum_{i=1} (G_i/z)^2$$

Reduced Coping Strategies Index (CSI)

The respondents are asked to inform frequency of use of each strategy, over a week (30 days recall). The number of different strategies used by the households is summed. A weight is also allocated to each strategy. CSI are then obtained by multiplying the score to the frequency for each strategy and then adding all the strategies scores. The more food insecure household would get the high score (Maxwell et al., 2008).

Results and Discussion

Household Size, Age of the Household's Head and Dependency Ratio

The average household sizes of the landless and farm households were 4.85 and 5.64 respectively with the minimum 1 person and maximum 11 persons and most of them live in extended family living. The average age of the total household heads was 51 years with the minimum of 27 years and maximum 81 years. The average age of farm households (51 years) were older than landless households (48 years) among the sampled households. Most of both landless and farm households had the dependency ratio between 20 to 39% (Table 1).

Table 1. Household size and age of the households' head and dependency ratio

	Landless HH (N= 77)	Farm HH (N= 120)	Total (N= 197)
Household size(no.)			
Mean	4.85	5.64	5.33
Minimum	1	2	1
Maximum	10	11	11
Age of household head(years)			
Mean	48	54	51
Minimum	27	29	27
Maximum	81	80	81
Dependency ratio			
0 -19%	22 (28.57)	40 (33.33)	62 (31.47)
20 -39%	31 (40.26)	44 (36.77)	75 (38.07)
40 – 59%	20 (26.97)	28 (23.33)	48 (24.36)
60% & above	4 (5.20)	8 (6.67)	12 (6.09)
Average ratio	28.1	27.2	27.58

Different Per Capita Income Levels of the Sample Households

The average annual per capita income of landless households was 356,463 MMK and farm households were 489,223 MMK in the study area. There were 50.65% of landless found in lowest income group and only 3.9% in high income group. In the farm households, there were 40% of farm households fall in the lowest income group and 10.83% of farm households in high income group were found (Table 2).

Table 2. Per capita income and different income levels of sample rural households

Income levels	Landless (N=77)	Farm Households (N=120)	Total (N=197)
Lowest income group (< 300000 MMK/year)	39 (50.65)	48 (40.0)	87 (44.16)
Low income group (300001-600000 MMK/year)	29 (37.66)	43 (35.84)	72 (36.55)
Middle income group (600000- 900000 MMK/year)	6 (7.79)	16 (13.33)	22 (11.27)
High income group (above 900000 MMK/year)	3 (3.90)	13 (10.83)	16 (8.12)
Ave. per capita income/ year	356,463	489,223	424,754

Composition of Food Items to Total Food Consumption of the Households

Rice is the major food item and the rice consumption was the highest in food composition of the sample households. Although other food cost contribution were not different between landless and farm households, the landless households' rice cost contribution 39% was higher than that of farm households 32% in their daily food cost. But landless households had lower meat cost contribution (17%) than that of farm households(24%) in their daily food cost(Figure1).

Daily Capita Calorie Intake and Capita Food Expenditure of the Households

The landless and farm groups do not differ from each other on acquiring low quantity of foods because of their daily per capita calorie intake were not significantly different between landless and farm households. The average calories were 2127 kcal in landless and 2181kcal in farm households, respectively. To fill up the minimum per capita daily requirement of calorie, the required value per capita was estimated at 586 MMK for the study area. This minimum per capita daily requirement of food was calculated by using the local available food and commonly eaten by local family based on the local market price. In the calculation of calorie intake, the highest calories were obtained from rice. Normally, the rural farmer was able to eat three plates of rice per day which was equivalent to 1434 kcal and cost 150MMK. The average daily per capita food cost of landless was 508MMK and farm households was 596MMK respectively. It revealed that landless households' average food cost was lower than that of farm households in the study area (Figure 2).

Food Security Status of the Sample Rural Households

The average minimum energy requirement of 2100 kcal was used to consider the food security status of the study area. There were 48.05% of food insecure and 51.95% of food secure households in the landless households. On the other hand, there were 45.84% of food insecure and 54.17% of food secure farm households in the study area (Table 3). Figure 3 illustrated the food poverty threshold line for the sample households.

