

Saovaluck Uckarach 2011: Breeding of Aromatic Rice Variety Khao Dawk Mali 105 for Blast Disease Resistance by Backcross Method. Master of Science (Agronomy), Major Field: Agronomy, Department of Agronomy. Thesis Advisor: Mr. Tanee Sreewongchai, Ph.D. 86 pages.

Rice is one of the most important cereal crops. More than one half of the world's populations consume rice as staple food. Thai rice variety Khao Dawk Mali 105 (KDML 105) is famous and popular in Thailand and many countries. This variety has good cooking quality and aroma. However, KDML 105 is susceptible to blast disease. The objective of this study was to transfer blast disease resistance gene, which is located on chromosome 11 from rice variety Jao Hom Nin (JHN) to KDML 105 by backcross method. The progenies were inoculated by blast pathogen to identify the resistance gene before each backcrossing. Genetic similarity of the BC₂F₂ progenies were evaluated comparing with their parents by using 31 Simple Sequence Repeat (SSR) markers which were distributed at various regions of rice genome. Five lines of the BC₂F₂ progeny with high genetic similarity 93.54, 90.32, 87.09, 83.87 and 83.87 percent to KDML 105 were selected. Moreover, these 5 lines demonstrated genetic similarity in cooking quality and aroma KDML 105. Each validation, molecular marker specific to these controlling genes were applied. In addition, all selected lines exhibited the resistant allele on chromosome 11 of JHN when they were evaluated for blast resistance. These lines can be used for improving blast resistance of KDML 105.

Student's signature

Thesis Advisor's signature