

PRODUCTIVITY, DIVERSIFICATION AND RESILIENCE OF SALINE AQUACULTURE SYSTEMS IN COASTAL SOUTHERN BANGLADESH

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Rationale



Salinity intrusion



~ 200 kg ha⁻¹year⁻¹



200,000+ ha



WorldFish



WorldFish

Increase productivity?
Species combination?
Costs vs benefits?



Aquaculture Treatments

3 treatments with 4 replications:

- **1. Farmers' mgt** : Polyculture
 - Shrimp+ several fish spp, multiple stockings & harvests
- 2. Improved mgt 1: Rotational monoculture

Dry season - shrimp (2 crops) (Cycle 1 & 2) Wet season - tilapia (Cycle 3)

3. Improved mgt 2: Rotational polyculture

Dry season - shrimp+tilapia (2 crops) (Cycle 1 & 2)

Wet season - polyculture rohu + singh + magur (Cycle 3)



Management Practice	Farmer's Practice	Improved 1 & 2	
Liming	200 kg ha ⁻¹	200 kg ha ⁻¹	
Water filtering	Unfiltered	Filtered	
Predatory Fish	No control	Controlled	
Disinfection	No disinfection	Disinfected	
Fertilization	No fertilizer	Fertilizer & dolomite	
Shrimp seed	Not PCR tested	PCR tested	
Feed	No feed	Feeding	
Water replenishment	When needed	When needed	
Post stocking fertilization	Very insufficient	When primary production is low	
Fish seed	Some wild	All from hatcheries	



Annual Production (kg/ha) in 2012 & 2013



Best Species composition



- Higher profit
- Lower risk
- Seed available



Wet season

- Higher profit
- Adaptive
- Cultural value





Cost, return, gross margin (excluding farmer's labor & land leasing value)

BDT 1000 ha-1



Water Depth





Salinity





Challenges . . .

Markets systems

- Seed
- Feed

Aquaculture management

- Water depth
- Escaping cat fish
- Aquatic weed control



Community

- Feeder canal
- Poaching risk





Lesson learned

- Opportunities
- □ Technologies "adoptable"
- **Community water management**
- Integration





Opportunities for scaling









Aquaculture production must more than double by 2050 to satisfy projected fish demand Million tons





Sources: Production data 1961–2010: FAO (2014a), FAO (2014b). Aquaculture production projections 2011–2050: Authors' calculations assuming a linear growth rate of 2 Mt per year.

Project aquaculture production South Asia is a hotspot for future fish demand

TABLE 3.2: Projected Aquaculture Production by Region

	DATA (000 TONS)	PROJECTION (000 TONS)			SHARE IN GLOBAL TOTAL		% CHANGE
	2008	2010	2020	2030	2010 (PROJECTION)	2030 (PROJECTION)	2010-30
Global total	52,843	57,814	78,625	93,612	100.0%	100.0%	61.9%
ECA	2,492	2,734	3,270	3,761	4.7%	4.0%	37.5%
NAM	655	631	728	883	1.1%	0.9%	40.0%
LAC	1,805	1,642	2,770	3,608	2.8%	3.9%	119.7%
EAP	751	795	936	1,066	1.4%	1.1%	34.0%
CHN	33,289	36,562	46,790	53,264	63.2%	56.9%	45.7%
JAP	763	765	861	985	1.3%	1.1%	28.7%
SEA	6,433	7,171	11,384	14,848	12.4%	15.9%	107.1%
SAR	1,860	2,185	3,493	4,163	3.8%	4.4%	90.5%
IND	3,585	3,885	6,232	8,588	6.7%	9.2%	121.1%
MNA	921	1,086	1,679	1,911	1.9%	2.0%	75.9%
AFR	231	302	418	464	0.5%	0.5%	53.6%
ROW	57	55	64	72	0.1%	0.1%	29.5%

Sources: FishStat and IMPACT model projections.

Note: ECA = Europe and Central Asia; NAM = North America; LAC = Latin America and Caribbean; CHN = China; JAP = Japan; EAP = other East Asia and the Pacific; SEA = Southeast Asia; IND = India; SAR = other South Asia; MNA = Middle East and North Africa; AFR = Sub-Saharan Africa; ROW = rest of the world.



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