

AQUACULTURE I

7. WEEK



POND CULTURE




WEEKLY TOPICS

WEEK	TOPICS
1. WEEK	WHAT IS AQUACULTURE?
2. WEEK	IMPORTANCE OF AQUACULTURE
3. WEEK	AQUACULTURE: ANIMAL PROTEIN
4. WEEK	HISTORY OF AQUACULTURE
5. WEEK	ORGANISATION OF AQUACULTURE
6. WEEK	CHARACTERISTICS OF AQUACULTURE
7. WEEK	POND CULTURE
8. WEEK	IN STATIC FRESHWATER PONDS
9. WEEK	IN BRACKISH-WATER PONDS
10. WEEK	RUNNING WATER CULTURE
11. WEEK	CULTURE IN RE-CIRCULATORY SYSTEMS (RAS)
12. WEEK	AQUACULTURE IN RACEWAYS, CAGES, AND ENCLOSURES
13. WEEK	MONOCULTURE AND POLYCULTURE
14. WEEK	RECENT ADVANCES IN AQUACULTURE



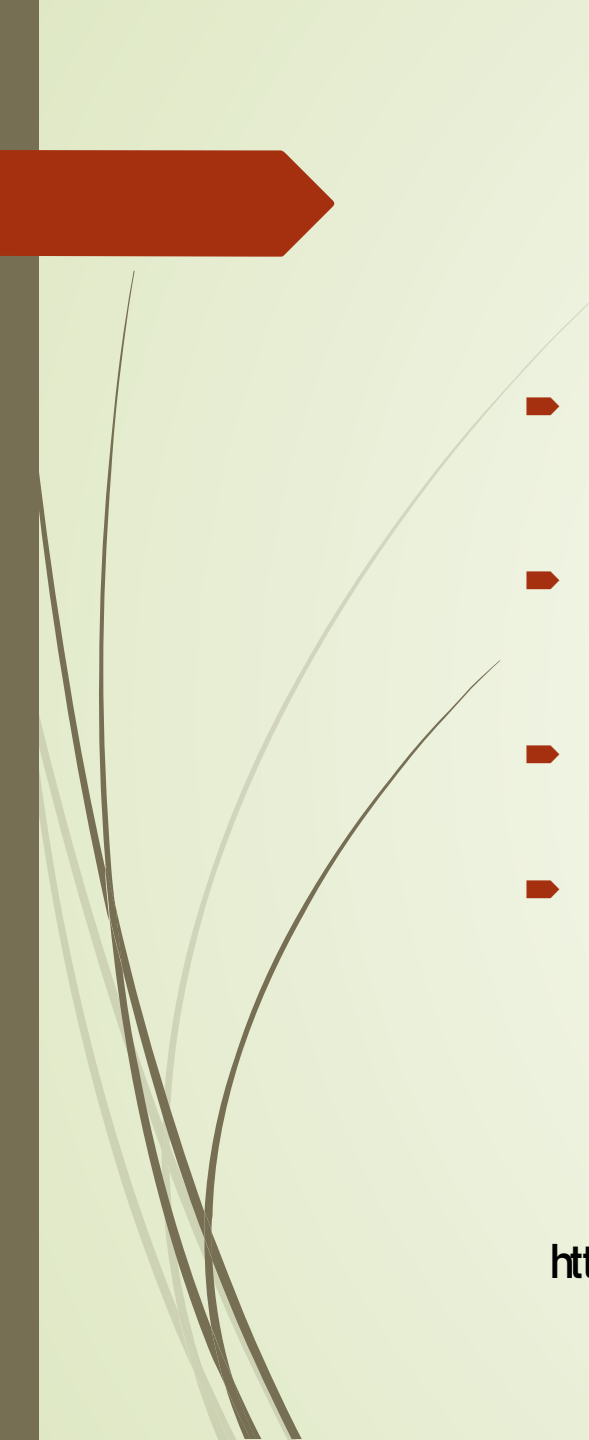
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- Organisms cultivable in ponds
 - Species suited for culture in stagnant and semi-stagnant ponds - fishes, crustaceans and molluscs; principal cultivated (freshwater and coastal) warm- and cold-water species in Latin America - fishes (Prochilodus spp., Mylossoma bidens, Colossoma bidens, Pimelodus spp., Cichla ocellaris, Plagioscion spp., Basilichthys bonariensis, Chirostoma spp., Brycon spp., Petenia kraussii, Rhamdia spp., Cichlasoma spp., Astronatus ocellatus, Salmo gairdnerii, Tilapia spp., Sarotherodon spp., Cyprinus carpio, Mugil spp., Eremophilus mutisii, etc.), and crustaceans (Penaeus spp. and Macrobrachium spp.).

