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.

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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.

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

Data from [a]SEAFDEC / AQD 1997; [b]Anon. 1991; [c]SEAFDEC / AQD 1998.
[d]For 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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	[a]Cage culture	[a]Pond culture
Capital outlay	P 148,500	184,475
Operating cost	P 138,500	174,475
Stocking density	3,000 / 6-unit cage	5,000 / ha
Size at stocking	5-7 cm	5-7 cm
Size at harvest	450 g	450 g
Culture period	8-10 months	5-6
Total yield	1,175 kg	1,755 kg
Survival	87%	78%
Gross revenue	P 305,370	456,300
Net profit	P 101,965	176,335
Return on investment	67%	96%
Payback period	1.46 yr	1.04 yr

Data from [a]Baliao 1997 and SEAFDEC/AQD 1998.

TILAPIA The culture of tilapia in brackishwater ponds is highly profitable. A cost-and-return analysis of this culture method show that the net income may be as high as 69% of total expenditure. On the other hand, the cage culture of tilapia shows that the return-on-investment is 189% from an investment capital of P 309,433.

	[a]Cage culture	[b]Pond culture
Capital outlay	P 309,430	94,594
Operating cost	P 295,215	84,000
Stocking density	16,200 pcs	20,000
Size at stocking	3-5 g	3-5 g
Size at harvest	350 g	250 g
Culture period	4 months	4-5
Total yield	4,820 kg	4,000 kg
Survival	85%	80%
Gross revenue	P 578,340	160,000
Net profit	P 268,900	65,400
Return on investment	189%	69%
Payback period	-	-

Data from [a]Tumonong 1995 and [b]Dureza 1997.

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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 though 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 (Figure 2). 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–1m 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 tilapias, remove predatory species such as snakehead and catfish. A 10 x 50 m or 500 m^2 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 2m^2. A pen measuring 100 x 50 m or 5,000 m^2 is sufficient to grow 2,500 common carp and 2,500 Nile tilapia.

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