

Design & Construction of Ornamental Fish Farms for Intensive Farming

By...

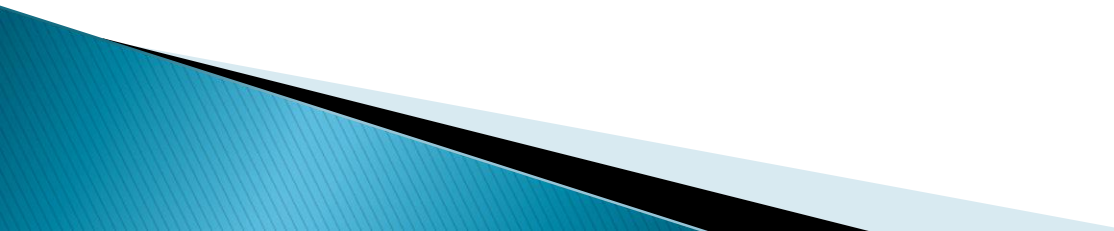
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Fish Farm

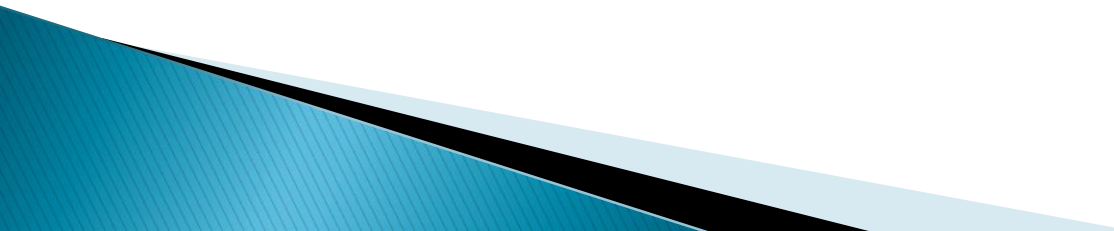
Fish farm is a set of scientifically planned, designed and constructed ponds for various fish cultural activities like breeding, hatching, rearing, nursing and stocking of fishes.



Objectives of fish farm

- ▶ For breeding of fishes
 - ▶ To maintain brooders
 - ▶ To conduct research to improve fish variety
 - ▶ To make facilities to store required quantity of fish seeds
 - ▶ To demonstrate fish cultural activities to fish culturists
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Selection of site for Aquafarm

- ▶ The species to be cultured
 - ▶ The targeted production level
 - ▶ Culture technology
 - ▶ Investment
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Stages of site selection

Selection of suitable site for an aqua farm can be done in two stages.

1. Reconnaissance survey (Pre-investment survey)

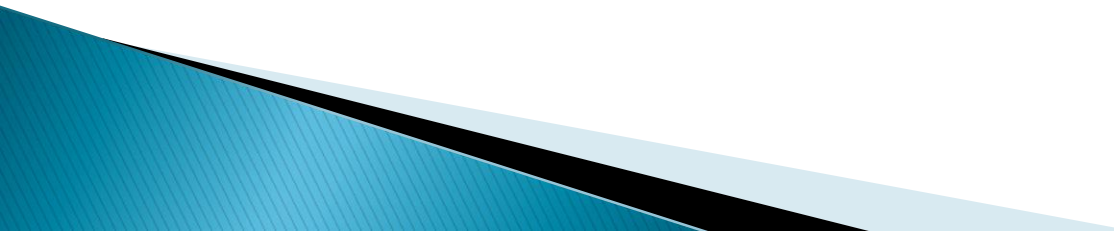
- ▶ Accessibility
- ▶ Physical features of the land
- ▶ Soil characteristics
- ▶ Water source
- ▶ **Physical features of the land**
 1. Natural feature
 2. Artificial features.

