



# AQUACULTURE CRSP 21<sup>ST</sup> ANNUAL TECHNICAL REPORT

## EVALUATION OF GROWTH AND REPRODUCTIVE PERFORMANCE OF THREE STRAINS OF NILE TILAPIA (*OREOCHROMIS NILOTICUS*) FOUND IN KENYA FOR USE IN AQUACULTURE

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Abstract

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### ABSTRACT

Three strains of tilapia (Sagana, Turkana, and Victoria) found in Kenya are being evaluated to determine their culture characteristics. Tilapia fry of the three strains, averaging 0.5 to 0.56 g, were stocked at 7 m<sup>-2</sup> and after 65 days averaged 7.8 to 8.5 g with no difference among strains. Survivals differed, ranging from 79.3 ± 5.6% for Sagana to 89.7 ± 2.6% for Victoria. After a 97 d secondary nursery period, the mean gain per strain ranged from 15.9 ± 4.01 g for Turkana to 22.4 ± 1.5 g for Sagana. Survivals ranged for 57.0 ± 4.6% for Sagana to 85 ± 4.04% for Victoria. Average yields were greater for Victoria (1,190 ± 147 kg ha<sup>-1</sup>) and least for Sagana (891 ± 44.9 kg ha<sup>-1</sup>).

At Auburn University, four strains of *O. niloticus* were compared: two domesticated (Egypt and Ivory Coast) and two less domesticated (Sagana and Victoria). The Egypt and Ivory Coast strains had similar fecundity, with 1.17 and 1.29 seed g<sup>-1</sup> female. Ivory Coast females were better in egg incubation, with 91% of spawns being successfully incubated versus 55% for Egypt. Survival from egg to swim-up fry was 63.5 ± 38.9% for Egypt and 81.25 ± 22.2% for Ivory Coast. When reproductive characteristics of the Ivory Coast, Sagana, and Victoria strains were compared, the Ivory Coast strain reproduced more successfully, giving an average of 11.4 eggs g<sup>-1</sup> female with a survival to swim-up of 41.4 ± 37.9%. An average of 48.2% of the Ivory Coast females spawned, compared to 28.7 and 11.6% of the Sagana and Victoria, respectively.

Growth in the primary nursery trial was similar for Egypt and Ivory Coast strains, with fish averaging 2.6 g after 30 d. In a second primary nursery trial comparing Ivory Coast and Sagana strains, the average weights after 30 d were 2.45 ± 0.4 g and 2.12 ± 0.2 g, respectively, with a 95% mean survival.

During the secondary nursery trial where fish were grown outdoors and a commercial feed or cow manure was given as a nutrient source, or when reared indoors on a commercial feed, Egypt and Ivory Coast strains grew similarly in a given production setting. Differences in growth related to nutrient input and production setting were distinct. At harvest, fish in manured outdoor tanks averaged 21.8 g, while those given a commercial feed averaged 87.9 ± 23.1 g for Egypt and 103.2 ± 3.9 g for Ivory Coast. Fish in the recirculating system averaged 36 g. Survival was similar across all production settings, ranging from 91.0 ± 3.8% to 98.0 ± 2.0%.

