

Eng-orn Srikeaw 2011: Investigation and Searching of Rice Blast Resistance Genes in Landrace Thai Rice Using DNA Markers. Master of Science (Genetics), Major Field: Genetics, Department of Genetics. Thesis Advisor: Mr. Chatchawan Jantasuriyarat, Ph.D. 135 pages.

Rice blast, caused by the pathogen *Magnaporthe grisea*, is one of the most destructive factors in rice production worldwide. The information on rice blast-resistant varieties is the most economical and effective method of controlling this disease and developing rice varieties in breeding. In this study, 203 landrace Thai rice cultivars including 19 cultivars from the North, 45 cultivars of floating rice from the Northeast, 99 cultivars from the Northeast and 40 cultivars from the South were analyzed by PCR using DNA markers specific to rice blast resistance genes: *Pi9*, *Pi36* and *Pid2*. The results showed that 64, 17 and 143 landrace Thai rice cultivars harbor resistance alleles of rice blast resistant genes: *Pi9*, *Pi36* and *Pid2* respectively. These results indicated that landrace Thai rice could be used in resistance breeding program to improve the resistance to rice blast in Thailand in the future. In addition, we study a total of 8 Thai *M. grisea* isolates collected and identified from different areas of Thailand. They were used for the evaluation of leaf blast disease reaction in Nipponbare that carrying the *Pi9* gene by comparison with susceptible check variety (Nipponbare). The results, Nipponbare *Pi9* showed resistance to Thai *M. grisea* isolate BAG 8.5 while the other seven isolates showed avirulent reaction to Nipponbare both with and without *Pi9* gene. The information from this study provides essential information for selecting the parents for rice blast resistant breeding program in Thailand in the future.

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Thesis Advisor's signature