

INTRODUCTION TO CULTURE OF FISH FOOD ORGANISMS

The organisms that form food for fish are collectively called as fish food organisms. Important fish food organisms in the aquatic environment are plankton, nekton and the benthos. Among these, plankton is of fundamental importance to fisheries. The word 'plankton' was derived from the Greek meaning 'Wanderers' (Victor Hensen, 1887). Plankton is defined as the heterogeneous assemblage of suspended microscopic materials, which wander at the mercy of winds, currents and tides. There are two main groups of plankton in the aquatic environment viz., Phytoplankton (floating plants) and Zooplankton (animals).

Phytoplankton

Phytoplanktons are chlorophyll bearing suspended microscopic organisms consisting of algae with all major taxonomic phyla; the majority of members belong to Chlorophyceae, Cyanophyceae and Bacillariophyceae. The quality and quantity of phytoplankton, and their seasonal successional patterns have been successfully utilized to sustain heterotrophic communities. Mass culture of phytoplankton serves as a chief food source for the growing larvae and adults of commercially fin and shellfishes.

Importance of phytoplankton

1. It is basic component of food chain
2. Indispensable food source in the commercial rearing of cultivable species
3. Important for most of the larval rearing of finfish and shellfish
4. More useful in the production of zooplankton which intern forms food for fish
5. Some species of blue green algae fix atmospheric nitrogen

Classification of phytoplankton

1. Chlorophyta (Green algae) - *Volvox, Chlorella, Clostridium, Spirogyra*, etc.
2. Cyanophyta (Blue green algae) - *Microcystis, Spirulina, Anabaena, Nostoc, Oscillatoria*, etc
3. Bacillariophyta (Diatoms) - *Coscinodiscus, Melosira, Fragillaria*, etc
4. Euglenophyta (Euglenids) - *Euglena*
5. Chrysophyta (Golden brown algae) - *Peridinium, Ceratium*, etc

Zooplankton

Zooplankton, the microscopic free swimming animal components of aquatic systems, are represented by a wide array of taxonomic groups; of which the members belonging to Protozoa, Rotifer, Cladocera and Copepoda are most common and often dominate the consumer communities. They constitute an important link between primary

producers (phytoplankton) and consumer of higher order in aquatic food webs (fish and prawns).

Classification of Plankton

I. Based on size

- a. Ultra plankton - < 2 μ m
- b. Nanoplankton - 2 – 20 μ m
- c. Microplankton - 20 – 200 μ m
- d. Mesoplankton - 200 μ m – 2mm
- e. Macroplankton - 2 – 20mm
- f. Megaloplankton - >20mm

II. Based on living/dead

- a. Euplankton (these are true plankton and live)
- b. Pseudoplankton (dead plankton consists of nonliving debris)

III. Based on life cycle

- a. Holoplankton: those organisms, which are planktonic throughout their life.
Ex: Phytoplankton
- b. Meroplankton: those organisms, which are planktonic for only a part of their life cycle.
Ex: Larvae of some benthic organisms

IV. Based on their occurrence

- a. Limnoplankton - Plankton which are present in lakes
- b. Rheoplankton - Plankton present in the river
- c. Haleoplankton - Plankton present in the pond
- d. Hypolimnoplankton - Plankton present in the brackish water
- e. Halioplankton - Plankton present in the saltwater/marine water

Periphyton

All microscopic organisms (both plants and animals), which grow attached on materials submerged in water, are known as periphyton. At times they get represented in plankton samples either due to fragmentation or detachment of the filaments or colonies. The periphyton forms a heterogeneous community and is broadly classified by the nature of their substratum as epipellic (grow on sediments), epilithic (on rocks and stones), epipsammic (in or on sand), epiphytic (on plants) or epizoic (on animal surfaces).