



Research in

AGRICULTURE, LIVESTOCK and FISHERIES

ISSN : P-2409-0603, E-2409-9325

An Open Access Peer-Reviewed International Journal

Article Code: 0248/2019/RALF

Res. Agric. Livest. Fish.

Article Type: Research Article

Vol. 6, No. 3, December 2019: 379-387.

HOUSEHOLD FOOD SECURITY THROUGH DAIRY FARMING IN SIRAJGANJ DISTRICT, BANGLADESH

Md. Shajahan Kabir^{1*}, Manasi Modok², Shahidullah³ and Rahima Akther⁴

¹Department of Rural Sociology, Bangladesh Agricultural University, Mymensingh-2202, Bangladesh; ²Program officer, World Vision Bangladesh; ³Interdisciplinary Institute for Food Security, Bangladesh Agricultural University, Mymensingh-2202, Bangladesh; ⁴Bangladesh Institute of Professional Management, Mymensingh-2202, Bangladesh.

*Corresponding author: Md. Shajahan Kabir; E-mail: mskbi786@gmail.com

ARTICLE INFO

ABSTRACT

Received
20 November, 2019

Revised
18 December, 2019

Accepted
26 December, 2019

Online
31 December, 2019

Key words
Household
Food security
Dairy farming

Food security exists when all people, at all times, have access to sufficient, safe and nutritious food to maintain healthy and productive lives. This study was carried out to investigate the household food security status of dairy farmer at three villages of Shahjadpur Upazila of Sirajganj District. This study was based on primary data and a semi-structured interview schedule was used for collecting data during January to March 2018. Data were collected from a random sample of 60 where the total dairy farmers were 240. Food security status of household of dairy farmer was measured on the basis of their per capita calorie consumption per day. Pearson's Product Moment Coefficient Correlation (r) was computed to explore the relationship of the respondents selected characteristics and their food security status. It is 40% percent moderately food secured per year, 25% household had food secured per year and 35% households were low food secured per year. Dairy farmer's Annual income, training, experience, credit received had a significant positive relationship with their household food security status. The Findings of the study would be helpful for policy makers. Government and non-government organizations work for development of tribal people; this study may help them achieve their goal. It will be helpful for the government to ensure their food security in the sense that they may be aware of the food insecure situation if the findings of the study are revealed to them.

To cite this article: Kabir M S, M Modok, Shahidullah and R Akther, 2019. Household food security through dairy farming in Sirajganj district, Bangladesh. Res. Agric. Livest. Fish. 6 (3): 379-387.



Copy right © 2019. The Authors. Published by: AgroAid Foundation
This is an open access article licensed under the terms of the Creative
Commons Attribution 4.0 International License



www.agroaid-bd.org/ralf, E-mail: editor.ralf@gmail.com

INTRODUCTION

The livestock species play very important economic and socio-cultural roles for the wellbeing of rural households such as food supply, source of income, asset saving, source of employment, soil fertility, livelihoods, transport, agricultural traction, agricultural diversification and sustainable agricultural. Bangladesh stands on the 89th position in the recently published Global Food Security Index-2017, which is the lowest among the South-Asian countries. (Global Food Security Index 2017) The BBS data shows that the agriculture sector, whose contribution to the GDP is 14.10 percent, grew 3.06 percent in fiscal 2017-18, up from 2.97 percent last year. (BBS, 2018). Since the Global Report on Food Crises launched in 2017, more than 100 million people each year (2016, 2017 and 2018) have been in need of urgent food, nutrition and livelihood assistance. The GRFC 2019 shows that in 2018, out of 803 million people analysed, 113 million people in 53 countries or territories – 14 percent of the population analysed – were in Crisis or worse (IPC/CH Phase 3 or above) Despite this progress, Bangladesh's food security is still fragile and major challenges remain. More than 54% of pre-school-age children, equivalent to more than 9.5 million children, are stunted, 56% are underweight and more than 17% are wasted (BBS 2018). Achieving food security at national level does not necessarily guarantees food security at provincial, district or household level. There exists disparity among provinces, districts and households. Even if a household is food secure it does not ensure that each member of the household is food secure due to discrimination in food distribution within household. The geographical, environmental and medical factors of food security are important for their respective fields but social factors are significant for policy making and use by development planners. Achieving food security requires that the aggregate availability of physical supplies of food is sufficient, that households have adequate access to those food supplies through their own production, through the market or through other sources, and that the utilization of those food supplies is appropriate and socio-culturally acceptable to meet the specific dietary needs of individuals (Riely *et al.* 1999; Rahman and Schmitz, 2007). Poverty, food insecurity and malnutrition are the usual phenomena for the rural Bangladesh.

