

## Cage Culture in Thailand

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Cage culture was initiated in Thailand in the early 1950's. Initially, the fish were raised in bamboo cages. The cages have been changed subsequently to wooden planks which are easier to make and handle. The number of fishermen raising fish in cages has increased every year. From the records of the Department of Fisheries, there was in 1975 an area of 722 hectares which contained about 345 cages. The production was about 227 tons, worth US\$ 150,000.

### Design and Construction

The cages for fish culture have to be inexpensive, durable, and easy to handle. In Thailand, the materials usually utilized are wooden planks and galvanized wire mesh.

Cages are box-shaped. Their size varies between 2-3 m (width) x 5-8 (length) x 1.5-2.5 m (depth). Construction cost for standard cage is about 7,000 Baht and its life span is about six years before repairs are needed.

A cage made of wood is constructed by securing together the planks of size 1 1/2 x 4". Between adjacent planks a space is arranged to allow water to pass through the cage. The space depends on the size of the fish being cultured, but it is usually at least 2 cm wide. A bunch of bamboo poles is used for floatation.

### Species for Cage Culture

There are many species used for culture such as catfish (*Pangasius sutchi*, *Clarius macrocephalus*), sand goby (*Oxyeleotris marmorata*), common carp (*Cyprinus carpio*), local carp (*Puntius genionotus*), Nile tilapia (*Tilapia nilotica*), and serpent head

(*Ophicephalus striatus*). The most popular species for commercial raising are *Pangasius sutchi* and sand goby.

*Pangasius sutchi* is a fish of economic importance in Thailand which the Department of Fisheries has recommended for extensive cultivation. It was the first fish to be used for culture in cages in Thailand. However, the cage culture of the species has not improved significantly because the fishermen have not considered the quality and quantity of the food. To improve the practices of the fishermen, biologists at the Chainat Fisheries Station conducted an experiment on the effects of stocking rate on growth.

This experiment was divided in 2 treatments with stocking rates of 50 fish/m<sup>2</sup> and 100 fish/m<sup>2</sup>. Each treatment was divided into 3 replications, and the initial average weight was 24.23 grams/fish.

Fingerlings were obtained from natural resources, such as rivers, canals and lakes. At present, *Pangasius* fingerlings can be obtained from the private hatchery and from some farmers.

The fish in this experiment were fed with pellets with the following ingredients: 30 percent ground fish meal, 25 percent soy bean, 25 percent peanut, and 20 percent rice bran. A daily ration of five percent of their body weight was given. After ten months, the weight gain of Pla Swai at 50 fish per square meter averaged 378.37 kilograms per cage or 798.19 grams per fish. However, the weight gain of each cage depended upon the position of the cages. The cage showing the least weight gain was positioned in the canal where the current was swiftest (Table 1, treatment B, replicate 2), the highest weight gain was in the center where the current was slower (Table 1, treatment B, replicate 3).

Table 1. Average fish weight (gm) at harvest in each replicate of two stocking densities.

Stocking Rate (fish/m <sup>2</sup> )	Replications			Average
	1	2	3	
50 (A)	706.50	659.26	625.49	663.75
100 (B)	883.36	625.31	960.19	822.95

The survival rate of Pla Swai treatment A averaged 93.78%, treatment B average 84.59 percent. The mortality of Pla Swai may have been due to injury from the transportation and a delay in stocking early in the experiment.

Cage culture of sand goby started just about 4-5 years ago in Nakorn Sawan province because the price of this fish becomes very expensive (\$3-4/kg). This fish can also be exported to neighbouring countries such as Hong Kong and Singapore.

Fish were stocked at a rate of 100 fishes per square meter and averaged 100 grams in size.

Fingerlings were collected from natural sources. The cost depended on the size of the fish. Fish less than 100 grams cost \$1 per kilogram; \$1.75 per kilogram above 100 grams.

The fish were fed with trash fish at 20-15 kilograms per cage (2 x 6 x 1.5 meter in size). After 3-4 months, the fish were harvested and sold at a price of \$3-4 per kilogram for fish weighing more than 400 grams; \$2-3 per kilogram for fish weighing less than 400 grams.

The problem, however, is that sand goby is a carnivorous fish. The fishermen have to feed trash fish which makes the diet expensive. However, they realize a profit of about \$150-200 per cage at the time of harvesting.

#### REFERENCES

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