PERCEPTION OF EXTENSION AGENTS ABOUT SUSTAINABLE AGRICULTURAL PRACTICES IN BANGLADESH

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A B S T R A C T

The main focus of the study was to identify to determine the level of perception of extension agent on sustainable agricultural practices and also find out the relationship between the characteristics of extension agent and their perception. The field investigation was carried out in Charghat, Bagha, Puthia and Paba upazilas (administrative unit) under Rajshahi district of Bangladesh. Eighty extension agents were selected as the sample of the study following the simple cluster sampling and data were collected from them during 20 March to 22 April 2013. For measuring the perception on sustainable agricultural practices, a 5-point Likert type scale was used and as usual methods were followed to find out the respondents characteristics. Descriptive statistical and Pearson's Product Moment Correlation Coefficient (r) was also applied. Results indicated that the respondents had top most perception on the sustainable agriculture practices of in respect of 'sustainable agricultural practices may require additional management beyond conventional practices and the lowest rank was the 'recommended sustainable agricultural practices are not new and only need refinement to increase profit and protect the environment'. The highest proportion (51.25%) of the respondent had in medium perception category compared to 37.5 percent in high and 11.25 percent in low perception category on sustainable agricultural practices. Correlation test indicated that innovativeness, Cosmopoliteness, source of information, knowledge and environmental awareness had positive significant relationship whereas age, level of education, service experience, training exposures, job satisfaction and aspiration had no significant relationship with the perception on sustainable agricultural practices.

Keywords: Perception, extension agents, sustainable, agricultural, practices.

INTRODUCTION

Bangladesh, basically an agro-based country, is considered one of the world's most densely populated countries (964 persons per square km) with an annual population growth rate of 1.34 percent (BBS, 2011). In such setting, the pressure on the land for agricultural production and the demand for job is increasing day by day. This has led to rapid changes in the country's socio-economic characteristics in the recent years. Against this backdrop, it is reasonable to expect that the nature and pattern of agricultural production have also been changing with the passage of time. As the population increases over time, it demands change in the cultivation systems of agriculture. In this regards,

cropping intensification are adopted to meet up the challenge of the food demand of 21 century. But in turn, it renders manifold problem on agriculture and environment. However, experts are concerned about the food production and its security for the increased population. As regards they developed a variety of strategies, agriculture practices might be one of the promising alternatives in order to maintain sustainable agriculture and to secure food requirement for the increased population. All these rapid changes, in economic, technological and demographic conditions along with creation of new market opportunities, promotion of chemical inputs and financial constraints have led or forced the farmers of Bangladesh to seek short-term profits and pay less attention in keeping their agriculture in balance with the ecological conditions. Modern agriculture in Bangladesh with high

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levels of external inputs like agrochemicals, hybrid seeds, fuel-based mechanization together with enhanced research and extension activities have contributed to an overall increase in the country's food production but have created observable dissonances in the agro ecosystem. Overexploitations of the limited natural resources have brought changes in the natural ecosystem which threatens to undermine future progress. The concept of sustainable agricultural practices is of concern for farmers, extension agents, agricultural education teachers, and others working in agricultural related occupations. Sustainability requires a holistic approach in order to understand the whole as an aggregation of interwoven parts working together (Hartfield and Karlen, 1994). The performance of sustainable agricultural practices is judged not in terms of how each practice works separately, but in terms of how the individual practices fit together and relate to each other, and how the systems that result relate to their environment and to other systems in the environment. While this is an important topic; there has been little opportunity for professionals to convene and discuss issues related to sustainability and to sustainable agriculture (Roling and Wagemakers, 1998). When an individual perceives a thing or object, it occurs with some processes. Perception takes place by sensation due to stimulation of sense organs which is the result of interpretation and analysis of sensation. The present study was undertaken to determine the level of perception of extension agent on sustainable agricultural practices and also find out the relationship between the characteristics of extension agent and their perception.

METHODOLOGY

Locale of the study and sample: The field investigation was carried out in Charghat, Bagha, Puthia and Paba upazilas (administrative unit) under Rajshahi district of Bangladesh. Total numbers of Extension agent (Sub Assistant Agriculture Officer) in Charghat, Bagha Puthia and Paba of Rajshahi district were 80. Eighty extension agents were selected as the sample of the study following the simple cluster sampling technique. Data were collected from the respondents from 20 March 2013 to 22 April 2013. Descriptive statistical measures such as number, percentage distribution, range, mean, standard deviation and coefficient variation were used in describing the selected variables. To examine the relationship between the dependent variable and independent variables, Pearson's Product Moment Correlation Coefficient (r) was done.

