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Aquaculture Department, Southeast Asian Fisheries Development Center

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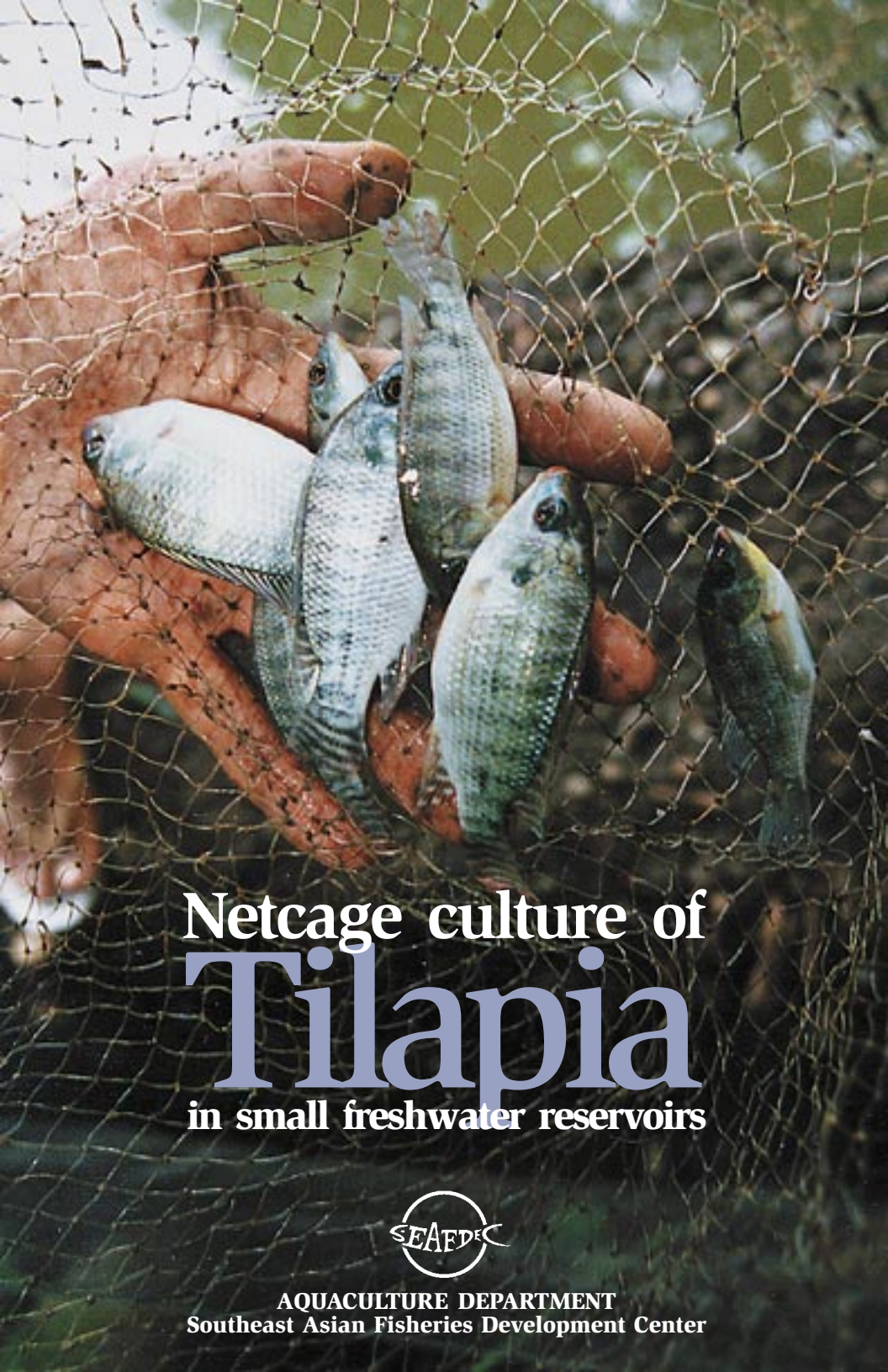


Netcage culture of Tilapia in small freshwater reservoirs

AQUACULTURE DEPARTMENT
Southeast Asian Fisheries Development Center

Tilapia (*Oreochromis* spp) culture in freshwater cages had been gaining popularity in the Philippines due to its market acceptability in various regions of the country. Tilapias are relatively tolerant to a wide range of environmental factors making them easy to culture. Various culture techniques which have been developed through decades of R&D range from extensive to intensive shemes.

In order to provide marginal fishermen additional source of income and to productively utilize man-made freshwater bodies, tilapia culture in small freshwater reservoirs (SFRS) was designed, tried and demonstrated, and is now being widely adopted in the country.

Culture in SFRs

SITE SPECIFICATION

- have sufficient source of good water whole year round,
- where natural food abounds is preferred. Greenish water indicates rich natural food
- free from industrial, agricultural and domestic pollutant.
- soil is clay loam to be able to hold water and maintain depth between 0.6 to 1.0 m
- accessibility

NET CAGE SPECIFICATIONS

Cages can either be fixed or stationary and floating, depending on the depth of the water. Mesh sizes of nets vary, from small to large, to contain the small fry and bigger-size fish.

Floating – this type is suitable for depths of 5m and above. The netcages are attached to bamboo rafts. Weights or sinkers are used to hold the structure in place. A freeboard of 1m is left above the waterline. Bamboo rafts, plastic containers, oil drums, or styrofoam may be used as floats.

