FORMULATION OF A FISH FEED FOR TILAPIA FINGERLINGS BY INCORPORATING FISH BY-PRODUCTS

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Feeds account for the highest operating costs in aquaculture when fish meals use as the main protein ingredient. Whereas, fish offals are waste materials which may be used as an animal protein source in fish feeds, and their recycling is a problem in the fish industry to be addressed. Hence, this study was conducted to evaluate the suitability of fish by-products in formulating fish feed for tilapia fingerlings. Fish offals were collected and processed in to a powder. Considering the nutrient requirements of tilapia fingerlings, two diets were prepared using fish powder originating from direct sun drying (T1) and boiling followed by sun drying (T2). Commercial feed (C) was used as the control. Tilapia fingerlings (body weight=2.50±0.04 g) were stocked in rectangular tanks. There were four replicates per each treatment and replicate consisted with 20 fingerlings. They were fed with the treatment diets for 40 days. Proximate compositions and quality parameters of the diets were evaluated and growth parameters of fingerlings were measured. Colour and water stability of the feeds were significantly different ($p<0.05$) as T1 had better quality parameters than T2. Water quality parameters; pH (6.8-7.0), salinity (0.10-2.50 psu), temperature (29-30ºC) and nitrate nitrogen (0.50-13.85 mg L^{-1}) of all fish tanks were fell within FAO recommended levels. Weight gain (391.01±9.27% vs. 357.11±13.59%), total length gain (86.59±2.04% vs. 74.78±0.73%) and specific growth rate (3.97±0. 04% day^{-1} vs. 3.78±0.08% day^{-1}) were higher ($p>0.05$) in fingerlings fed with T1 compared to T2, while the respective values being similar with C. Survival rates of fingerlings were insignificant ($p>0.05$) among the treatments. According to the cost analysis, T1 exhibited a significantly lower ($p<0.05$) incidence cost. Hence, the feed formulated with sun-dried fish powder can be considered as a cost-effective feed that could be utilized for intensive farming of tilapia fingerlings.

Keywords: Growth performances, Incidence cost, Survival rate