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PRESENT STATUS AND FUTURE FISH PRODUCTION POTENTIAL OF SADAR UPAZILA OF JHENAIDAHA DISTRICT, BANGLADESH

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Abstract: An investigation on the present status and future fish production potential of Jhenaidaha Sadar *Upazila* of Jhenaidaha district was carried out from July 2001 to June 2002. Jhenaidaha Sadar *Upazila* is endowed with a large variety of waterbodies that can be used to produce a considerable amount of fishes. The present investigation was undertaken to know about the present status of fish production at different types of waterbody and make a potential to increase fish production in future in Jhenaidaha Sadar *Upazila*. The total fish production of all the waterbodies of Jhenaidaha Sadar *Upazila* was found to be 1,365.09 mt. Analyzing the present status of fish production, a five-year fish production potential has been prepared and after five year, the fish production target is estimated to be 3,289.62 mt. Among the different waterbodies, the highest fish production was found in pond sector (1,411 kg ha^{-1}). This study suggested the proper utilization of the available fisheries resources and some recommendations have also been made to increase fish production in Jhenaidaha.

Key words: Fish production, Jhenaidaha, future production potential

Introduction

Jhenaidaha Sadar *Upazila* is enriched with a variety of waterbodies. A large number of perennial and seasonal ponds, roadside ditches, *beels*, baors, canals, rivers, floodplains, culturable paddy fields, flood control and irrigation projects etc. are found in this *Upazila*. Although aquatic resources in Bangladesh are ubiquitous but the proper development of these resources has not been emphasized. This is most likely due to lack of awareness among policy makers and planners. Lack of scientific knowledge, multiple ownership of ponds, attack of fish diseases and non-availability of good quality fish fry are a major problem in pond fish culture in Bangladesh (Ali *et al.,* 1982; Ali and Rahman, 1986). Chowdhury (1981) also reported that lack of fund for re-excavation of ponds ranked first among all the problems faced by the fish farmers of Bangladesh. A preliminary survey of present supply and demand for fish and fishery products showed that aquaculture is an effective means of filling the gaps in current and future supplies of many of the favoured aquafoods. To prepare a fish production potential for a definite area, one should know the present condition of available water bodies and current fish production rate of the area.

The total fish production of Bangladesh in 2003-2004 fiscal year was 21 *lac* mt (Anon, 2006). At the end of sixth five year potential (from 2002-2003 to 2006-2007), the fish production target has been fixed up at 24.05 *lac* mt. To achieve this target, Department of Fisheries (DoF) has undertaken different management and development activities for different types of water bodies. This national fish production target can be achieved by adopting proper aquaculture management technologies in all types of water bodies of each and every part of Bangladesh (Ali, 1991). As Jhenaidaha Sadar *Upazila* is enriched with a large variety of waterbodies, a production potential for this *Upazila* is very much needed to share with the achievement of the national target. If every *Upazila* has a definite production potential, then the production target of the country

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will be achieved easily. The study aims to identify the possible fish cultivable area and present fish production trend and to increase fish production achieving the future target level through proper culture and management.

Materials and Methods

***Study area*:** There are six *upazilas* in the Jhenaidaha district. Among them Jhenaidaha Sadar *Upazila* is situated in the middle of the district. Jhenaidahaa Sadar *Upazila* is located in between 23°26´ N and 23°36´ N latitude and 88°57´ E and 89°20´ E longitude. The area of Jhenaidaha Sadar *Upazila* is 471.31 km^2. It consists of one Paurashava, 17 *Unions* and 316 villages. According to population census 2001, the total population of Jhenaidaha Sadar *Upazila* is 395,637 (Male 204,957 and Female 190,680).

***Data collection*:** The study has been conducted over a year from July 2001 to June 2002. The investigator along with the Assistant Fisheries Officer (AFO) and Field Assistant (FA) of Jhenaidaha Sadar *Upazila* with the help of three local surveyors collected data on present status of fish production from different type of waterbodies. The District Fisheries Officer (DFO), Jhenaidaha and Senior Upazila Fisheries Officer (SUFO), Jhenaidaha Sadar gave important guidelines in preparing survey questionnaire to collect information. All the surveyors were divided into three groups and information on water bodies of all villages under all the *Unions* (including Jhenaidaha Paurashava) were collected.

