Tilapia: Silent Booming in Bangladesh

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Introduction

History of Tilapia in Bangladesh began since introduction of Oreochromis mossambicus in 1954, and then Oreochromis niloticus (Fig 1) in 1974, with hope to contribute protein supplement¹. These attempts were unsuccessful due to lack of knowledge on their biology and culture technologies. Attempts had been taken again with introduction of Oreochromis in 1986, GIFT (Genetically Improved Farmed Tilapia) strain in 1994 and 2005 by Bangladesh Fisheries Research Institute (BFRI)² and Chitrabata strain in 2007 by Chitrabata Aqua Park Ltd. All these species and strains came from Thailand except GIFT, which is brought in from Philippine. Mono-sex (all male) Tilapia hatcheries have been established in different places of the country. Over last 15 years its demand has gradually increased as food fish and thus it has appeared as an important aquaculture species.

Objectives

This was a part of scoping study on commercially important aquaculture species traded into Europe under European Commission (EC) funded project on Sustaining Ethical Aquaculture Trade (SEAT).

- The main objective was to assess the current production status and development trends of four major aquaculture species of Bangladesh, Tilapia is one of them.

Methods

- Tools: Literature review and rapid rural appraisal (RRA).
- Place visited: Comilla (Important for flood plain Tilapia culture), Chandpur (For cage culture), Pabna (For monoculture), Khulna (Polyculture with shrimp and prawn), Jessore (Polyculture with carp), and Mymensingh (Polyculture with catfish and carp) districts. 24 Tilapia farms (4 per district; 2 small: farm size ≤0.20 ha, 1 medium: farm size 0.21 to 0.80 ha and 1 large: ≥ 0.81 ha in each instance), 6 Tilapia hatcheries (1 per district), 6 markets (1 per district) and 2 processing plants in (Khulna) were visited (Fig 2).
- Number and types of interviewees: 24 Tilapia farmers, 6 hatchery owners, 18 retailers and 18 consumers (3 retailers and 3 consumers at each market) and 2 processors were involved.
- Duration: From September 2009 to April 2010.

Table 1: Difference between Tilapia farming and other production systems

<table>
<thead>
<tr>
<th>Attributes</th>
<th>Species</th>
<th>P. mossambicus</th>
<th>A. niloticus</th>
<th>M. carpio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farming distribution</td>
<td>Country-wide</td>
<td>Few districts</td>
<td>Not widely</td>
<td>Country-wide</td>
</tr>
<tr>
<td>Water suitability</td>
<td>Fresh and brackish water</td>
<td>Fresh water</td>
<td>Fresh water</td>
<td>Fresh water</td>
</tr>
<tr>
<td>Availability of water</td>
<td>Freshwater</td>
<td>Freshwater</td>
<td>Freshwater</td>
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<tr>
<td>Availability of water</td>
<td>Freshwater</td>
<td>Freshwater</td>
<td>Freshwater</td>
<td>Freshwater</td>
</tr>
<tr>
<td>Types of farmers involved</td>
<td>Poor to better-off</td>
<td>Medium to better-off</td>
<td>Poor to medium</td>
<td></td>
</tr>
<tr>
<td>Susceptible to disease</td>
<td>Highly resistant</td>
<td>Medium</td>
<td>High</td>
<td>Medium</td>
</tr>
<tr>
<td>Market demand</td>
<td>High</td>
<td>Medium to high</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Market price</td>
<td>Stable</td>
<td>Fluctuate</td>
<td>Stable</td>
<td>Stable</td>
</tr>
<tr>
<td>Consumers preference</td>
<td>Medium to high</td>
<td>Medium to medium to high</td>
<td>Medium to rich</td>
<td></td>
</tr>
<tr>
<td>Culture period (months)</td>
<td>4</td>
<td>12</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>No. of crops per ha</td>
<td>2</td>
<td>82</td>
<td>23</td>
<td>57</td>
</tr>
<tr>
<td>Gross profit (%)</td>
<td>62</td>
<td>23</td>
<td>57</td>
<td>51</td>
</tr>
</tbody>
</table>

Graph 2: Tilapia Production (Kg ha⁻¹ yr⁻¹) in different production systems

- Currently Tilapia is cultured at various densities and combinations from mono- to polyculture in different containments. Recently red Tilapia has been introduced also (Fig 4).
- Pangasius catfish culture is an alternative species to compensate when catfish market price goes low, while shrimp and prawn farmers stock Tilapia to minimize the loss from diseases (Fig 5).
- At present, there are about 70 Tilapia hatcheries¹, whereas in 1992 there was only one mono-sex hatchery in Cox's Bazar.
- About 446 commercial Tilapia farms have been established all over the country over last 10 years. Moreover, currently Tilapia is cultured in about 500 Pangasius farms in polyculture with Pangasius and carp¹.
- Total production of Tilapia in Bangladesh was 66,767 MT in 2007-2008, this contributed 6.64 % to national aquaculture production and 2.6 % to global total Tilapia production².
- About 99.99% of cultured Tilapia is consumed domestically (Fig 6) and there is a negligible quantity of export so far.

Acknowledgements

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References


Impact statement

- The increasing availability of mono-sex Tilapia seeds made diverse positive impacts on traditional aquaculture practices.
- There was a rapid increase in national total production of Tilapia from 2,140 MT in 1999-2000 to 66,767 MT in 2007-2008 (Graph 1).
- The way of Tilapia farms are increasing (about 30% per year); it may be the prime aquaculture species in Bangladesh in near future.
- Monoculture in pond showed highest Tilapia production kg ha⁻¹ yr⁻¹ (Graph 2), however most of the farmers prefer polyculture with other species.
- The main constraints of this sector are the lack of quality seed¹ and recent outbreak of unknown disease in cage systems in Chandpur and panel culture system in Cox's Bazar.

Graph 1: Gradual enhancement in Tilapia production (MT).

Graph 2: Tilapia Production (Kg ha⁻¹ yr⁻¹) in different production systems

Graph 3: Cage culture of Tilapia.