Farmers' awareness on environmental degradation nearby the brickfield areas

M. B. Hasan[1], M. A. Ali[1], M. S. Alam[2] and M. A. S. Bhuyian[3]

[1]Department of Environmental Science, [2]Department of Dairy Science and [3]Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh-2202, Bangladesh, Email: bauaho24@gmail.com

Abstract

This study was undertaken at Trishal upazila of Mymensingh, Bangladesh to investigate the farmers' awareness on environmental degradation nearby the brickfield areas and to explore the relationship between the selected characteristics of the farmers (i.e. independent variables) with their awareness on environmental degradation (i.e. dependent variable). Thirty five farmers were selected randomly from a total of 175 farmers under Amiandangori village of Balipara union and thirty farmers were selected randomly from a total of 150 farmers under Dauaniabari village of Boilor union of Trishal upazila in Mymensingh district. Personal interview schedule was used for collecting data. Simple and direct questions and different scales were used to obtain desired information. Co-efficient of correlation (r) was computed in order to explore the relationships between the dependent and independent variables.

The findings revealed that majority (47.70 percent) of the farmers had medium level of awareness on environmental degradation nearby the brickfield areas. Farmer's characteristics like academic qualification, farm size, annual income, extension media contact, and knowledge on environmental degradation had significant ($p < 0.05$) positive relationship with their awareness on environmental degradation. Besides, the findings revealed that majority (57 percent) of the respondents expressed their opinion towards medium vulnerability, 15 percent low vulnerability and 28 percent high vulnerability of environmental degradation nearby the brickfield areas.

Keywords: Farmers' awareness, Environmental degradation, Brickfield

Introduction

Environmental degradation is the burning issue of the world at present situation. Because the global environment is changing more rapidly than any time in the known history. Besides Bangladesh is an agro-based country and most of the people of our country are poor and depend on agriculture. But the agricultural land is decreasing due to various natural and anthropogenic activities. Urbanization is one of the most important reasons for decreasing agricultural lands which requires brick. There are about 6000 brick manufacturers in Bangladesh (Banglapedia, 2007). Again brickfield is increasing gradually at a high rate which changes the physical, chemical and biological properties of soil. The agriculture of Bangladesh has been suffering from various problems such as nutrient deficiency or toxicity of soil, natural calamities, insects and disease hazards, improper soil and crop management, alternation of agricultural land by the Brickfields and industries as well as urbanization.

Brickfield owners rarely burn coal because coal is expensive and scarce. They usually burn wood and tires for preparing bricks. They were little aware of the environmental problems arising from indiscriminate burning of tires, wood and coal in such a rudimentary way but due to scarcity of an alternative, brickfield owners continuously burnt wood and tires in the brickfield. Moreover even under well-controlled processes world wide, 0.2 microgram toxic equivalents of dioxins and furans are emitted as byproduct into the air during the production of each tone of brick, which is very harmful for lives (Banglapedia, 2007).

Global warming is also a well-known phenomenon related to brickfield. The elements of GHGs produced from brickfield areas are Ash, dust, SO_2, CO_2, CO particulate matters and volatile organic compounds which deteriorated air quality of surrounding brickfield areas and acid rain syndrome occurred on soil surface vegetation. Crops, which are grown in contaminated soils may contain residues of chemicals and they become unfit for human and animal consumption (Kudesia, 1990). Recently, degradation of agricultural land as well as soil contamination has become a great problem in our country. It rapidly depleted the quality, fertility and productivity of soil. Even through chemical properties of soil depleted by

brickfield adjacent areas not only in Bangladesh but also in other Asian countries of the world (Kudesia, 1990). Brick making industry or brickfield has tremendous effect on agriculture directly or indirectly. Brickfields reduce agricultural land and thus hampered agricultural production. Various particulate and gaseous matters also released from brick industry which badly affected our environment. Brick kilns are spread all over the country which have hampered soil fertility status by cutting top soils. Moreover, the same locations have been utilizing for years and the biomass energy used for firing bricks resulted serious environmental pollution and decreased soil nutrient status. Hence it is also implemented on pressure through Environmental related laws to increase the stack height of brick kilns by 120 feet. (Islam and Rahman, 2011). Brick Burning Control Ordinance 1992 prohibits brickfield owner from using fire wood in kilns. The law, however, allows use of coal. It also prohibits setting up of brickfields on crop lands.

Considering the above facts, the present study was undertaken to investigate the farmers' awareness on environmental degradation nearby the brickfield areas, to explore the relationship between the selected characteristics of the farmers and their awareness on environmental degradation and to determine vulnerability of environmental degradation nearby the brickfield areas at Trishal upazilla in Mymensingh district.

