Srijanya Sukmanomon 2012: Genetic Impacts of the Dissemination of GIFT Nile Tilapia to Thailand. Doctor of Philosophy (Aquaculture), Major Field: Aquaculture, Department of Aquaculture. Thesis Advisor: Professor Uthairat Na-Nakorn, Ph.D. 140 pages.

Nile tilapia, *Oreochromis niloticus*, contributes the largest portion of Thailand's annual production of freshwater fish. The GIFT strain of Nile tilapia has been introduced to Thailand and contributes to at least 75% of the total seed production. The present study comprised two parts. First, genetic alteration that may have occurred in four GIFT-derived strains (ON-PT, ON-UT, ON-PB and ON-CP) was studied using 14 microsatellite primers. Two Chitralada-derived strains (ON-AIT and ON-AY) were included in the study to evaluate possible introgression from the GIFT strain. Four conspecific reference populations, the 9th generation GIFT, the Chitralada, a culture population from Ivory Coast and a wild population from Uganda were included as well as the congeneric *O. mossambicus* and *O. aureus*. The overall F_{ST}, pairwise F_{ST}, and genetic differentiation tests showed significant differences between all population/species pairs. Genetic variation of the GIFT-derived, Chitralada-derived, and the reference GIFT was relatively high while that of the Chitralada strain was low. Model-based clustering revealed six clusters wherein ≥95% of the GIFT and three GIFT-derived strains (except ON-CP) were assigned to the same cluster. The Chitralada strain was pure (98% assigned to a single cluster) while the two Chitralada-derived strains showed small to high introgression from the GIFT strain. Likewise, introgression from Chitralada to GIFT occurred in two (ON-PT and ON-CP) of four GIFT-derived strains. Interspecific introgression was revealed in three populations including the GIFT strain, one of the GIFT-derived strain (ON-CP), and Chitralada derived-strains (ON-AY) as shown by individual bar plot. No introgression was observed in two GIFT-derived strains, ON-PB and ON-UT. The second part of the study emphasized genetic diversity of the feral populations of Nile tilapia collected from reservoirs locating in three parts of in Thailand, Sam Roi Yot reservoir in southern Thailand (ON-SY), Bang Phra reservoir in central Thailand (ON-BP) and Bueng Boraphet in northern Thailand (ON-BB). The reference populations were the same as part I. The results showed that ON-CD contributed to significant portions of the genepool of the three feral populations. Genetic differentiation among the feral populations was significant; differentiation was also observed between the feral populations and the newly introduced ON-GIFT. Introgression at the intraspecific level (from ON-GIFT to ON-BP and ON-BB) was observed while interspecific introgression between *O. niloticus* and *O. mossambicus* was observed in ON-SY.

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