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Selective Breeding of Red Tilapia (*Oreochromis* spp) Via Diallel Cross Experiment and Molecular Markers

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Tilapia is an important farmed freshwater fish in Malaysia. Tilapia farming was introduced in Malaysia in 1940's. In 2003, tilapia accounted 21,417 tons of total freshwater aquaculture production. Red hybrid is the most popular species in Malaysia. One of the constraints faced by the industry is quality of fries. There are quite a number of private hatcheries in Malaysia producing tilapia fries and not much is known about their quality with respect to their genetic variability. Thus we attempted to characterize the five populations, which were GIFT (GT), PKPS (PS), Bentong (BN), Enggor (EG) and Negeri Sembilan (NS) using 20 polymorhic Microsatellite markers. Their dendogram relationship showed that the hetrozygosity value was high, which indicated the presence of high genetic variability among the five populations. As a continuation, we started Diallel Crossing among four populations, which were PKPS (PS), Bentong (BN), Enggor (EG) and Negeri Sembilan (NS). Attention given to three traits, which were Reproduction, Growth and Survival. In reproduction, we focused on spawning Frequency and Fecundity. While in Growth Factor, trait studied was Specific Growth Rate. In Survival, Egg Hatchability, Fry Survival and Adult Fish Survival were the three parameters focused on. We managed to produce broodstocks with known genetic attributes through quantitative genetics for fast growth rates based on high heritability, high additive variance and low environmental effects.