

Abstract

The study amalgamated earthworm and agro-industrial wastes through vermicomposting and then evaluated the potential of the bedding (mixture of *Eisenia fetida* and vermicompost) to replace fishmeal in semi-intensive farming of *Oreochromis niloticus*. The bedding was used to substitute fishmeal at inclusion rates of 100, 60, 30 and 0% (D100, D60, D30 and control D0). In triplicates, the four homogeneous diets were fed to quadruplicate groups of 30 g *O. niloticus* for 112 days. There was no significant difference ($p > .05$) in mortalities, average length gain and FCR among all tests. Nevertheless, diet D0 had significantly ($p < .05$) superior amino acid profile, low fibre content and fish carcass crude protein ($63.2 \pm 0.72\%$ dry matter). Subsequently, D30 and D0 produced fish with significantly higher ($p < .05$) mean weight gain (256.03 ± 0.4 g) and biomass (369,136 g) respectively. On the contrary, diet D100 had significantly higher ($p < .05$) crude lipids content ($9.4 \pm 0.6\%$ dry matter), economic returns and profit index than the control diet due to the comparatively low cost of producing the earthworm bedding. This simple biotechnology can commercially be upscaled to sustainably produce cheap and nutritious fish feed capable of increasing yields and maximizing profits.