

CULTURE OF MICROWORMS

Some of the micro-worms form important food items for the post-larvae, juveniles, adults and brood stock of finfish and shellfish. Among the microworms *Tubifex* and *Chironomid* larvae are commonly used as live food for the maintenance of ornamental fishes, and larvae and post-larvae of freshwater prawns.

Tubifex

Tubifex worm belongs to the Family Tubificidae of the Order Oligochaeta of the Class Chaetopoda under the Phylum Annelida. The commonly available species is *Tubifex tubifex*. Tubifex worms are commonly called as sludge worms. Tubifex worms inhabit in sewage drains. When present in plenty, the worms can be seen as reddish wriggling carpet in sewage drains. The anterior end embedded in mud while the posterior end waves about. They jerk into the mud when disturbed. Tubifex worms are long and slender. There is no distinct head. At the extreme anterior end there is a lip like structure known as the prostomium which is not counted as segment. The first segment lies immediately behind prostomium. The mouth present in the first segment is known as peristomium while the anus lies in the last segment and is known as anal segment. The coelom is spacious and divided into segment compartments by the inter-segmental septa. Some of the segments in the anterior end become fused together to form a swollen structure known as the clitellum. Tubifex worms feed on decaying organic matter, detritus, vegetable matter which commonly available in sewage drains.

Tubifex worm is a hermoprodite, because it has both male (testes) and female (ovaries) organs in the same animals. These minute reproductive organs attached to the ventral side of the body wall in the celomic cavity. In mature specimens, the reproductive organs are clearly found on the ventral side of the body.

Culture of Tubifex

Tubifex can be easily cultured on mass scale in containers with 50 to 75 mm thick pond mud at the bottom, blended with decaying vegetable matter and masses of bran and bread. Continuous mild water flow is to be maintained in the container, with a suitable drainage system. After the arrangement of the system, the container is inoculated with Tubifex worms, which can be obtained from nearby muddy canals or sewage canals. Within 15 days, clusters of Tubifex worms develop and this can be removed with mud in masses by means of a spade and kept in large wide mouth plastic container. When worms will come to the surface due to lack of oxygen, they are collected and washed under brisk stream of water to remove residual mud attached to the body. Since their guts still may contain mud, which they have eaten. Therefore, they should be kept long enough under stream of water for the mud to be evacuated from the intestine. After proper cleaning only, the worms are fed to the fish.

Chironomid

Chironomid larvae belong to the Family Chironomidae of the Order Diptera under the Class Insecta of the Phylum Arthropoda. Chironomid larvae are commonly called as blood worms. Chironomid flies attract towards foul smell where organic matter decays and lay eggs. The eggs hatch into Chironomid larvae. Larvae initially live in soft tubes made from organic matter. As larvae grow, come out of tubes and swim vertically in water, by showing wriggling movement. Fully grown larvae are dark red in colour. Chironomid larva looks like an annelid worm. Body is segmented and head is free. It is about 1.0 to 1.5 mm in length. Larva has three legs, one in front and the other two at rear end of body. Rear end (tail) has tufts of hairs.

The worm Chironomid larvae are herbivorous in feeding habits and feed on algae, detritus, decaying organic and vegetable matter etc. Chironomid flies lay eggs on organic matter, which is immersed in water. The eggs hatch straight into proboscis larvae, which in turn metamorphose into adult flies. The larvae initially live in soft tubes and become free swimming in water.

Culture of Chironomid larvae

Flat trays filled with water are added with soil and composted manure or organic matter or decaying vegetable matter to attract chironomid flies to deposit eggs. Some times the chironomid flies even lay eggs in clear stagnant waters also. Each female lay a batch of about 20,000 eggs which hatch out in about 3 days. The larvae are herbivorous in feeding habit and feed on algae, detritus and decaying vegetable matter. Initially the larvae live in soft tubes made up of organic matter, which can be clearly seen at the bottom of the tray. After 2 to 3 days, they come out of the tubes and freely swim in water vertically. The larvae are harvested with scoop net and washed thoroughly before feeding. It constitutes one of the staple food items in the ration of nearly all carnivorous young fishes.