2. Detailed survey

▶ **Main factors**

1. Site condition
2. Topography
3. Soil characteristics
4. Water properties and supply

▶ **Other factors**

1. Environmental condition
 2. Socio-economic condition
 3. Pollution
 4. Availability of materials
 5. Technical assistance
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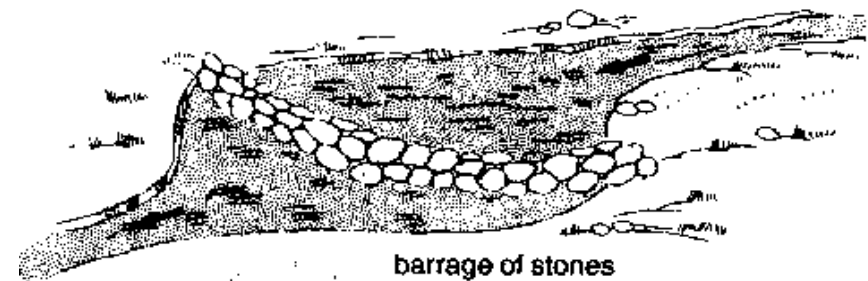
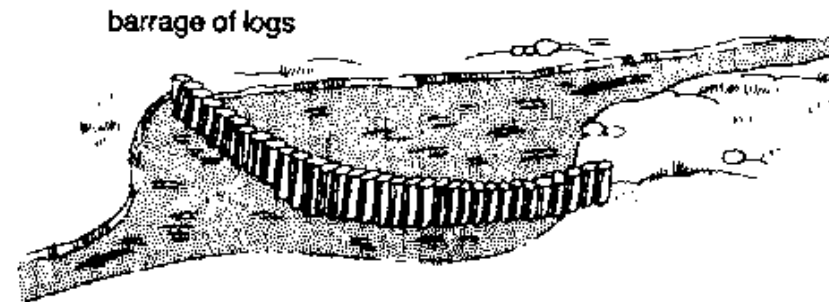
Classification of ponds based on source of water

1. Sunken ponds

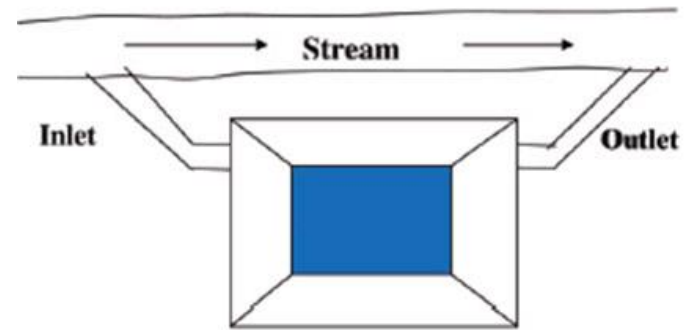
- ▶ These ponds are not having inlet and outlet structures. These ponds are rain fed ponds.



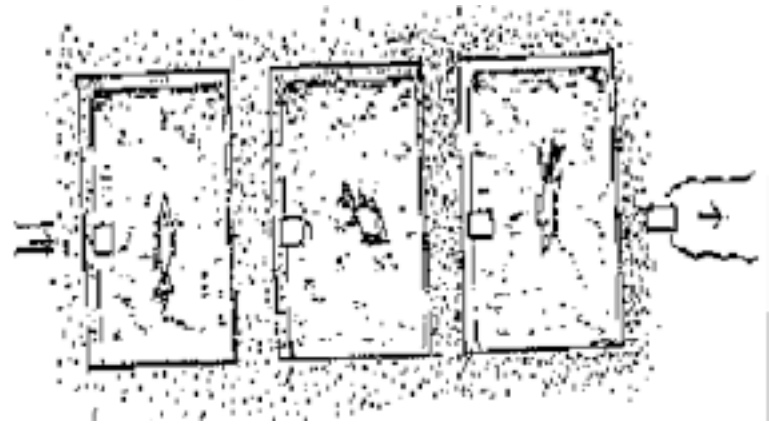
- ## 2. Barrage ponds: These ponds are usually filled by rainfall or by spring water.



