LEVEL OF SHRIMP FARMING KNOWLEDGE OF FARMERS IN BAGERHAT

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ABSTRACT

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A survey was conducted at six Upazila under Bagerhat district to determine the level of shrimp farming knowledge from July to September 2008. For which 120 farmers from the selected area were selected randomly. The knowledge status was judged considering six factors as remembering, understanding, problem identifying, analyzing, evaluating and innovating. Existing wisdom of the farmers regarding to shrimp culture practice such as pond preparation, species selection and stocking density, water quality monitoring, use of additional fertilization, feed and feeding, disease controlling, harvesting and restocking, risk management and shrimp marketing revealed that the selected farmers had medium level of knowledge on an average. Only a few farmers were found possessing appropriate level of knowledge. Farmers' knowledge score on the subsequent levels of cognitive domain on remembering, understanding, problem identifying, analyzing, evaluating and innovating were found to be in diminishing order in all the components of shrimp farming practices. Among the six levels of knowledge, the farmers were given highest score on remembering and lowest score on innovating. The delicate characteristics of the farmers such as age, gender, education, annual income, family size, training status, extension media contact and shrimp farming experiences were observed to be significantly related with their shrimp farming knowledge.

Keywords: Shrimp farming knowledge, Shrimp marketing, Risk management

INTRODUCTION

The southwestern region of Bangladesh is known as the main zone of shrimp cultivation and about 75% of country's shrimp production is obtained from this region (Huq *et al.*, 2004). Every year our country earns a lot of foreign currency by exporting frozen shrimp products. The vast majority (more than 90%) of the shrimp exported from Bangladesh are captured from natural waters, with an estimated 60% from Khulna and Bagerhat zone, 35% from Comilla and Noakhali zone and 5% from Cox's Bazar (Anonymous, 1993).

During the fiscal year 2004-2005, Bangladesh earned 2571.72 crores taka by exporting fish and fish products, where frozen shrimp alone contributed 2281.59 cores taka (Anonymous, 2005).

The significance of shrimp culture to improve the socio-economic conditions of fish farming communities (both inland and coastal areas of Bangladesh) was still unnoticed. In fact, proper shrimp culture practice in the country may provide a vast scope to uplift the livelihood status of the marginal fishermen and fishing communities. In Bagerhat region, most of the shrimp farmers were found illiterate and poor. Farmers were found hardly interested in using scientific culture technique that requires a little higher investment. Shrimp yield in traditional farms would be increased by applying modern available technology such as intensification of culture operation through regularization of the farm size, increasing stocking density, adding aeration system, application of fertilization and feeds etc. Having appropriate knowledge on shrimp farming is prerequisite to get maximum production. So, it is imperative to know how much knowledge is possessed by the farmers for running shrimp culture successfully.

Before giving any policy direction towards increasing production, it is important to know the socio-economic characteristics of farmers. Further, it is essential to determine the level of adoption of fisheries technology by the farmers and their ability to utilize aquaculture perception which they have acquired from formal training and extension activities conducted by Department of Fisheries (DoF) and other agencies. Evaluation of the aquaculture knowledge and skill of the concerned farmers is not the mere objective but an understanding that influences the characteristics of the farmers on their adoption of modern aquaculture practices are necessary to plan and implement a programme for increasing the production.

Now considerable effort is being undertaken through research and extension delivery system to increase production. But actual increase in production will depend on the activities of the farmers. The performance of the farmers is influenced by their personal, economical, social and physiological characteristics (Hossain *et al.*, 1992). Therefore, collection of information related to shrimp farming is an important step for the overall promotion of this sector.

In view of the problem stated above, the present study was undertaken to determine the shrimp farming knowledge of farmers and to locate the relationship between farmers' characteristics and their shrimp farming knowledge.

MATERIALS AND METHODS

Study area and sampling: The survey work was carried out at Fakirhat, Mollahat, Sadar, Rampal, Mongla and Morrelganj upazilla of Bagerhat district from July to September 2008. Data were collected by means of a structured questionnaire on each 20 farmers from upazilla. All the farmers were selected randomly. Age, gender, education, major profession, annual income, land holding, training status, extension media contact, farming experience and credit source are considered as independent variable and the dependent variable was the level of shrimp farming knowledge of the farmers.

Conceptual framework of the study: The profundity of shrimp farming knowledge has been postulated by Bloom's since long. Farmers' knowledge has been conceptualized as the sum of knowledge at each of ten technical contents, and at each of six levels of Bloom's cognitive taxonomy for each content area (Figure 1). Relationship of this knowledge with independent variables is shown through graphical presentation.