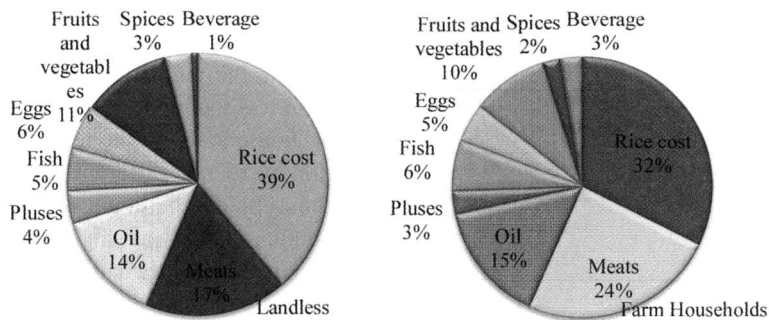


Figure 1. Composition of food items to total food cost of sample rural households

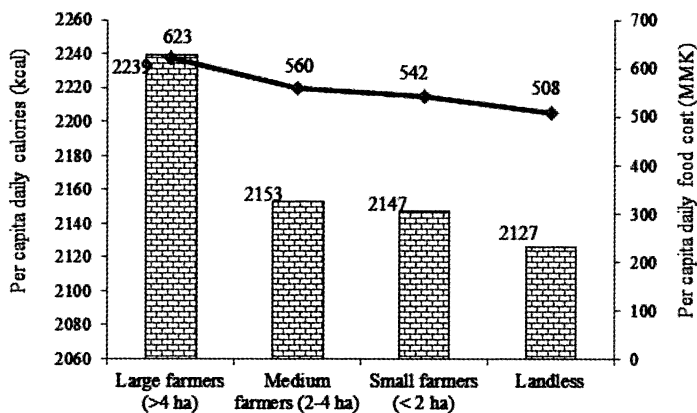


Figure 2. Daily capita food expenditure and calorie intake

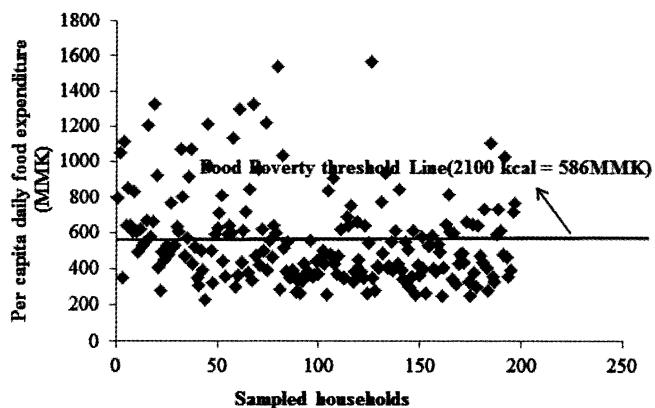


Figure 3. Food poverty threshold line (2100 kcal = 586 MMK) of sample rural households

Table 3. Food security status of the sample rural households

Food Security Status	Landless (N=77)	Farm Households (N=120)	Total (N=197)
Food insecure	37(48.05)	55(45.84)	92(46.71)
Food secure	40(51.95)	65(54.17)	105(53.29)

Food Poverty Incidence of the Households

The measures of poverty depth and poverty severity provide complementary information on the incidence of poverty (Reyes, 2005). The minimum income requirement for food and food expenditure was 586 MMK per capita per day. Based on this food expenditure requirement, the level of food poverty for sample households could be calculated (Table 4.38). The head count ratio in landless was estimated 71.42% and farm households was 57.5%, respectively. It means that 71.42% of landless and 57.5% of the farm households fall in food poverty. The food poverty gap ratio for landless and farm households have 22.2% and 16.64% respectively. Then, square food poverty gap ratio or severity of the food poverty for landless and farm households were 8.49% and 6.01% respectively (Table 4).

Percentage of Food Share in Total Expenditure and Income among Sample Rural Households

The food share in the household total expenditure and income should be estimated to examine the well-being of different rural households (Dolly Kyaw, 2009). Landless households use about 53% of their total income in food consumption and farm households use 35% of household's income for

food consumption (Table 5). Therefore, it was obvious that the majority of landless households were more vulnerable than farm households in the study area because more than half of their income was mainly used for food consumption.