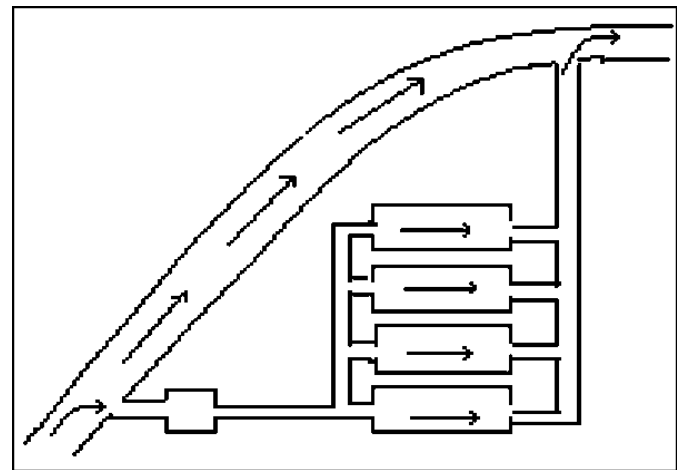
3. Diversion ponds: These ponds are made by diverting water from another source.



a. Rosary system

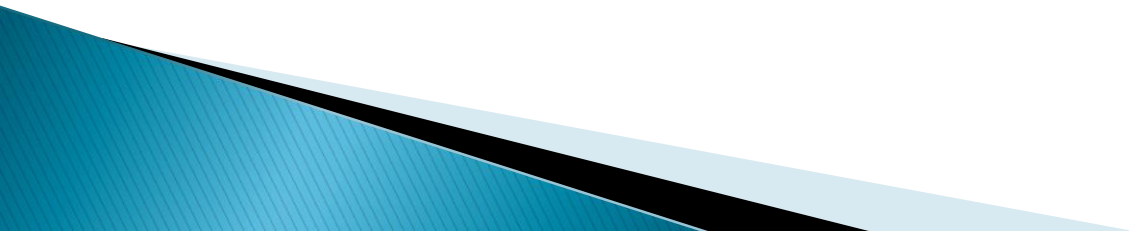


b. Parallel system





Intensive Farming Systems for Aquaculture



Scientific Hatcheries



Intensive Pond Systems

- ▶ **Requirements of system**
 - Water supply
 - Aerations (Blowers)
 - Removal of solid waste (Sand filter, Bead filter Etc)
 - Waste water treatment



Polythene Lined Ponds



Raceway culture

Flowing water is diverted from natural streams or a well. Raceways are typically used for raising rainbow trout. To be considered a low-risk method, waste must be treated and fish escapes prevented.



