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Tilapia hatchery and grow-out

Aquaculture Department, Southeast Asian Fisheries Development Center

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Tigbauan, Iloilo, Philippines: Author.

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Is **TILAPIA** farming profitable?

Technical information for a 5-hectare tilapia grow-out pond

Project duration (years)	5
Area (ha)	5
Stocking density (per m^2)	7
Total stocks per crop	350,000
Croppings per year	2
Average weight at harvest (kg)	0.250
Feed conversion ratio	1.8
Survival rate (%)	75
Recovery at harvest (pieces)	262,500
Total weight at harvest (kg)	65,625
Farm gate price (PhP/kg)	55
Gross sales (PhP)	3,609,375
Costs-and-returns	
Total variable cost per cropping (PhP)	2,742,000
Total fixed cost per cropping (PhP)	531,813
Net income per year (PhP)	335,562
Internal rate of return (%)	108
Return-on-investment (%)	129
Payback period (years)	0.72

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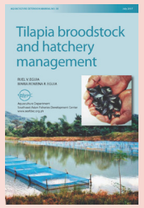
AEM 22 Pag-aalaga ng Tilapya *RV Eguia, MRR Eguia (2007)*
A 55-page manual detailing the culture and grow-out of tilapia until its harvest. This manual also includes a list of government agencies in the Philippines involved in tilapia research and development.

AEM 23 Pagpapaanak ng Tilapya *RV Eguia, MRR Eguia (2007)*
A 52-page revised edition of the 1996 manual, discusses the spawning of tilapia in concrete tank hatcheries, hapa hatcheries in ponds and lakes and the hatchery operations of tilapia.

AEM 36 Tilapia Farming in Cages and Ponds *RV Eguia, MRR Eguia (2004)*
A 40-page manual describes the farming practices for tilapia in cages, pens, ponds, and tanks. Also details selection of quality seedstock, maintenance of stock (feeding, water management), and harvesting. A list of institutions working on tilapia R&D is included.



AEM 38 Tilapia Broodstock and Hatchery Management *RV Eguia, MRR Eguia (2007)* A 48-page manual covers topics on broodstock selection, hatchery and nursery management, costs-and-returns analysis and health management.

AEM 51 Modyular na pag-aalaga ng tilapya sa mga kulungang lambat *R Eguia, MRR Eguia, ND Salayo (2011)*
An extension manual detailing traditional cage culture method, concept of modular cage culture, economic feasibility of modular cage culture, and post harvest processing.

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TILAPIA
Hatchery and Grow-out

Southeast Asian Fisheries Development Center
AQUACULTURE DEPARTMENT
www.seafdec.org.ph

Why **TILAPIA**?

Tilapia is known as the "aquatic chicken." It has become a global staple fish and protein source because it grows fast and breeds easily in captivity. An easy fish to culture, it is tolerant to a wide range of salinity and temperature levels. Moreover, farming tilapia requires minimal inputs.

How to breed and culture **TILAPIA**?

Hatchery in netcages

- Install 3 x 10 x 0.75 m fine-meshed netcages in ponds or 3 x 10 x 1.5 m fine-meshed netcages in lakes
- Stock four (3 females and 1 male) or five (4 females and 1 male) tilapia breeders (3-4 month old, minimum 100 g) per square meter

Female broodstock (*Oreochromis niloticus*) with eggs in its mouth

- Feed breeders at 3% of total biomass with tilapia feeds containing 40% protein
- Check for the presence of fry three weeks after stocking the breeders
- Collect fry and transfer to nursery netcages
- Place breeders in separate holding facilities and continue feeding them high-protein tilapia feeds for the next breeding cycle

Nursery in netcages

- Stock 800-1,000 fry/m^2 in netcages of appropriate mesh size
- Feed fry with supplemental feeds to avoid or minimize cannibalism
- Sort fry after two weeks
- Re-stock fingerlings according to size in separate netcages
- Transfer fingerlings to grow-out enclosures when total length is 37 mm (size 17) to 46 mm (size 14)

A fixed cage module

Grow-out in ponds

- Prepare the pond by sun drying the pond bottom and applying lime to stabilize soil and water pH. Lime is unnecessary when soil pH is above 7.5 and the alkalinity of the pond water is above 50 mg/liter of $CaCO_3$

- Stock 1-2 fingerlings/m^2 for extensive systems, 3-4 fingerlings/m^2 for semi-intensive systems, and 5-10 fingerlings/m^2 for intensive systems
- Feed fingerlings with tilapia feeds daily at 2-3% of the total fish biomass in semi-intensive systems and at 3-5% of the total fish biomass in intensive systems
- Intensive systems require good water management (water change as needed) apart from additional provisions like paddlewheel aerators
- Harvest fish when they reach the market size of 150-300 g (4-6 months)

Is **TILAPIA** seed production profitable?

Technical information for a small-scale netcage-based hatchery

No. of broodstock (F=1,600; M=400)	2,000
Female broodstock that produces fry per cycle (%)	80
Fry production per female broodstock (pcs)	200
Production per cycle (pcs)	256,000
Number of cycles per month, 36 days	2
Productive months per year	10
Production per month (pcs)	358,400
Recovery after one month (%)	70
Production per year (pcs)	3,584,000
Farm gate fry selling price, size 22 (PhP/pc)	0.45
Gross sales	1,612,800

Costs-and-returns (per year)

Total variable cost (PhP)	436,000
Total fixed cost (PhP)	450,000
Net income per year (PhP)	726,800
Internal rate of return (%)	146
Return-on-investment (%)	163
Payback period (years)	0.48