ISSN-2076-3913 (Online) & ISSN-2076-3964 (Optical)
Marine Res. Aqua. 1(2):1-4 (September 2010)

NATIONAL AQUACULTURE PRODUCTION IN BANGLADESH: AN OVERVIEW OF FRESHWATER AQUACULTURE PRODUCTION AND CARP PRODUCTION

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Accepted for publication on 15 August 2010

ABSTRACT

Parven A, Ahmed S (2010) National aquaculture production in Bangladesh: an overview of freshwater aquaculture production and carp production. *Marine Res. Aqua.* 1(2), 1-4.

The present study was carried out to find out the current trends of fresh water aquaculture production of Bangladesh emphasized on fresh water culture with the data over last 17 years analyzing through electronic windows version software FISHSTAT$^+$, (FAO). The collected data were evaluated the trends of fish production in various aspects which values from 1985 to 2002 for Bangladesh perspective. Analytical data focused that total aquaculture production mainly depends on freshwater aquaculture and largely production of carp polyculture. Freshwater aquaculture production value is increasing rather than other aquaculture. The major carp production trend is more or less changing due to the farmer interest in culture of high income species. Fresh water aquaculture production is increasing day by day. Last 17 years' research findings were overviewed emphasising on constraints, farmers' interest, export scenario, feasibility and acceptability to fish culture and existing technologies. Among the problems associated with freshwater aquaculture are environmental factors, lack of seed, disease, high cost of feed, inappropriate technologies, and lack of knowledge of farmer. Exotic carps are introduced in freshwater aquaculture due to its nature of culture is eco-friendly, production rate is very high and small scale farmer can easily do the carp poly culture in the small pond and can get the money security.

Key words: *fresh water aquaculture, FISHSTAT$^+$, FAO, poly culture, food security, exotic carp, carp poly culture*

INTRODUCTION

Bangladesh is one of the world's leading fisheries producers inland. Produced 1,646,819 tonnes during 2003-2004. From marine catch total of 4,55,601 tonnes and aquaculture catch 9,14,752 tonnes during 2003–2004. Above 2.1 million tonnes fisheries had gotten in 2005 fiscal year (DoF, 2005). FAO (2005) ranked Bangladesh as sixth largest aquaculture producing country with its estimated production of 856, 956 tonnes in 2003 (FAO, 2005). Aquaculture accounted for about 43.5% of the total fish production during 2003–2004, with inland open water fisheries contributed 34.8% (DoF, 2005). In general fish production over the last decades (1991-92 to 1998-99) grew at a rate of 7.09% per anum. Annual growth of production has been highest for the ponds (15.32%).

In Bangladesh, there are mainly two types of aquaculture practices freshwater aquaculture, brackish water aquaculture and also have very small mariculture (infant stage). Aquaculture production systems are mainly extensive and extended extensive, with some semi-intensive and in very few cases intensive systems. Although the fishery culture have contributed over 55% of inland fish production (Azim *et al*. 2002). Indigenous freshwater carps (22%) and exotic carps (10%) from both the farming and capture sectors are the primary contributors to total production (Azim *et al*. 2002), other freshwater fish include catfish, snakeheads and small indigenous species.

However, carp polyculture in ponds is more productive, capital intensive and is a more profitable activity compared to the other culture systems. Carps are by far the most important species in cultured fish production. Total carp production accounted for 88% of the total freshwater fish production in the country. Three Indian major carps namely, *Labeo rohita*, *Catla catla* and *Cirrhinus cirrhosus* and one exotic carp, *Hypophthalmichthys molitrix* now account for more than 78% of total pond production (ICLARM, 2002). However, carp polyculture at the individual small holder level has the greatest potential for expansion since it can, through the implementation of more intensive culture systems including the application of fertilisers, use of supplemental feeding and improved management practices (Gupta *et al*. 1999), provide a significant potential increase in income, by as much as 57% or US$ 717/ha, this is more than the other culture practices in use (DoF, 2003).

The main objective of this study is to find out present status of fresh water aquaculture and export scenario in Bangladesh particularly of shrimp and prawn in the aspect of production and values trends for over 17 years period from 1985-2002.

MATERIALS AND METHODS

This paper has been prepared with using secondary data specially follow the FAO data. During preparing this paper different Journals, books, thesis were reviewed etc. The provision of aquaculture production in quantities, values and capture production databases has provided by FAO through a Windows-based program called FISHSTAT$^+$. The details materials and methodology used in this study is given here below:

Data Source: Electronic version of Fsishstat+ (2003) (FAO), From Fishstat+ 17 Years data (1985-2002) from Aquaculture Production; Quantities, values, commodities production and trade dataset was extracted through the instruction given by the course instructor. All data were analyzed and graphs are generated using Microsoft Excel.

RESULTS

In case of Bangladesh the total aquaculture is increasing day by day (189,0459mt, 2002). The fresh water aquaculture is contributing the highest portion about (88.60% in 2002) of total aquaculture production (Fig: 1A).