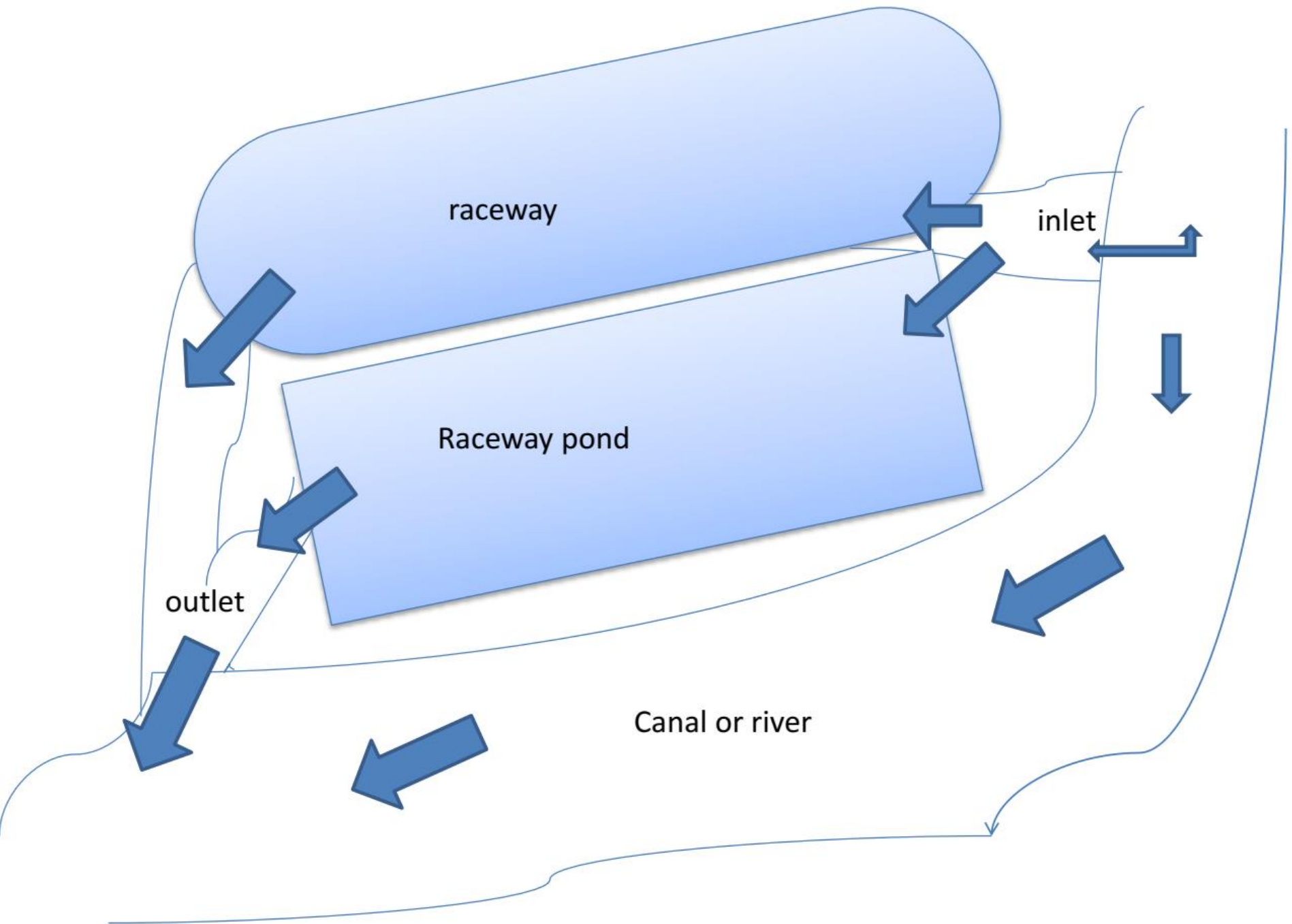
Grow-out (G1) with RAS facility

▶ Types of Raceways

- Concrete
- Stone
- Earth
- Fiberglass
- Polyester resin

Raceway Structures

- Structure should be like that where.....
- Water should be move easily
- Must be attached with
- Stream
- River
- Canal



▶ **Fry culture**

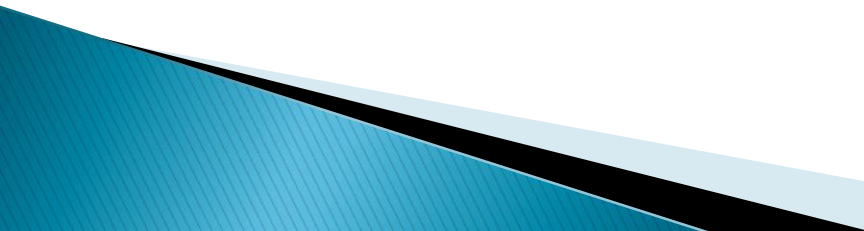
- o Depth – 30cm
- o Slope – 1/100
- o Width of raceway – 1.0m
- o Length of raceway should be 10–20m
- o Inlet and outlet with gauze

