

Abdu Salih Ali 2013: Genetic Diversity of Rice (*Oryza sativa L.*) Based on Blast Disease Resistance in Thailand. Master of Science (Tropical Agriculture), Major Field: Tropical Agriculture, Faculty of Agriculture.
Thesis Advisor: Assistant Professor Tanee Sreewongchai, Ph.D. 83 pages.

Blast is a fungal disease that affects rice plants in most rice growing provinces of Thailand. This study was carried out with the identification of blast disease resistant rice varieties using mixed and individual isolates. In first phase, three hundred eleven genetically diversified varieties/accessions which include 263 landrace, 43 improved and 5 wild rice varieties/accessions were obtained by the National Rice Gene Bank of Thailand. The screening for blast resistance at seedling stage was done using 63 mixed diversified blast isolates followed by 29 individual isolates. The blast isolates were collected from seven provinces of Thailand. The result indicated that a total of 35 varieties/accession were found to be resistant and out of these 35 only 9 genotypes were highly resistant to all tested blast isolates. While in the second phase, 30 rice genotypes composed of Indica, Japonica and Tropical Japonica categories that include resistant and susceptible check varieties were used to evaluate the resistance ability against 23 individual blast isolates. The result revealed that only RD41 of the indica category was found highly resistant to all 23 individual blast isolates with Resistance Index (RI) value of one. The resistance check IR64 had RI value of 0.86 and this showed reduced resistance level. PSL2 and JHN genotypes were resistant against all blast isolates with RI value of 0.95 except to isolate P7.1 and P40.4. Among the 23 blast isolates studied, only P3.2 collected from Wong Thong district of Phitsanulok province was the most virulent pathogen in over 33% of the total inoculated rice plants. The resistant genotypes identified in this study could be used in future breeding programs in order to come up with agronomically important and blast disease resistant rice genotypes.

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