Materials and Methods

This study was undertaken at Trishal upazila of Mymensingh during April to November 2012 to investigate the farmers' awareness on environmental degradation nearby the brickfield areas and to explore the relationship between some selected characteristics of the farmers remarked as independent variables such as age, academic qualification, family size, farm size, annual income, extension media contact, knowledge on environmental degradation with their awareness on environmental degradation (i.e. dependent variable). Thirty five farmers were selected randomly from a total of 175 farmers under Amiandangori village of Balipara union and thirty farmers were selected randomly from a total of 150 farmers under Dauaniabari village of Boilor union of Trishal upazila in Mymensingh district. A structured interview schedule was used for collection of relevant data for the study. Closed form questions were included in the schedule. Simple and direct questions were also included to ascertain the opinions of the farmers regarding a number of aspects. Three point rating scale was used to determine the awareness of environmental degradation of the farmers nearby the brickfield areas. The draft interview schedule was prepared in accordance with the objectives of the study. The interview schedule was pre-tested with 5 respondents near brickfields from the study area. Necessary correction, additions and modification were made in the interview schedule based on the pretest results. Data were collected by the researcher himself through focus group discussion (FGD). Wherever the respondents felt any difficulty in understanding any questions, the researcher took utmost care to explain and clarify. Qualitative data were converted to quantitative one whenever necessary. Data obtained from the respondents were first put to a master sheet, then compiled, tabulated and analyzed in accordance with the objectives of the study. Descriptive statistical methods like range, mean, percentage distribution and standard deviation were used in describing the characteristics of the farmers and their awareness of environmental degradation nearby the brickfield areas. For exploring the relationship between the characteristics of the farmers and their awareness on environmental degradation nearby the brickfield areas, Pearson's Product Moment Coefficient of Correlation (r) was used. The analysis of the data was performed using SPSS (Statistical Package for Social Sciences) software. Besides five percent and one percent level of probability were used in the present study.

Results and Discussion

Selected Characteristics of the Farmers

In this section the findings of the farmer's selected characteristics have been discussed. The selected characteristics are: i) Age, ii) Academic qualification, iii) Family size, iv) Farm size, v) Annual income, vi) Extension media contact, vii) Knowledge on environmental degradation. The study revealed that the average being 44.51 years and the standard deviation was 10.24 years. On the basis of age, the farmers were classified into three categories where the highest proportions (36.9 percent) of the farmers were in

the old aged category compared to 30.8 percent young aged and 32.3 percent middle aged category (Table 1). It appears that greater than one third (36.9 percent) of the farmers in the study area are comprised of old aged. This indicates that decision making relating to farm affairs, especially in respect to awareness on environmental degradation the study areas are considerably influenced by relatively old farmers. A large proportion (29.2 percent) of the farmers fell under the (1-5) category of "primary level" and also 29.2 percent of the farmers are in the category of "can only sign" compared to 10.8 percent with "no education" (0), 18.5 percent having "secondary education" (6-10) and 8 percent having above secondary education (>10) (Table 1). The largest proportion (58.5%) of the farmer had medium size family compared to 29.2 percent small size family and 12.3 percent having large family size (Table 1). The farmers were divided into four categories. These categories and the distribution of the farmers according to their farm size which indicated that the highest proportion (43.10 percent) of the respondents fell under the small farm size category (0.41-1.00) compared to 29.2 percent marginal (up to 0.40 ha), 20 percent (1.01-3.032 ha) medium farms and 7.7 percent large size (above 3.032 ha). The majority of the farmers had small farms. Thus most (72.30 percent) of the farmers were in the categories of marginal and small farms (Table 1). Annual income in this study was determined by adding income from agricultural (crop, livestock and fisheries) and non-agricultural farms during a year. The range of annual income score was 30 to 180 thousand taka with an average of 121.60 thousand taka. (Table 1) Based on the extension media contact scores, the respondents were classified into three categories as shown in Table 1. The highest 46.2 percent of the respondents had (8-14) medium extension media contact while 18.5 percent had low (0-7) extension media contact and rest 35.40 percent had high (15-25) extension media contact. The average environmental degradation knowledge score being 22.72 with a standard deviation of 7.73. The highest proportion (49.20 percent) of the respondents had moderate environmental degradation knowledge compared to 7.7 percent low environmental degradation knowledge and 43.1 percent having high environmental degradation knowledge (Table 1).

