

Saengchai Sriprakhon 2009. Identification and Geographical Distribution of Bacterial Leaf Blight Isolates (*Xanthomonas oryzae* pv. *oryzae*) and Tagging Resistance Genes in a Landrace Rice cv. Chiang Rung (*Oryza sativa* L.). Master of Science (Agricultural Research and Development), Major Field: Agricultural Research and Development, Interdisciplinary Graduate Program Thesis Advisor: Ms. Patcharin Tanya, Ph.D. 127 pages.

Ninety isolates of *Xanthomonas oryzae* pv. *oryzae* (Xoo) were collected from three major rice growing region of Thailand and used for the genetic diversity and their distribution studies. Twenty-five pathogenic groups were classified based on pathogenicity against 9 near-isogenic lines that carried a series of known resistance gene: *Xa3*, *Xa4*, *xa5*, *Xa7*, *xa8*, *Xa10*, *xa13*, *Xa14* and *Xa21*. The recessive resistance gene *xa5* showed the broadest spectrum of BB resistance. Resistant genes *Xa4*, *Xa7* and *Xa21* were shown 65.6, 66.7 and 44.4 % BSR respectively. Thirteen BLB isolates were used to evaluate BB resistance in 182 landrace rice cultivars. Thirteen landrace cultivars, Beu Reu Meu, Beun Umeu, Chiang Rung 502, Yaa Gou, Chiang Rung Na Prang, Puang Nak 16, Leung 52, KorKoh 6 (Maled Yaw), Dok Payom, Nam Sogui 19, Gao Ruang 88 and Sameu Gai, shown high level of BB resistance against broad spectrum of isolates. BSR percentage of these cultivars ranged from 53.8 to 83.3 % in which their resistance levels are similar to some of from the near-isogenic lines. Chiang Rung 502 (CR502) showed the highest BB resistance. The inheritance of BB resistance of CR502 was determined using a F₂ population derived from a cross between CR502 and RD6-blast. Phenotypic ratio of resistant : susceptible plants were 3 : 1 indicated a single dominant gene underlying the BB resistance in CR502. Ninety-six polymorphic microsattelite markers were screened two DNA pools (resistant and susceptible) to identify genomic location of BB resistant gene. Two markers, RM144 and RM254 clearly discriminated the resistant and susceptible phenotypes and explained 53.3 and 60.5 % of BB resistance reaction in the F₂ population. These markers were located on chromosome 11 where *Xa3*, *Xa4*, *Xa(t)* and *Xa22* were previously reported.

Student's signature

Thesis Advisor's signature