

Reprint

ISSN 1923-7766 (Web Version)

# International Journal of Experimental Agriculture

*(Int. J. Expt. Agric.)*

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Volume: 6

Issue: 2

September 2016

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*Int. J. Expt. Agric. 6(2): 26-29 (September 2016)*

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M.M. ABDULLAH, M.S. ALI AND M.R. ISLAM



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## FARMERS' PRACTICE IN POND FISH FARMING

M.M. ABDULLAH\*<sup>1</sup>, M.S. ALI<sup>2</sup> AND M.R. ISLAM<sup>3</sup>

<sup>1</sup>Lecturer, <sup>2&3</sup>Professor, Department of Agricultural Extension and Information System,  
Sher-e-Bangla Agricultural University, Dhaka-1207, Bangladesh.

\*Corresponding author & address: Md. Masum Abdullah, E-mail: kamranmasum@yahoo.com  
Accepted for publication on 25 August 2016

### ABSTRACT

Abdullah MM, Ali MS, Islam MR (2016) Farmers' practice in pond fish farming. *Int. J. Expt. Agric.* 6(2), 26-29.

The purpose of this research was to determine farmers' practice in pond fish farming and also to explore the relationship of farmers' selected characteristics with their practice on pond fish farming. Data were collected from 101 pond farmers from 4 villages of Kaijuri Union under Faridpur Sadar Upazilla by using a pretested interview schedule during 20th March to 12th April 2013. Descriptive statistics such as mean, standard deviation, range and percentage were used to describe the variables. Pearson product moment correlation coefficient was used to measure the relationship of the variables. The study revealed that about 61.4 percent of the pond farmers had medium practice, while 27.7 percent farmers had low practice and only 10.9 percent farmers had high practice. Pond size, commercialization and training exposure of the pond farmers had positive significant relationship and problem faced had negative relationship with their practice in pond fish farming.

**Key words:** pond farmer, practice, fish farming

### INTRODUCTION

Throughout the centuries fish has been an important component of the population's diet in many parts of the world. As an agro-based developing country, it is often argued that the future development of Bangladesh depends particularly on the agriculture sector which includes crops, livestock, fisheries and forestry. Fisheries, as one of the important sub-sectors of agriculture supplies animal protein, earns foreign exchange, provides considerable employment and income, reduces poverty also suffers from self-sufficiency problem in Bangladesh (DoF 2014). Moreover, most of the people in Bangladesh depend on fish for their animal protein and fish provides 60.00 percent of per capita protein intake (DoF 2014). The fisheries sub-sector contributes 5.38 percent of Gross Domestic Product (BER 2014). Bangladesh earns a significant amount of foreign currency, i.e. 2.75 percent of total export earnings from fisheries products (BBS 2013). There are three categories of major fisheries resources, these are- inland capture (34%), inland culture (48%) and marine capture (18%). Inland fisheries comprises of rivers, ponds, estuaries, beels, floodplains, haors, baors, brackish water etc. In early sixties inland fisheries contributed about 90% of total fish production of the country. Fish production from aquaculture has increased to a great extent but open water fish production is in slow progress. Now only about 34% of the total fish production comes from inland open water (DoF 2010).

In order to increase fish production as well as fish consumption Department of Fisheries (DoF) is trying to publicize fisheries innovation to the pond farmers. As it is evident that no other considerable research have been done yet to find out the pond fish culture practices regarding pond fish farming. On these prospect, the researcher was devotedly interested to undertake the research entitled "farmer' practice on pond fish farming" with the following objectives: i) to identify the best practices used by the farmers in pond fish farming, ii) to determine selected characteristics of the fish farmers, iii) to determine the farmers' practice on pond fish farming and iv) to explore the relationship of farmers' selected characteristics with their practice on pond fish farming.

### METHODOLOGY

The study was conducted at Kaijuri union under Sadar Upazilla of Faridpur district. Four villages were randomly selected from 15 villages of Kaijuri union. The selected villages were Mongolcot, Vatpara, Chormongolcot and Loskarkandi. The pond farmers from these selected four villages were considered as the population of the study and the list of pond farmers was prepared with the help of Upazila Fisheries Officer and the respected field staffs. The number of pond farmers was 253. The sample size was 101 pond farmers by taking about 40 percent of the population proportionally from the selected villages by random sampling method. Data were collected from the sample farmers with the help of a pretested interview schedule during the period from 20<sup>th</sup> March to 12th April 2013. Pearson product moment correlation coefficient was used in order to explore the relationship between the concerned variables.