Results

During the study, culture level at different water bodies were recorded and highest production was found in pond (1,411 kg ha^{-1}) and lowest in river (232 kg ha^{-1}) (Table 1). The community based floodplain culture and paddy-cum fish culture were found very negligible. A considerable portion of the culturable waterbodies still remained out of fish culture. The total production of Jhenaidaha Sadar *Upazila* from different perennial and seasonal water bodies was 1,365.09 mt. While the future production target is estimated at 3,289.62 mt. by the Department of Fisheries of Jhenaidaha district. Among different waterbodies, the highest fish production in Jhenaidaha Sadar *Upazila* has recorded from pond sector. The percent of total fish production from pond system was the highest at Surat *Union* and the lowest at Haldani *Union* (Table 2). Beel ecosystem was the second largest source of fish production in the Jhenaidaha Sadar *Upazila* . *Beels* are present more or less in all the *Unions* and played an important role in case of fish supply in this *Upazila*. The highest fish production from *beel* (38%) was recorded from Sadhuhati *Union* and the *beel* ecosystem was absent in Jhenaidaha Paurashava (Table 2).

Table 1. Cultivable area, current fish production rate and future production target from different water bodies of Sadar *Upazila* of Jheniadah district.

Water body	Culturable area (ha)	Present production (kg ha^{1})	Target production (kg ha^{1})
Pond	672.88	1411	2964
Baor	102.22	1018	1967
Beel	385.72	315.35	1235
Canal	99.97	403.6	1482
River	499.34	232	400
Roadside ditches	34.88	968	1729
Floodplain	1156.34	*	125
Paddy field and irrigation project	44.56	*	1235

*Not considerable

Baor fish production has only come from Jhenaidaha Paurashava (15%), Makuhati *Union* (11%) and Haldani *Union* (64%). In canal fish production, the highest percentage (13%) of total fish production has come from Ghorsal *Union* (13%). River fish production also contributed an important role in fish supply in Jhenaidaha Sadar *Upazila*. The highest river fish production (29%) came from Naldanga *Union* (Table 2). Fish production from roadside ditches was found only in Jhenaidaha Paurashava (4%) and Ghorsal *Union* (8%). In floodplain the highest fish production (14%) came from Fursandi *Union*. Some flood control and irrigation projects were found in Sadhuhati, Haldani and Ganna *Unions*. Among the three *Unions* the highest percent total fish production (16%) has come from Ganna *Union* (Table 2). The total fish production of all the waterbodies of Jhenaidaha Sadar *Upazila* during the investigation period was 1,365.09 mt. Analyzing the present status of fish production, a five year fish production potential has been prepared and after five years

estimated fish production would be 3,289.62 mt.

Table 2. *Union* wise percent of the total fish production of different waterbodies (ha) in Jhenaida Sadar *Upazila*.

Name of *Union*	Percentages of fish production from different waterbodies							
	Pond	*Baor*	*Beel*	Canal	River	Roadside ditches	Flood plain	Paddy field & irrigation project
Paurashava	70	15	0	10	1	4	0	0
Sadhuhati	44	0	38	6	0	0	0	12
Makuhati	79	11	10	0	0	0	0	0
Sagenna	82	0	11	7	0	0	0	0
Haldani	20	64	4	2	0	0	10	10
Kumrabaria	86	0	6	3	0	0	5	0
Ganna	75	0	7	2	0	0	0	16
Maharajpur	74	0	10	0	15	0	1	0
Paglakanai	65	0	19	2	13	0	1	0
Porahati	77	0	8	2	11	0	2	0
Harishankarpur	85	0	5	0	6	0	4	0
Padmakar	72	0	15	0	7	0	6	0
Dogachhi	79	0	10	3	0	0	8	0
Fursandi	75	0	4	3	4	0	14	0
Ghorsal	48	0	29	13	0	8	2	0
Kalicharanpur	86	0	5	4	0	0	5	0
Surat	95	0	3	1	0	0	1	0
Naldanga	52	0	18	1	29	0	0	0
Total	1264	90	202	59	86	12	59	38
Average	70.22	5	11.22	3.28	4.78	0.67	3.28	2.11

Discussion

The present investigation was aimed to know the fish production in different types of waterbody in Jhenaidaha Sadar *Upazila*. After analyzing the data of fish production in relation to types of waterbody and aquaculture technology practiced, a five-year fish production potential has been prepared. The average fish production of ponds in Jhenaidaha Sadar *Upazila* was found 1,411 kg ha^{-1}. The average annual production of fish from cultured, culturable and derelict ponds were1,161 kg ha^{-1}, 296 kg ha^{-1} and 185 kg ha^{-1} respectively (Rahman, 1989). Ahmed (1992) also reported that the average annual production from cultured ponds and ditches was 1,260 kg ha^{-1}. The target of five year fish production potential in ponds is estimated to increase the present production into 2,964 kg ha^{-1}. The first and foremost needed thing is to train up the fish farmers and fishermen. Then credit facilities must have to be ensured to the poor fish farmers/fishermen to achieve the target.