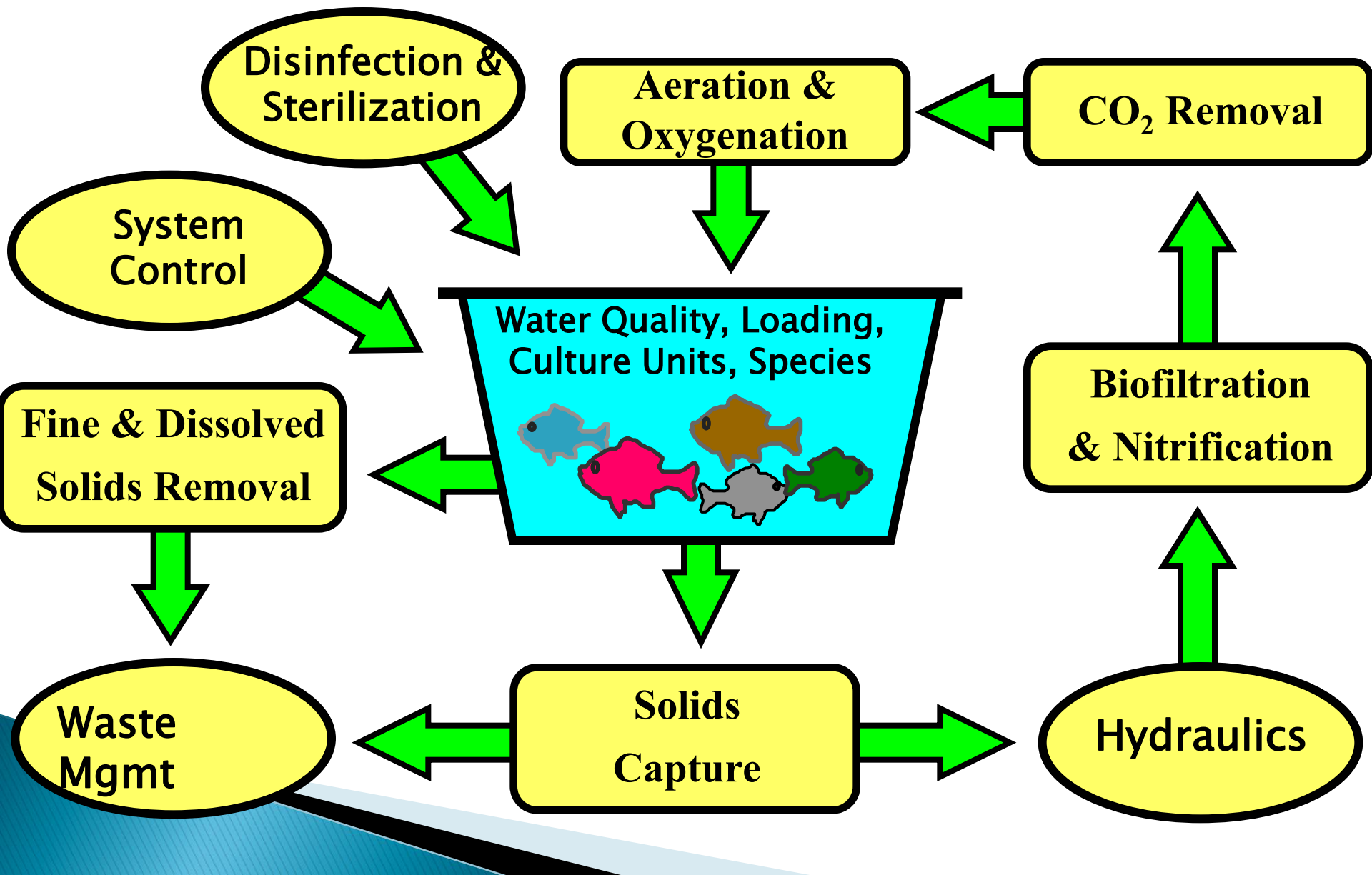
▶ • **Market production**

- o Depth – 60cm
 - o Slope – 1/100
 - o Width – 3m
 - o Length – 10–30m
 - o Inlet or outlet with gauze
 - **Brood stocking**
 - o Depth > 90cm.
- ▶ Slope – 1/100.
- ▶ Width – 2m
- ▶ Length – 20–40m

