

Effect of Feeding Levels and Feeding Frequency on Growth Performance and Feed Utilization of Red Tilapia Fingerlings (*Tilapia hornorum* X *Tilapia mossambicus*) .

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Abstract

The present study was carried out at the Mariculture research center (M.R.C.) of the Suez Canal University, EL-Arish, North Sinai, Egypt. It aims to evaluate the feasibility of Red Tilapia culture in salt water. Effect of feeding levels and feeding regimes on growth performance and feed utilization of Red Tilapia fingerlings. Three feeding levels (2, 3 and 4% of total fish biomass) and within each feeding level two feeding frequency (4 times/day and 6 times/day). The fish had an average initial weight of 5.50 g and 32% crude protein were tested .The results showed that: The fish fed on 4% feeding levels from total fish biomass and 4 times /day have the heaviest final body weight (29.68+4.35 g) and have a daily weight gain and specific growth rate of 0.28+0.05 (g/fish/day) and 1.98+0.16 (%/day) , respectively.

Key words: Red Tilapia, Feeding level, feeding regimes, Growth, Feed efficiency.

Introduction

In Egypt, where fresh water is not plentiful, the competition between agriculture and fish farming tends to increase the pressure on aquaculture to use more marginal areas and water sources less suitable for agriculture .The shortage in fresh water in many countries and the competition for it in agriculture and other urban activities has increased the pressure to develop aquaculture in brackish water and sea water (El-Sayed,2006).Tilapia are important species, especially for tropical aquaculture and euryhaline fish that can live and thrive in a wide range of salinity from fresh water to full sea water even though some species tolerate a wide range of salinity than others (Philippart and Ruwet,1982; Gunner *et al.*,2005; Kamal and Mari,2005).A survey of the literature suggests that *Oreochromis niloticus* not among the more saline tolerant species.Watanabe *et al.* (1985) defined *O. niloticus* as only a moderately salt – tolerant species and suggested that optimizing transfer time from fresh – to salt – water may help improving its performance in saline waters . Acclimation procedures for euryhaline tilapias intended for saline water culture were reviewed by Perschbacher (1992). He reported that, while *O. mossambicus* can be acclimated in a single – step (intermediate salinity directly to final sea water salinity) and requires only one day at the intermediate salinity for sea water acclimation with no mortality; *O. aureus* requires 4 days and *O. niloticus* needs 8 days. AL-Amoudi (1987) compared the salinity tolerance of several species and hybrids and found *O. aureus*, *O. spilurus*, *O. mossambicus* to be more saline tolerant than other. Villegas (1990) found that *O. niloticus* was

significantly less saline tolerant than *O. mossambicus* and their reciprocal F1 hybrids. Doudet (1992) evaluated several species and hybrid for their suitability to be cultured in the brackish waters of lagoon in the lovry coast, *O. niloticus* not the lagoon species, sarotherodon melanotheron and tilapia guineensis were suitable. *O. aureus* was found best, followed by the *O. niloticus*, *O. aureus* and *O. mossambicus*, *O. niloticus* hybrids. Several Red Tilapias, such as the Taiwanese (Cheong *et al.*, 1987) and Florida (e.g.Thouard *et al.*, 1990; Watanabe *et al.* (1990) red strain, originating by hybridization of either *O. niloticus* or *O. mossambicus*, are also considered as saline tolerant. Pongthana *et al.*(2010) comparative performance of four red tilapia strains and their crosses in fresh- and saline water environments .They found that the growth performance of red tilapia was significantly lower in saline than in freshwater environments ($P < 0.001$).

Ng *et al.* .(2013) show that the use of alternative lipids in tilapia feeds is becoming increasingly commonplace due to the rising cost of fish oil (FO).The results present by same authers appeared that growth performance and feeding efficiencies were not significantly better ($P > 0.05$) for tilapia fed the FO based-diet than the alternative oil-based diets while none of the body indices or carcass/fillet yield were impacted by the dietary lipid source. **The effects of fish oil-enriched diets on growth, feed conversion and fatty acid content of red hybrid tilapia, *Oreochromis* sp.examinated by Al-Souti *et al.* (2012). They reported that Juvenile, red hybrid tilapia were fed diets containing cod liver oil (0%, 4%, 8%, 12% of total diet) substituted against corn oil. After 10 weeks, no significant**