Coping Strategies to Food Insecurity of the Sample Rural Households

The index of coping strategy has three advantages: it is easy to implement; it directly captures notions of adequacy and vulnerability; and the questions asked are easy to understand by both respondents and analysts (Hoddinott, 2001). There were only 1.29% of the landless households and 1.67% founded in high levels of coping strategies for food insecurity. About 42.85% of the landless and 41.66% of the farm households were founded in low level of coping strategies for food insecurity. Fortunately, there were 51.94% and 54.17% of landless and farm households have no need to use coping strategies for food insecurity (Table 6). Reducing number of meal was the highest coping strategies and then substituting with cheaper foods was the second highest coping strategies employed by the rural households in the study area (Figure 4).

Table 4. Food poverty incidence of sample rural households

Food Poverty	Landless (N=77)	Farm Households (N=120)	Total (N=197)
Head count ratio (%)	71.42	57.5	62.94
Food poverty gap ratio (%)	22.20	16.64	18.81
Severity of poverty (%)	8.49	6.01	6.98

Table 5. Percentage of food share of sample rural households

Food Share	Landless (N=77)	Farm Households (N=120)	Total (N=197)
Total expenditure	1,192,959	1,774,766	1547,359
Total food cost	863,906	947,123	914,596
Ratio of food cost in total expenditure	72%	53%	59%
Total household income	1,641,987	2,678,078	2,273,108
Total food cost	863,906	947,123	914,596
Ratio of food cost in HH income	53%	35%	40%

Table 6. Classification of coping strategies of food insecurity of the sample rural households

Coping Strategy Index	Landless (N=77)	Farm Households (N=120)	Total (N=197)
No need to use coping strategy	40 (51.95)	65 (54.17)	98 (49.75)
Low index of CS	33 (42.86)	50 (41.66)	90 (45.68)
Medium index of CS	3 (3.90)	3 (2.5)	6 (4.06)
High index of CS	1 (1.29)	2 (1.67)	1 (0.51)

**Figure 4. Coping strategies of food insecurity of sample rural households**

Factors Influencing per Capita Food Expenditure of the Sample Rural Households

In the study area, food secure households group were characterized by smaller family size, higher annual income, higher rice and meat consumption and reduce migration to other places compared to the food insecure groups. An increase in household income only would not be sufficient to maintain good health and nutritional food-security. Therefore, household access to enough food is highly dependent on household characteristics, household resource allocation among several farm enterprises and environmental factors.

Conclusion and Policy Implication

It was obvious that the majority of the rural households except large farm households were vulnerable in the study area as more than half of their

income was mainly used for food consumption. The average annual per capita income of landless household was 356,463 MMK and farm household was 489,223 MMK in the study area. According to food share percentage, landless households were the most vulnerable because about 90% of their total income was used in food consumption. The average capita daily calories of landless have 2127 kcal and farm households have 2181 kcal, respectively. According to the average daily per capita food expenditure, landless consume 508MMK and farm households consume 596 MMK, respectively in the study area. The minimum per capita income requirement for food expenditure was estimated at 586 MMK to reach 2100kcal per capita per day, if the families do not satisfy minimum average calorie needed, the rural people cannot break the vicious cycle of poverty. The head count ratio of the landless (71.42%) and farm households (57.5%), respectively meant

that 71.42% of landless and 57.5% of the farm households fell in food poverty. Therefore, food insecurity was one of the important problems in the study area and the people should try to escape the food poverty trap by raising their income level.

Therefore, household access to enough food is highly dependent on household characteristics, household resource allocation among several farm enterprises and environmental factors. The most important coping strategies which were practiced by sample household's food insecurity were reducing number of meal, substitute with cheaper foods, to borrow cash and foods from relatives or others, sales of animals, and migration. Thus, an increase in household income might reduce food poverty incidence and increase in consumption expenditure and harnessing the potential role of coping strategies currently practiced by the households to mitigate food insecurity shall be considered and incorporated as policy options. The proactive policy in health extension services, enhancing technology adoption, promoting income diversification program, incorporating coping strategy in the regular projects and agricultural development program should be integrated to ensure food security situation in the Dry zone area.

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