Measurement of dependent variable: Extension agents' perception on sustainable agricultural practices is the dependent variable of the present study. Their perception has been measured by constructing a 5-point Likert type scale. A 5-point scale consisting of 17 items (statements) on sustainable agricultural practices was constructed for this purpose. Every respondent was asked to express his extent of agreement or disagreement by checking against any of the five responses like strongly agree, agree, undecided, disagree and strongly disagree and corresponding scores were 5, 4, 3,2 and 1 respectively. Perception score of the respondents on sustainable agricultural practices was obtained by adding together scores of all the 17 items present in the interview schedule. Thus, perception score of a respondent on sustainable agricultural practices could from 17 to 85, 17 indicating 'very low perception' and 85 'very high perception'.

Measurement of independent variable: The independent variables such as age and level of education were measured by using the measuring units of year and, year of schooling. Service experience was determined by the duration of experience of a respondent in agriculture extension services. Training exposure of the respondent computed by the number of training he/she received in various agricultural practices. For example, if a respondent had received 5 training regarding agriculture practices then his/herscore assigned by the 5; and who had received no training regarding Agriculture practices then his/her score assigned by 0. Innovativeness of a respondent was measured based on period to adopt some new technology or practices. A cosmopoliteness score was computed for each of the respondent to determine the degree of exposure on the basis of number of visits by extension agent to eight types of places by checking any one of five responses; regularly, often, occasionally, rarely and not at all with corresponding assigned scores of 4, 3, 2, 1 and 0 respectively. The job satisfactions of a respondent were found out by using 5-point Likert scale on 10 facilities. Source of information score was computed for each respondent to determine the degree of his/her knowledge that he/she gained from different potential sources. Each respondent was asked to check his/her

responses against ten different statements in a five-point rating scale; regularly, often, occasionally, rarely and not at all and corresponding assigned weights for each response were 4, 3, 2, 1 and 0, respectively. Knowledge score ofeach respondent was determined by the degree of his/her awareness and idea on ten sustainable agricultural practices and were asked to answer whether they informed or not informed with the statements by checking not informed, slightly informed, moderately informed, well informed and highly informed. The score assigned against each items were 0, 1, 2, and 4. For measuring the aspiration score each respondent was asked to check seven statements and provide his own choice and assigned to his responses were 1, 2, 3 and 4 respectively. Fifteen statements in relation to environmental awareness were selected and respondents were asked to give their opinion like agree or disagree. The score which were assigned for items were agree-l and disagree-0.

RESULTS AND DISCUSSION

Perception of extension agents: Computed perception indices of the 17 statements regarding sustainable agriculture practices ranged from 51 to 82 with an average of 68.3 and standard deviation 7.527. A rank order of 17 statements regarding sustainable agriculture practices according to their perception indices has been also presented in Table 1 for a clear understanding of the comparative perception of the extension agent on the 17statements.

Table 1. Rank order of the perception according to their perception index.

Sr.	Sustainable Agricultural Practices	SA	A	UD	DA	SDA	SPI	Rank
1.	Sustainable agricultural practices may require additional management beyond conventional practices.	24	18	25	11	2	291	1
2.	There may be insufficient labor for the workload required in sustainable Agricultural systems.	2	14	29	33	2	221	11
3.	Economic gains when employing sustainable agricultural practices are not Convincing.	13	16	23	19	9	245	8
4.	Net farm income may decrease when a producer implements sustainable agricultural practices.	2	14	15	42	7	202	15
5.	Recommended pest control methods for sustainable agricultural systems have potential for more pests in the long term	7	21	31	13	8	246	7
6.	Recommended practices in sustainable agriculture have not been embraced by mainstream agriculture.	23	7	28	20	2	269	4
7.	The slow rate of adoption is due to lack of motivation among farmers.	6	17	12	41	4	220	12
8.	The adoption of sustainable agricultural practices is slow because farmers lack of knowledge to implement them.	4	21	11	29	15	210	14
9.	Recommended sustainable agricultural practices are not new and only need refinement to increase profit and protect the environment.	13	4	8	32	23	192	17
10.	Sustainable agricultural systems should produce an adequate food supply to feed the world population.	2	9	31	23	15	200	16
11.	An advantage of sustainable agricultural practices is reduction in the use of Chemical fertilizers.	13	21	24	10	12	253	6
12.	Environmental balance is a basis for sustainable agricultural practices.	11	15	17	28	9	231	10
13.	Sustainable agricultural practice involves recycling crop waste and livestock or human manure .	4	21	18	28	9	223	13
14.	Sustainable agricultural practices enhance the quality of life for farmers and society as a whole.	19	19	24	3	15	264	5

15.	Sustainable agricultural practices enhance environmental quality and the natural resource base upon which the agricultural economy depends.	10	11	27	28	4	235	9
16.	In Sustainable agricultural production programs are designed to improve the efficiency of resource utilization will result in the most cost-effective use of water, fertilizers, and pesticides.	15	16	40	9		277	2
17.	Sustainable agricultural practices will result in the most cost-effective use of water, fertilizers, and pesticides.	22	20	18	12	8	276	3

SA=strongly agree, A=agree, UD=Undecided, DA=Disagree, SDA=strongly disagree.

