

GROWTH PERFORMANCE OF GIFT TILAPIA FED WITH AZOLLA (*Azolla pinnata*) INCORPORATED FEED

H.M.A.I. Kumari, R.H.G.R. Wathsala and V.A. Wijesekara

*Department of Animal and Food Sciences, Faculty of Agriculture, Rajarata
University of Sri Lanka, Anuradhapura, Sri Lanka.*

Azolla is a potential fish feed ingredient due to its high nutritional value, abundant production and low cost of production. This study investigated the replacement of protein sources with azolla in fish feed formulation, using Genetically Improved Farm Tilapia (GIFT) as a model to assess growth performances and cost-effectiveness. A commercial feed was used as a positive control (PC). Iso-protein feed was prepared, supplementing the negative control (NC) of 0% azolla with 15% (T1), 20% (T2), and 25% (T3) of Azolla. The feed was prepared using air-dried Azolla powder. Tilapia fingerlings (body weight: 1.72 ± 0.09 g) were stocked in fifteen rectangular tanks (60 cm $\times$ 30 cm $\times$ 30 cm). Three replicates were conducted per treatment, each comprising 15 fingerlings. They were fed with the treatments for 45 days. The proximate compositions, quality parameters of feeds and growth parameters of the fingerlings were analyzed by using ANOVA. The color and water stability of the feeds were significantly different ($p < 0.05$) while PC had better quality parameters. Water quality parameters; pH (6.6-7.5), salinity (0.51-0.56 PSU), temperature (26-28°C), and nitrate nitrogen (1.9 - 2.9 mg L⁻¹) of all fish tanks reported within acceptable levels. Nevertheless, there was a significant difference ($p < 0.05$) in turbidity among the treatments, and the higher the azolla percentage, the turbidity level increased from 3.8 to 8.5 NTU. Weight gain (WG), length gain (LG), and specific growth rate (SGR) were significantly different among the treatments while PC had the highest WG ($475.06 \pm 2.11\%$), LG ($61.54 \pm 1.61\%$), and SGR ($2.02 \pm 0.02\%$ day⁻¹). Among the formulated feeds, the significantly highest SGR ($1.92 \pm 0.07\%$ day⁻¹) was observed in T3. Among the treatments, survival rates were insignificant ($p > 0.05$) and T3 exhibited a significantly lower ($p < 0.05$) incidence cost. Therefore, it can be concluded that incorporating 25% azolla (T3) in GIFT tilapia feed could achieve a higher specific growth rate while saving on feed cost.

Keywords: Azolla powder, Growth parameters, Incidence cost, Water quality