Now a days a good number of innovations are being practiced by the pond farmers for pond fish farming. Based on pre-test experience and through consultation with relevant experts' 13 innovations regarding pond fish farming were consider for this study. Those are: counting the fingerlings before releasing in the pond, applying cow-dung in pond, using lime in pond, using fertilizer in pond, applying supplementary feed in pond, eliminating the undesired and predatory fish from pond, controlling weeds from pond, preparing banana compost in pond, treating the fingerlings before releasing in the pond, sorting and grading of fish for better production, pulling the "harra" in pond, applying medicine if diseases attack the fish, keeping record of income and expenditure for fish culture. The respondent were asked to indicate their extent of practice of these 13

innovations with four alternative responses as regularly, occasionally, rarely and never and weights were assigned to the alternative responses as 3, 2, 1 and 0, respectively. Practice on pond fish farming of the respondents were computed by summing up all the scores obtained by them from all the 13 innovations. Thus the possible range of practice on pond fish farming score was 0-39, while 0 indicated no practice and 39 indicated highest practice in pond fish farming. Selected characteristics like age of a pond farmer was measured by counting the actual years from his/her birth to the time of interview. Education of a pond owner was measured by the number of years of schooling completed in an educational institution. A score of one (1) was given for each year of schooling completed. If a pond owner didn't know how to read and write, his education score was zero, while a score of 0.5 was given to a pond owner who could sign his name only. If a pond owner did not go to school but studied at home or adult learning center, his educational status was determined by equivalent formal schooling year. Land possession of a pond farmer referred to the total area of land in hectare on which his/her family carried out farming operations. Pond size was estimated on consideration of full benefit of the pond owners from pond fish farming in terms of hectare. Annual family income of a pond farmer was measured in thousand taka. Annual income from pond fish farming was measured in thousand taka. Commercialization of fish products score of a farmer was determined by the ratio of value of crops sold out of the total value of crops raised and it could range from 0 to 100, while 0 indicating no commercialization and 100 indicating very high commercialization (Karim and Mahboob, 1974; Ali 2008). Training exposure of a pond farmer was measured by the total number of days he/she participated in different training programs. Extension contact score of a respondent was determined by summing up his/her scores for contact with five selected media with four alternative responses as 'regularly', 'occasionally', 'rarely' and 'not at all' basis and weights were assigned as 3, 2, 1 and 0, respectively. Thus possible extension contact score could vary from zero (0) to 15, where zero indicated no extension contact and 15 indicated the highest level of extension contact. For measuring problem faced the respondents were asked to respond to four alternative responses as 'severe problem', 'moderate problem', 'low problem' and 'not at all' for each of six selected problems. Scores were assigned to those alternative responses as 3, 2, 1, and 0, respectively. Finally, the problem faced in pond fish farming could range from 0 to 18 where '0' indicated no problem and '18' indicated high problem.

## RESULTS AND DISCUSSION

### Best practices used by the farmers in pond fish farming

Among the several practices some are used extensively by the pond farmers. Applying cowdung in the pond is one of them. Because of low price and availability throughout the year most of the farmers apply cowdung regularly in their pond. Secondly to speed up the natural food consumption in the pond as well as to keep the color of pond water impeccable farmers use lime in their pond. Third most important practice used by the farmers is applying supplementary feed in pond. Fourth practice is controlling weeds from pond. And the fifth most used practice is keeping record of income and expenditure for fish farming.

### Selected characteristics of the pond farmers

Selected characteristics of the pond farmers have been presented in Table 1, which indicates that majority (64.4 percent) of them were middle aged farmers with 'primary level' and 'secondary level' of education (71.3 percent). Overwhelming majority of the farmers had small land possession (84.2 percent), medium pond size (54.5 percent), low to medium annual family income (92.08 percent) and low to medium annual income from pond fish farming (96.04 percent). Majority of the farmers had medium commercialization of fish (51.5 percent), no training (71.3 percent), very low extension contact (58.4 percent) and medium problem faced in pond fish farming (50.5 percent).