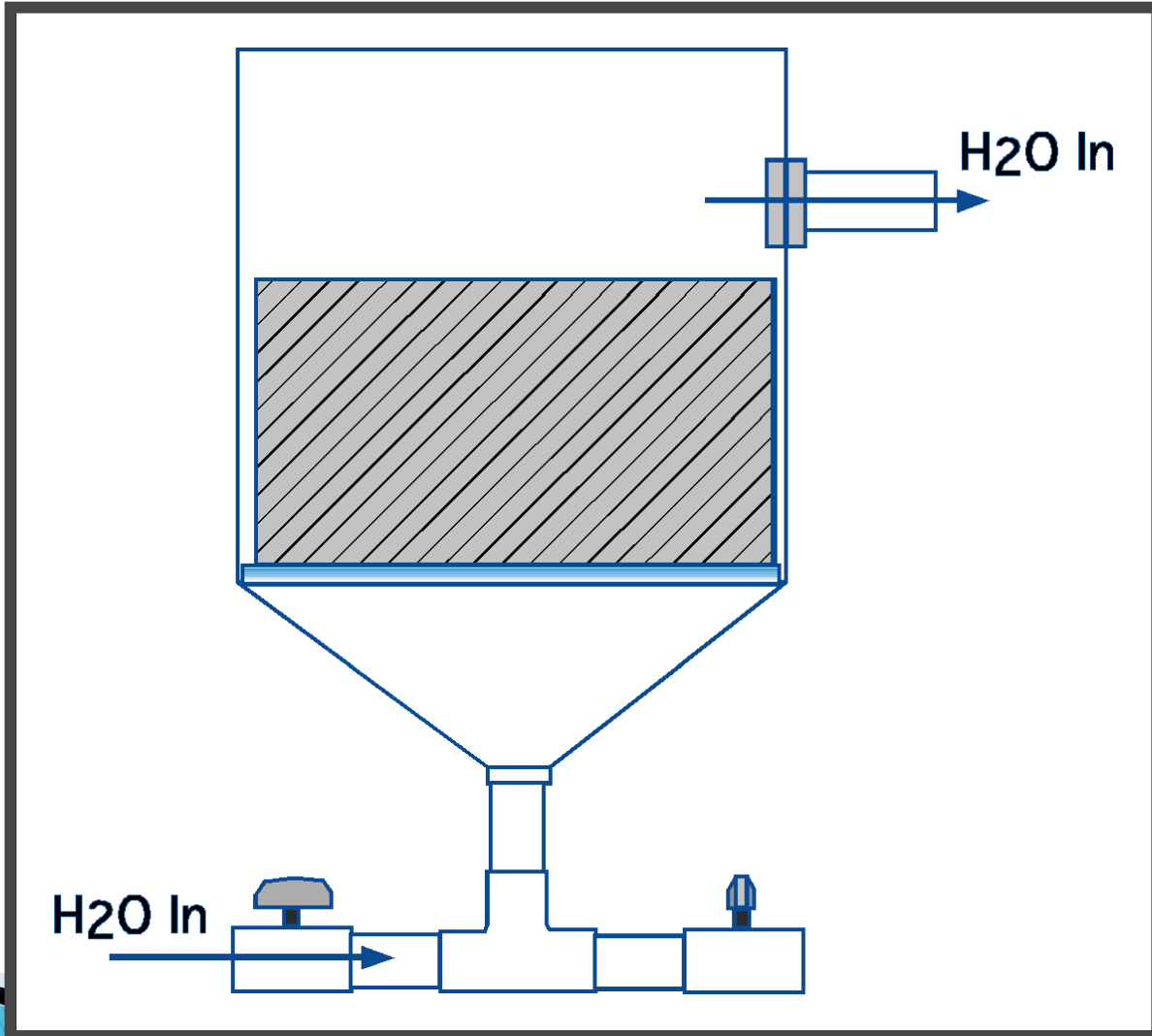


Recirculating System Applications

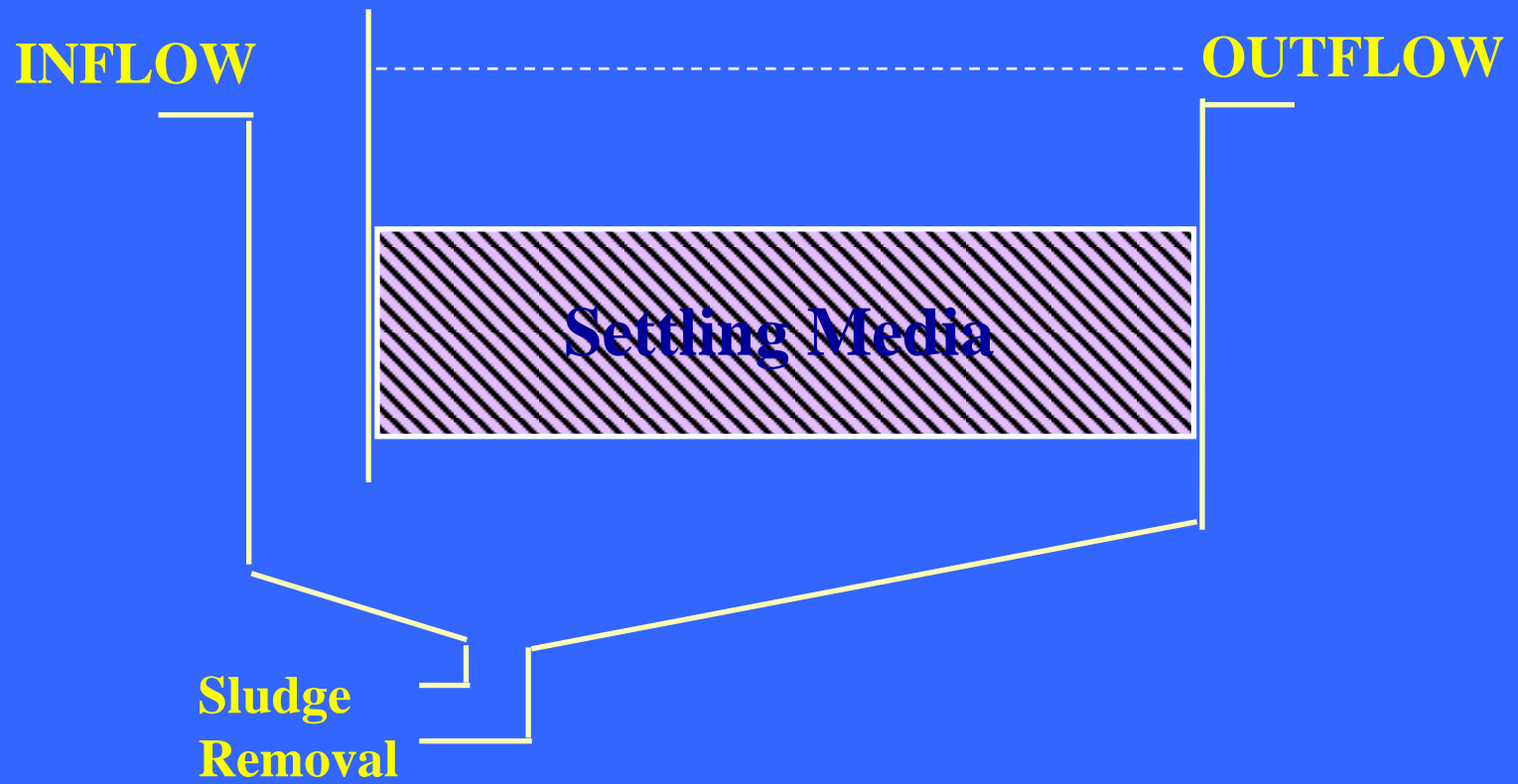
- ▶ **Broodstock maturation**
 - ▶ **Larval rearing systems**
 - ▶ **Nursery systems**
 - ▶ **Nutrition and health research systems**
 - ▶ **Short-term holding systems**
 - ▶ **High density growout**
- 







Tube Settler



PRETREATMENT

MAIN TREATMENT

POLISHING TREATMENT

Course Screen



Sedimentation



Tube Settler



Microscreens



Granular Filter



DE or Cartridge Filter



Foam Fractionation



100

75

50

30

10

Particle Size in an Intensive Aquaculture System

(After Chen & Malone, 1991)





THANK YOU

