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RESEARCH REPORTS

Sustainable Aquaculture for a Secure Future

Title: Stocking Ratios of Hybrid Catfish (*Clarias macrocephalus* x *C. gariepinus*) and Nile Tilapia (*Oreochromis Niloticus*) in an Intensive Polyculture

Author(s): Nguyen Thanh Long¹ and Yang Yi²

¹ Cantho University
Cantho, Vietnam

² Asian Institute of Technology
PathumThani, Thailand

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Abstract: An experiment was conducted in fifteen 5-m² cement tanks for 91 days to determine the appropriate stocking ratio of Nile tilapia (*Oreochromis niloticus*) to hybrid catfish (*Clarias macrocephalus* x *C. gariepinus*) and effects of stocking ratios on the growth of both Nile tilapia and hybrid catfish, water quality, nutrient utilization efficiency and economic returns. Hybrid catfish fingerlings of 25-26 g size were stocked at 20 fish/m², while Nile tilapia fingerlings of 20-23 g size were stocked at 0, 1, 2, 3, 4, 5 and 6 fish/m², giving stocking ratios of Nile tilapia to hybrid catfish of 0:20, 1:20, 2:20, 3:20, 4:20, 5:20, and 6:20, respectively. The control (0:20) had three replicates, while other treatments had two replicates each. No fertilizers were applied to the tanks. Floating pelleted feed (30% crude protein) was given twice daily at 0830 and 1530 h six days per week. Feed rations were calculated based only on hybrid catfish biomass at feeding rates of 5% and 3% body weight per day for hybrid catfish smaller and larger than 100 g, respectively. All tanks were aerated by airstones throughout the experimental period.

The addition of Nile tilapia into hybrid catfish tanks did not cause any significant effects on survival, growth and yields of hybrid catfish ($P > 0.05$). Survival of tilapia was not significantly different in the polyculture treatments ($P > 0.05$). With increasing stocking ratios of Nile tilapia to hybrid catfish, mean tilapia weights at harvest decreased linearly, while both net and gross tilapia yields increased linearly ($P < 0.05$). FCRs based on either

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hybrid catfish alone or combined hybrid catfish and Nile tilapia were not significantly different among all treatments ($P > 0.05$). Combined net yields were not significantly different among all treatments ($P > 0.05$), however, combined gross yields increased linearly with increasing stocking ratios of Nile tilapia to hybrid catfish ($P < 0.05$).

The present experiment indicates that intensive polyculture of hybrid catfish and Nile tilapia is feasible technically and economically. However, further research is needed to optimize the stocking ratio of Nile tilapia to hybrid catfish to reduce the nutrient release to the environment.

This abstract is excerpted from the original paper, which was a proceeding of the Sixth International Symposium on Tilapia in Aquaculture.

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