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RESEARCH REPORTS

Sustainable Aquaculture for a Secure Future

Title: **Growth Performance of a Genetically Improved Line of Nile Tilapia Under Tropical Conditions in Tabasco, Mexico**

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Abstract: The establishment of good quality broodstock treatments, their distribution to local hatcheries, and the implementation of intensive masculinization programs are basic steps for sustainable aquaculture. The selective breeding program supported by the CRSP from 2001 to 2003 was initiated using 220 females and 110 males obtained from a batch of fish purchased from Egypt by the state government. A second line is currently being selected from wild animals. We have identified a stock of wild Nile tilapia in the Usumacinta River that shows several advantageous phenotypic traits (small head, small tail, large body, and uniform color). For the first year of work, we were able to combine the efforts of the CRSP project and another supported by the National Council for Science and Technology (CONACyT-Mexico). This action allowed us to work at the Mariano Matamoros Hatchery using 200, 1,000, and 2,000 m2 ponds and to use fish first selected by Mario Fernandez in 2000. To date, we have selected organisms from the third generation (F3) based on a combination of length and condition factor and we are currently raising a fourth generation. In this study we evaluated six tilapia lines (three more than the originally proposed lines) in terms of growth, condition factor fillet production and feed conversion factor. The lines evaluated were: Tabasco-l, Control, Teapa, Wild-I, Wild 2 y Stirling. Fish were stocked in 2 m3 hapas at a density of 25 fish/m3. All hapas were placed in a single earthen pond. Average initial weight was 50 g. Best values obtained for weight correspond to the line Tabasco-1 averaging 446.2 g at the end of the grow-out trial. This line had a 1.77 g/day growth rate. Followed by the Stirling line with an average final weight of 439.47 g (1.74 g/day). The lowest value was obtained from fish of the Teapa line (original broodstock of the state hatchery) with an

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average final weight of 343.86 g (1.30 g/day). Fillet yield was higher for the Tabasco-l line (31.44% of body weight) and an average fillet weight of 130.1g, followed by the Stirling line (31.30% and 125.3g) Once again, the lowest value corresponded to the Teapa Line (28.70% and 99.6 g). From the first generation, the Tabasco-l line has demonstrated the productive potential that represents to farmers, allowing high yields at harvesting.

Spanish:
Fueron evaluadas seis líneas de tilapia *Oreochromis niloticus* en cuanto a crecimiento, factor de condición, rendimiento en filete y factor de conversión alimenticia. Las líneas de selección utilizados fueron: Tabasco-l, Control, Teapa, Silvestre-I, Silvestre 2 y Stirling. Los organismos se sembraron en jaulas de 2 m3 a una densidad de 25 organismos/m3 , con un total de 50 individuos por jaula, todas las jaulas fueron colocadas en un mismo estanque. El peso promedio de siembra fue de 70 g. Los mejores valores obtenidos para la variable peso, correspondieron a las líneas Tabasco-I con valores de 446.2 g., y una ganancia de 1.77 g/dia, seguido de Stirling con 439.47 g y una ganancia de 1.74 g/dia; el valor mas bajo correspondió a la linea teapa con un peso de 343.86 g. y ganancia de 1.30 g/dia. El rendimiento en filete presentó los mejores valores para la línea Tabasco-l , con un rendimiento de 31.44 % y un peso de filete de 130.1g; seguido de la línea Stirling con 31.30% y 125.3g; el valor mas bajo correspondió nuevamente para la línea Teapa con un rendimiento de 28.70% y un peso de filete de 99.6 g. La línea Tabasco-I aventajó al resto de las líneas para todas las medidas efectuadas. Desde su primera generacion la línea Tabasco-I, ha demostrado el potencial productivo que representa para los productores, al permitirles altos rendimientos en sus cosechas.

This abstract was excerpted from the original paper, which was in the Proceedings for the 7th International Symposium on Tilapia in Aquaculture (ISTA7), Wilfrido M. Contreras-Sanchez and Kevin Fitzsimmons eds., Vera Cruz, Mexico, 6-8 September 2006, pp.229-230.

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