A large number of roadside ditches are available in Jhenaidaha Sadar *Upazila*. On a biological production sense, the ditches were not very suitable for aquaculture because they retain water only during monsoon and then dried up. The present fish production of roadside ditches in Jhenaidaha Sadar *Upazila* was 968.0 kg ha^{-1}. The five year fish production potential in roadside ditches has been estimated to attain 1,729 kg ha^{-1}. To attain the target, ditches should be cleaned up and fast growing fish and small indigenous species could be stocked. Considerable number of perennial and seasonal canals were found in current study area and its present production was 403.6 kg ha^{-1} that could be raised up to 1,482 kg ha^{-1} through adopting sustainable culture and management system.

The Fisheries Resources Survey System (FRSS) indicated that the estimated average production from dewatered *beels* can be as high as 1,890 kg ha^{-1} yr^{-1}(Rahman, 1989). During the study period the production of *beels* in Jhenaidaha Sadar *Upazila* was about 315.35 kg ha^{-1} that could be raised upon1,235 kg ha^{-1}. To achieve the target, fast growing fish species should be stocked, as the *beels* are seasonal. Public awareness should be created against excessive application of agricultural pesticides as pesticides highly hamper fish production. Indiscriminate fishing of juveniles and berried fish should be stopped. There are 5 baors in Jhenaidaha Sadar Upazila. The production of the *baors* estimated during the study period was 1,018 kg ha^{-1}. The five year production target has been fixed up at 1,976 kg ha^{-1}. To achieve the target, community based fish culture by the surrounding villagers should be implemented and regular monitoring should be done by the fisheries officer of DoF. The DoF should provide proper training to the targeted group members on *baor* fisheries management techniques.

A vast area of the country is usually flooded during the monsoon and normally remains under water for 3-6

months. There are 38 floodplain ecosystems in the Jhenaidaha Sadar *Upazila*. The floodplain area serves as feeding, growing and spawning ground for many fish species. These areas are productive and provide sufficient food to inhabitant fishes. The production of fish from flood plains in Jhenaidaha Sadar *Upazila* was very low. The five year production target is estimated to be 125 kg ha^{-1}. To achieve the target, DoF should stock a considerable number of fingerlings in to the floodplains every year. Harvesting of under size and berried females should strictly be prohibited strictly and public awareness should be created through varies programmes.

The production of fish in culturable paddy fields in Jhenaidaha Sadar *Upazila* was insignificant. The five year production target is estimated at 1,235 kg ha^{-1}. In case of paddy-cum-fish culture, the species ratio may be 25% surface feeders preferably Catla (*Catla catla*) which is readily available, 30% column feeders i.e., Rohu (*Labeo rohita*) and 45% bottom feeders i.e., Mrigal (*Cirrhinus mrigala*) or omnivores like common carp (*Cyprinus carpio*). *Puntius* spp. has also been observed to grow well in paddy-cum-fish culture plots. To augment growth, available low cost supplementary feed comprising mustard oil cake and rice bran in 1:1 ratio may be given to fishes daily at the rate of 2.5% body weight, particularly after harvesting paddy (Nuruzzaman, 1990).

The Nabaganga river and other river tributaries are present in Jheniadaha Sadar *Upazila*. The production of the river during the investigation period was found to be 232 kg ha^{-1} that could be increased to 400 kg ha^{-1}. To achieve the target, under-sized fishing and fishing of egg-bearing fish should be strictly prohibited. Over fishing must also be stopped. Public awareness should be created in this regard. Fish sanctuary will have to be established in some rivers and tributaries. To achieve the aim of the present study the following suggestions and recommendations are proposed:

Conclusion

In the Jhenaidaha district, a large number of different types of water bodies are available which have potential for fish culture. Government has given priority to this District to increase its present production through improvement of culture techniques and management system. Day by day number of population is increasing. Therefore it is a burning issue to fulfill the protein demand as well as earning foreign currency. If improve culture technology is followed, Bangladesh has great future to increase fish production through improvement of culture technique and management system and also implementing fisheries conservation rules and regulations. To achieve the national fish production target, it is necessary to make *Upazila* wise production and implementation plan.

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