

ASSIGNMENT PRESENTATION OF FRESH WATER AQUACULTURE

TOPIC- TRAITS OF IMPORTANT CULTIVABLE FISH AND SHELLFISH & THEIR CULTURE METHODS



COLLEGE OF FISHERY SCIENCE, NDVSU JABALPUR

INTRODUCTION

- Finfish are those aquatic organisms that have fins.
- All aquatic organisms bearing shells are called shellfish.
- As they are two different group of aquatic organisms they have different traits & culture methods.
- Finfish mainly includes carps, catfishes, air breathing fishes, sharks & skates.
- Shellfish mainly includes prawns, crabs, oysters & shrimps.

CULTURE OF CARPS

- Among the group of cyprinids known as the indian carps, *Catla catla*, *Labeo rohita* & *Cirrhinus mrigala* is of great economic importance and are fresh water species.
- Most important cultured species in India, Pakistan & Burma.
- They are more to be cultured in fish farms.
- They do not breed naturally in ponds or other confined waters.
- They are all river spawners, having semi floating & non-adhesive eggs.

Carps

- Order :Cypriniformes

Family : Cyprinidae

- Widely distribute world wide
 - ✓ Europe, Asia, North America and Africa in natural
 - ✓ Australia, South America, Madagascar by human introduced
- Major carp species used in carp culture are
 - ✓ Common carp,
 - ✓ Chinese carp (silver carp, grass carp, bighead, black carp and mud carp.)
 - ✓ Indian carp (catla, rohu, mrigal)



Source : <http://www.arkive.org/>

Why carp culture and carp fishes?

In India, culture of carp is perfectly point of view because of their short Food chain, but economic too. These fishes can be culture without any problem are generally liked by the consumers, some easily culturable fishes with very successful breeding do attain a metre length with more amount of flesh.

Carp fishes are most liked by the farmer as well as consumer because of their following characteristics:

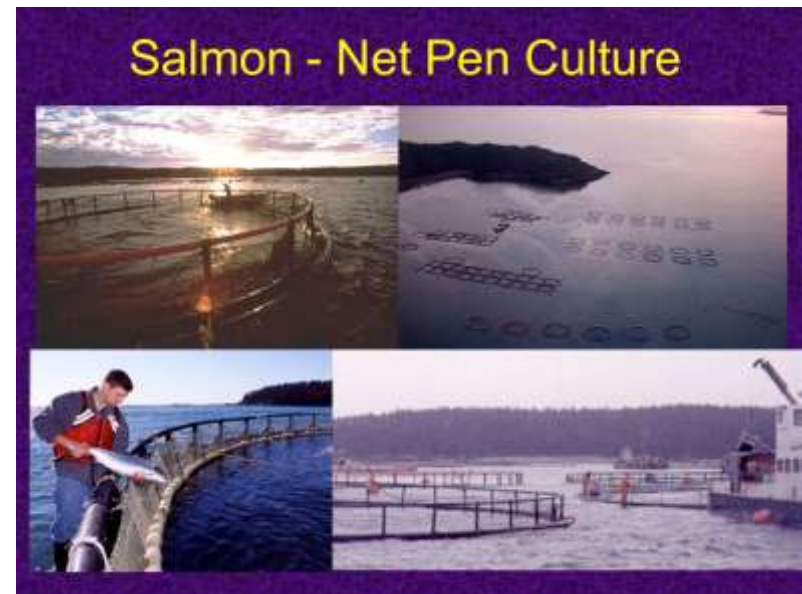
- These fishes are found in river, lakes, ponds.
- They can survive even in the poor quality of water.
- They have tolerance for temperature variation.
- They feed on phyto and zoo- plankton, debris and decaying organic matter.
- They have high growth rate.
- They are fit for induced breeding.
- They show more resistance to diseases.
- Their flesh is palatable, tasty, nutritious and easily digestible.

