Socio-economic conditions of the pond owners of Demra, Dhaka

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Abstract
On the basis of fish culture status 96 ponds of the study area were classified into 4 categories like wild stock (27%), extensive culture (24%), improved extensive culture (33%) and semi-intensive culture (16%). Percentage of small, medium and large ponds were 38, 44, and 18 respectively whereas education levels below SSC, below Bachelor and above were 43, 38 and 19 respectively and single owners belonged to 54% of the ponds. Per hectare yields of extensive, improved extensive and semi-intensive categories of culture were 1.3, 2.12 and 4.0 metric tons respectively and their net return were 46, 63 and 92 thousand taka respectively. Considering the problems of fish culture, multiple ownership was found to be the most important one.

Key words: Socio-economic, Pond fishery

Fish and fishery resources play a vital role in improving socioeconomic conditions, combating malnutrition, earning foreign currency and creating employment opportunities in Bangladesh. There are 5,277,571 hectare water bodies of which 915,506 hectare ponds which are suitable for fish culture, but most of them remain unused (BBS 1997). If the existing ponds are brought under fish culture by exact planning, proper management and re-excavation, the present fish production level can easily be increased 2 to 3 times to reach the recommended quantity of fish for the people of Bangladesh. Some limited survey type and related works on pond fishery resources have so far been done in Bangladesh. Most of these studies (Rahman and Ali 1986, Khan 1986, Quddus and Akbar 1995), however, focused on socioeconomic aspects of developing pond fish culture. Cost and returns of different management category is included in this study in addition to the above investigation.

A survey of ponds was conducted in Demra area of Dhaka city during July'95 to June'96 through personal visits and interviews following a detail questionnaire. The survey was carried out with the help of Demara Thana Fishery Officer for identification of the actual area boundary and to detect each and every pond. A sample of 96 stocking ponds (5% of the total ponds) were selected randomly. The fish culture status was
categorized into four types viz. (i) wild stock category, (ii) extensive culture category, (iii) improved extensive culture category and (iv) semi-intensive culture category on the basis of amount of inputs used and how inputs used. Cost and return of different management categories of ponds and various problems and their solutions were recorded through interview. Collected data were analysed by objectives of the study. A tabulation plan was developed and statistical measures such as frequency count, percentage distribution, mean, chi-square test etc. were used to analyse the data. Ponds were classified into 4 categories with less than 0.10 ha as small, 0.10-0.25 ha as medium, 0.26-0.50 ha as large and above 0.50 ha as very large. Educational status of pond owners were classified into three categories: (i) below S.S.C. (ii) below Bachelor's and (iii) Bachelor's degree & above. On the basis of number of owners the ponds were classified into five categories (i) single ownership, (ii) 2-3 ownership, (iii) 4-5 ownership, (iv) above 5 ownership, and (v) public/organization ownership. Flooding condition of ponds were as (i) every year flooding, (ii) rarely flooding and (iii) never flooding. The chi-square test was done to find out the interaction of fish culture status with the size of pond, number of pond owners, educational status of pond owners, and flooding condition of ponds.

The total and percentages of the different categories of the socioeconomic factors are shown in the Table 1. Most of the ponds of Demra area were found to be small (38%) and medium (44%) (Table 1). It is a low lying area for which they needed to raise their homestead area. Similar results were also reported by Kaiya (1986) after a survey of pond fishery resources in Mirzapur upazila. The very few larger ponds found in this area were excavated basically in abandoned brick fields and for raising industrial sites. The chi-square test indicates that fish culture status did not depend on pond size.

Considering the ownership of the ponds, it was observed that 34% of the total ponds were under joint ownership, 54% were under single ownership and the rest 12% ponds were public or organizational property. This result contradicts with those of Alkbar and Rahman (1982) who reported that 84% ponds were joint ownership and only 16% were under single ownership in Mymensingh district. Khan et al. (1991) also expressed dissimilar results that about 97.8% of the ponds were under private ownership comprising 28.29% under single ownership and 69.51% under joint ownership in Trisas Upazila. The ponds, under public or organizational property, were not properly utilized for fish culture. So, multiple ownership and public ponds were the most important limiting factor to fish culture. Number of ownership of the ponds affected remarkably fish culture status of the ponds. Multiple ownership affected intensity of fish culture. The chi-square test showed that there was significant relationship between pond-ownership and fish culture status (Table 1). This indicates that the fish culture status is affected by the increase in number of pond owners. Kaiya et al. (1987) pointed out that multiple ownership was considered as the major problem by 82.5% of the pond owners.

