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RESEARCH REPORTS

SUSTAINABLE AQUACULTURE FOR A SECURE FUTURE

Title: Techniques to Mitigate Clay Turbidity Problems in Fertilized Earthen Fish Ponds

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Abstract: An experiment was conducted in fifteen earthen ponds at the Asian Institute of Technology (AIT), Thailand, during June to November 1998 to identify the source of clay turbidity mitigation techniques and their effects on fish growth and water quality, and to find a suitable approach for turbidity mitigation during the rainy season. There were five treatments: (A) control; (B) covering upper 50 cm pond dikes with black plastic material to prevent turbidity from run-off (edge-covered); (C) covering pond bottoms with small mesh (1 cm) net to prevent turbidity from fish disturbance (bottom-covered); and (E) covering pond dikes with rice straw (straw-covered). All ponds were fertilized weekly with chicken manure at a rate of 500 kg ha⁻¹ (dry matter basis) supplemented with urea and triple superphosphate (TSP) to provide 28 kg N per ha per week and 7 kg P per ha per week. Sex-reversed all-male Nile tilapia (*Oreochromis niloticus*) were stocked at two fish per square meter at a size of 19.0±1.0 g. Results showed clearly that clay turbidity was mainly from the run-off of pond dikes but not from fish disturbance of pond bottom during the rainy season and indicated that covering pond dike was effective in mitigating clay turbidity caused by the run-off in fish ponds. No significant differences of fish survival were found among all treatments. The straw- and weed-covered treatments resulted in significantly higher fish growth and yield. In contrast, the edge- and bottom-covered treatments did not increase fish yield, compared with the control. Covering pond dikes with rice straw not only reduces clay turbidity caused by run-off but also enhance Nile tilapia growth probably through microbial biofilm developed on the rice straw. Therefore, covering pond dikes with rice straw is a cost-effective technique for clay turbidity mitigation in fish ponds during the rainy season.

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