D-12: Effect of organic manures on growth and larval survival of Bighead carp, *Aristichthys nobilis*

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Organic manure is used extensively in quaculture for stimulating primary and secondary productivity. The pond is the medium of growth for fish. It is also the environment in which their food is grown. The use of zooplankton as the first feed for larviculture has been widely studied. Fry perform better, when fed with live zooplankton than with dry artificial diets. Availability of a suitable feed is important in larviculture. The present study was initiated to examine the effect of organic manure on the growth and survival of postlarvae of Bighead carp, *Aristichthys nobilis*, a predominant zooplankton feeder and an important fish species used in polyculture systems in seasonal tanks of Sri Lanka.

Nine cement tanks (21 m^2) were disinfected with bleaching powder, sun-dried and filled to 50 cm water depth.

Chicken manure, cow dung and a control were tested in 3 replicates. Fertilization was at 10 kg/100 l water initially and at half this dosage weekly. Macrozooplanktion were eradicated with 0.5 ppm Dipterex and insects by spraying 250 ml kerosene oil.

Bighead carp were stocked at 10,000 postlarvae/tank. Phytoplankton and zooplankton were filtered from 100 l pond water using a phytoplankton net (100 mesh/cm) and zooplankton net (60 mesh/cm), respectively. Phytoplankton were fixed in Lugol and zooplankton in 5% formaldehyde and their volumes were measured with a graduated measuring cylinder.

Parameters such as Secchi Disc visibility, water temperature, pH and Dissolved Oxygen were measured regularly.

Soybean milk was prepared by mixing finely ground soybean with boiling water and was fed twice daily to the fish as a supplementary feed for 7 days at 2.0 kg soybean powder/100,000 fish followed with a 1:1 mixture of soybean and fine rice bran, twice daily. From the 10th day, feeding was at 5% body weight with rice bran mixed with a binder and made into a dough and placed on a feeding tray 30 cm under the surface of water.

The maximum mean length attained by the fish (3.54 cm) was in the cowdung treated tanks. The maximum weight attained by the fish (5.02 g) was also in these same tanks. Growth in length and weight of postlarvae was not significantly different at 5% level in the different treatments but the survival rates were significantly different. Survival rates of fish were 57.36, 91.22 and 72.29% in tanks treated with chicken manure, cowdung and the control tnaks, respectively.

Dissolved oxygen (DO) levels varied greatly in tanks treated with chicken manure and cowdung and ranged from 0.4 to 5.2 mg/l and from 0.45 to 9.25 mg/l, respectively. In the controls, DO values did not change much (range = 4.2 to 7.2 mg/l). DO values in the fertilized tanks reduced rapidly after 2 weeks while in the control it remained high.

The volume of phytoplankton varied from 0.25 to 3.5 ml in chicken manure treated tanks while the variation in the volume of zooplankton was small (0.1 to 3.0 ml). Phytoplankton volume in the cowdung treated tanks varied from 0.1 to 1.7 ml while that of zooplankton varied from 0.01 to 2.0 ml.

The pH varied from 6.8 to 7.2 and temperature varied from 27.2 to 31.7°C.

Results show the use of cowdung was superior to that of chicken manure for survival of Bighead carp postlarvae. The application rates were identical for chicken manure and cowdung. DO levels in chicken manure treated ponds were low, when compared to other tanks. The amount of chicken manure used may have exceeded the maximum level that a tank can digest. Lower survival rates and slower growth rates observed may be attributed to excessive amounts of chicken manure, resulting in oxygen depletion and release of toxic substances, which are toxic not only to fish, but also to fish food organisms.