Data contained in Table 1 indicate that the respondents had top most perception on the sustainable agriculture practices of in respect of 'sustainable agricultural practices may require additional management beyond conventional practices.' was the highest (SPI=291) followed by on 'in sustainable agricultural production programs are designed to improve the efficiency of resource utilization will result in the most cost-effective use of water, fertilizers, and pesticides.' was the second highest (SPI=277) and 'sustainable agricultural practices will result in the most cost-effective use of water, fertilizers, and pesticides.' was the third highest (SPI=276). Perception was the lowest (SPI=192) in respect of 'recommended sustainable agricultural practices are not new and only need refinement to increase profit and protect the environment'. The respondents showed 'sustainable agricultural systems should produce an adequate food supply to feed the world population.' was the second lowest (200). Sustainable agriculture practices perception indices (SPI) of 17 statements were between 192 to 291. The maximum possible sustainable agriculture practices perception index (SPI) is 400. However, none of the statements has more than 300; these facts indicated that pesticide perception of the respondents was considerably lower in comparison to the maximum possible level on all the statements. Data contained in Table 2 indicate that the highest proportion (51.25%) of the respondent fell in medium perception category compared to 37.5 percent in high and 11.25 percent in low perception category.

Table 2. Distribution of respondents according to their extent of perception

| Categories | Respondents | | Mean | SD |
	Number	Percent		
Low (51-60)	9	11.25		
Medium (61-71)	41	51.25	68.30	7.53
High (above 71)	30	37.50		
Total	80	100		

The findings revealed that low proportion (11.25%) of the SAAO (explain what is SAAO) in the study area had low perception of the sustainable agricultural practices .The majority (88.75%) of the respondents had medium to high perception towards the sustainable agricultural practices. This may have positive impact on sustainable agricultural production due to knowledge on sustainable agriculture.

Relationship between selected characteristics of the respondents and their perception on sustainable agricultural practices: Coefficient of correlation was computed in order to explore the relationships between the selected characteristics of the respondents and their perception on sustainable agricultural practices has been presented in Table 3.

Correlation test indicated that innovativeness, cosmopolitness, source of information, knowledge and environmental awareness had positive significant relationship whereas age, level of education, service experience, training exposures, job satisfaction and aspiration had no significant relationship with the perception on sustainable agricultural practices. Innovativeness is a desirable characteristic that helps farmers to consider and accept new technologies earlier than other members of their society. Innovators have a high degree of media exposure and their intrapersonal network extend over wide area, reaching outside of their local system (Rogers, 1995). Individuals who are cosmopolite frequently come in contact with new people, new things and new ideas. Cosmopoliteness thus can

change the mental makeup of the people and make them more receptive for new ideas. Knowledge increases one's awareness, mental alertness, makes one familiar with facts, objects, concepts or practices. Source of information is very important to know the farmer's exposure to the extension support in expressing their

perception and adoption of improved technologies. Person who are aware about the environment, are likely to make effort to practice sustainable agricultural technology. The more aware person is likely to be more receptive to new innovations or ideas.

Table 3. Title is missing.

Dependent variable	Independent variable	Co-efficient of correlation (r)	Table value at 'r' 78 df	
Perception in sustainable agricultural practices	Age	-0.008NS	5%	1%
	Level of education	-0.027NS		
	Service experience	-0.015NS		
	Training exposures	0.076NS		
	Innovativeness	0.376**		
	Cosmopoliteness	0.410**	0.219	0.286
	Job satisfaction	-0.146NS		
	Source of information	0.501**		
	Knowledge	0.336**		
	Aspiration	-0.154NS		
	Environmental awareness	0.608**		

* Significant at 0.05 level of probability, ** Significant at 0.01 level of probability, NS = Non significant

CONCLUSION

From the preceding discussion revealed that the extension agents had moderate perception on sustainable agricultural practices in the study area. This might be due to the fact that considerable proportion of extension agents was not higher education, had not enough training exposure, moderate use of source of information and moderate knowledge on sustainable agriculture. Hence, it is recommended that steps should be taken for providing sustainable agricultural related training to extension agents. As with all other emerging areas in the field of agriculture, extension agents should be encouraged to keep up-to-date with the latest developments in sustainable practices.

REFERENCES

BBS. (2011). Statistical Yearbook of Bangladesh. Dhaka, Bangladesh, 14-16

Hartfield, J. L., & Karlen, D. L. (1994). Sustainable agriculture systems. Boca. Raton, FL: Lewis Publishers.

Roling, N. G., & Wagemakers, M. A. E. (1998). Facilitating sustainable agriculture: Participatory learning and adaptive management in times of environmental uncertainty. 125-133. Cambridge, United Kingdom. : Cambridge University Press.

Rogers, E. M. (1995). Diffusion of Innovation. 4th ed. New York: The Free Press.