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MONOSEX TILAPIA PRODUCTION THROUGH ANDROGENESIS: SELECTION OF INDIVIDUALS FOR SEX INHERITANCE CHARACTERISTICS FOR USE IN MONOSEX PRODUCTION

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Abstract*

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ABSTRACT

There is evidence that in domestic stocks of Nile tilapia (*Oreochromis niloticus*), sex ratios of individual pairs may vary from 1:1. Several authors have found wide variation in sex ratios from one single pair mating to another. The grand mean for the population might average 1:1, but individual pairs would produce sets of progeny where the male frequency may range from 5 to 100%. This variability in sex ratios is a challenge to the development of YY breeding programs, where sex determination is assumed to be controlled by the Y chromosome with no other factors involved. For YY production of males to be successful, variability in the percent males produced must be reduced, and parent lines that conform to a simple Mendelian inheritance must be established.

Nine families of Nile tilapia based on single pair matings have been selected, each with a sex ratio that was either highly skewed to male or female or that conformed closely to a 1:1 sex ratio. Matings within the families as well as across families are being conducted to determine the heritability of sex and the factors influencing it. Progeny from representative matings are being cultured in 45-l aquaria at temperatures of 27–28°C and 36°C during the period of gonadal differentiation to determine the effect of temperature on altering sex ratios and how that response may vary by family. A total of 80 within-family and 65 cross-family spawns have been obtained from the nine families. Additional pair spawns were made through 30 July 2000. The sets of progeny obtained to date are being grown to a sexable size to determine the frequency of each sex. Sex ratios from each set will be compared to those of other sibling matings and the frequency from the parent family.