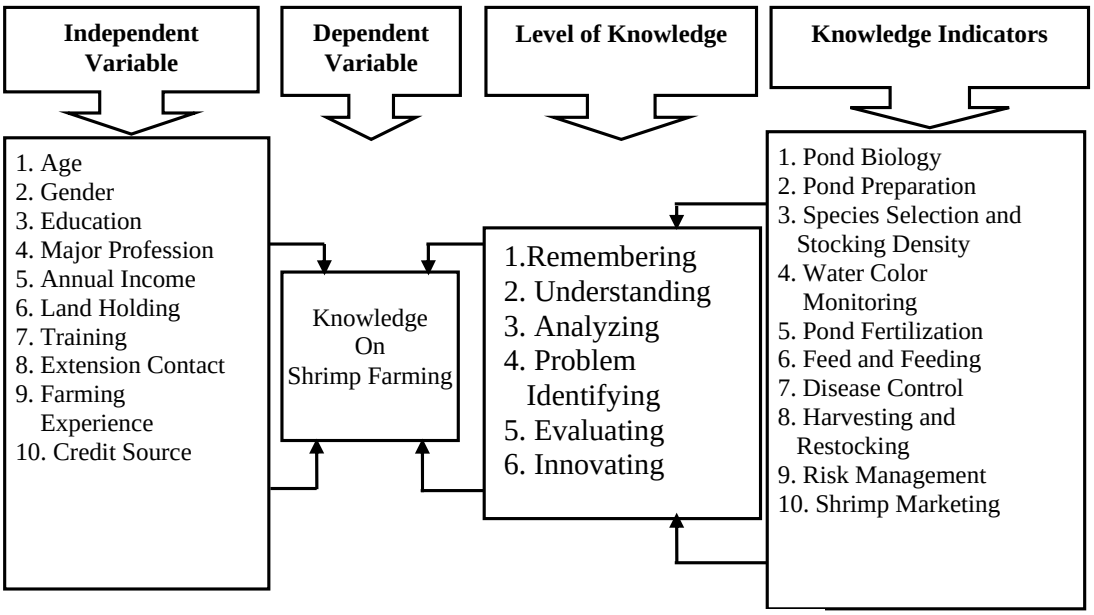

Figure 1. Conceptual Framework of the Study

Data analyzing procedure: The knowledge of the selected shrimp farmers were determined based on six level of cognitive domain of learning as postulated by Bloom (1956). These six levels of cognitive domains are remembering, understanding, problem identifying, analyzing, evaluating and innovating. The responses of the farmers towards the selected questions were quantified by means of scoring system as outlined in Table 1.

The responses of each question of the concerned respondent were graded according to the above-mentioned scale. The score of respondent for a certain question representing each level of cognitive domain could vary from 0 to 4 as per scoring system outlined in Table 1. Then the total score of a respondent against a particular component of shrimp farming practices could range from 0 to 24, as there were 6 sub-levels of knowledge under each component. The total score of a respondent covering all the 10 components of shrimp farming practices could vary from 0 to 240. From each technical area, six questions representing 6 sub-levels of cognitive domain were asked to the farmers.

Table 1. Scoring system for determination of farmer's response

Response quality	***Score***	***Grade***	***Status***
76 to 100 percent correct answer	4.0	A	High knowledge
51 to 75 percent correct answer	3.0	B	Medium knowledge
26 to 50 percent correct answer	2.0	C	Low knowledge
Below 25 percent correct answer	1.0	D	Poor knowledge
Wrong answer	0	F	No knowledge

RESULTS

Knowledge of farmers on shrimp farming: According to the total shrimp farming knowledge score, farmers were categories into four groups as shown in table 2 which reveals that most of the farmers had medium level of knowledge where as lowest portion of farmers had poor knowledge.

Table 2. Distribution of knowledge score

Level of knowledge score	**No. of farmers**	**Percent**
Poor (Below 60)	7	5.8
Low (60 to 120)	42	35.0
Medium (121 to 180)	61	50.8
High (181 to 240)	10	8.3
Total	**120**	**100**

The component-wise average shrimp farming knowledge score of the respondents has been presented in Table 3. As per the scoring system, the score of a farmer under each of the 10 components of shrimp farming practices could vary from 0 to 24. Total of the component-wise average score of the farmers was 122.94 out of the possible score 0-240 which could be remarked as medium knowledge category. Among the 10 cultural components, farmers had lowest score of knowledge on disease control (Table 3).

It is noteworthy that the possible score of the sub-level indicators was 0-40. The respondents were very good in remembering level of knowledge profile and their level were very poor in case of innovating (Figure. 3).

