

Effect of different types of diets on the growth performances of Guppy with *Bacopa monnieri* plant in a combined system

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The recent expansion of freshwater aquaculture may require a large quantity of fresh water. The limited availability of freshwater resources has forced the rethinking of wise use of freshwater in the aquaculture sector to concern the water productivity. In this experiment, Guppy (*Poecilia reticulata*) fish combined with Lunuwila (*Bacopa monnieri*) plant creates a concept of a simple aquaponic system. A sixty-day feeding trial was conducted to investigate the effects of three commercial feeds, commercial fish feed (T1), commercial prawn feed (T2) and a 1:1 combination of fish feed and prawn feed (T3) on the growth performances of Guppy in simple floating raft aquaponic system with Lunuwila plant. Control (C1) was designed only with fish without the floating raft which was fed with the commercial fish feed same as T1. Control 2 (C2) was designed only with hydroponic components without the fish to compare the plant growth. Triplicate groups of guppy male juveniles were stocked in 12 indoor plastic crates, at a stocking density of 15 fish/tank. Fish fed using their respective diet at the rate of 5% of their body weight and growth performance was measured. Fish growth in Treatment 2 showed significantly high mean weight (0.46 ± 0.002 g); the lowest feed conversion ratio (1.21 ± 0.01), the highest feed efficiency ratio (0.83 ± 0.01) and the highest protein efficiency ratio (2.01 ± 0.02). The plant growth showed the significantly highest mean weight of plant (1.47 ± 0.02 g), the highest mean length (17.26 ± 0.63 cm), the highest number of leaves (26.00 ± 1.15) and the highest mean root length (7.43 ± 0.23 cm) in T2. Based on fish growth performance and plant growth parameters, T2 diet could take as the best diet among the treatments. Thus, the study revealed that the commercial prawn diet could be recommend for the co-cultivation of Guppy and Lunuwila plants in a simple floating raft aquaponic system.

Keywords: aquaponics system, fish feeds, growth performance, Guppy, Lunuwila plant

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