

Evaluation of growth, feed utilization, and economics of hybrid tilapia, *Oreochromis niloticus* × *Oreochromis aureus*, fed diets containing different protein sources in combination with distillers dried grains with solubles

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Abstract

A feeding trial was conducted in aquaria with juvenile hybrid tilapia (*Oreochromis niloticus* × *Oreochromis aureus*) to evaluate the use of different protein sources in combination with distillers dried grains with solubles (DDGS). Twelve 110-L glass aquaria were stocked with 28 juvenile (2.7 ± 0.5-g) hybrid tilapia per aquarium. Three replicate aquaria were randomly assigned to each of the four dietary treatments. Diets were isonitrogenous and isocaloric. The control diet contained 12% fish meal and 41% soybean meal as the primary protein sources (Diet 1). Each experimental diet contained 30% DDGS by weight, in combination with 8% fish meal and 34% soybean meal (Diet 2), 26% meat and bone meal (MBM), and 16% soybean meal (Diet 3), or 46% soybean meal alone (Diet 4). Fish were fed to apparent satiation twice a day for 10 weeks. There were no significant differences ($P > 0.05$) in average weight gain, specific growth rate (SGR), feed conversion ratio (FCR), and protein efficiency ratio (PER) among tilapia fed Diets 1, 2, and 3. Fish fed Diet 4 had significantly lower ($P < 0.05$) average weight gain, SGR, and PER than fish fed Diets 1 and 3. Relative cost per unit weight gain for Diets 1, 2, and 3 were statistically similar ($P > 0.05$), while cost per unit weight gain for Diet 4 was significantly higher ($P < 0.05$) than other diets. Diet 3 represented approximately a 20% cost savings compared with the control diet, with no reduction in growth. This study indicates that diets without fish meal containing 30% DDGS in combination with MBM and soybean meal provide good growth in tilapia. A diet without animal protein did not support acceptable growth.

Aquaculture Research

Volume 35 Issue 4, Page 365 - March 2004