Note:

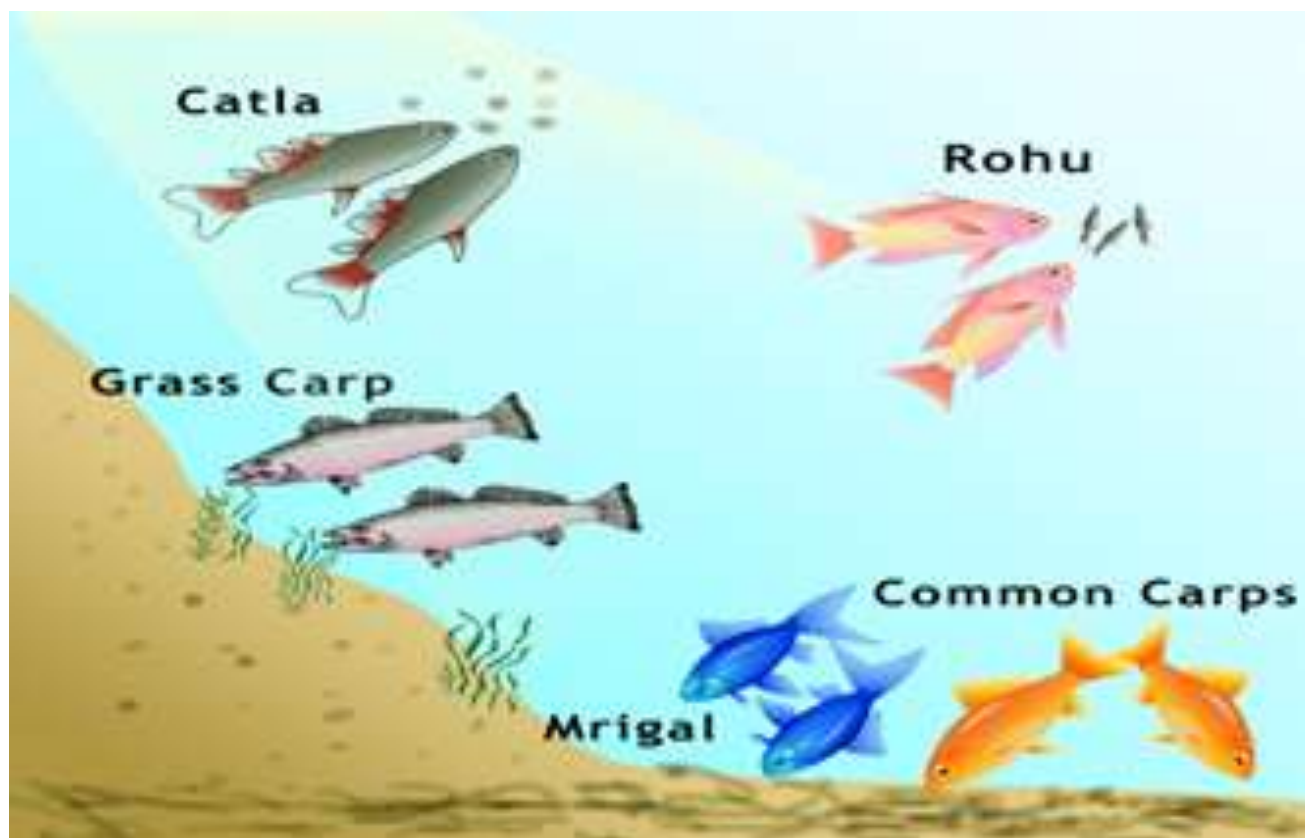
Carp - fresh water fish often breed for food.

CULTURE METHODS

- Monospecies culture
- Monosex culture
- Poly culture
- Sewwage fed fish culture
- Cage culture
- Pen culture



POLY CULTURE OF CARPS



Principle of carp polyculture

1. *Stocking density*

- Economics of culture and market demand for fish
- Ecological niche to be filled
- Natural food availability
- Water quality, available of water and aeration equipment
- Size of fish stocking
- Size of fish desire to harvest
- Climate and length of growing season
- Energy and labor available for stocking, harvesting and processing



EXOTIC CARPS

- Exotic fishes are those species that are non-indigenous having their origin in other country and has been introduced in the indian waters.
- Silver carp, grass carp & common carps are the most cultured species.
- They have faster growth rate & attain markateable size faster than the indigenous carps.
- Common carp is the most widely cultured carp.
- They are non-predatory fishes.

