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RESEARCH REPORTS

Sustainable Aquaculture for a Secure Future

Title: A Systematic Approach to Maximizing Nutrient Efficiency and Growth of Nile Tilapia (*Oreochromis niloticus*) Under Semi-Intensive Pond Culture

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Abstract: Pond management strategies have been developed in Thailand to optimize use of nutrients in fertilizers for high and predictable yields of Nile tilapia. Application of concepts dealing with phosphorus : nitrogen : carbon ratios needed in fertilized ponds and research with fish stocking strategies have led to the highest yields reported for Nile tilapia under semi-intensive culture. We obtained mean net fish yields of over 50 kg/ha/day in 75 days, and 32 kg/ha/day with 150 day growout. Ponds had high concentrations of dissolved inorganic carbon (DIC). DIC at dawn was 20-30g/m². Ponds were stocked with 3 fish/m². They were fertilized at a rate of 1 g dry weight chicken manure/m²/day (70 kg/ha/wk) and supplemental urea and triple superphosphate to give a nitrogen (TN) input of 0.5 g/m²/day and a TN : TF ratio of 4 : 1. Ammonia was adequately cycled in ponds to eliminate concern for adverse influences of un-ionized ammonia on fish growth. Artificial aeration of ponds was not required. Mean dissolved oxygen at dawn was near 3.0 mg/L. Cost-effectiveness of this approach was determined for tilapia production in the tropics.

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