Livestock rearing in Bangladesh is an integral agricultural activity among most rural households, particularly landless, marginal and small landholders. The sector has vital impact on equity in terms of income, employment and poverty reduction in rural areas as distribution of livestock is more egalitarian as compared to land. Apart from its multifaceted roles in socio-economic development, the livestock sector constitutes about 25 percent of agricultural gross domestic product and provides nutritionally rich food to many people in both rural and urban areas (BBS, 2018). Dairy farmers have significant roles in the agricultural productive activities, but they are backward from modern technology and suffer from lack of capital. Sometimes they take loan from the international and national organization; NGOs and banks fulfill the requirement of credit. Agricultural credit is important to dairy farmers in achieving food security and improving standard of living. Institutional credit and various trainings are important for the improvement of both the standard of living and food security of the dairy farmer.

Knowing of the status of food security of a dairy farmer is essential where a major portion is secured by a dairy farmer. If their state of food insecurity is revealed, careful and need-based interventions may possibly be taken properly to mitigate the crises. For this reason, it was necessary to undertake such a research at Shahjadpur Upazila in Sirajganj District. The main focus of the present study is to identify the present status of food security of the dairy farmer. The present study was carried out to explore household food security status of dairy farmer at the selected household location and to find out the effects of dairy farming on household food security. In addition, the relationship of the characteristics of dairy farmers and their food security status was also analysed.

METHODOLOGY

The aim of the study was to know the food security condition of dairy farmer. Preliminary visits were made in selecting a study area and finally the study was conducted in Shahjadpur upazila in Sirajganj district. The survey was carried out for three months from January to March 2018. In total there were 240 dairy farmers (head from each household) in this selected village which were considered as the population of the study. Twenty five percent of the population was randomly selected by using a table of Random Numbers. Thus, a total of 60 dairy farmers constituted the sample size for the study and considered all are took loan from NGOs and local Bank. A semi-structured interview schedule was carefully prepared keeping the objectives in mind to collect relevant data. The Researcher was asked the questions systematically in a very simple manner. Answers of those questions were recorded properly.



Figure 1. Map of Shahjadpur Upazila. Source: Bangla Pedia

Data were analyzed in accordance with the objectives of the study. SPSS (Statistical package for social sciences) computer program was used to perform the data analysis. Various statistical measures such as range, mean, number percentage, standard deviations and co-efficient of variation were used to describe the selected characteristics of the respondents of the study area. In order to find out the relationship between the individual characteristics of the dairy farmer and their food security status, Pearson's Product Moment correlation co-efficient (r) was computed. To reject or accept the null hypothesis 5 percent and 10 percent level of probability was used throughout the study and considered also alternative hypothesis.

RESULTS AND DISCUSSION

Various features of selected dairy farmers

In the study there were nine selected characteristics of dairy farmer's viz. age, level of education, family member, household farm size, annual income, training, experience, and credit received, perceived strategies to increase food security. The composite findings on the selected characteristics of the dairy farmers were

presented in Table 1 and have been discussed in subsequent sections. The table 1 revealed that age of the farmers ranged from 28 to 60 years. The mean age was 35.17 years with standard deviation of 6.91. The respondents were classified into three categories, such as young (up to 35 years), middle aged (36-55 years) and old (above 55 years) on the basis of their age as shown in Table 1. The study findings indicated that the highest proportion (58.34 percent) of the respondent in the study area was young aged category compared to 38.33 percent belonging to middle aged and 3.33 percent to old aged category. It indicated that 97 percent of the respondents were young to middle-aged. Mahzabin (2011), Kobir (2007), Akhter (2007), Hasan (2006) found almost similar distribution of respondent in different age categories in their respective studies. Livestock production plays a major role in the life of farmers in developing countries. It provides food, income, employment and many other contributions to rural development. In the Asian region, livestock provides the major additional contribution to agriculture through draught power, manure products such as meat, milk, eggs, while poultry provides daily cash income and much required nutrition to rural population. Livestock play an important role in the economy of the country.

