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RESEARCH REPORTS

SUSTAINABLE AQUACULTURE FOR A SECURE FUTURE

Title: Response to selection for body weight of Nile tilapia (*Oreochromis niloticus*) in different culture environments

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Abstract: Within-family selection was practiced in Nile tilapia (*Oreochromis niloticus*) for 12 generations to increase body weight at 16 weeks of age. Response to selection was evaluated based on the progenies from two selected generations (S_{10} , S_{13}). Two variants of control lines (random-bred control and mean selected control) were used to account for environmental changes during the course of the selection experiments. A genetically improved strain (GIFT strain) and a commercial strain (Israel strain) were included in the performance evaluation. Eight experiments were conducted between 1993 and 1997. The different test groups were stocked communally in tanks, hapas, and ponds. Results showed that the selected group consistently had higher final body weights in the three test culture environments. The highest response was observed in the selection environment (tanks). A higher response occurred in the tanks for S_{10} (68% as deviation from the RBC group) and the response was still substantial at S_{13} . A significant interaction was observed in the 1996 GxE study but this can be attributed to a scale effect, a change in the magnitude of growth difference within group from one environment to another. In this study, the pond environment provided more optimal condition for growth than the tank and hapa environments. The results of 1993 and 1997 GxE analyses did not show significant test group x environment interaction. Overall, the results of these growth evaluations showed that the selected group produced from within-family selection had improved growth performance and the selection response achieved in the tanks was apparent in hapa and pond environments.

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