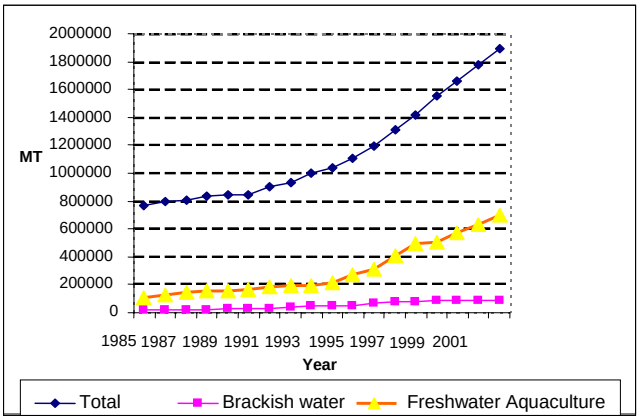

Fig. 1A. Comparison of Total fish production with Freshwater and brackish water Aquaculture production

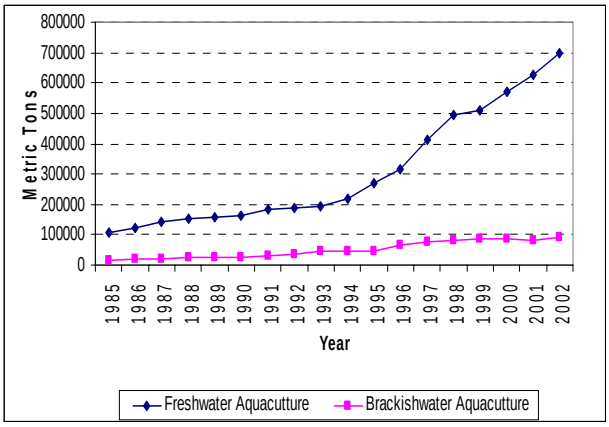

Fig. 1B. Freshwater and Brackish water Production Value (Thousand Us dollar) and production quantity (MT)

After the 1996 the sudden increase of freshwater aquaculture has observed. But the brackish water aquaculture production is increasing very slowly rather than freshwater aquaculture. (Fig: 1A) In case of brackish water aquaculture value reach in highest in 1999, it was 336653.4 USD but in 2000 and 2001 it remain stable and again decrease in 2002 (Fig: 1B) but in case of fresh water aquaculture the production value is increasing day by day but the increasing rate is not remarkably high (Fig: 1B). In case of freshwater aquaculture quantity reached in high in 1998 (Fig: 1B) and it was 4,92,545 Metric tons and after 1999 production quantity is still increasing. But in brackish water aquaculture production quantity is increasing after 1996, though the value is decreasing.

Species wise freshwater aquaculture production in quantity is dominated by three major carps and another alien species grass carp. The grass carp production quantity is increasing day by day. In 2001 silver carp and roho production quantity overlap with each other and still now grass carp production is more than other carp species. In 2000 another major carp catla production decrease and reach 104,435 metric tons and after that again increasing and reach in 2002 127,714 but below than the silver carp and roho (Fig: 2A) But incase of species wise freshwater aquaculture production in value the first position is for roho and silver carp again cross the catla value in 2001. (Fig: 2A), the quantities of commodity production and trade mainly depend on Shrimp and marine fish and dried fish exportation. In 1997 the production commodity was 45,822 metric ton but it decreased in 1998 and continued up to 1999 at 28,531 metric ton and again increased and reached 53,561 in 2002 (Fig: 2B).

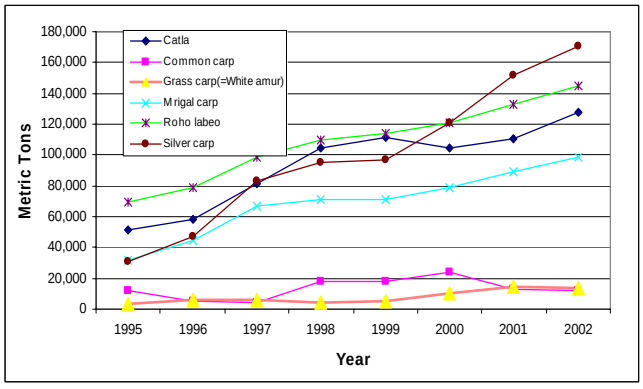

Fig. 2A. Carp (species wise) Aquaculture production Quantity (MT) and Value (Thousand US dollar)

