Lecture 6a

Intensive Farming

Intensive

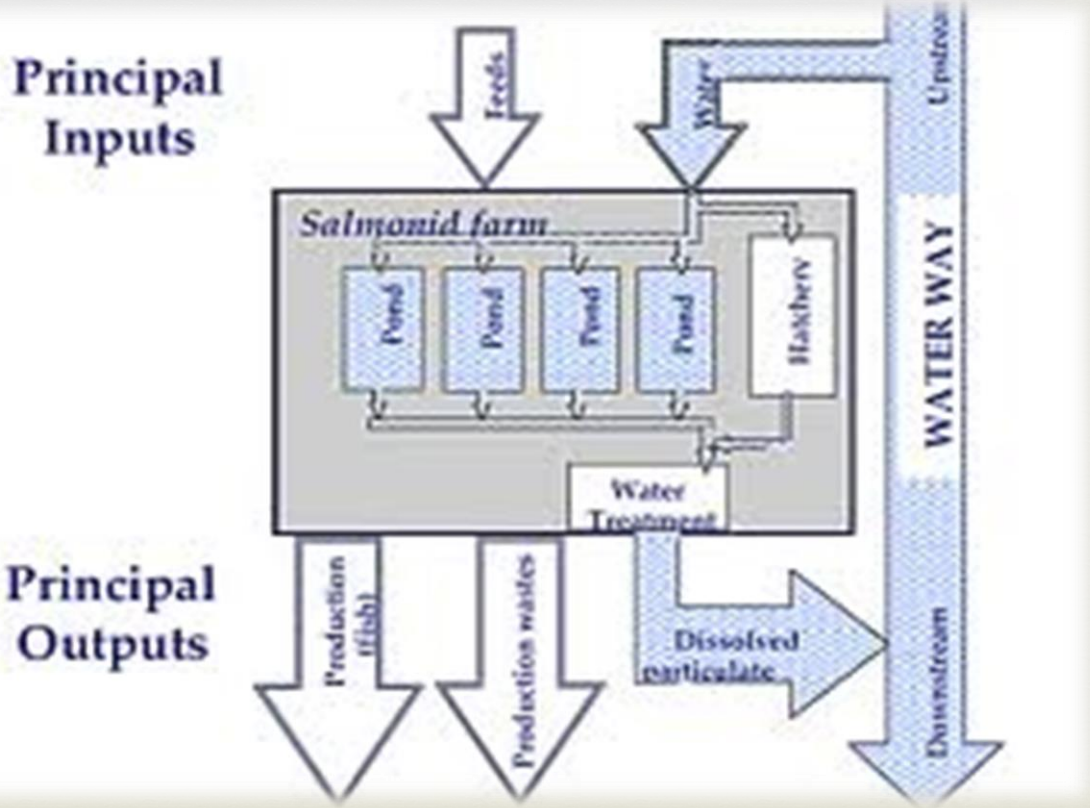
- High level of skills
- High input costs
- High productivity
  - 50 – 300 kg/m^3/year
    - Water quality control
    - Aeration
    - Balanced diet
- Integrated systems