Table 1. Salient features of the pond farmers

Characteristics	Range		Categories	Farmers		Mean	SD
	Possible	Observed		No.	%		
Age (years)	-	18-65	Young (up to 30)	21	20.80	40.85	10.08
			Middle aged (31-50)	65	64.40		
			Old aged (>50)	15	14.90		
Education (schooling years)	-	0-18	Illiterate (0)	09	5.90	7.56	4.13
			Can sign only (0.5)	06	8.90		
			Primary (1-5)	12	11.90		
			Secondary (6-10)	60	59.40		
			Above secondary (>10)	14	13.90		
Land possession (hectare)	-	0.18-2.10	Marginal (up to 0.20)	1	1.0	0.58	0.33
			Small (0.20-1.00)	85	84.20		
			Medium (1.01-1.80)	14	13.90		
			Large (>1.80)	1	1.0		

Cont'd							
Pond size (hectare)	-	0.07-0.76	Small pond (up to 0.10)	36	35.60	0.21	0.17
			Medium pond (0.11-0.50)	55	54.50		
			Large pond (>0.50)	10	9.90		
Annual family income ('000'Taka)	-	40-600	Low income (up to 50)	49	48.52	139.15	93.95
			Medium income (51-150)	44	43.56		
			High income (>150)	8	7.92		
Annual income from pond fish farming ('000'Taka)	-	10-250	Low income (up to 50)	54	53.47	60.37	44.86
			Medium income (51-150)	43	42.57		
			High income (>150)	4	3.96		
Commercialization (score)	0-100	52-95	Low (up to 60)	13	12.90	76.00	12.00
			Medium (60.1-80)	52	51.50		
			High (>80)	36	35.60		
Training exposure (number of days)	-	00-14	No training (0)	72	71.30	1.46	2.83
			Low training (1-3)	17	16.80		
			Medium training (>3)	12	11.90		
Extension contact (score)	0-15	1-9	Very low (up to 3)	59	58.40	3.80	2.23
			Low (4-6)	25	24.80		
			Medium (>6)	17	16.80		
Problem faced (score)	0-18	2-15	Low (up to 5)	41	40.60	6.47	3.11
			Medium (6-11)	51	50.50		
			High (>11)	9	8.90		

SD = Standard deviation

Source: Authors' estimation

### Practice of pond farmers on pond fish farming

Pond farmers practice scores could range from 0 to 39. But their observed scores ranged from 4 to 19, the mean is 10.75 and standard deviation is 3.62. Based on the scores, the pond farmers were classified into three categories as: "low practice" (up to 5), "medium practice" (6-10), "high practice" (above 10). The distribution of the pond farmers according to their practice level is shown in Table 2.

Table 2. Distribution of the pond farmers according to their practice on pond fish farming

Pond farmers practice level	Pond farmers (n=101)		Mean	SD
	Number	Percent		
Low practice	20	20.2	10.75	3.62
Medium practice	38	37.6		
High practice	43	42.5		
Total	101	100		

Source: Authors' estimation

About 42.5 percent of the pond farmers had high practice, while 37.6 percent farmers had medium practice and 20.2 percent farmers had low practice. Thus, a proportion of 80.1 percent of the pond farmers had high to medium practice on various aspects of pond fish farming.

### Relationship of the selected characteristics of pond farmers with their practice on pond fish farming:

The summary result of correlation analysis has been presented in Table 3.

Table 3. Pearson product moment coefficient analysis of selected characteristics with their practice on pond fish farming

Characteristics of the pond farmers	Dependent variable	Calculated value of 'r'
Age	Practice in pond fish farming	0.096
Education		0.077
Land possession		0.169
Pond size		0.227*
Annual family income		0.137
Annual income from fish farming		0.148
Commercialization		0.252*
Training exposure		0.286**
Extension contact		0.143
Problem faced		-0.222*

\*Correlation is significant at the 0.05 level of probability, \*\*Correlation is significant at the 0.01 level of probability.

Source: Authors' estimation

Table 3 reveals that pond size, commercialization, training exposure had significant positive relationship with their practice in pond fish farming. With a large sized pond the farmer could practice more things than the small sized pond farmers and in case of commercialization the large sized pond farmers can commercialize more fish. And when the farmers can participate in more training program then the rate of practice increased, because after training the farmers know how to do things scientifically. On the other hand problem faced had significant negative relationship with their knowledge on pond fish farming.

### **CONCLUSION**

On the basis of findings it was found that majority of the pond farmers had low to medium practice on various aspects of pond fish farming. The findings also explores that the farmers are reluctant to practice some items which are somehow intricate to manage like grading, sorting, applying medicine, etc. So regular training session will be recommended to excite the practice on pond farming. It may be concluded that the production of pond fish will not be possible to improve to a significant extent unless the concerned authorities (Ministry of Fisheries & Livestock, Department of Fisheries) take proper steps to improve farmers overall practices regarding pond fish farming.

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