

ABSTRACT

Two legume seeds Vigna catiangu and Phaseolus mungo were tested for the possibility of using as a partial replacement of fishmeal in practical diets for young Oreochromis niloticus (L.) diets. 20 diets were evaluated in this study each for 70 days using a closed recirculating system.

Control diets were prepared using fishmeal as the main protein supplement of 20% (C4), 25% (C3) and 28% (C2 and C1) protein levels. The highest protein level was further evaluated at 14% and 22% lipid levels. Control diets were served as reference to evaluate the test diets, which had fishmeal substitution levels of 25% (V1, V3, P1 and P2) and 50% (V2 and V4) in 28% protein diets, 33% (V5, and P3) 66% (V6 and P4) in 25% protein diets and 20% (V7 and P5, 60% (V8 and P6) and 100% (V9 and P7) in 20% protein diets. All the diets were tested with 2-3 g size fish while 28% protein diets were also evaluated for fish of 4-5 g size.

All fish were fed ad libitum twice a day except 22% lipid diets which were also tested for a feeding frequency of thrice a day.

Daily variability of food consumption showed a rhythmic pattern. Absolute consumption gradually increased with fish growth. % ADG decreased as the plant inclusion level increased. Poor performance were observed for SGR, FCR and PER as the substitution level of fishmeal increased except at 20% substitution of P.mungo.

C2 gave the best %ADG, SGR and P2 produced the best FCR of 1.81. PER tends to increase as the protein level in the diet goes down. Best NPU was recorded for P5 diet.

Digestibility was estimated using Cr_2O_3 and crude fibre. Crude fibre estimation was higher than the Cr_2O_3 estimations. As the dietary protein level decreases the dry matter digestibility tends to increase. However, protein digestibility increased with increasing plant inclusion level in the diets.

Carcass composition indicated that the initial moisture content was reduced, significantly, in all the diets at the end of the trial while protein and lipid contents increased. As the dietary protein level decreased carcass lipid increased from 8.84% to 11.19%.

Economic evaluation revealed that diet V9 is the best from an economical stand point but poor in the growth performance. Fish maintained on P6 and P7 diets were the costliest to produce 1 Kg of fish.