



Diversification of Aquaculture Activities and Production Methods

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Extensive Aquaculture

Small Exercise;

Please tell me what do you see in the
following pictures?



Extensive Aquaculture



Extensive Aquaculture

- *Hundreds of ponds;
- **Hectares of pond surface; and
- ***Millions cubic meter of water

Extensive Aquaculture

The production conditions in these fields: 1

1. There is no feeding activity in the field;



Extensive Aquaculture

The production conditions in these fields: 2

2. Stocking density is too low
(less than 1 ton per hectare per year);



Extensive Aquaculture

The production conditions in these fields: 3

20 - 40 cubic
meter water is
used per kg fish;



Extensive Aquaculture

The production conditions in these fields: 4

The amount of harvested fish is variable
and based on the

- a. Climate conditions (water temperature, dissolved oxygen, salinity, pH etc), and
- b. Available field of the aquaculture activity.

Extensive Aquaculture

The production conditions in these fields: 5

Animal health and welfare is not under control



Extensive Aquaculture

The production conditions in these fields: 6

Food safety is low;
but...
the quality (customer preference) is higher



Extensive Aquaculture

General Definition

- Fish production in extensive systems is based on the use of organic and inorganic fertilizers. Fertilization of ponds promotes the growth of simple plants which form the base of the food chain in the pond. Fish stocked in these ponds feed on phytoplankton, zooplankton, bottom-dwelling invertebrates and smaller fish. At its most effective, this type of production can be integrated with other types of crop or livestock production, using animal manure and agricultural by-products as sources to stimulate primary production.

Semi Intensive Aquaculture

Small Exercise;

Please tell me what do you see in the following pictures?



Semi intensive Aquaculture



Semi intensive Aquaculture

- *Limited numbers of ponds;
- **Some hectares of pond surface;
- ***Hundreds of cubic meter of water

Semi intensive Aquaculture

The production conditions in these fields: 1

Feed the fish; but remember that there is a organic matter-live food (eg. small crustaceae) in the ponds. We support the live foods by commercial feeds;



Semi intensive Aquaculture

The production conditions in these fields: 2

Stocking density is lower than extensive method
(1-5 kg/cubic meter);



Semi intensive Aquaculture

The production conditions in these fields: 3

- Average 5 cubic meter water is used per kg fish;



Semi intensive Aquaculture

The production conditions in these fields: 4

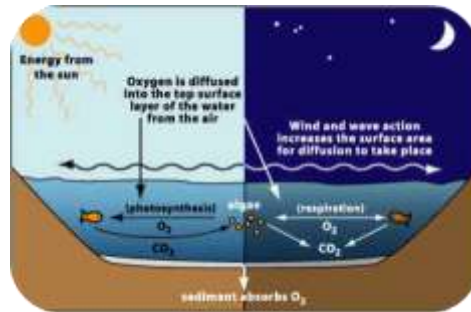
The amount of harvested fish can be planned.



Semi intensive Aquaculture

The production conditions in these fields: 4

- The oxygen amount is effected by the fertilization in the ponds, reduced oxygen can effect the fish health/welfare (in negative way).



Semi intensive Aquaculture

The production conditions in these fields: 5

Food safety is medium level and customer preference is high (because of the suitable price and the general appearance of the fish).



Semi intensive Aquaculture

General Definition

Semi-intensive aquaculture aims to increase the production of fish from pond systems beyond the level supported by food which is naturally available through the use of supplementary feeds. Supplementary feeds range from cereals and agricultural and fishery by-products to formulated feeds. Traditionally they are incomplete and would be inadequate as a sole source of food. Their function is to provide extra nutrients to complement those obtain from natural foods.

Intensive Aquaculture

Small Exercise;

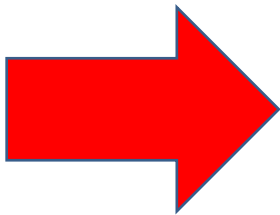
Please tell me what do you see in the following pictures?



Intensive Aquaculture



Intensive Aquaculture



- *Very limited field
- **Artificial feeding
- ***Full control by the experts
- ****High stocking density

Intensive Aquaculture

The production conditions in these fields: 1

All nutritional requirements of the fish are provided by artificial/commercial feeds. The existence of life food is not allowed in the field.



Intensive Aquaculture

The production conditions in these fields: 2

Important environmental conditions is under control, measuring water temperature, dissolved oxygen, pH and salinity.



Intensive Aquaculture

The production conditions in these fields: 3

- Stocking density, in normal conditions, is 12-18 kg per cubic meter. If liquid oxygen support is provided stocking density can be increased until 50 kg per cubic meter.



Intensive Aquaculture General Definition

In intensive culture systems there is a decreased dependence on the availability of natural food and greater dependency on the use of commercial feeds. Densities of fish kept within such holding areas are limited by species tolerance, ability to grow at raised stocking densities and maintenance of environmental parameters rather than the production of a natural food supply.