Perapong Kehung 2010: Breeding of Rice KDML 105 for Bacterial Blight Resistance by Backcross Method. Master of Science (Genetics), Major Field: Genetics, Department of Genetics. Thesis Advisor: Professor Pradit Pongtongkam, M.S. 66 pages.

Identification of *xa5* gene was done using RG556 marker in 14 hybrid rice (BC_1F_5) lines derived from the cross between KDML 105 rice and IRBB5 (a bacterial blight resistant variety carrying *xa5* gene), backcrossed to KDML 105 followed by selfing for 4 generations. It was found that all BC_1F_5 lines contained 1,600 bp band. Upon treating these bands with restriction enzyme *Hpy* CH4 IV, all BC_1F_5 lines gave 1,000 bp and 300 bp similar to those of IRBB5, a bacterial blight resistant line. The results indicated that the tested BC_1F_5 lines had resistance *xa5* gene, in homozygous condition. The level of bacterial blight resistance was also determined by inoculation with *Xanthomonas oryzae* pv. *oryzae* race 0701 on 45 day young seedling leaves. The results showed resistant level (R) in all BC_1F_5 lines. Using AFLP technique, B1, B3, B5, B6, B13 and B14 of BC_1F_5 lines showed 99.06% genetic similarity to KDML105. Test of agronomic and quality traits, the results indicated B7, B8 and B11 lines had yields of 493.3, 526.49 and 447.83 Kg/Rai, respectively. Their yields were par or higher than KDML 105 (449.03 Kg/Rai). Genetic composition of B7, B8 and B11 lines were 96.7, 96.7 and 97.64% similar to that of KDML 105. These three selected lines will be further used for quality and yield testing.

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