



## Advances in fish farming

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### ABOUT THE STUDY

Fish farming or Pisciculture is a form of aquaculture, where commercial breeding of fish in artificial environment takes place. Fish farming is similar to crop farming, sericulture, apiculture or animal husbandry, mainly involving catching, breeding and rearing of fish occurs. Global demand for dietary consumption of fish has resulted fishing and fish farming. It provides artificial environments or pseudo-natural environments like tanks, ponds etc. for breeding fish. Most commonly farmed aqua species are: tuna, salmon, crustaceans, crap, molluscs etc. To supplement a species' natural number some the fishes are released into the natural habitat, this is called Fish hatchery.

**Mariculture:** It usually involves food production majorly for human consumption. In this process marine organism such as fish shellfish, finfish, some sea plants etc. are cultivated for human consumption.

**Algaculture:** In this type of aquaculture usually algae are cultivated. Harvested algae are microalgae (phytoplankton, planktonic algae or microphysics) and macroalgae (seaweeds). Cultivation of microalgae is easier when compared to macroalgae.

### TYPES OF FISH FARMING

Fish farming can be done in two ways:  
Extensive and Intensive

#### Extensive farming

Extensive farming is based on local photosynthesis production. It refers to breeding fish in medium-to-large sized ponds (existing ponds) or water bodies, which mostly relies on natural productivity of water body with slight modification with external inputs, in this type, productivity is low.

Major fish reared in extensive fish farming systems are catfish, carp tilapia, etc.

In extensive fish farming, fish feed is mostly based on the food web system within the pond, which can be enhanced by addition of fertilizer or manure.

**Ranching:** This is an extensive fish farming type and is considered a form of "re-stocking" of natural populations. In this type, fishes are raised in cage and released to feed in the wild and are captured when they reach the market sized. Salmons are mostly reared through ranching.

#### Intensive fish farming

Intensive fish farming is a well-managed form mostly in closed circulation tanks or flow-through raceways, in which the maximum production of fish is obtained using minimum quantity of water. Fishes are mostly fed formulated feed. In this system, oxygen, water quality and food supply is closely monitored. It is a high cost process but with higher production rates.

Examples of fish reared in this system are tuna, sea bass, salmons, trout etc.

Intensive fish farming can be divided into:

- Completely closed (cage systems)
- Flow-through or raceways (semi-closed systems)
- Open system (floating cage systems)

**Semi-intensive fish farming:** In this type, the fish still obtain its food through food web within their ponds, but they are supplemented with fishmeal, vegetable origin etc. in this type fish grows faster and to larger size.

**Cage system:** This system involves growing of fishes in existing water resources but enclosed in a net cage, allowing the free flow of water but restricting the movement of species.

**Pond system:** In this system the farmer uses the existing pond which is at low risk of rainwater runoff and flooding. In this system fish are often fed with commercial fish food.

**Tank system:** Tank system design is dependent on the number of species that can be carried in the tank, which also defines the feeding rates.

**Raceways systems:** This system uses artificial channel and is based on continuous water flow, also called as flow through systems.

### **Different type of fish culture based on number of species grown**

**Monoculture:** In this single species of fish is grown.

**Polyculture:** It is a practice of culturing more than one species of fish in same pond/ system.