Intensive

Cage Culture

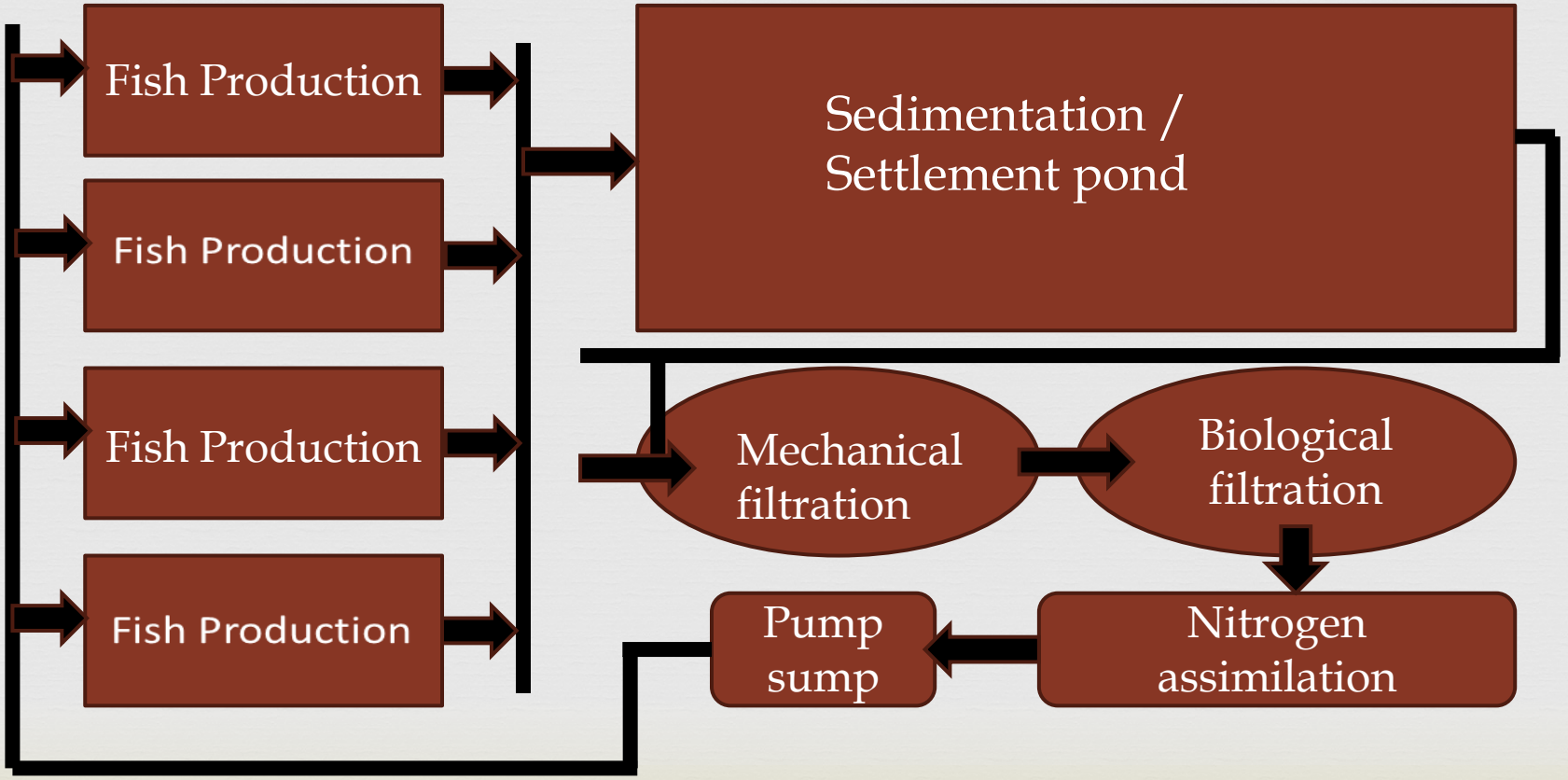
Intensive

Flow through Systems



Intensive

RAS – Recirculating aquaculture systems



Intensive

- RAS aquaculture incorporates technology in order to treat, filter and reuse the same water continuously
  - This allows for very precise control over the culture conditions and systems can be designed for maximum productivity
  - The reliance of water is greatly reduced and with RAS farmers can grow fish in very dry and arid areas.
  - Because the water conditions are monitored and controlled the climate no longer plays such a vital role in deciding what and how you can farm

Intensive

- RAS can be very expensive!
  - Requires a high level of skills and management
- Farms can be integrated into agricultural schemes
  - Water availability and food security are two major issues facing modern society, integrated aquaculture offers a suitable farming solution

Intensive

Advantages and Disadvantages

	Cage Culture	Flow Through	RAS
Capital costs	Medium	Medium to High	High
Input costs	Low	Low	High
Skill level	Medium	Medium to High	High
Maintenance	Medium	Low	High
Water usage	Low	Medium	Low to medium
Risk to Environment	Medium to high	Medium to High	Low
Risk from environment	High	High	Low
Production	Medium	Medium to High	High