Table 3: Shrimp farming knowledge of the farmers on 10 selected components (n =120).

Knowledge indicators	**Mean Knowledge score** *(out of the possible score 0-24)*
Pond Biology	13.12
Pond Preparation	12.58
Species Selection & Stocking Density	12.69
Water Color Monitoring	11.84
Pond Fertilization	12.20
Food & Feeding	13.36
Disease Control	9.27
Harvesting & Restocking	13.13
Risk Management	11.13
Shrimp Marketing	13.62
Total	**122.94** *(out of the possible score 0-240)*

Relationship between independent characteristics and knowledge score on shrimp farming: Age and Knowledge score

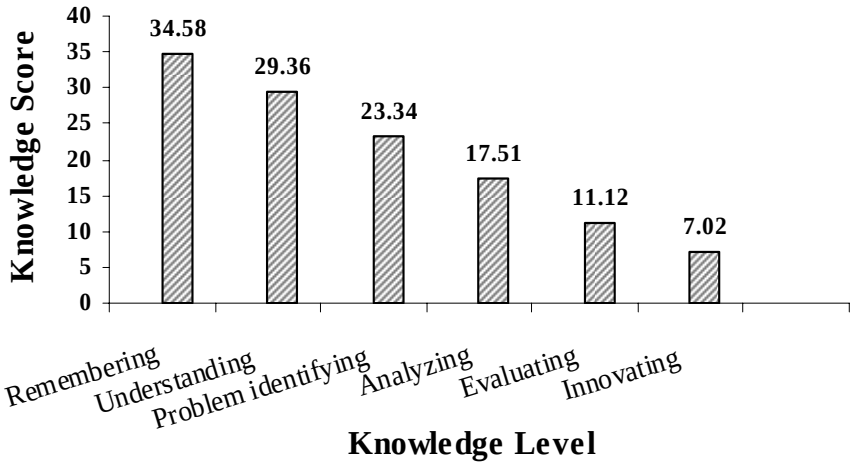

Figure 2. Knowledge score of the farmers on sub-level indicators

The knowledge score of the farmers of different age classes were moderately different (Figure 3). The highest knowledge score was found in the age class of 41-55 years. Knowledge score was found to increase gradually with increasing the age of the respondents up to and/or equal to 55 years. But found decreased after 55 years.

Gender and Knowledge score

The relationship between gender of the farmers and their knowledge score on shrimp farming has been presented in Figure 4. The knowledge score of the male was greater than female.

Education and Knowledge score

Knowledge score was found increase gradually with upgrading education level (Figure 5).

Major profession and Knowledge score

The maximum knowledge score belonged to those respondents whose major profession were shrimp farming. The knowledge score of the farmers of different occupational status were moderately different (Figure 6).

Annual income and Knowledge score

There was a positive relationship between annual income per decimal land and knowledge score as the correlation co-efficient value, r is 0.28. So, knowledge score of the farmers increased gradually with increasing the amount of income (Figure 7).

Land holding and Knowledge score

Positive relationship was found between land holding and knowledge score as the correlation co-efficient value, r is 0.17. Which indicates that knowledge score of the farmers increased gradually with increasing the amount of land area (Figure 8).

Training and Knowledge score

Trained farmers were found to possess higher knowledge score than non-trained farmers (Figure 9).

Extension contact and Knowledge score

The farmers having extension contact were found possessing higher knowledge score than those of having no extension contact (Figure 10).

Farming Experience and Knowledge score

Positive relationship was found between farming experience and knowledge score as the correlation co-efficient value, r is 0.1 which indicates knowledge score of the farmers increased gradually with upgrading the period of farming practice (Figure 11).

Credit source and Knowledge score

Farmers, depend completely on bank for credit, were found to possess higher knowledge than others (Figure12).