Dimension – six or more units of 5x5x3m joined in a single floating module

Frames – each net cage must be supported by frame made of bamboo poles. The frame needs to have an inner dimension of 5m x 5m. The construction should be durable enough to withstand stress caused by movement of module and wave action. A vertical beam made of pipe or strong wood with chain ring at the far end serves as attachment when rigging the net cage.

Anchors and moorings – To hold the floating cages in place, the four corners of the module are anchored using weights or tied to rocks and posts in water embankments.

Stationary – Like floating cages, stationary net cage module may also have six or more compartments. Fish cages attached to a staked bamboo (60cm-1m deep) are suitable for shallow areas. Its basic framework consists of nylon net sewn similar to an inverted mosquito net. The net flooring which may or may not touch the bottom is kept at least 0.6m above the water level. A brace strengthens the posts while a cover protects the stocks from floods and poachers.

STOCKING

Stock tilapia fingerlings (3-5g BW) at 20-25 per cubic meter at early morning or late afternoon when the temperature is cool. Acclimate the fingerlings first before directly stocking to the cages. This is done by gradually adding culture water into the plastic bags until the desired salinity and temperature are reached. Slowly release the fingerlings into the culture water by tilting the opening of the bag to allow the fingerling to swim freely.

FEEDING

Feed twice daily (one in the morning and the other in the afternoon) at 2-5% of the total biomass. Feeding (commercial pelletized feed may be used) is done manually by broadcasting.

MONITORING

Monitor daily the following: pH, dissolved oxygen, water temperature and transparency

Clean, remove fouling organisms

Repair/mend and replace damaged or torn nets immediately. It is advisable to have extra nets so that proper repair and maintenance can be undertaken.

HARVESTING

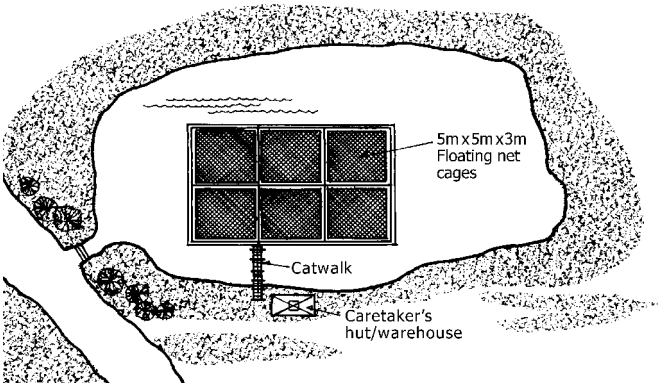
Depending on the market, selective or total harvest maybe done or when ABW of at least 250g is obtained. For selective harvesting, just lift the net and scoop the desired fish. Return smaller fish to grow to marketable size. For total harvesting, lift the net cages, scoop and place the fish in styrofoam boxes with crushed ice for transport to the market.

PROFITABILITY OF TILAPIA CULTURE

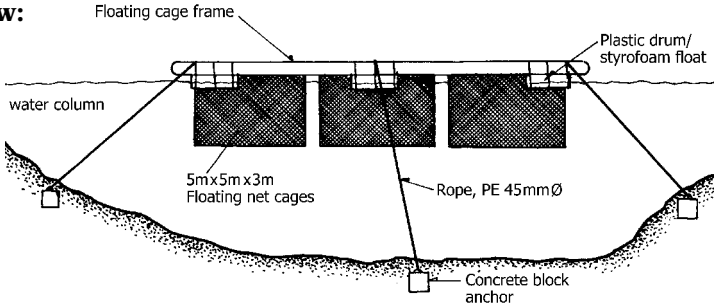
Based on the verification trial in San Julian, Tapaz, Capiz, for 14 units of 5x5x3m cages, (one of which is for breeders), the investment requirement is P181,408. The amount includes cost of materials, labor for cage, frame, net and caretaker's hut, wages, fry, feeds, etc. The gross income from sales of tilapia at P50.00/kg is P217,750 giving a net profit of P72,929 in one crop. Two crops a year may be possible for tilapia culture. Cages and frames and nets may still be used during subsequent crops and, with proper maintenance, these may last for 2-3 years. The return of investment is 80% with payback period of 1.2 years.

THE FLOATING NET CAGE MODULE

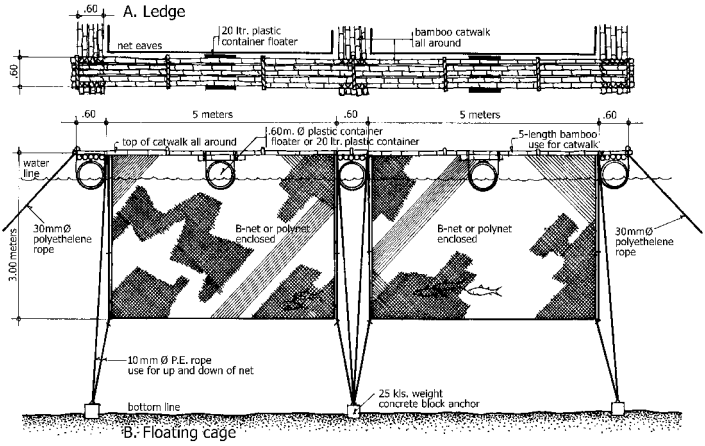
Top view:



Side view:



Details:



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