Site Selection

- Choosing the "right" site
  - Most important decision
    - Production potential
    - System type
    - Culture Species

- Can be the difference between success or failure

Criterion

- Water availability
  - Amount of water available
  - Quality of water available
  - Temperature of water available
- Land
  - Amount of land available
  - Composition of land
    - Sand, clay, rock, nutrient level

Continued…

- Climate
  - Annual rainfall
  - Average temperature
- Access to market
  - Proximity
  - Roads
- Infrastructure
  - Power

Closing the loop

- Hatcheries and seed production
- Intensive farming is dependant on the production of high quality seed
  - Fingerlings or fry
- Hatchery
  - Broodstock
  - Breeding
  - Larval rearing

Hatcheries

Hatcheries

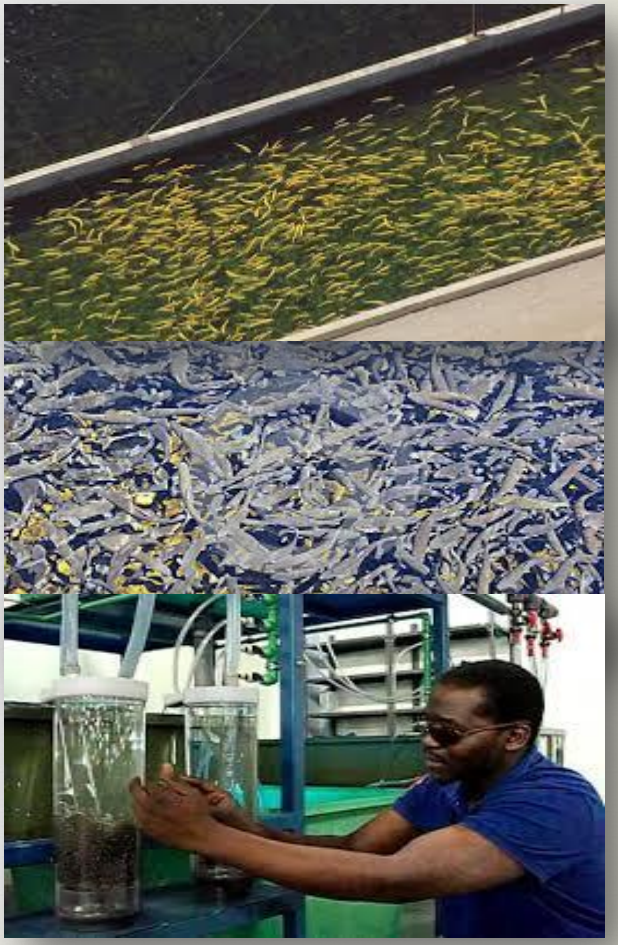
- Typically hatcheries are RAS systems
  - For best results water quality, temperature, flow, feeding and even light are carefully controlled.
  - Because fingerlings are not very big, hatcheries do not need to be very big to produce a lot of fish.

Hatcheries

- Broodstock systems will also need to be build to house and maintain a healthy breeding population
  - These fish are not for market, in some instances the fish can be kept for many years and spawned repeatedly.
  - In order to get good spawning the broodstock fish are kept in low densities and fed very high quality feed

Hatcheries

- Successful fish farming depends on good quality fingerlings
  - Producing good quality fingerlings depends on good quality broodstock, good management practices, excellent water quality and high quality feeds
  - Although many fish farmers do also have a hatchery it is sometime better to buy quality fingerlings from a reputable hatchery
    - Think about chicken farming or vegetables?



Hatcheries

- Alternatively farm fingerlings for other fish farmers in the region
  - Having a reliable source of fingerlings nearby is a big advantage to a farmer
  - If there is no hatchery in the area and people are importing fingerlings from another province, think about building a hatchery
- Remember, always understand your market and do the necessary research beforehand.
  - Have a plan!