Table 1. Selected characteristic of dairy farmers

Characteristics	Scoring system	Range		Number (N=60)	Percent	Mean	SD
		Observed	Category				
Age	Years	28-60 (Unknown)	Young (≤ 35)	35	58.34	35.17	6.91
			Middle-aged (36-55)	23	38.33		
			Old (>55)	2	3.33		
Education level	Level of schooling	1-3 (Unknown)	Cannot read or write (0)	0	0	1.73	0.821
			Can sign only (0.5)	0	0		
			Primary (1-5)	60	100		
Family size	Numbers	1-5 (Unknown)	Small (1-4)	58	96.67	3.47	0.566
			Medium (5-6)	2	3.33		
			Large (above 6)	0	0		
Farm size	Decimal	6-74 (Unknown)	Small (6-20)	29	48.33	27.90	17.71
			Medium (21-50)	23	38.33		
			Large (above 50)	8	13.34		
Annual income	Taka (in "000")	87-227 (Unknown)	Small (80-129)	22	36.67	142975	28675.48
			Medium (130-164)	23	38.33		
			Large (above 164)	15	25		
Training	Days	0-21 (Unknown)	Low (< 7)	51	85	1.67	4.75
			Medium(7-20)	6	10		
			High (above 20)	3	5		
Credit received	Taka (in "000")	0-20 (Unknown)	Small (<5)	47	78.33	3333.3	6806.44
			Medium (5-10)	6	10		
			High (above 10)	7	11.67		
Perceived strategies to increase food security	Score	17-34	Low (0-17)	3	5	23.52	3.81
			Medium (18-30)	52	86.67		
			High (above 30)	5	8.33		

Source: Field survey 2018; SD= Standard Deviation

The level of education of the dairy farmers ranged from 0 to 3 and the average was 1.73 with a standard deviation of 0.821. On the basis of scores obtained, the respondents were grouped according to national standard of classification on the basis of their household size score, the respondents were classified into three categories as shown in Table 1. Among '0' percent were cannot read or write, '0' percent were can sign only, 100 percent had primary level of education and none had more years of schooling (Table 1). Findings indicated that majority of the respondent primary. This might be due to the reason that educational facilities were poor in these villages. The family members of the dairy farmers ranged from 1-5, the mean being 3.47 and the standard deviation was 0.566.

The respondents were classified in to three categories on the basis of their farm land as shown in Table 1. Computed data indicate the highest proportion 96.67 percent of the dairy farmers had small family size, 3.33 percent of the respondents had medium family size and '0' percent of the respondents had large family size. The household size of the respondents ranged from 6-74 decimal with an average of 27.90 decimal and standard deviation 17.71.

Annual incomes of the dairy farmers were measured in 'thousand Taka' per year. It was ranged from 87 to 227 with an average of 142975 and standard deviation of 28675.48. On the basis of annual income, the respondents were divided into three categories (Table1).

Computed data indicated that 48.33 percent of dairy farmers belonged to small farm size category, while 38.33 percent fell in medium size category and 13.34 percent had large farm. It indicated that majority of the families possessing small amount of land Computed data indicate that the highest proportion 38.33 percent of the respondent had medium income while 36.67 percent had low income, rest of the respondent 25 percent had high income.

Computed data indicated that 85 percent of dairy farmer belonged to low training experience, while 10 percent fell in medium training experience and 5 percent had high training experience. It indicated that majority of the families possessing low training .The training of the respondents ranged from 0-21 days with an average of 1.67 and standard deviation 4.75. The respondents were classified in to three categories on the basis of their training participated as shown in Table 1.

