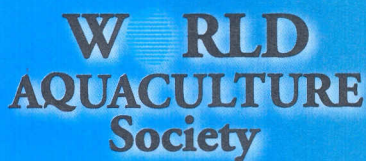


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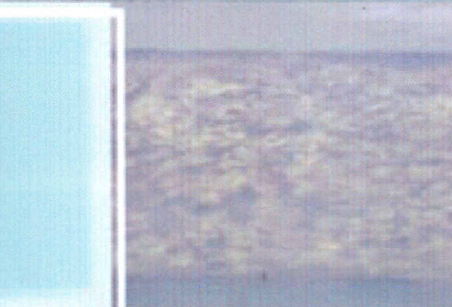
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GENETIC IMPROVEMENT PROGRAMS FOR RED TILAPIA *Oreochromis spp* IN ASIA

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Red tilapia (*Oreochromis spp*) has become popular in Asian countries due to its greater economic value relative to Nile tilapia. As there is a growing demand for quality seed of this species, the WorldFish Center has initiated a genetic improvement program for red tilapia in Thailand and another one in Malaysia. Several other countries in East and South East Asia (China, Bangladesh, Indonesia, Philippines and Vietnam) have also expressed their strong interest in developing or obtaining genetically improved strains.

In Thailand the selective breeding program for high growth has undergone the third cycle of selection. In the first two generations, the fish were performance tested in three different environments (freshwater pond, freshwater cages and saline water tank). Due to constraints with physical facilities, labours and resources, only two environments (freshwater pond and saline water tank) are practised in the latest generation (2010). Data were collected over two generations. Preliminary analysis showed that genetic gain was estimated at an average rate of 4-5% per generation (or per year). Statistical analyses were also performed to assess genotype by environment interaction.

In Malaysia, two batches of diallel cross involving three strains from Malaysia, Taiwan and Thailand were carried out in 2009. Growth data recorded in progeny of a total of 101 full- and half-sib families were combined to estimate additive genetic and heterotic effects. The best performing individuals within each cross combination were chosen to form the synthetic base population for the selection program. The first cycle of breeding and production was completed in 2010. The second cycle of production and selection is under way.

In both countries, the ultimate aim of the project is to develop a genetically improved strain of red tilapia with uniform red coloration, high survival and good adaptation to local environments. A successful development of genetically improved strains of red tilapia is expected to have a direct beneficial impact on fish farmers of developing countries in the region. Although the program is still at an early stage, there have been several requests for seed stock from farmers. Under prevailing farming conditions, the improved strain of red tilapia showed higher growth rate than locally available stock used by farmers. In the future we will conduct a formal on-farm field test to evaluate growth performance of the improved strain.