

FISH FEED DEVELOPMENT FOR SUSTAINABLE AQUACULTURE FISH PRODUCTION IN AFRICA

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Abstract:

Combinations of three commercial digestive enzyme supplements (protease, carbohydrase and phytase) were added at the rate of 50g/kg to Fish: Soybean (50:50) meal diets to evaluate their effects on the efficiency of soybean meal as a substitute for fishmeal in practical diets for *Clarias gariepinus* juveniles (9.38 + 0.04g) in a 30-day trial in in-door plastic tanks. Five diets were evaluated: T1 (control, with fishmeal (i.e. 100:0 diet) as the sole protein source without enzyme); T2 (fishmeal:soybean (50:50) without enzyme); T3 (50:50 diet supplemented with protease and carbohydrase); T4 (50:50 diet with phytase and carbohydrase) and T5 (50:50 diet with protease and phytase). The fish were fed to satiation once daily at 9.00hrs. Results showed that all treatments supported the growth of *Clarias gariepinus*, as mean fish weight increased from 9.38 to 21.66g during the experimental period. No mortality was recorded under all the treatments during the experiment. Average daily growth (ADG) was highest (0.45g/fish/d) in fish fed diet T3, followed by T5 (0.43); T1 (0.43); T2 (0.41) and T4 (0.33). Specific growth rate (SGR) was highest at 2.9% per day in T5, followed by T3, T1, T2 and T4 with 2.88, 2.85, 2.79 and 2.43% per day respectively. Feed conversion ratio (FCR) was lowest in T1 (1.09), followed by T5 (1.12), T3 (1.14), T2 (1.16) and T4 (1.24) respectively. Results confirmed that the use on supplementary digestive enzymes significantly improved the efficiency of soybean-based diets, suggesting that highly efficient fish diets could be produced using plant protein sources, thereby reducing the use of scarce and expensive fish-meal as protein source in fish feeds.