The score of credit received by the respondents ranged from Taka 0 to 20 thousand with a mean of 3333.3 and standard deviation of 6806.44 More than 78.33 percent of the respondents were in the small category, 10 percent medium, rest 11.67 percent were in high category Most of the cases, who were involved in the NGOs, got the training. They received training on issues like leadership management, different IGA (Cow rearing, goat rearing, beef fattening, tailoring etc), vegetables cultivation, social development, business management, market operating, child protection and women rights, hygiene and sanitation etc.

Perceived strategies to increase food security

The observed score of different strategies ranged from 17 to 34 with a mean and standard deviation of 23.52 and 3.81, respectively. On the basis of scores of strategies to increase food security the respondents were categorized into three groups (Table 1). The Table indicates that the majority (86.67 percent) of the respondents had medium strategy, while 8.33 percent had high and 5 of them had low strategies to increase food security. The findings indicate that most of the dairy farmers adopted different strategies to increase food security due to flood, drought etc.

Food Security Status of the Dairy Farmers

The food security situation per person per day in a household ranged from 1595 to 2531. The average year per food security by households was estimated to be 1978.33 score with a standard deviation of 229.07. The average was lower than the national average of 2318.3 kcal (HIES, 2010). Based on the food security status, dairy farmers have been classified into three categories as severely food secure, food low secure and food secure. The household food security of the respondents has been shown in Figure 1.

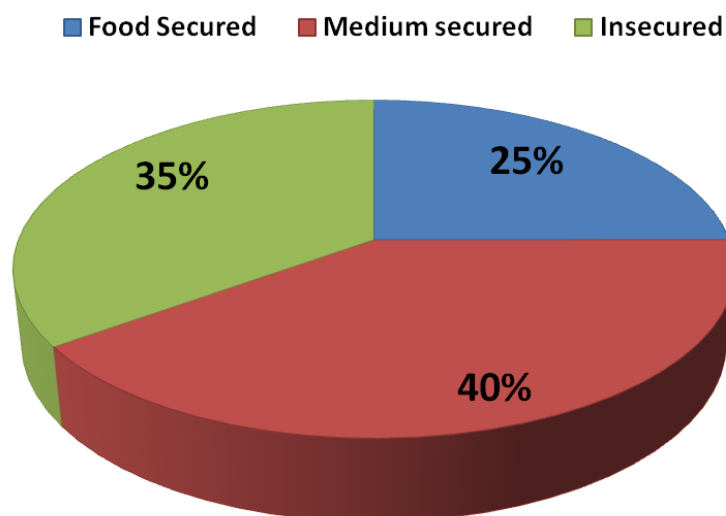


Figure 1. Pie chart of food security status

Source: Field Survey 2018

Findings show that food security still lingers as a truth for the dairy farmers. It is assumed that the real situation of food insecurity is much graver in the sense that food security in this study has been measured considering the calorie intake of the households. This method may give a slight deviation of nutritional security as the main calories were met by carbohydrate intake in the households. Nonetheless, a matter of little contentment regarding food security remain for dairy farmers inhabitants due to some off-farm income generating initiatives of different GO and NGO. The minimum calorie requirement set in Bangladesh is 2122 kcal/person/day (HIES, 2010). Computed data indicated that 25 percent of dairy farmers belonged to food secured, while 40 percent of dairy farmers belong to medium food secured and 35 percent had low secured.

Relationship between Selected Characteristics of the Dairy Farmers and their Food Security Status

Co-efficient of correlation 'r' between the selected characteristics of the dairy farmers and their household food security status has been presented in Table 2. However, the interrelationships among the different variables have also been computed by using correlation co-efficient.