Table 1. Salient features of the selected characteristics of the farmers

Characteristics	Unit of measurement	Range		Categories	Farmers		Mean	SD
		Possible	Observed		Number (n=65)	Percent (%)		
Age	Year	Unknown	27-65	Young aged (up to 35)	20	30.8	44.51	10.24
				Middle aged (36-50)	21	32.3		
				Old (51 & above)	24	36.9		
Academic qualification	Year of schooling	Unknown	0- 12	No education (0)	7	10.8	4.99	3.60
				Can sign only (0.5)	19	29.2		
				Primary education (1-5)	19	29.2		
				Secondary education (6-10)	12	18.5		
				Above secondary education (>10)	8	12.3		
Family size	Number	Unknown	2-13	Small (up to 4)	19	29.2	5.77	1.84
				Medium (5-7)	38	58.5		
				Large (above 7)	8	12.3		
Farm size	Hectare	Unknown	0.025- 3.6	Marginal (up to 0.04)	19	29.2	1.25	0.87
				Small (0.041-1.0)	28	43.1		
				Medium (1.01- 3.032)	13	20.00		
				Large (above 3.032)	5	7.7		
Annual income	'1000'TK	Unknown	30-180	Low income (up to 90)	4	6.2	121.60	29.85
				Medium income (91-120)	37	56.9		
				High income (above120)	24	36.9		
Extension media contact	Score	0-21	3-18	Low contact (0-7)	12	18.5	11.84	5.82
				Medium contact (8-14)	30	46.2		
				High contact (15-21)	23	35.4		
Knowledge on environmental degradation	Score	0-36	7-30	Low knowledge (0-12)	5	7.7	22.72	7.73
				Medium knowledge (13-24)	32	49.2		
				High knowledge (above 24)	28	43.1		

Farmer's awareness on environmental degradation nearby the brickfield areas

In the study area the highest proportion (47.70 percent) of the farmers had (11-20) medium awareness compared to 16.9 percent (0-10) low and 35.4 percent high (above 20) awareness on environmental degradation nearby the brickfield areas (Table 2). The study also indicated that the farmers of the study area have medium awareness on environmental pollution. Hamid, (1995) indicated moderate awareness in a study on farmers' awareness on environmental pollution caused by the use of agro-chemicals. In the study on farmers' awareness on environmental degradation caused by the use of modern agricultural technologies by (Sutradhar, 2002) found that 58 percent of his respondents were in moderate awareness category which is most similar to the present study.

Table 2. Distribution of farmers according to their awareness on environmental degradation nearby the brickfield areas

Categories	Farmers (n=65)			
	Numbers	Percentage	Mean	SD
Low awareness (0-10)	11	16.9		
Medium awareness (11-20)	31	47.7	17.01	3.41
High awareness (above 20)	23	35.4		

Vulnerability of environmental degradation faced by the farmers nearby the brickfield areas

The farmers in the study area were assumed to face a number of environmental degradation issues nearby the brickfield areas. Ten environmental degradation issues were selected to measure the extent of vulnerability. The vulnerability scores ranged from 13 to 28 against the possible range from 10 to 30. The categories of the respondents on the basis of the vulnerability scores have been shown in Table 3.

Table 3. Categories of the respondents according to their opinion on vulnerability of environmental degradation nearby the brickfield areas

Categories	Frequency	Percent	Mean	Standard Deviation
Low vulnerability (10-17)	10	15.4		
Medium vulnerability (18-25)	37	56.9	28.74	5.27
High vulnerability (Above 25)	18	27.7		
Total	65	100.0		

Relationship between the Selected Characteristics of the Farmers and their Awareness on Environmental Degradation nearby the Brickfield areas

Co-efficient of correlation was computed in order to explore the relationships between the selected characteristics of the farmers and their awareness on environmental pollution. The relationship (r) between the selected characteristics of the farmers and their awareness on environmental degradation has been presented in Table 4. It revealed that academic qualification, annual income, extension media contact and knowledge had highly positive significant with farmers' awareness on environmental degradation. Farm size had positive significant with farmers' awareness. It was found that family size had highly negative significant with farmers' awareness on environmental degradation. Besides age was not significant with farmers' awareness on environmental degradation nearby the brickfield areas.

Table 4. Relation between the selected characteristics of the farmers and their awareness on environmental degradation nearby the brickfield areas (N=65)

Dependent variable	Selected characteristics (independent variables)	Computed 'r' values	Level of Sig.
Farmers awareness on environmental degradation	Age	0.235	NS
	Academic qualification	0.618	**
	Family size	-0.324	**
	Farm size	0.292	*
	Annual income	0.547	**
	Extension media contact	0.885	**
	Knowledge	0.655	**

** Correlation is significant at 0.01 level (table value 0.3173)
* Correlation is significant at 0.05 level (table value 0.2441)

Conclusion

Knowledge on environmental degradation is crucial for eco-friendly environment. A number of vulnerabilities on environmental degradation were found in the study area due to brickfield establishment. The impact of those vulnerabilities is very much dangerous. So, it is necessary to aware the people to the vulnerabilities on environmental degradation nearby the brickfield areas.

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