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- Preparation of pond
 - Control of predatory and weed fishes
 - Predators in fish ponds - zooplanktons, insects, fishes, amphibians, reptiles, birds and mammals; methods of their control; weed fishes and their control.

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- Control of aquatic vegetation
- (a) Role of vegetation in ponds: different kinds of aquatic vegetation in water bodies with special reference to tropical ponds - microphytes and macrophytes; submerged, floating or emergent; adverse effects of excessive growth of aquatic vegetation, including depletion of nutrients and decreased production of plankton; effect of fertilizer application on the growth of vegetation.
- (b) Control of algae:
 - (i) Mechanical method - repeated seining.
 - (ii) Chemical methods - application of copper sulphate, copper oxychloride, malachite green, powdered superphosphate, monuron, diuron, dichlone, powdered quicklime, etc.
 - (iii) Biological method - use of herbivorous fish.
- (c) Control of undesirable macrovegetation:
 - (i) By increasing depth of water.
 - (ii) Manual removal.
 - (iii) Mechanical methods: different devices for cutting and raking weeds; time and periodicity of cutting; clearance of cut weeds.
 - (iv) Chemical methods: different kinds of herbicides used - contact herbicides and systematic herbicides; toxicity of herbicides; treatment techniques - methods and dosages of application; effects of herbicide application on water quality, fishes and fish food organisms.
 - (v) Biological control: use of herbivorous fish and other animals; encouraging the growth of an algal bloom through fertilization; covering the water surface with floating vegetation, such as water hyacinth, Pistia or Salvinia.

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- Improvement and restoration of pond bottom
 - Draining, drying the bottom soil cultivation and dredging; benefits accruing thereof; use of right type of sand in shrimp ponds; dispersion of iron oxide in coastal shrimp ponds for eliminating hydrogen sulphide.
 - Control of principal physico-chemical factors of fish production
 - Temperature, dissolved oxygen, salt and alkalinity; use of thermal effluents from power plants for faster growth in temperate and cold climates.
 - Liming
 - Effect of liming; time and methods of liming.
 - Fertilization
 - Objectives and effects of fertilization; different kinds of inorganic fertilizers (phosphate, potassium and nitrogenous fertilizers) and organic manures (cattle dung, poultry manure, pig manure, sewage sludge, compost, etc.); micronutrients; use of organic and inorganic fertilizers singly and in combinations; determination of dosages in relation to initial soil and water quality; methods of application; precautions necessary in the application of fertilizers and manures.

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- Nursery techniques

- Stocking ratio of fish spawn in relation to food resources and condition of water body; stocking rates of shrimp and prawn larvae in relation to food resources, condition of the pond bed, water turnover, aeration facilities and weather; artificial feeding - feeds commonly used, periodicity and rates of feeding, time and place of feeding, feeding methods, etc.; maintenance of water quality and health of larvae/juveniles; prevention of water stratification in prawn ponds; methods of selective eradication of fish in prawn ponds.

- Rearing (culture techniques)



- Stocking rates and maximum standing crop

- Rates of stocking fry, fingerlings and yearlings in relation to food resources and condition of water body; stocking density and stocking rate; general formula for stocking; relation of production rates to stocking rates and management practices; maximum standing crop or carrying capacity of fish ponds; raising of carrying capacity obtained under normal conditions through fertilization and/or supplementary feeding; influence of species stocked, volume of water and climate on the level of maximum standing crop.



- Routine pond management

- Periodic fertilization; checks on water quality and fish and shellfish health; supplementary feeding; control of predators; checking of pond walls (for leaks); water control systems (for leaks and blockage); pond bottom (for excessive deposits of silt and organic matter); control of weeds; liming (if necessary).

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- Types of culture
 - (a) Monoculture: culture of single species of:
 - (b) Polyculture: culturing of:
 - (c) Combination of pond fish culture with crop or animal production:
 - Fish-cum-chicken farming; fish-cum-pig farming; fish-cum-duck farming; rice-cum-fish culture; advantages of integrated farming and recycling of organic wastes.
 - Production rates in different types of pond culture
 - Harvesting
 - Different methods of harvesting; period of harvesting; single harvest and multiple cropping.
 - Economic aspects of different types of pond culture

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- References
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