

### 13. THE EFFECT OF MANURE APPLICATION AND SUPPLEMENTARY FEEDING ON THE GROWTH OF TILAPIA IN CONCRETE TANKS

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This study was undertaken at Kingolwira fingerling hatchery, Morogoro, to determine the effect of cow dung manure application and maize bran and leucaena feeding on water quality variables, growth, survival and yield of Nile tilapia. Sixteen 10 m<sup>3</sup> tanks were stocked at 10 fingerlings per tank. The fish in the tanks were assigned to eight treatment combinations in a 2<sup>3</sup> factorial design, each treatment being replicated twice. The main treatments comprised of manuring with cow dung, maize bran supplementation and Leucaena supplementation. These main treatments were allocated either singly or in combination to form the eight treatment combinations. Results from the study showed that growth and yield were significantly ( $p < 0.05$ ) affected by cow dung manure applications and maize bran supplementation, while Leucaena supplementation was not significant ( $p > 0.05$ ). The mean weight at harvest were  $39.4 \pm 1.65$  and  $42.0 \pm 2.03$  g/fish from fertilized and maize bran supplemented tanks respectively. The mean yields of fish at harvest from fertilized and bran supplemented tanks were  $494 \pm 0.02$  and  $550 \pm 0.02$  g/tank respectively. There were no significant ( $p > 0.05$ ) effects of treatments on survival rates of the fish. However, the lowest survival rate (70%) was found in tanks supplemented with Leucaena. Fish receiving neither feed supplements nor manure had 100% survival rate, but they had the lowest mean weight. The ranges of temperature (24 – 27°C), pH (8.3 – 8.7), ammonium (0.02 – 0.05 mg/l) and nitrite (0.003 – 0.009 mg/l) in the present study were within the accepted range of tolerance for fish culture. The level of ammonia and nitrite increased with leucaena supplementation. Furthermore, the values of 2.31 and 2.46 mg/m<sup>3</sup> for phytoplankton biomass in tanks supplemented with manure and bran respectively suggest that their use can enhance satisfactory stand plankton. It is concluded from these results that, the use of cow dung manure and maize bran can improve the performance

of tilapia in tanks. These inputs increase the concentration of plankton which provides a valuable source of natural feed for growth and production of the fish. Furthermore, the quality of water in tanks may remain good for fish culture with application of manure, bran and leucaena.