A majority (95%) of the pond owners showed their interest in fish culture. But the institutional credit facilities and other support such as training and motivation were not sufficient for fish culture. Only 34% pond owners got Bank loan for fish culture. Majority (53%) pond owner's expenditure for fish culture was from own sources (Table 1). The name of loan issuing bank are Sonali Bank, Bangladesh Krishi Bank and Agrani

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Bank. It was remarkable observation that there was no NGO help, either training or credit facilities, for fish culture in the survey area. Khan et al. (1991) observed that about 38% of the pond owners had invested their personal capital for fish cultivation while 62% of them invested money for fish culture through obtaining loans from Bank (43%), BRDB (8%), UFO (5%), co-operatives (4%) and other organization like BRAC, SARA etc. The range of educational status of pond owners of the survey area was from primary level to master's degree. There was no illiterate pond owners whereas most of the owner’s (81%) academic qualification was high school to H.S.C. level. In addition to these, 19% of the owners were higher educated because the study area was in the capital city. The chi-square test statistic indicates that the different categories of fish culture status were significantly depend on educational level of the pond owners.

The number of ponds under fish culture decreased with the increase of incidence of flooding. The Table 1 shows the distribution of ponds under different categories considering the flooding condition. This table reveals that 28% of the total ponds surveyed were found to become flooded every year and 21% were found rarely flooded, whereas 51% of the ponds found to be never flooded. Mollah (1980) observed that only 7% of the ponds got flooded in the rainy season. Kaiya (1986) reported that 53.3% were
found to become flooded every year. It is evident from the statistical analysis that there is a significant relationship between the flooding condition of ponds and the fish culture status. The result indicates that the increase of flood reduces pond fish culture.

Per hectare cost, gross and net return of fish production of different culture categories are shown in the Table 2. Total cost of fish production was highest for semi-intensive category and lowest cost for extensive category. The table also shows that both gross and net returns/ha were highest for semi-intensive and lowest for extensive category. This means that there may be a positive correlation between production cost and gross return, as well as production cost and net return. Table 2 also shows that per hectare yield by improved extensive culture is 61.5% higher than that by the extensive culture. Furthermore, per hectare yield by semi-intensive culture is 19% higher than the improved extensive culture and 3 times higher than the extensive culture. On the other hand, net return of improved extensive culture was 37% higher than the intensive culture. Net return of semi-intensive culture was 46% higher than improved extensive culture and double than the extensive culture. On the basis of the major findings of the study, the following suggestions are made which may help increase the pond fish production and interest of scientific pond fish culture.

### Table 2. Average per hectare costs and returns of different management category

<table>
<thead>
<tr>
<th>Culture and management of fish pond</th>
<th>No of ponds</th>
<th>Av. area (ha)</th>
<th>Fry</th>
<th>Fertilizer &amp; feed</th>
<th>Labour &amp; Harvesting</th>
<th>Total Cost (Tk) in thousand</th>
<th>Yield / ha (m.ton)</th>
<th>Total Yield (Tk)</th>
<th>Gross Return (Tk)</th>
<th>Net Return (Tk)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extensive</td>
<td>23</td>
<td>0.28</td>
<td>12</td>
<td>-</td>
<td>6</td>
<td>18</td>
<td>1.3</td>
<td>64</td>
<td>46</td>
<td></td>
</tr>
<tr>
<td>Improved extensive</td>
<td>32</td>
<td>0.13</td>
<td>21</td>
<td>13</td>
<td>10</td>
<td>44</td>
<td>2.1</td>
<td>107</td>
<td>63</td>
<td></td>
</tr>
<tr>
<td>Semi-intensive</td>
<td>15</td>
<td>0.20</td>
<td>30</td>
<td>58</td>
<td>20</td>
<td>108</td>
<td>4.0</td>
<td>200</td>
<td>92</td>
<td></td>
</tr>
</tbody>
</table>

*The ponds with wild stock category are excluded here.*

The multiple ownership is a problem for fish culture because the share holders are usually unable to arrive at an unified decision in respect of fish farming. This problem can be solved by leasing out the pond to a person interested in fish culture. Khan (1986) suggested that utilization of joint ownership ponds can be done by (a) co-operatives, (b) leasing to interested person(s), and (c) village organization under which all ponds may be put into productive use. In this case, the share holders will have the lease money distributed among them according to their shares. The public ponds may be utilized by being provided to the co-operatives of rural youths, women, landless labours or private enterprise and by ensuring available funds to them with a reasonable interest. It is suggested that necessary steps to be taken by the Government to provide a minimum level of education and training facilities to the fishermen on the scientific methods of pond fish cultivation. In order to meet the credit needs of the fishermen the commercial and other specialized bank such as ‘Agriculture Bank’ should offer credit to the pond owners on short term at a reasonable rate of interest. Provision should, although, be
made for adequate diversified and timely delivered loans with strict supervision for their proper utilization.

The responses of pond owners about the problems of fish culture indicates that multiple ownership was the most important problem. Among others, lack of scientific knowledge, scarcity of funds, non-availability of fish fry and incidence of flooding were the major problems indicated by the pond owners. These problems could be overcome, at least in partially through proper training of the pond owners, ensuring of fish fry supply and provision of credit facilities. The incidence of flooding is the important problem which is very hard to be tackled.

References


Kaiya, M.K.U., 1986. Survey of pond fishery resources in Mirzapur upazila under Tangail district. An M.Sc. thesis submitted to the Faculty of Fisheries, Bangladesh Agricultural University, Mymensingh, 52 pp


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