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Title: Supplemental feeding of tilapia in fertilized ponds

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Abstract: The addition of feed to fertilized fish ponds was evaluated by adding feed alone, feed plus fertilizer, or fertilizer alone to nine ponds stocked with Nile tilapia *(Oreochromis niloticus)*. Two experiments were conducted. The first had 500 fish per 250 m^2 pond in 3-treatments: ad-libitum feeding; fertilizer only; or fertilizer and ad-libitum feeding. The second experiment had 5 treatments with 750 fish per pond: ad-libitum feed only; fertilizer only; or 0.25, 0.50, and 0.75 satiation ration plus fertilizer. Ponds in Thailand were maintained for 155-162 d, during which chemical and physical properties were monitored. In experiment 1 tilapia growth was highest in feed only ponds, and lowest in fertilizer only ponds. Net yield did not differ significantly among treatments, due to variation in survival. In experiment 2, tilapia growth was lowest in fertilizer only ponds, intermediate in 0.25 ration ponds, and highest in 0.50, 0.75, and ad-libitum ponds. The latter treatments were not significantly different. Multiple regressions for each experiment indicated only 47-87% of the variance in growth was explained by feed and fertilizer input, while 52-89% of the variance in yield was explained by those factors. For both experiments combined, 90.3% of the variance in growth was explained by feed input, fertilizer input, alkalinity, and total inorganic nitrogen concentration. For yield, R^2 was 0.888 and the regression included feed input, pH, and number of low dissolved oxygen events. Experiment 1 appeared to approach carrying capacity near the end, while no reduction in growth occurred in experiment 2 at higher fish density and biomass. Reductions in growth in experiment 1 were not correlated with declining water quality late in the grow out. Combinations of feed and fertilizer were most efficient in growing tilapia to large size (500 g) compared to complete feeding or fertilizing alone.

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