Table 2. Correlation co-efficient between selected characteristics of the dairy farmer food security status

Selected characteristics of	Correlation coefficient ('r') with 58 d.f.
Age	.032
Level of education	.181
Family member	.183
House farm size	.235
Annual income	.985**
Training	.620**
Credit received	.310*
Strategies to increase food security	.080

Source: Author estimation

** Correlation is significant at the 0.01 level (2-tailed); * Correlation is significant at the 0.05 level (2-tailed)

However, the relationships have been presented in the following sub-sections dealing with one of the characteristics of the dairy farmers with their household food security status.

Age and household food security status

The computed correlation coefficient was found to be 0.032 (Table 2), which led to the following observations.

The relationship was found between the concerned variables. The computed value of r (0.032) was also found smaller than the tabulated value with 58 degrees of freedom at 0.05 level of probability. Hence, relationship was no significant at 0.05 level of probability.

Based on above findings, the null hypothesis could be rejected. This result was not beyond expectation as Faridi and Wadood (2010) reported that age of the household head did not seem to have statistically strong significant impact on food security.

Level of education and household food security status

The computed correlation coefficient value was found to be 0.181 (Table 2), which reflects the following findings:

A positive relationship existed between the concerned variables. The computed value of r (0.181) was also found larger than the tabulated value with 58 degrees of freedom at 5 percent level of probability. Hence, the relationship was no significant at 0.05 level of probability.

Mahzabin (2010), Nigussie (2008), Najafi, (2003) and Haile *et al.* (2005) found positive relationship between education and household food security condition in their respective studies. The food security levels were higher up to 21 percent with livestock ownership as compared to no livestock ownership. The results for food security are significant at 1 percent level of significance. The results regarding livestock role in ensuring household food security are in line with for Ethiopia. They found that ox ownership play a positive role in ensuring household food in Ethiopia. In Pakistan literacy rates, access to land, markets and employment are important determinants of poverty and food security in Pakistan.

Relationship between family member and household food security status

The correlation coefficient between these two variables was 0.183 (Table 2) which was not significant at 0.05 levels. Thus, the null hypothesis could not be rejected and it was concluded that family member of the dairy farmer had no relationship with their household food security status. This means that the development of food security of the dairy farmers was independent of their family member because of labor cost is very minimum.

Household farm size and food security status

The relationship between the concerned variables was positive. The computed value of r (0.235) was also found larger than the tabulated value with 58 degrees of freedom at 5 percent level of probability. Hence, the relationship was significant at 0.05 level of probability. Thus it could be said that the categories of household farm size of the respondent could play a significant role in securing household food security.

Annual income and household food security status

Following observations were made based on the computed correlation coefficient value r (0.985) presented in Table 2. A positive relationship existed between the concerned variables. The computed value of r (0.985) was also found larger than the tabulated value with 61 degrees of freedom at 1 percent level of probability. Hence, the relationship was strongly significant at 0.01 level of probability.

Based on the above findings, the null hypothesis was rejected. Considering the above findings the researcher concluded that higher the annual income, the higher is the probability that the household would be food secure. This result was not beyond expectation as Mahzabin (2011), and Babatunde *et al.* (2007) found similar findings in their studies.

Training and food security status

The relationship between the concerned variables was positive. The computed value of r (0.620) was also found larger than the tabulated value with 58 degrees of freedom at 1 percent level of probability. Hence, the relationship was significant at 0.01 level of probability. On the basis of above findings, the null hypothesis was rejected and hence it can be concluded that the training experience of the dairy farmers had positive and significant relationship with their food security status.

Credit received and food security status

The computed correlation coefficient was found to be 0.310 (Table 2), which led to the following findings: A positive relationship was found between the concerned variables. The computed value of r (0.310) was also found larger than the tabulated value with 58 degrees of freedom at 0.01 level of probability. Hence, the relationship was not significant at 0.01 level of probability. On the basis of above findings, the null hypothesis was rejected and hence it can be concluded that the credit received of the dairy farmers had positive and significant relationship with their food security condition.

Perceived strategies to increase food security and household food security status

The computed correlation coefficient value was found to be 0.080 (Table 2). It reflects the following observations. The relationship between the concerned variables was positive. On the basis of above findings, the null hypothesis was accepted. Hence it can be concluded that the perceived strategies to increase food security had positive and no significant relationship with their household food security status. Thus it might be said that who perceived more strategies at a time, he would be more food secure.