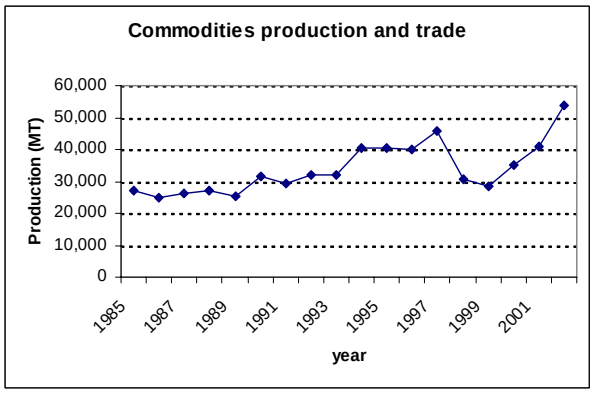

Fig. 2B. Quantities of commodities production and trade

DISCUSSION

Aquaculture production in Bangladesh has shown an average growth of 28% from 0.12 million tonnes to 0.66 million tonnes during the period 1985 to 2000. However, during the same period shrimp production has increased from 11,000 to 94,000 tonnes, with an average annual growth of 45%. It is due to producers are following improved technologies and proper utilisation of water bodies. It is estimated that aquaculture production could be increased by about 150% over the next five years (Mazid 2002). However during the fifth five-year plan despite the target for total production being 2.02 million tonnes, only 1.66 million tonnes actually produced. Over the last decade the price of fish has been increased at an annual rate of 2.5% (FFYP, 1997–2002). In Bangladesh 88% of total aquaculture values has come from the freshwater culture and rest of 12% from brackish water culture. The brackish water production of Bangladesh contributes of world's brackish water culture as about 4%, whereas fresh water production contributes 3% (DoF, 2002).

After 1996; freshwater aquaculture was increasing because farmers were trying to culture alternative high value species, rapid expansion of pond fisheries and productivity increase. Statistics indicate that major carp production of the inland open waters, particularly rivers and estuaries, has been declining (can be verified from different issues of the Fish Catch Statistics published by the Department of Fisheries). The overall increase however, is mainly due to the increasing acceptance and production of major and exotic carp species which are very popularly grown in the inland closed water environment such as ponds. The share of carp species in the closed water environments is expected to increase further as aquaculture expands because it is the main culture species (Alam 2002).

But in brackish water aquaculture the production value of brackish water in Bangladesh showed up and down pattern in increased year by year but significantly dropped by the year 1994, and in 2000 due to outbreak of shrimp disease (Chowdhury and Muniruzzaman, 2003). The unexpected production increase from brackish water culture sector in the year 1996 happened may be due to drastically expanding shrimp farming, availability of natural shrimp fry and high international market value. But after this the value is decreasing due to HACCAP.

Freshwater aquaculture is mainly dependent on carp polyculture; including major carps and exotic carps; specially grass carp and common carp. In the last few decades exotic species, including silver carp, grass carp, bighead carps, common carp and silver barb have become popular because of their quick growth with low cost feed in comparison to indigenous major carps. Due to low market price of both fingerlings and fish feed, poor people can afford to eat species like the silver carp rather than the more expensive indigenous carps. For that the value of silver carp is increasing day by day with the highest production for decades. Bangladesh and India, the contribution from alien species has been increasing steadily. It is suggested that overall alien finfish species have done minor ecological harm to native flora and fauna.

Both fisheries and aquaculture in Bangladesh play a major role in alleviating protein deficiency and malnutrition, in generating employment and foreign exchange earnings. Moreover, the fisheries sector contributes 5.10%, of the country's export earnings, 4.91% of its GDP and provides 63% of the national animal protein consumption (DoF, 2003). Fish and fishery products are the country's third largest export commodity contributing 5.10% of its exchange earnings, in 2002–2003 Bangladesh earned US$ 324 million of which shrimp alone contributed 72% of the total by quantity and 89% by value (DoF, 2003). The country's main exportable product is frozen shrimp, other exported products include frozen fish, frozen frog, dry fish, salted fish, turtles, crabs, shark fins and fish maws (dried fish swim bladders) (DoF, 2003). From the results we can say that aquatic production of carp in all categories has been increasing over time due to the positive impact of the stocking program of DOF and NGOs.

CONCLUSION

Fish and fisheries play an important role in the economies of developing countries, contributing to animal protein intake, employment generation, household incomes and foreign exchange earnings. Bangladesh faces many challenges and constraints in the sustainable management of aquatic resources. Aquaculture production in the country has been facing problems from outbreaks of disease, lack of up-to-date management practices, and lack of awareness on the part of fish growers. Indiscriminate and unplanned use of feed and fertilizer and overstocking increase stress on fish and increase their susceptibility to pathogens. The most obvious effect of disease is mortalities in the fish population, followed by economic losses. Although the country is facing serious problems in fish production due to disease outbreaks, production is still increased slowly. By the proper management and adaptation of cultural technique; total aquaculture production can be increase and that making beneficial the local poor people as well as national economy of the country. Due to poor infrastructural facilities in the field of fish harvesting, landing, handling, preservation, distribution, marketing and quality assurance, Bangladesh fetching 10-15 percent lower prices in the international markets. Quick and proper action should be initiated by the Government of Bangladesh for future aquaculture development, Bangladesh requires developing more hatchery and appropriate

technology adaptation strategy and also need to develop locally made artificial feed; which can reduce the production cost and help to promote aquaculture ventures for expansion of private sector.

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