Analysis of food security status and coping strategies of rural households in Assam

Abstract

Background;……..Aim of the study: This study attempts to estimate the food security status and access the coping strategies utilized during food shortagesamong the rural households of Assam. Methodology: Data were collected from 120 farmers, who were selected using a stratified random sampling method and were classified according to their possession of land. The data collected related to the year 2016-17. Data were analyzed using descriptive statistics, food security index and tabular and percentage analysis. The results of the study revealed that in Lower Brahmaputra Valley Zone, 30 per cent of sample households were food secure while 70 per cent households were food in secure. Moreover, 76.92 per cent of medium farmers were food secure and 77.78 per cent of marginal farmers were food insecure which indicates that the farm size could be a significant factor to the food security status of farming households. Conclusions:The findings revealed that the most important way of obtaining food when stocks run out was to purchase food on credit from the market followed by selling productive assets like land or livestock during the food shortages. Other options likereduce quantity, consume seed stock held for next season,take money from money lenders etc. were also adopted by rural households during shortage period.Therefore, there is the increase the volume of food production as well as improve on access to income generating activities that are more sustainable.(This sentence needs reediting)

Keywords: Rural households, food security, copping strategies, Assam.

Introduction

Food is the basic need and necessity of life that must be satisfied before any other developmental issue. Inadequate nutrition is considered as measure of poverty in manysocieties or synonymous to poverty (Datt*et al.*, 2000).Food security is described as access by all people at all times to the food needed for an active and healthy life. The food andAgriculture Organization of United Nations defined food securityas situation in which people at all times have physical andeconomic access to sufficient, safe and nutritious food to meettheir dietary need and food preferences for active and healthy life (FAO, 1996). According to Gopichandran*et al.*, (2010), food security has been a matter of concern in recent years due to the global food crisis and rising

food prices. Food security historically referred to the overall regional, national or even global food supply and shortfalls in supply compared to requirements, but with increasedobservation of disparities in the sufficiency of food intake by certain groups, despiteoverall adequacy of supply, the term has been applied more recently mostly at alocal, household or individual level (Foster, 1992).Food security at global level does not guarantee food security at the national level. Moreover, food security at the national level does not guarantee food security at the household or even the individual level.Brinda (2003) observed that household food security remains to be a major concern around the globe with millions of adults and children suffering from malnourishment.Hoddinott and Yohannes (2002) suggested that household food security is an important measure of wellbeing. Therefore, the conceptual understanding of the term 'food insecurity' has evolved gradually to address the questions of not only transitory problem of inadequate supplies at macro level but also chronic issues of inadequate access, unequal distribution and low utilization of food at the household level. It is very important to explore how households in the rural communities are coping with food insecurity situation.The objective of the study is to assess household food security situation in the rural communities and various coping strategies being adopted with regards to their capacities and vulnerabilities to cope with food insecurity due adversities.

Research Methodology

The study was conducted based on limited samples drawn from only two districts *i.e*Nalbari district and Barpeta district of Lower Brahmaputra Valley Zone of Assamfor the year of 2016-17 and was selected purposively as no specific study as considered in the present study had so far been undertaken and these districts have average growth in food crop production. A multi stage random sampling design was used for the present study. The sampling design consisted of three stages. Block formed the first sampling unit, villages the second and the farm households were treated as the third sampling unit. In consultation with the Block Development Officers and other concerned officers lists of all the villages in the blocks were prepared for all the selected districts. From the given number of villages two villages from each development block were selected randomly.All the preliminary stage of investigation a complete list of all the households of the villages was prepared along with their operational holding. The households were then classified into 4 groups according to the NSS classification based on their size of operational holding *viz*., marginal (less than 1 ha), small (1-2 ha), semi medium (2-4 ha) and

medium (4-10 ha). A total of 30 households from each of the blocks were selected randomly. Thus the total households came upto 60 (2 x 30) for each districts. That means the total sample size was 120 (2 x 60). A structured questionnaire was used in gathering the primary data which was analyzed using descriptive and inferential statistics.

Measuring the food security index:

To identify the factors influencing the food security status of farming households, two stages of analysis were done. At first a food security index (Z) was constructed and food security status of each household was determined based on the food security line using the recommended daily calorie intake approach and then a logit model was used to estimate the food security status of households as a function of a set of independent determinants. The ICMR Expert Group (1990) had concluded that on the basis of the recommended dietary allowance (RDA), it ought to be 2200 kcal per capita per day. ~~Therefore t~~This value defined the food security line for the study. Households which were below the food security line are classified as food-insecure households while those households that are above are classify as food-secured households. Food security index (Z) was calculated~~defined~~ as:

$$Z = \frac{\text{Households daily per capita calorie supply (A)}}{\text{Recomended daily per capita calorie requirement (I)}}$$

Where, A= Household daily per capita calorie requirement, and

I= Recommended daily per capita calorie requirement

~~Again, tabular and percentage a~~Analyses were under taken for the objective of coping strategies~~taken by~~rural households. The coping strategies stated by them were sorted out and the percentage ranking was given against each solution for the sample respondents of Lower Brahmaputra Valley Zone.