CONCLUSIONS

The findings of the study revealed that 25 percent of dairy farmer belonged to food secured, while 40 percent of dairy farmer belong to moderately food secured and 35 percent had low secured. Dairy farmer suggestions to ensure better food for the households were mainly centered on alternate income generation through technical supports from NGOs and concerned departments of GOs. It may, thus, be indicative that the dairy farmer entirely did like to get only financial grants aids to improve their household food security status. Annual income of the dairy farmer had strongly positive significant relationships with their household food security status. Training experience and credit received might be changed the attitude of household head which in turn enables to adopt new techniques of income generation and consequently it might have helped achieve household food security.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

REFERENCES

1. Akhter S, 2007. Participation of Rural Women in Homestead Waste Management towards Integrated Plant Nutrient System (unpublished master's thesis). Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.
2. Babatunde RO, Omotesho OA and Sholotan OS, 2007. Factors Influencing Food Security Status of Rural Farming Households in North Central Nigeria. *Medwell Agricultural Journal*, 2(3): 351-357.
3. BBS, 2018. Statistical Pocket Book of Bangladesh. Bangladesh Bureau of Statistics, Ministry of Planning, Government of the People's Republic of Bangladesh, Dhaka.
4. Faridi R and Wadood S N, 2010. An Econometric Assessment of Household Food Security in Bangladesh. *The Bangladesh Development Studies*, 33(3): 97-111.

5. Hasan K, 2006. Participation in Farming Activities by Conventional and Organic Farmers (unpublished master's thesis). Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.
6. HIES, 2010. Household Income and Expenditure Survey. Bangladesh Bureau of Statistics, Government of the People's Republic of Bangladesh, Dhaka.
7. HIES, 2005. Household Income and Expenditure Survey. Bangladesh Bureau of Statistics, Government of the People's Republic of Bangladesh, Dhaka
8. Haile HK, Alemu ZG and Kudhlande G, 2005. Causes of household food insecurity in koredejaja pleasant association, Oroniza zone, Ethiopia. Working paper, Department of Agricultural Economics, University of Free State.
9. IFPRI, 2009. Bangladesh Food Security Investment Forum, May 26, 2010- May 27, 2010. Retrieved from <http://www.ifpri.org/event/bangladesh-food-security-investment-forum> (21 March 2012).
10. Kobir H, 2007. Contribution of Farming Enterprises of the Small Farmers towards Household Food Security (unpublished master's thesis). Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.
11. Maxwell D, Levin C, Armar-Klemesu M, Ruel M, Morris S, Ahiadeke C, 2000. "Urban livelihoods and food and nutrition security in Greater Accra, Ghana", International Food Policy Research Institute, Research Report, 112: 1-172.
12. Mahzabin IA, 2011. Household Food Security Status of Selected Farmers in Phulpur Upazila of Mymensingh District (unpublished master's thesis). Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.
13. Najafi B, 2003. An Overview of Current Land Utilization Systems and Their Contribution to Agricultural Productivity. Report of the APO Seminar on Impact of Land Utilization Systems on Agricultural Productivity. Productivity Organization, Islamic Republic of Iran.
14. Nigussie F, 2008. Determinants of Household Food Security with a particular focus on Rainwater Harvesting: the case of Bulbula in Adami-Tulu Jido Kombolcha Woreda, Oromia Regio (unpublished master's thesis). School of Graduate Studies, Addis Ababa University, Addis Ababa.
15. Rahman KMM and Schmitz PM, 2007. "Food production sustainability and security in Bangladesh: status and prospects", Wissenschaftsverlag Vauk Kiet KG, Postfach 4403, D-24043 Kiel, Germany.
16. Riely F, Mock NB, Cogill B, Bailey L, and Kenefick E, 1999. "Food security indicators and framework for use in the monitoring and evaluation of food aid programmes", Food and Nutrition Technical Assistance, 1825 Connecticut Avenue, NW, Washington, D.C.