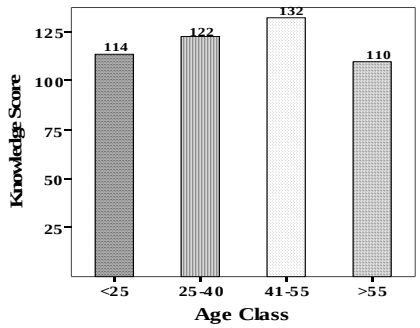

Figure 3. Relationship between age and knowledge score

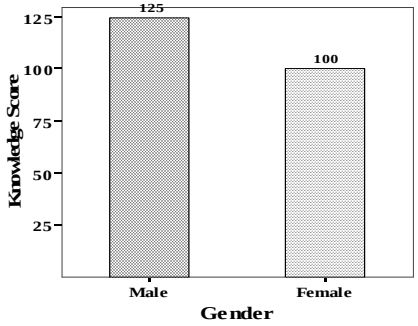

Figure 4. Relationship between gender and knowledge score

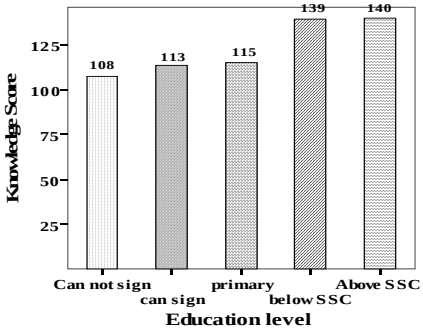

Figure 5. Relationship between education and knowledge score

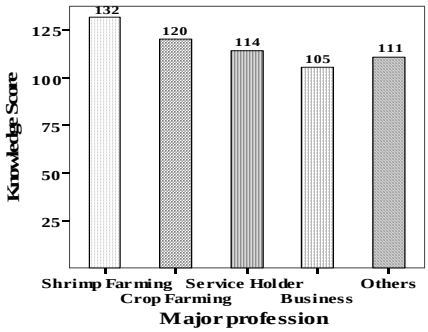

Figure 6. Relationship between Major profession and knowledge score

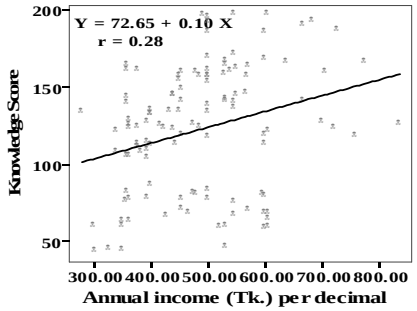

Figure7. Relationship between annual income per decimal land and knowledge score

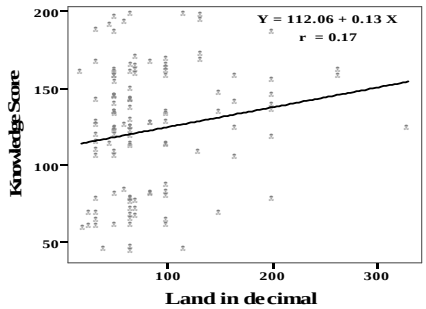

Figure 8. Relationship between land in decimal and knowledge score

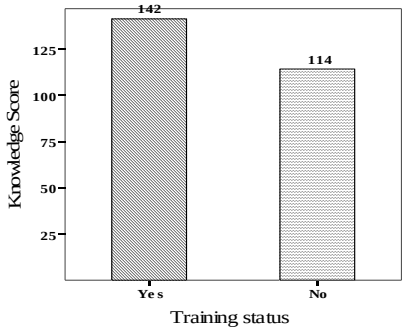

Figure 9. Relationship between training status and knowledge score

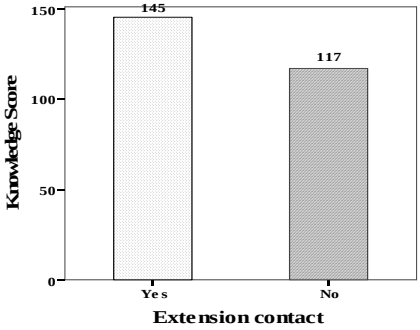

Figure 10. Relationship between extension contact and knowledge score

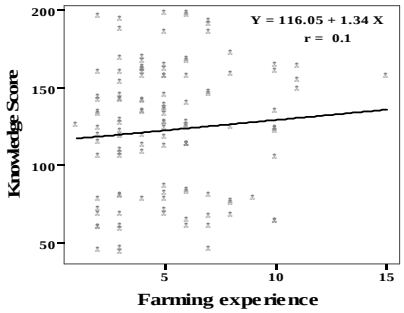

Figure 11. Relationship between farming experience and knowledge score

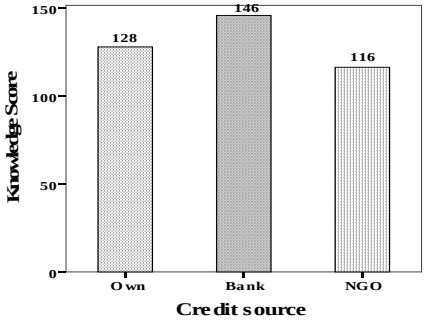

Figure 12. Relationship between credit source and knowledge score

DISCUSSION

The ascending trend of knowledge score with the age up to 55 years of the farmers were due to the reasons that they were usually venturesome, innovative, and energetic having a modern out look and potentiality to provide leadership in the society. On the other hand, aged people (above 55 years) were found in lack of energy and enthusiasm due to decline in health and having a traditional out look and also dependent upon other members of the family. Similar findings were noted by Azam (2004). But Azad (2005) and Guha (2006) noted that there was no significant relationship between age of the respondents and their cognitive domain of learning.

