

Use of different carbon sources for the biofloc system during the early nursery stage of *Cyprinus rubrofasciatus*

A.M.A.N. Adikari*, P.P.M. Heenatigala, A.D.W. Rajapakshe, K.L.W.T. Maduka and S.B.K. Dunusinghe

National Aquatic Resources Research and Development Agency (NARA), Crow Island, Colombo 15, Sri Lanka

A study was conducted to assess the most suitable carbon source for the biofloc-based system to rear the early growth stage of *Cyprinus rubrofasciatus*. Three carbon sources; molasses (MO), rice bran (RB), wheat flour (WF), and their combinations; 1:1 mix of MO and RB (MORB), and 1:1MO and WF (MOWF) were tested during the study. A control (CON) was maintained without addition of a carbon source and all treatments were triplicated. Post-larvae with an average weight of 0.007 ± 0.004 g were randomly assigned in eighteen rectangular fiberglass tanks (2m x 1.5m x 1.5m) at 400 fish/m² stocking density and reared for 45 days. The water quality parameters of all experimental tanks were measured once a week. Fish in BFT (Biofloc Treatments) and CON treatments were fed twice a day, 5% of their body weight with commercially available fish feed (42% CP). The average weight of the fish reared in WF ($0.18 \text{g} \pm 0.34$), MO ($0.15 \text{g} \pm 0.4$), and RBMO ($0.16 \text{g} \pm 0.05$) treated BFT system were significantly higher ($p < 0.05$; one-way ANOVA) compared to the CON ($0.06 \text{g} \pm 0.02$). TAN concentration in the WF based BFT system ($2.91 \text{mg/L} \pm 0.5$) was significantly higher ($P < 0.05$) compared to the MO ($0.45 \text{mg/L} \pm 0.1$) and RBMO ($1.31 \text{mg/L} \pm 0.1$) treatments. The survival of post-larvae in MO treated tank was 87% and it was significantly high ($P < 0.05$) compared to other carbon sources, RBMO (82%), WFMO (74%), RB (72%), and WF (70 %). MO based BFT system showed significantly ($P < 0.05$) lowest nitrite-N ($0.22 \text{mg/L} \pm 0.1$) and the highest biofloc ($5.3 \text{mL/L} \pm 1.0$) volume than other treatments. When considering both survival and growth MO based BFT system is more suitable to rear *Cyprinus rubrofasciatus* post-larvae compared to that of WF, MOWF, and RBMO systems.

Keywords: biofloc system, *Cyprinus rubrofasciatus*, carbon source, post-larvae

* Corresponding author – email: adikari.aman@gmail.com