Gross Income of Tala-Isdaan in 4 months culture

Oyster

50 bamboo poles x 7 strings	= 350 strings
@ 5 kgs/string = 1,750 kgs	= 146 cans
146 cans x Php 250	= Php 36,500

Tilapia

5,000 stocks @ 80% survival	= 4,000
4,000/4 pcs/kg	= 1,000 kgs
1,000 kgs x Php 80	= Php80, 000

GROSS INCOME = Php116, 500

Production Cost

Feeds

FCR 1.5 x 1000 kgs	= 1,500 kgs of feeds
1,500 kgs/25 kg/bag	= 60 bags
60 bags x Php 525	= Php 31,500

Labor

120 days x 250/day	= 30,000.00

Depreciation

Php 31, 980/3 croppings	= 10,660.00

Gross Income = Php 116,500.00

Less

Total Production cost/cropping	= 72,160.00
Net income/cropping from Integrated culture of oyster & saline tilapia	= Php 44,340.00

TALA-ISDAAN

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CONCEPT

TALA-ISDAAN is a concept of integrated culture of shellfish (oysters) and fish of any species in pens or cages. The name describes the combination or integration of growing TALABA (oysters) and ISDA (finfish like seabass, saline tilapia, rabbitfish, etc.) to mitigate the impacts of aquaculture. A notable accomplishment of this project is the coming-up of an engineering design of a cage that will allow such integration with minimum cost, management and space.

Tala-isdaan or integrated culture in general, is the strategy to limit the nutrient inputs or maximize their use in the estuarine or marine environment. Its socio- economic importance is also evident as it offers additional income to fish farmers from the oysters cultured.

Feed is the most important variable production cost. A simple objective is therefore to minimize waste from uneaten food, which has the added benefit of reducing the risk of environmental degradation. Food conversion rate in farms varies between 2.6:1 in milkfish and 2.2:1 in tilapia depending on the feeding strategy and close feed management. This overfeeding results in excess nutrients entering the aquatic ecosystem as organic sediments or dissolved nutrients in the water column.

One recent research findings (survey conducted by the EMMA 1 Project) reported that the impact on the sediments were

measured ensure that they are about the same. A difference of less than 5ppt in salinity level can be tolerated by tilapia. Tilapia fingerlings are transported in plastic bags at a density of not more than 1kg per bag. Water preferably with same salinity as the river for long travels, lower density is recommended.

water. The nets can be doubled to avoid escape of fish due to accidental tearing.

The fingerlings can be grown in ponds to bigger or desired stocking size. Before stocking, they are graded to ensure that the fish are of appropriate size and cannot get through the mesh of the net cage. Allowance must be given on the size of the fingerlings because some fish species like milkfish take a longer time to recover from stress or to adjust to new environment. They don't eat at once, and consequently loose weight or become somewhat slimmer to allow passing through the mesh of the net cage.

The seeded oyster strings are deployed first or installed into the cage prior to the stocking of fish. The fish are stocked in the cage early in the morning or when the ambient temperature or river is colder. Stocking at high noon or in the afternoon is discouraged to avoid harm or stress to the fish.

The management employed in the culture of the fish depends on the species. The culture practices followed in the culture of milkfish and tilapia are almost similar. The management includes choosing right stocking density and adopting practical feeding regime. The most common species for culture in Dagupan City is milkfish. It would be interesting to choose saline tilapia for the project because the species commands attractive price in the City.

The stocking rate of saline tilapia in brackishwater cages ranges from 15 to 25 pcs/m3. Before the stocking, the salinity of origin of fingerlings and the river where the cage is located are

much less where there was a mix of fish and shellfish culture than where there was a monoculture of fish. The recommendation was to encourage the mixing of fish and shellfish culture.

Engineering Design

An engineering design of using a floating 10 meter diameter circular steel cage (2" dia GI pipe) is typical in near-shore fish cage farming in the Philippines. The same design is adopted or used for TALA-ISDAAN except that some improvements and modifications in the structural designs were done. Additional steel braces are installed to the old cage design and additional floats (200 l plastic drums) maybe provided to allow the carrying of additional weights of bamboos and oysters by the cage. Mooring system is improved in tidal areas because of additional drag caused by the surface area and weight of oysters.

As illustrated in Figure 1, the circular cage is 10 m in diameter and is made of 2" GI pipe either schedule 10 or 20. Circular nets using knotted mesh 210/12 x 12 k x 200 will be made and installed. At 5 meter depth, the net shall have an inside volume capacity of about 392.70 m3. Weights made of cement or stones will be used as sinker to keep the net sunk and in shape.

The cage is encircled by 50 bamboo poles (2.5 meter length),

tied horizontally on top of the lower beams of the steel cage. The arrangement of the bamboo is similar to sun rays (TALA). Galvanized iron (GI) wire or plastic ropes are used for tying. Ten 200-liter capacity plastic drums tied under the beam are used as floats.

Seven oyster strings are hanged on each of the bamboo poles. Each string is composed of two two-meter rubber strips. Each string can grow about five kilogram of oysters in four months. Other materials such as coconut shells, plastic strips, and oyster cultch can also be used as oyster growing materials.

Advantages of the circular cage designs are:

a. It has less drag effect in flowing water compared to square or rectangular cages;

b. The oysters grown outside the cage provides protection to cultured fish inside the cage against strong water flow. Consequently, feeding can be more efficient because escape of feeds is minimized. The energy of the fish for growth is increased because of slower water flow. The conserved energy or energy budget otherwise used in maintaining the position of the fish in flowing water can be used instead for growing;

c. Circular cages are easily transferred from one place to another site most especially during flooding;

d. Floating debris in flowing rivers that entangle on the side of the cages are removed easily by rotating the cages. Rotation may help in maintaining uniform growth of oysters; and

E. The arrangement of the bamboo poles with oysters encircling the cage discourage or protect the cage against poaching.

Fish Culture

There are various species that can be used for TALA-ISDAAN. The following criteria can help in selecting the right species for culture:

a. Culture period must not be more than 120 days (four months) because oyster can be harvested in three to four months;

b. Fish which has tolerance to wide salinity range is preferable in barckishwater estuaries where drastic salinity fluctuations are expected;

c. Fish belonging to low trophic level are preferred like bangus, tilapia and rabbitfishes. However, high value species maybe preferable for higher profit like seabass, grouper, rabbitfishes and red snapper; and

d. The farmer must be able to financially support and market the species selected.

The fish are cultured in nets inside the circular cage. The mesh size of the net corresponds to the size of the fingerlings to be stocked. However, it is advisable to culture bigger fingerlings to gain best survival rate. Also bigger mesh size allows better water change and circulation inside the cage and lessen the drag of the cage caused by flowing