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Catfish culture

Aquaculture Department, Southeast Asian Fisheries Development Center

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Is CATFISH grow-out culture profitable?

Technical Assumptions for Catfish Backyard Grow-out Operations	
Project duration (year)	5
Days of culture/crop	120
Number of runs/year	3
Total farm area (ha)	0.04
Stocking density (pcs/m^2)	15
Total stocked (pcs/crop)	6,000
Average body weight at stocking (g)	3.5–5.0
Average body weight at harvest (g)	150
Survival rate	70 %
Feeding rate (% of body weight)	3.5–5.0
Cost of diet (PHP/kg)	40
Number produced per run (pcs)	4,200
Target production/year (pcs)	12,600

Cost and Return Analysis	
Revenue	113,400
Variable costs	83,420
Fixed costs	8,034
Total cost	91,454
Financial Indicators	
Annual net profit (PHP)	65,838
Return-on-investment	130.37 %
Payback period (yr)	0.71
Break-even price (PHP)	145
Break-even production (kg)	508

*Currency values are in Philippine Pesos (PHP) and based on monitored prices in 2024

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- **AEM 75 Breeding, seed production, and culture of African catfish *Clarias gariepinus***
  Josefa Tan-Fermin et al (2024) 42 pp
- **AEM 41 Grow-out culture of the Asian catfish *Clarias macrocephalus* (Gunther)**
  Eliseo Coniza, Mae Catacutan, Josefa Tan-Fermin (2008) 40 pp
- **AEM 40 Breeding and seed production of the Asian catfish *Clarias macrocephalus* (Gunther)**
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CATFISH
CULTURE

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

Why CATFISH?

The catfish, *Clarias* spp. ("hito," "paltat," "pantat," and "ito" locally) is one of the most important freshwater food fishes in Southeast Asia. Catfish farming does not require a large area, can thrive in poor water quality conditions, can be raised at high stocking densities using formulated diet, is less susceptible to diseases, and less labor intensive.

The African catfish, *Clarias gariepinus*, gained popularity as an aquaculture commodity since it grows fast, has a bigger size than other catfish species, and is resistant to diseases.

African catfish (*Clarias gariepinus*)

How to culture CATFISH?

BREEDING

- For African catfish, choose breeders that weigh 0.5–1 kg, at least 9 months to 1 year old, at a sex ratio of 2:5 (male to female ratio) and stock in separate tanks covered with nets.
- Determine the total body weight (BW) of female catfish to be spawned artificially and prepare hormones to be used. Pituitary gland (PG), human chorionic gonadotropin (hCG), and Ovaprim or Ovatide may be used. Injection dosages as administered to female broodstock are tabulated in the table above.

Dosage of hormones administered to female broodstock

Hormone	Dose given to Female
Fish pituitary gland (PG)	1–2 PG/female
Human chorionic gonadotropin (hCG)	4,000 I.U./kg
Ovaprim	0.5 mL/kg
Ovatide	0.5 mL/kg

- Anaesthetize the female catfish by placing them into a pail with 5 liters of water mixed with 5–10 drops of the anaesthesia Quinaldine or 5 mL 2-phenoxyethanol. Remove fish from pail after 2–3 minutes and pat dry with a towel and inject hormone to dorsal musculature. Massage the injected area and return the injected female to a holding tank.
- Ten to 12 hours after injection, check the readiness of the female to release eggs by exerting gentle pressure on the ventral abdomen even while inside the tank. If eggs easily ooze out, then prepare to dissect the males.
- Anaesthetize males, pat dry, dissect the ventral side of the fish and take out the testes and seminal vesicles. Place these in a petri dish, cut up into smaller pieces, place in a woven cloth and squeeze to extract the milt.
- Mix the milt with 0.6 % saline solution (get 67 mL of 0.9 % NaCl and add 33 mL of distilled water) to have more viable sperm for fertilization.
- Press gently the lower abdomen of the female and let the eggs come out into a clean and dry bowl. Pour the milt extracted from the males into the bowl and mix using a feather. Add more water and continue mixing for 30 seconds to ensure that fertilization occurs. Transfer the eggs and milt to a small dip net and gently wash with running water.
- Place the fertilized eggs on a framed screen inside the aerated plastic basin or in a wooden trough made of marine plywood with mesh net before the water outlet.
- Wait for 36 hours to ensure that all of the fertilized eggs have hatched. After 36 hours, gently shake the slanted framed net screen so hatched larvae will fall into the bottom of the trough, and siphon unhatched eggs to avoid water fouling. Three days after hatching, feed larvae egg custard (solidified egg emulsion) or natural food organisms such as brine shrimp *Artemia salina*, Cladocerans *Moina* sp. and *Daphnia* sp. may also be given.

Dissection of male catfish

A female spawner being stripped of eggs

Mixing of milt and eggs using a feather

NURSERY

The area of nursery ponds range from 100 m² to 500 m² with an average area of 200 m². The pond must be surrounded by a fence made of fine mesh net to keep out predators.

- A nursery pond can have high stocking densities and can accommodate about 100,000 fry.
- For ponds with high stocking densities, provide good aeration, water flow, and pond maintenance, as well as provide adequate feed for the fry.
- Feed the larvae with powdered supplemental feed for three days after stocking.
- Switch to pelleted supplemental feeds after the first 3 days.
- Feed the fry at least three times a day.
- Increase the water depth to 60 cm 4 to 5 days after stocking.
- Provide shade to avoid stress on the fry.

Catfish fry

- Fingerlings may be selectively harvested after 15 to 18 days since the fry were stocked in ponds. They may also be kept in ponds for 30 days until they become juveniles, which command a higher price.

GROW-OUT

- Drain, level, and dry pond bottom for 2–3 weeks. Repair gates and screens. Check dike for leaks and seepages. Eradicate unwanted species using lime. Apply lime at 500–1,000 kg/ha. Apply cow or chicken manure at 500–1,000 kg/ha. Install a fence 20–30 cm high along the perimeter dike. Let in water at an initial depth of 10–20 cm and allow to settle for 7 days. Apply inorganic fertilizer 16-20-0 at 50 kg/ha and urea at 25 kg/ha. Increase water depth to 50–60 cm.
- Stocking density for grow-out culture depends on the initial size of the fingerlings. Catfish juveniles, with mean total length of 3 to 4 cm can be stocked at 80 to 100 individuals/m², 5 to 6 cm at 60 to 80 individuals/m², or 7 to 10 cm at 40 to 60 individuals/m².
- For intensive culture, catfish fingerlings or juveniles are fed with artificial feeds containing at least 40 % crude protein. Alternatively, feed fish with a combination of blanched chicken entrails and rice bran at a ratio of 9:1.
- Follow the usual pond routine of stock sampling, water monitoring, survival monitoring, observing for signs of disease or abnormality, and farm records keeping.
- Prior to harvest, cook some catfish samples to detect off-flavor. If detected, reschedule the harvest and determine the cause. Replenish 60–80 % of pond water for 3 days. Hold harvested fish in tanks with running water for a few days.
- Harvest fish after 4–4.5 months of culture. Catfish are marketed live.