

6<sup>th</sup> Global Summit on  
**AQUACULTURE AND FISHERIES 2017**  
May 25-26, 2017 Osaka, Japan

**Effects of acute inbreeding on the growth performance and yield of Mozambique Tilapia, *Oreochromis mossambicus***

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Tilapia species plays an important food security role in developing countries and in Africa. However, it is often farmed by small/medium scale farmers characterized by low efficiency and yield with poor technical knowledge of basic genetics and breeding principles. When animals are kept in captivity and in groups that depend on artificial mating, inbreeding is inevitable. Large amounts of inbreeding in these farming communities with small effective breeding population may reduce production efficiency. In as much as inbreeding is unavoidable, understanding its effects may aid in the decision making processes of breeding programmes, especially within small/medium scale hatcheries in developing countries including Africa. Therefore, the objective of this study was to evaluate tilapia's (*Oreochromis mossambicus*) productivity under the maximum possible inbreeding conditions. Full-sib mating was conducted on *O. mossambicus* over three generations of repeated mating at Welgevallen experimental farm at the University of Stellenbosch. A total of 25 males and 25 females were used as the parental stock, where a 14-day spawning period was followed by three generations of full-sib mating. Measurements of body weight (BW), standard length (SL) and specific growth rate (SGR) were recorded for each of the sixteen randomly sampled fish per replicate, at two weeks growth intervals for the period of 90 days at each generation. Regression analysis was used to determine the rate of phenotypic depression per unit increase in F and analysis of variance used to establish the difference between the means. The effect of acute inbreeding on growth performance, yield and occurrence of deformity traits studied in this experiment on Mozambique tilapia, *Oreochromis mossambicus* at two levels of inbreeding coefficients, namely F=0.250 and F=0.375 showed the following results. The base population with F=0.000 was established through the crossing of two geographically separated and genetically unrelated farm stocks. At each generation, the inbreeding depression for body weight (BW), standard length (SL), specific growth rate (SGR) and yield were highly significant, but no linear relationship was found between level of inbreeding and inbreeding depression. Both condition factor (K) and the number of observed deformities appears not to be significantly affected by inbreeding at all levels of inbreeding studied. Over all, the average inbreeding depression at F=0.250 and F=0.375 was found to be 46.5 percent and 46.6 percent for body weight (BW); 18.2 percent and 18.0 percent for standard length (SL); 21.8 percent and 20.3 percent for specific growth rate (SGR) and 5.752 percent and 8.940 percent for flesh yield. The outbred Control group differed significantly ( $P<0.05$ ) from the six inbred family groups in terms of body weight (BW), standard length (SL), specific growth rate (SGR) and yield at all levels of inbreeding studied (F=0.250 and F=0.375). This study demonstrates that inbreeding has a significant negative effect on production traits of *Oreochromis mossambicus*, especially on growth. These results emphasize the need to create awareness amongst small scale farmers of the importance of preventing uncontrolled inbreeding in production systems, as well as to monitor inbreeding levels during the process of dissemination of improved fish strains to small/medium scale fish growers in developing countries, including Africa.

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