EFFECT OF BIOFLOC ON GROWTH OF GENETICALLY IMPROVED FARMED TILAPIA JUVENILES IN INDOOR CONDITION

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The biofloc technology (BFT) is based upon the development and management of the dense microbial population through the adjustment of the carbon to nitrogen (C/N) ratio and thereby controls the inorganic nitrogen concentration in the water. The present experiment was focused to study the effect of BFT on growth of Genetically Improved Farmed Tilapia (GIFT) juveniles in indoor tanks. Two biofloc treatments; biofloc formed with added glucose (BFG) and molasses (BFM) maintaining a C/N ratio at 15 and without biofloc (control) were managed in 50 L indoor tanks each with four replicates. Male GIFT tilapia (45 days old, mean body weight 2.8 ± 0.2 g and standard length 1.8 ± 0.2 cm) were introduced to each tank at a stocking density of 1 fish/L and cultured for 8 weeks. They were fed with commercial feed (34.4 ± 0.8% protein) at a rate of 5% body mass. Water quality parameters, body weight and the standard body length were measured and specific growth rate (SGR) was calculated. Proximate analysis for two biofloc systems was performed at the end of the experiment. Temperature (27 – 32 °C), pH (6.5 -8.5), dissolved oxygen (2.9 - 6.9 mgL^{-1}), nitrate nitrogen (0 – 15 mgL^{-1}) and ammonia nitrogen (0 - 0.025 mgL^{-1}) levels of water were within the favorable range for tilapia culture. The average body weight and length of tilapia were significantly higher ($p<0.05$) in both BFG and BFM compared to the control from 6th week onwards. The significantly highest ($p<0.05$) SGR of fish was observed in BFG (5.1% d^{-1}) followed by BFM (4.5% d^{-1}) while the lowest was in control (3.5% d^{-1}). Significantly higher ($p<0.05$) dry matter percentage was observed in BFM while crude fat, fiber and protein contents were higher ($p<0.05$) in BFG. Based on the SGR values, it is concluded that, biofloc technology enhances the growth of the tilapia juveniles. Proximate analysis of the biofloc revealed that, biofloc formed in BFG has higher nutrient value. Further, water quality should be monitored carefully in BFT tanks since dissolved oxygen contents can reach to the critical levels.

Keywords: Biofloc, GIFT Tilapia, Growth, Water quality