

NOTICE OF PUBLICATION



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RESEARCH REPORTS

Sustainable Aquaculture for a Secure Future

Title: Fishmeal-Free Diets Improve the Cost Effectiveness of Culturing Nile Tilapia (*Oreochromis niloticus* L.) in Ponds Under an Alternate Day Feeding Strategy

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Abstract: Feed constitutes 60-70% of total production costs of tilapia (*Oreochromis spp.*). Reductions in quantity of feed used for fish growout and in the cost of formulated feeds are two approaches to containing feed costs. Our previous studies show that alternate day feeding at full ration produces Nile tilapia (*O. niloticus*) of comparable body size and harvest yield as those fed daily at full ration. The reduced feed consumption and 100% improved feed conversion with fish on the alternative day feeding strategy provided a significant cost savings to the semi-intensive growout of Nile tilapia in ponds in the Philippines. The cost of commercial fish feeds are rising sharply as the demand for fishmeal increases and its supply declines. We evaluated the growth performance of tilapia fed on alternate days with diets that incorporated plant ingredients widely available in the Philippines or other semi-tropical or tropical regions (cassava meal, copra meal, coconut oil, rice bran) and that contained porkmeal to replace fishmeal. Fish were grown out in ponds for 120 days with isocaloric balanced, 0% and 6% fishmeal diets contained 31% crude protein and 6% crude fat. Fish showed similar performance on diets containing 0% and 6% fishmeal. Final body weight, total length, specific growth rate were virtually identical in fish on the two diets. Survival rates were 84% and 89% for fish on the 0% and 6% fishmeal diets, respectively. Feed consumption and feed conversion were also similar among the two groups. Total extrapolated yield at harvest was 3062 and 3080 kg fish/hectare for the 0% and 6% fishmeal groups, respectively. A marginal budget analysis showed an 8% improved return on fish

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fed the cheaper diet lacking fishmeal. This along with the alternative day feeding strategy previously shown to be as effective as daily feeding protocols has the potential of reducing overall feed costs for growing marketable size tilapia by > 60%. Collectively, the results show that substitution of diets containing fishmeal with cheaper and more sustainable sources of protein are effective options for reducing the costs without negatively impacting the production of tilapia.

This abstract was excerpted from the original paper, which was published in Better Science, Better Fish, Better Life: Proceedings of the Ninth International Symposium on Tilapia in Aquaculture (2011) [Edited By: Liu Liping and Kevin Fitzsimmons] pg: 95-101

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