

**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**: 2<sup>nd</sup> Phase “ Broodstock establishment project”
- vii. **DoF**: GEF funded - 4<sup>th</sup> 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. Rajts<sup>1</sup>, T. Huntington<sup>1</sup> and M. G.  
Hussain<sup>2</sup>

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



# **GEF 2002**

## **Study 1: Genetic Status of Endemic and Exotic Broodstock**

### **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 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

## 1. BROODSTOCK MANAGEMENT

- Set the targets selective breeding programme for implementation
- Develop the national action plan to support the implementation

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



# 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

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

# “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 !



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Thank You