Present study also exposed that male farmers had higher knowledge level than female. It might be happened for some reasons such as dependency on husband or male members of the family for input purchasing, religious restriction, household maintenance, low level of education status etc. Similar findings were also noted by Azam (2004).

Education is a prerequisite for acceptance and adoption of aquaculture practices. Education helps a farmer to gain necessary ideas and judge the profitability of aquaculture enterprises in socio-economic development. In the present study, shrimp farming knowledge of the farmers was positively correlated with farmers' educational status. It was found that the educated farmers had more knowledge on shrimp farming practices. A very much similar findings were noted by Ahmed (2004), Alam (2004), Alim (2004) and Azad (2005).

The farmer, whose major profession was shrimp farming, had higher level of knowledge than the others. It might be happened due to their higher affiliation to shrimp farming with more attention than the farmers of non-major profession. But no significant relation between major profession and shrimp farming knowledge was found by Alim (2004) and Azad (2005).

A positive relationship was obtained between annual income per decimal land and knowledge score of farmers. The relationship between knowledge score and land holding was also found positively correlated. Which may be supported by the findings of Azam (2004).

Again results of the present study showed that shrimp farming knowledge of the farmers was significantly correlated with their training status. The trained farmers were found to possess higher knowledge on shrimp farming practices than the non-trained farmers. The similar findings were also noted by Alim (2004), Azad (2005) and Guha (2006).

Extension media contact was significantly correlated with farmers' knowledge on shrimp farming practices. The farmers having extension media contact had higher knowledge on shrimp farming practices than the farmers who did not get the touch of extension media. Similar types of findings were noted by Siddeque (2002), Alim (2004), Azad (2005) and Guha (2006) in their research work in Jamalpur and Gazipur district.

In the study area, the credit source of the farmers were own, "bank loan" and "NGOs" The farmers whose credit sources were bank had higher knowledge score than others. Similar results were noted by Azam (2004).

Knowledge has a broad meaning. It is an expression and indication of intellectual capability of a person which is reflected in his/her ideas, thoughts, views, belief and actions. Like other knowledge, shrimp farming knowledge of a fish farmer comprise of an interrelated and integrated sequence of various steps involved in cultivation of shrimp and allied species beginning from pond preparation and ending in harvesting and marketing of shrimp. Shrimp farming knowledge of the farmers is influenced by a variety of interrelated factors such as, social, environmental, physical, economical and technical traits. The Shrimp farming knowledge of the farmers of Fakirhat, Mollahat, Sadar, Rampal, Mongla and Morrelganj upazilla under Bagerhat district were determined based on 10 components of shrimp culture. The farmers in the surveyed areas were found to have medium level of shrimp farming knowledge on most of the components of shrimp farming. They had high level of knowledge on the remembering and understanding sub-levels of the cognitive domain of shrimp farming activities. The reasons for having much better score on the above two aspects of cognitive behavior of the farmers appeared to be due to easier and simple nature of the questions as asked to the farmers. The present results coincide with the views of Alim (2004), Ahmed (2004), Azad (2005) and Guha (2006).

Farmers' knowledge score on the subsequent sub-levels of cognitive domain on remembering, understanding, problem identifying, analyzing, evaluating and innovating were found to be in diminishing order in all the components of shrimp farming practices. Descending low score of the respondents in the above sub-level of knowledge seemed to be related with the difficulty and complexity of questions as put forward to the farmers which required much thinking, greater aptitude, psychological and intellectual exercise on the specific technical matters. Downward trend of knowledge score of the farmers as observed in the study are comparable to those reported by Alim (2004), Ahmed (2004), Azad (2005) and Guha (2006) in their field level of studies.

CONCLUSION

Most of the farmers were found to possess medium level of shrimp farming knowledge on an average. A small proportion of the farmers had high level of knowledge. This is not fairly desirable situation for the promotion and development of shrimp farming practices.

As the DoF entrusts with the responsibility of disseminating and popularizing aquaculture technologies in the country, therefore, DoF should take comprehensive plans and programmes to educate the farmers through providing training and extension support. The NGO's may also come forward to supplement the government effort to strengthen shrimp farming activities for the socio-economic development of the rural farmers.

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