

Kanidta Sangsawang 2012: Identification of DNA Markers Linked to the Temperature-Sensitive Genic Male Sterility Gene in Rice (*Oryza sativa* L.). Master of Science (Genetics), Major Field: Genetics, Department of Genetics. Thesis Advisor: Associate Professor Surin Peyachoknagul, Dr.Agr. 44 pages.

Hybrid rice can produce about 20% higher yield than the inbred rice varieties. Main advantages of using two-line system in hybrid rice production are simplicity, cost effectiveness and ability to use a wider range of parent lines than three-line system. Temperature sensitive genic male sterility (TGMS) in maternal line is a result of the expression of genes in the nucleus which are controlled by temperature (thermo-sensitive genic male sterility; TGMS). However, a mechanism and position of *tgms* genes are still unclear. In this study, Two TGMS line were crossed with 2 wild type rice varieties (B8xAzucena and B7xB30) to produce the F<sub>2</sub> populations. The ratios of normal and male sterile F<sub>2</sub> in both crosses were 3 : 1 following Mendelian principles indicated that the TGMS character was inherited by recessive allele of a single gene. The DNA markers linked to *tgms* genes were also identified using Insertion/Deletion (Indel) markers. A total of 84 Indel markers, 10 polymorphic markers were obtained and mapped in selected sterile individuals from two population of F<sub>2</sub> hybrids from TGMS and wild type inbreds. The results suggested that *tgms* gene was mapped to the interval between Os02g12050 and Os02g12350 markers which were located within 200 kb apart on chromosome 2. The linked markers obtained from this study will be further useful for plant breeding.

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Student's signature

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Thesis Advisor's signature