Results and Discussion

Food security status among sample households

Based on the National recommended daily per capita calorie requirement *i.e* 2200 kcal, food security index (Z) was calculated and presented in the Table 1 for marginal, small, semi medium and medium farmers of Lower Brahmaputra Valley Zone of Assam.

From Table 1, it was observed that in case marginal farmers households, 22.22 per cent were food secure and 77.78 per cent households were food insecure. The value of the food security index for farmers were 1.05 (food secure households) and 0.80 (food insecure households). Results of the analysis showed that the households with average farm size of 0.87 ha were food secure with less adult equivalent 4.03. On the other hand the food insecure households with average farm size of 0.92 ha had more adult equivalent 5.06. Average calorie intake of food secure households was 2318.10 kcal which was higher than the national average calorie intake and for food in secure households was 1754.94 kcal which was much lower than the national average calorie intake. In case small farmers, 33.33 per cent of the households were food secure with index value of 1.11 and 66.67 per cent were unable to meet the recommended daily per capita calorie requirement with index value of 0.84. There was no difference between average farm size of food secure and insecure farmers. So, the average farm size of both categories was 1.65 ha. But adult equivalent of food secure households was less (3.93) as compared to food insecure households of small farmers (4.75). The average calorie intake of food secure households was 2443.58 kcal which was much higher than the national average calorie intake of 2,200 kcal. But it was much lower in case of food insecure households which was 1856.43 kcal. In case of semi medium farmers, 39.53 per cent of the farming households were food secure with food security index value of 1.07 while 60.47 per cent were food insecure with index value of 0.85. The average farm size of food secure households was 2.18 ha which was higher than the food insecure households with average farm size of 2.17 ha. In terms of adult equivalent, the food secure households had 4.40 numbers of members while the food insecure households had 4.38 numbers of members. The average daily calorie intake of food secure households was 2355.37 kcal which was higher than the national average calorie intake of 2,200 kcal. But the average daily calorie intake of food insecure households was 1862.46 kcal and this was much lower than 2,200 kcal. Again, 76.92 per cent of the medium households were food secure with index value of 1.18 and 23.08 per cent were food insecure with index value of 0.84. Regarding the average farm size, the food secure households had higher farm size (5.92 ha) with less adult equivalent (4.40) compared to those insecure households having farm size of 5.89 ha and higher numbers of adult equivalent *i.e.* 6.40. A similar finding was made by Muhammed-Lawal and Omotesho (2004).The average household size (adult equivalent) for the food secure farming household was seven persons while the food insecure farming households had an

average household size of ten individuals. This finding agrees with that of Babatunde *et al*. (2007) in a recent study. The average daily calorie intake of food secure households was 2600.37 kcal which was much higher than the national average calorie intake of 2,200 kcal while the average daily calorie intake of food insecure households was only 1845.11 kcal.

Finally from the results of total sample households of Lower Brahmaputra Valley Zone, 30 per cent were food secure while 70 per cent were food insecure. This result agreed with Muralidharan *et al*, (1977) as lack of purchasing power was a factor for inadequate calorie intake of farming households.Thus, there was a need to bring about changes in the food basket of rural households, which would help to augment their calorie consumption in consonance with the recommended national level of average daily calorie intake (2,200 kcal).

Table 1: Food security indices for different categories of farmers

Categories	Food security indices	Households		Categories	Households	
		Food secure	Food insecure		Food secure	Food insecure
Marginal	Food security index (Z)	1.05	0.80	Semi medium	1.07	0.85
	No. of households	6	21		13	26
	Percentage of households (%)	22.22	77.78		33.33	66.67
	Farm size (ha)	0.87	0.92		2.18	2.17
	Adult equivalent	4.03	5.06		4.40	4.38
	Per capita daily calorieavailability	2318.10	1754.94		2355.37	1862.46
Small	Food security index (Z)	1.11	0.84	Medium	1.18	0.84
	Number of households	7	34		10	3
	Percentage of households (%)	17.07	82.93		76.92	23.08
	Farm size (ha)	1.65	1.65		5.92	5.89
	Adult equivalent	3.93	4.75		4.40	6.40
	Per capita daily calorieavailability	2443.58	1856.43		2600.37	1845.11
	Total	**Lower Brahmaputra Valley Zone**			**Food secure**	**Food insecure**
		No. of households			36	84
		Percentage of households (%)			30.00	70.00

Coping strategies utilized by the households during food shortages

Copingstrategies are employed to mitigate the effects of ~~not havingenough~~food deficiencyto meet the household's needs.Table 2 shows the types of strategies adopted by the respondents of Lower Brahmaputra Valley Zone.

