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(Abstract)

USE OF DUCKWEED (*Wolffia* SP) AS AN ALTERNATIVE FISH FEED IN THE REARING OF ADVANCED FRY OF TILAPIA (*Oreochromis niloticus*) IN CEMENT TANKS

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Use of duckweed (*Wolffia* sp.), a nourishing and small aquatic weed abundantly found in paddy fields and seasonal tanks in the dry zone, as a feed for rearing Tilapia (*Oreochromis niloticus*) was investigated. Tilapia is in high demand in the rural areas due to its taste, low cost and abundance and could be used for development of rural aquaculture. Low cost aqua-feed is necessary as commercial fish feed is expensive.

The trial was carried out at NARA, Colombo, for a period of 4 weeks. Six rectangular cement tanks of 1.6 m x 1.0 m x 0.5 m were used for the experiment. The tanks were cleaned, washed and filled with tap water up to 45 cm. After 5 days, Tilapia advanced fry (initial weight = 0.0754 ± 0.0441 g) obtained from the Aquaculture Development Centre in Udawalawe (NAQDA) were stocked at a stocking density of 500 fry m^{-3} .

Two feed types were tested, i.e. commercial feed (Cf) and fresh Duck weed (DW) (*Wolffia* sp.) in triplicate. Duckweed was cultured in 2 cement tanks and was provided twice per day, at a daily rate of 5% of body weight. Twenty fish in each tank were sampled weekly to determine average weight and adjust the feeding rate accordingly.

pH and water temperature were measured daily in the morning. Nitrite-nitrogen (NO_2), Nitrate-nitrogen (NO_3) and Total Ammonia Nitrogen (TAN) were measured once a week. After 41 days of rearing, the fish were harvested and % survivals were determined. Average Daily Growth (ADG), Specific Growth Rate in weight (SGR-W) and Feed Conversion Ratio (FCR) were determined and toxic un-ionized ammonia (NH_3) was calculated.

The mean Ammonia, Nitrate, and Nitrite in the 2 treatments i.e. Cf and DW were 0.0584 ± 0.0607 , 1.6793 ± 1.8364 , 0.009 ± 0.0188 and 0.0403 ± 0.0328 , 1.2142 ± 1.3170 , 0.0043 ± 0.0071 respectively. The mean water temperature in the 2 treatments was not different ($29.26 \text{ }^\circ\text{C} \pm 1.3936$). pH of the 2 treatments i.e. Cf and DW were 8.5651 ± 0.5361 and 8.7245 ± 0.6206 , respectively.

The Mean ADG, SGR-W and % survival of fish fed on commercial feed were 0.0261 ± 0.0076 , 6.7604 ± 1.7589 and 44.6 ± 16.35 respectively and those fed on Duckweed were 0.0061 ± 0.0018 , 5.0463 ± 0.8496 and 25.5 ± 6.74 . The FCR of commercial feed and Duckweed were 1.003 ± 0.6097 and 4.2066 ± 0.2462 respectively. The results indicate that *O. niloticus* advanced fry could be reared with duckweed (*wolffia*) as supplementary feed. However, further research will be needed to determine the optimum duckweed quantity as daily ration, as the amount of 5% body weight of feed per day was not sufficient.

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