TCP/BGD/3501
Enhancing aquaculture production for food security & rural development through better seed & feed production & management with special focus on public-private partnership

Broad topic

Fish Seed in Bangladesh

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Road Map

- Backdrop - past initiatives
- Presentation focus and key issues to be addressed
- Rationale and key issues to be addressed for this TCP – Seed
- Proposed principal routes to mitigation and modality for interventions
- What are our key outputs & activities?
- Way forward - Proposed starting point
- Work plan
Context: Initiatives this Millennium

Challenges not new:

i. **WF - ADB** funded "Dissemination and Evaluation of Genetically Improved Tilapia in Asia" and "Genetic Improvement of Carp Species in Asia"

ii. **WF - USAID** funded “Feed the Future Aquaculture project” - Tilapia Breeding Nucleus's (TBN)

iii. **DFID-FGRP** "Production of all female silver barb"

iv. **ACIAR/CSIRO** - "Hilsa Biology and Genetic Study"

v. **DFID**- "Genetic improvement strategies for production in exotic carps for low input aquaculture in Asia"

vi. **DoF**: 2nd Phase “Broodstock establishment project”

vii. **DoF**: GEF funded - 4th Phase “Carp Brood Stock Management and Genetic Improvement Programme”
2002 - GEF funded project
Carp Brood Stock Management and Genetic Improvement Programme under Fourth Fisheries Project

F. Rajts¹, T. Huntington¹ and M. G. Hussain²

Proceedings of a workshop on Genetic Management and Improvement Strategies for Exotic Carps in Asia,
1.1. Objective

- Quantify the declining genetic pool of hatchery brood stock & decline of performance of improved strains.
- Identify likely genetic damage of the endemic population by mass stocking of floodplains domesticated stocks.
- Assess the extent of damage caused by introgressed silver carp on national fish production.
- Develop a framework to control hatchery broodstock management, breeding activities, nursery management, and quality control of hatchery products. Propose a framework for their control.

So over a decade on .....
Seed Issues Identified in 2012
by Backstopping mission report of Regional Aquaculture Officer, FAO RAP, BK

i. Poor quality seed and growth retardation in culture phase &

ii. Poor or no broodstock management & genetic norms followed by hatcheries.

iii. Hatcheries exchange their stock with riverine stocks from brood banks without assessing their genetic status.

iv. The practice of using preserved milt for stock up-gradation is not practiced.

v. Very few fishes (low population size) were used for breeding purposes every year.
Seed issues identified in 2012
by Backstopping mission report of Regional Aquaculture Officer, FAO RAP, BK

vi. Knowledge level about seed quality is very low.

vii. Genetic introgression of silver carp with bighead carp.

viii. No proper enforcement of Seed Certification and the Fish Hatchery Act, 2011.

ix. Weak technical and managerial capacity in hatchery operation and management.

x. Lack of effective regulation for quality control in hatchery operations and seed trade/distribution.
Hence this Presentation Focus

Fish Seed in Bangladesh - Enhancing Seed Quality Through Targeting Genetic Broodstock Management & Improved Organisation Of Hatchery Operations
**Key issues to be addressed in TCP – Seed**

- Despite decades of multi-agency interventions the genetic quality of major cultured species are deteriorating and is badly in need of maintenance or improvement.
- Seed production appears disorganized nationally
- The overall capacity of government to provide technical support for seed development needs significant up-liftment.
Key issues we seek to address?

i. Quality of key hatchery produced species continuous to deteriorate despite decades of multi-agency interventions

ii. Seed production appears disorganized nationally

iii. The overall capacity of government to provide technical support needs for seed quality sub-optimal.
Principal Route for Mitigation

i. Decipher “quality issue” and sources for its recognition- what does this mean do we have robust indicators?? Where is the evidence?? How good is the evidence?

ii. Understand the typology of seed production sector and are there any benefits from co-operation

iii. Interrogate current hatchery practices of actual producers through observation NOT hatchery owners

iv. First hand technical audit of facilities at time of practice
Principal Route for Mitigation

v. All these routes point to **people** and NOT fish.

vi. Fish are the least of our problem. We therefore need to manage the people so that they can effectively manage the fish.

vii. Why should private hatchery operators cooperate?
   - Is it legal, technical, financial..?
   - Need to understand this context as well

viii. Relationship between hatchery owners and hatchery workers.. Staff turnover?

ix. Given numerous previous interventions how effective has this been?
Proposed modality for interventions:

- Government and some private sector facilities serve as brood banks through PPP.
- Jointly operated private sector and government hatcheries on selective breeding programmes.
- Government to invest in research and development of broodstock and improved broodstock or seed or both provided to the private sector.
What are our key outputs & activities?