The survey results showed that the first most important way of obtaining food when stocks run out was to purchase food on creditfrom the market if the household could afford (95.83 %). This was reported by approximately 96.67 % ~~per cent~~ in Nalbari district, 95% in Barpeta district. The next alternative was to obtain foods by selling productive assets like land or livestock during the food shortages (86.67 %). It was 91.67% ~~per cent~~in Nalbari district and 81.67% ~~per cent~~in Barpeta district. Over 55 % ~~per cent~~of total households of Lower Brahmaputra Valley Zone reported consumption of seed stock held for next season, and itwas crucial in building household resilience to food insecurity. It was found that 83.33% ~~per cent~~in Nalbari district and 26.67% ~~per cent~~in Barpeta district sample households had to consume of seed stocks held for next season.Another strategy was reducing quantity of food intake adopted by total sample households*i.e*50.83% ~~per cent~~of Lower Brahmaputra Valley Zone (46.67 per cent in Nalbari district and 55 per cent in Barpeta district). Again, 39.17% ~~per cent~~households of Lower Brahmaputra Valley Zone preferred to take low quality foods during food shortages period to ensure food security. It was 33.33 % ~~per cent~~in Nalbari district and 45 % ~~per cent~~in Barpeta district.Taking loan from money lenders was not the preferred option, as they tend to charge higher interest, as expressed by the respondents.Only24.17% ~~per cent~~were reported of taking loan from money lenders for buying foods from market (30 % ~~per cent~~in Nalbari district and 18.33% ~~per cent~~in Barpeta district). The sources of food in these villages were own production and purchase. More than 24 per cent households stated that gathering wild foods from nature was the only solution during the food crisis period. But due to failure of their crops they had to depend on wild foods like wild tubers and wild leafy vegetables during crisis period which was 18.33 per cent in Nalbari district and was 30 per cent in Barpeta district. About 10 per cent households had to restrict consumption of adults during food crisis period to ensure food security. This was the common practice of a mother deliberately limiting her own intake in order to ensure children get sufficient food across all the social and economic groups in the study areas which was 15 % ~~per cent~~in Nalbari district and was 6.67% ~~per cent~~in Barpeta district. More than

8 per cent of total sample households of Lower Brahmaputra Valley Zone adopted other strategies including diversifying their livelihood, cultivating more crops, working as daily labor, and seasonal migration to neighboring area during peak season and inter cropping were some of the mechanisms used by the households which included 16.67 per cent in Barpeta district.Borrow food or rely on help from friends or relatives was another strategy adopted by 6.67 per cent households during the food crisis period (10 per cent in Nalbari district and 3.33 per cent in Barpeta district). Where the quantity falls short, some households reduced the number of meals per day and sometimes skipped whole day's food without eating which was only 5 per cent of total sample households of Lower Brahmaputra Valley Zone which included 10 per cent of sample households of Nalbari district. Only 1.67 per cent of total sample households of Lower Brahmaputra Valley Zone stated that they managed to get food by sending household members to beg to neighboring area during the food crisis period to ensure enough food for their families which included 3.33 per cent of sample households of Barpeta district.

These were the major copping strategies adopted by households of Lower Brahmaputra Valley Zone during food shortage periods.

Table 2: Coping strategies used by the households of Lower Brahmaputra Valley Zone

Coping strategies	Nalbari district		Barpeta district		Total		Rank
	Frequency	Percentage (%)	Frequency	Percentage (%)	Frequency	Percentage (%)	
Reduce quantity	28	46.67	33	55.00	61	50.83	IV
Take low quality food	20	33.33	27	45.00	47	39.17	V
Borrow food or rely on help from friends or relatives	6	10.00	2	3.33	8	6.67	X
Purchase food on credit	58	96.67	57	95.00	115	95.83	I
Gather wild food	11	18.33	18	30.00	29	24.17	VII
Consume seed stock held for next season	50	83.33	16	26.67	66	55.00	III
Sale productive assets land /livestock	55	91.67	49	81.67	104	86.67	II
Send household members to beg	0	0.00	2	3.33	2	1.67	XII
Take money from money lenders	18	30.00	11	18.33	29	24.17	VI
Restrict consumption of adults	9	15.00	4	6.67	13	10.83	VIII
Reduce number of meals eaten in a day	6	10.00	0	0.00	6	5.00	XI
Others	0	0.00	10	16.67	10	8.33	IX

Conclusion

This study contributes to understanding food situation and identified the coping strategies used in ensuring foodsecurity among rural households in Assam.The findings revealed that the most important way of obtaining food when stocks run out was to purchase food on credit from the market followed by selling productive assets like land or livestock during the food shortages. Other options likereduce quantity, consume seed stock held for next season,take money from money lenders etc. were also adopted by rural households during shortage period.Food insecurity coping strategies adopted by the farming households have short term effect. Therefore, there is the increase the volume of food production as well as improve onaccess to income generating activities that are more sustainable.Therefore, food security is a multi-faceted issue, there should be a good sectoral integration to address these issues and improve the food security in the long term. Sectors like education, agriculture, health, forestry, infra-structure need to have a common effort on access, availability, utilization and stability of the food security. For building disaster resilient communities, systematic capacity of community to prepare for and respond to local disaster needs to be strengthened.Finally, it could be recommended to undertake an in-depth analysis of mitigation measures of food insecurity which are within the reach of poor farm households in the study area.

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