ABSTRACT

THE MARICULTURE POTENTIAL OF TWO STRAINS OF TILAPIA IN JAMAICA

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The effects of varying schedules of acclimation to elevated salinities of 34 o/oo (seawater = 35 o/oo) on red hybrid tilapia (Sunfish Hatcheries Strain), and Oreochromis niloticus fingerlings spawned and reared in freshwater were investigated. The objective of this study was to determine the relative salt tolerance of the two strains of locally available fish.

Red hybrid tilapia tested displayed no mortality when subjected to salinity increases of 0-34 o/oo over 72 and 48 hour periods. On direct transfer to 34 o/oo, 100% mortality was observed. O. niloticus displayed a high mortality (75%) along with disease problems when subjected to salinity increases of 0-34 o/oo over a five day period. The remaining fish died, apparently due to handling. Severe disease problems and mortality became apparent when the salinity to which fish were

exposed was greater than or equal to 21 o/oo.

As a result of the high tolerance displayed to full strength seawater by the red hybrid, growth trials were conducted to compare survival and growth of fingerlings in fresh and seawater. Fingerlings of average weight 21-22 g were grown in rectangular plastic containers of volume 1000 l at a density of 50 fish per tank for 4 weeks. The growth rate of fish acclimated to seawater (0.88 g/day) was observed to be significantly higher than that obtained in freshwater (0.64 g/day). This ability of the red hybrid to survive under fully marine conditions is a positive factor for the development of Tilapia mariculture in Jamaica.

A preliminary study was conducted to investigate growth and survival of seawater-acclimated red hybrid tilapia in floating cages. The cages were sited in Bowden Bay, an area currently used for oyster culture. The objective was to examine the suitability of cages as rearing units for red hybrid tilapia in seawater.

All male fish of average weight 40-50 g were stocked in three rectangular cages (2 m^3) at densities of 100,150 and 200 fish per cage. After three weeks in the cages, infection by the ectoparasite Neobenedenia melleni

(Platyhelminthes: Monogenea) resulted in high mortality. Treatment of the surviving fish for 30 seconds in a formalin bath (10 ppm), along with relocation of the cages to deeper water proved to be an effective control strategy.

A new set of fish were stocked in relocated cages at a density of 100 fish/cage. Specific growth rate and percentage survival ranged from 2.1-3.2%/day and 86-98, respectively. This compares well with production figures obtained for red tilapia cultured in freshwater systems in Jamaica.