1. **Pilot Improved brood-banking project:**
   - Develop a plan to upgrade farmers broodbanking facilities & a programme to train staff to implement it.

2. **Pilot-scale, PPP cooperative selective breeding programme:**
   - Develop selective breeding programme procedure and train staff
   - Secure required facilities & equipment needed for selective breeding

3. **Implementation plan for selective breeding programme for Indian & Chinese carps tilapias & striped catfish**

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1. **BROODSTOCK MANAGEMENT**

   - Set the targets selective breeding programme for implementation
   - Develop the national action plan to support the implementation
What are our key outputs & activities?

1. Develop guidelines to implement the Fish Hatchery Act
   - Formulate technical guides to facilitate compliance
   - Consult with hatchery and nursery operators on guidelines

2. Upgrade management capacity of private hatcheries for breeding & hatchery operations
   - Plan of hatchery facilities
   - Process of certification
   - Develop Better Hatchery Management Practices (BHMP)
   - Train technicians – govt. & private, in BHMP

2. Organisation of Hatchery Operations
   - Plan a workshop
   - Invite resource speakers from relevant NGOs & Foundations, & other organizations
   - Action workshop recommendations

3. Initiate and assist formation of a national network of seed producers
Proposed Starting Point

Our (minimum) scope is mandated by the Fish Hatchery Act, 2010 and the promulgated Fish Hatchery Rules, 2010

- Why? This should be the framework for intervention or can be foul of the law. It does not follow, however, that Act is ideal for all circumstances.
Fish Hatchery Act, 2010 – Main aspects of the Act:

- Registration of Hatchery
- Banning of hybridization of fish
- Banning of inbreeding
- Banning of import of fish related items
- Banning of fry production unless registered
- Control and inspection of Hatchery
- Power to make Rules
- Power to take any appropriate action against hatchery
Fish Hatchery Rules, 2010
Registration is subject to compliance

• General requirements
• Establishment, operation and registration of carp hatchery
• Requirements for establishment, operation and registration for:
  – Monosex tilapia hatchery:
  – Galda and Bagda hatchery
  – Ornamental fish hatchery
  – Other indigenous fishes (catfish, perch, snakehead etc.)
  – Aquatic animals other than fish
• Schedule 1: General facilities Equipment/utensils machinery

NB:
i. “Brood bank” not specifically defined in Act or rules
ii. Striped catfish is not covered Fish Hatchery Rules, 2010
# TCP- Areas Targeted and their Activities

<table>
<thead>
<tr>
<th>BROOD BANK</th>
<th>SELECTION</th>
<th>HATCHERIES</th>
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<tbody>
<tr>
<td>Identify &amp; select 5 govt brood farms &amp; institutions to partner (Mth 1-2).</td>
<td>Selective breeding (Mth 2-3).</td>
<td>Create registry &amp; database of hatcheries &amp; nurseries (Mth 1-2)</td>
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<tr>
<td>Select and survey seed multiplication farms; develop plan for upgrading brood banking (Mth 1-2).</td>
<td>Develop national action plan to support the implement selective breeding programmes (Mth 6-7).</td>
<td>Identify and select 8 private hatcheries (Mth 1-2).</td>
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<td>Develop training materials and programme for technicians of brood farms (Mth 2-7)</td>
<td>Begin &amp; continue selective breeding programme activities (Mth 6-21).</td>
<td>Better hatchery management practice (Mth 2-6).</td>
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<tr>
<td>Conduct training in brood banking (Mth 6-7)</td>
<td>Monitor selective breeding programme activities, make adjustments (Mth 13-21).</td>
<td>Training materials and programme for hatchery technicians (Mth 2-6).</td>
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<tr>
<td>Monitor brood banking activities, make adjustments as needed. (Mth 6-21)</td>
<td>Assess progress and results of and selective breeding project (Mth 16-21)</td>
<td>Conduct training in hatchery management and operation (Mth 6-7).</td>
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<td>Prepare business develop &amp; management plans for hatchery (Mth 10-12)</td>
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“Selection” of Broodstock

- Many have to revisit this series of activities
- TCP only talks to “Selection” activities
- KEY problem in BD is NOT “selection” but likely to be “broodstock management”.
- Therefore need to carefully look at activities to ensure the problems are better evaluated and understood and appropriate tasks undertaken.
- Broodstock banking may be site of focused broodstock management
Summary and Way Fwd

• Despite numerous past projects same challenges on broodstock and seed quality remain
• We need to critically evaluate past projects and draw lessons for this project.
• The challenges lie with the people NOT the fish.
• This TCP will focus increasing capitation of human capital for more effective management of brood banks, broodstock and seed producing hatcheries
• Over the next two days we will work together to devise a broodstock and seed plan that addresses your experiences and needs.
• Your inputs therefore crucial!
Thank You

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Thank You