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RESEARCH REPORTS

Sustainable Aquaculture for a Secure Future

Title: Clarias and tilapia interaction in polyculture

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Abstract: Experiments were conducted to assess the effects of polyculture on tilapia growth and to evaluate African catfish (*Clarias gariepinus*) as a predator control for unwanted tilapia offspring in a polyculture system. Three treatments were tested using nine 200 m^2 earthen ponds. Ponds were stocked with male tilapia in treatment 1 (T_1), mixed sex tilapia in treatment 2 (T_2), and mixed sex tilapia and catfish in treatment 3 (T_3). Fish were fed a commercial diet ration of 1.5% of body weight per day twice a day at 0900 hr and 1500 hr. Feed inputs, adjusted biweekly, were based on Nile tilapia (*Oreochromis niloticus*) biomass. Gut contents of African catfish were analyzed two weeks prior to termination of the experiment. Water quality parameters were estimated biweekly. Diel analysis of dissolved oxygen (DO), temperature, and pH were performed at three depths and six time intervals, and net primary productivity (NNP) was estimated using DO concentrations. A t-test was used to compare final fry biomass, daily weight gain (DWG) of Nile tilapia, net fish yield (NFY), and the diel variability of gut content. DWG and NFY were significantly higher for treatment T_1 in which male Nile tilapia were stocked. Mean fry biomass for each treatment showed large fluctuations. Statistical analyses of two of the three replicates of T_1, T_2, and all three replicates of T_3 indicated that T_2 production was significantly greater than T_3 production. Forty-seven percent of the sampled African catfish contained one of the following in the stomach or intestines: whole fish, partially digested fish, fish flesh, fish scales, fins, or bones; twenty-six percent of the African catfish had freshly ingested fry in the stomach. Biweekly variation in mean values for water quality parameters were comparable for each treatment. Tilapia production in polyculture with African catfish was significantly

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lower than the culture systems with either all male tilapia or mixed sex tilapia. African catfish predation of tilapia fry was sufficiently effective to serve as a population control for tilapia; however, active predation occurred only in semi-intensive culture systems where fish were fed their natural diet.

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