Should you use cages and pen instead of ponds? A simple comparison of farm economics

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Shelter and waves
Install structures that can withstand the impact of the open sea. Strong winds and waves may destroy the structures. Shelter from the forces of waves and winds is a prime consideration in site selection. Beveridge (1996) found ebb and tidal currents in the range of 0.1-0.6 m per second and mean tidal currents of 0.03-0.2 m per sec to be satisfactory. Sites with currents exceeding 1 m per sec are not recommended.

Depth
Consider depth in choosing site for cage culture. The costs and problems associated with mooring increase with depth. Cages should be sited in sufficient depth to maximize the exchange of water. The cage bottom should be well clear of substrate.

Substrate (from rocky to muddy) can influence cage design. It is difficult to drive supports in rocky substrate but may be advantageous in marine water as rocky substrate indicates good current scour thus reducing wastes build-up.

REFERENCES:
Chua TE. 1979. Site selection, structural design, construction, management and production of floating cage culture in Malaysia.

Should you use cages and pens instead of ponds?

A SIMPLE COMPARISON OF FARM ECONOMICS
By L Tabigoon Jr

From our list of species that can be cultured in ponds, fishfarmers may well ask themselves if indeed they will gain more from using cages and pens rather than ponds. Not including environmental impact and not accounting for other costs, below is a simple comparison of farm economics for mudcrab, grouper, and tilapia culture in cages or pens vs. ponds.

MUDCRAB
Locally known as alimango, mudcrab is a highly esteemed table delicacy and the most important crab for commercial culture in the Philippines. It commands a high price in domestic and export markets. Technical data used in the economic analysis of the monoculture of the mudcrab *Scylla serrata* were derived from an AQD study in 1981. Stocking mudcrab at 5,000 per ha gave the highest average weight and survival.

At present, AQD has a technology verification project on mudcrab production in mangrove or tidal zone using nylon net enclosures. AQD's Technology Verification Head, Dan Baliao, says that the project aims to attain production yield of 600 kg per ha per crop or more in 3 to 4 months culture period.

<table>
<thead>
<tr>
<th></th>
<th>Cage culture</th>
<th>Pond culture (fattening)</th>
<th>Net enclosures in mangroves</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital outlay</td>
<td>P 232,000</td>
<td>P 2,568</td>
<td>201,765</td>
</tr>
<tr>
<td>Operating cost</td>
<td>P 116,000</td>
<td>2,250</td>
<td>109,820</td>
</tr>
<tr>
<td>Stocking density</td>
<td>10,000 / ha</td>
<td>5,000 / ha</td>
<td>2,040 / ha</td>
</tr>
<tr>
<td>Size at stocking</td>
<td>30-40 g</td>
<td>150-200 g</td>
<td>9-22 g</td>
</tr>
<tr>
<td>Size at harvest</td>
<td>250 g</td>
<td>250 g</td>
<td>275 g</td>
</tr>
<tr>
<td>Culture period</td>
<td>3-4 months</td>
<td>15 days</td>
<td>6 months</td>
</tr>
<tr>
<td>Survival</td>
<td>70%</td>
<td>97%</td>
<td>86%</td>
</tr>
<tr>
<td>Total yield</td>
<td>1,200 kg</td>
<td>43.5 kg</td>
<td>485 kg</td>
</tr>
<tr>
<td>Gross revenue</td>
<td>P 432,000</td>
<td>6,525</td>
<td>164,900</td>
</tr>
<tr>
<td>Net profit</td>
<td>P 130,000</td>
<td>3,960</td>
<td>55,080</td>
</tr>
<tr>
<td>Return on investment</td>
<td>56%</td>
<td>100%</td>
<td>59%</td>
</tr>
<tr>
<td>Payback period</td>
<td>1.78 yr</td>
<td>-</td>
<td>1.6 yr</td>
</tr>
</tbody>
</table>

4For additional structures only.

GROUPER
Although grouper pond culture is still in its infancy, it is considered lucrative investment. It may be capital-intensive (see table next page), but farmers are attracted to its high return of investment. Cage culture may be in submerged stationary or floating set-ups, and is considered an intensive system. Grouper are usually brought to the market live.

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Backyard fish farming

By AP Surtida

If you live near a river, reservoir or bay, you can fence off a natural sheltered inlet and grow fishes or crabs. Make sure that you comply with the legal requirements (like a permit) in your locality.

The pen is usually made of low-cost bamboo. The area of the pen will depend on the contour of the land like the small farm in Indonesia shown on Figure 1. Here’s how to construct a pen:

1. Drive bamboo poles at least 20 cm into the pond bottom. Make sure the top of the fence is no less than 1 m above the highest water level.

2. Weave a fine mesh net into the bamboo fence to prevent fish from escaping. Use enough net to cover the fence from top to bottom.

3. At the bottom of the pen, dig a small pond and narrow channel to make fish harvest easy. Fish could also settle in this area when water level is low. The small pond and channel should gradually slope from 25 cm to about 50 cm—1 m deep. The width depends on the width of the fenced bay.

4. After constructing the fence, small pond and channel, wait for the water to rise. Inquire from the local fishing agency when a high water level will occur, or consult a calendar with a predicted tide table.

When the water level rises, check the fence and nets for holes where fish could escape. If you wish to stock carps or tilapia, remove predatory species such as snakehead and catfish. A 10 x 50 m or 500 m² pen system is sufficient for 5,000 fingerlings sized 5-10 g.

To grow common carp and Nile tilapia together, stock one common carp and one Nile tilapia for every 2 m². A pen measuring 100 x 50 m or 5,000 m² is sufficient to grow 2,500 common carp and 2,500 Nile tilapia.

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