INTRODUCTION

In India, composite carp culture is the main activity of freshwater aquaculture in which 3 indigenous carps and equal no. of compatible exotic carps are used as candidate species. Exotic carps are exogenous Chinese carps which are non native to India. They also have a faster growth rate and are introduced from outside the country. Exotic carps also like other fishes needs nutrition for their growth, metabolism and other activities.

The qualitative and quantitative requirement of nutrients for growth, reproduction and other normal physiological functions is known as nutritional requirement.

Nutrients required by the fish are broadly classified into the following categories:

- Proteins
- Carbohydrates
- Fats or Lipids
- Vitamins
- Minerals

CULTURE METHODS

- Polyculture
- Composite fish culture
- Sewage fed fish culture
- Cage culture

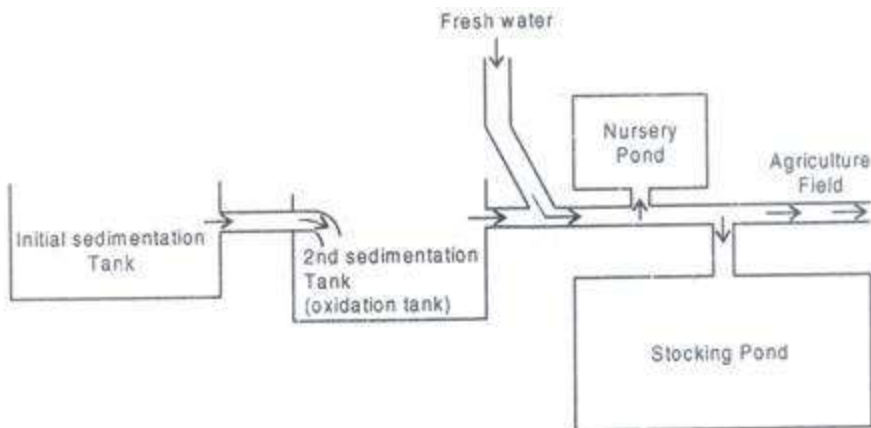


Fig- 28. Schematic representation of treated sewage supply to fish pond.



Composite Fish Culture -- An Example of freshwater aqua culture

- Can be adopted in village ponds as well as newly constructed ponds and tanks
- Under the technology more than one type of compatible fishes are cultured simultaneously.
- It is the most advanced and popular fish culture technique in the country. It enables to get maximum fish production from a pond or a tank through utilization of available fish food organisms in all the natural niches, supplemented by artificial feeding etc.

Composite Fish Culture -- An Example of freshwater aqua culture

- Fish species involved are :
- Indian Major Carp
 - Catla Zoo plankton feeder Surface feeder
 - Rohu Omnivorous Column feeder
 - Mrigal Detritivorous Bottom feeder
- Exotic carps
 - Silver carp Phytoplankton Surface feeder
 - Grass carp Herbivorous Surface, column
and marginal areas
 - Comm carp Detritivorous Bottom feeder
/Omnivorous

CAT FISHES

- Owing to their unique taste & texture , cat fishes are considered a delicacy by some consumers.
- Commercially , they are not being cultured in India.
- They include predatory fishes.
- Experimental culture of some species like *Clarias batrachus*, *singhi* & butter cat fish has been developed by some research institutes.
- Air breathing cat fish such as magur & *singhi* have a greater potential for culture in shallow , swampy & marshy areas.

- Non-airbreathing catfishes such as *pungasius*, *wllago attu*, *ompak* sp., *mystus* sp. Can be grown in normal ponds.



CULTURE METHODS

- Larval rearing
- Grow out culture



FRESH WATER PRAWN CULTURE

- The giant fresh water prawn *macrobrachium rosenbergii* is one of the highly precised species cultured in fresh water.
- Distributed in the major river systems of the country.
- Although the fresh water prawns live in fresh water their larvae require brackish water to survive & grow.
- Adults migrate to estuaries to breed & post larvae migrate back to fresh water.
- They are omnivorus.
- They have uneven growth rates, especially males.

CULTURE METHODS

- They mainly occurs in Indian riverine system draining into Bay of bengal.
- Cultivated under monoculture as well as polyculture.



