
Thesis Advisors: Dr. Boonrat Jongdee, Assoc. Prof. Dr. Prasit Jaisil, Dr. Gringgrai Pantuwan

ABSTRACT

Flash flooding is one of the major problems for rainfed lowland rice in northeast, Thailand. Approximately 1.86 million rai of this rainfed lowland rice area of 29.76 million rai was reported to be damaged in 2002. Thus, submergence tolerance is an objective of rainfed lowland rice breeding program for northeast Thailand.

Khao Dok Mali 105 backcross introgression lines (KDML–BC) for flood tolerance have been developed using maker-assisted selection (MAS) by BIOTEC (Thailand). Thirteen lines have been selected for being tolerance to flood. However, prior releasing to farmers, they have to be evaluated under farmer field and flood conditions and evaluation for farmer adoption.

Experiments were conducted under simulated flood condition and farmer field for 5 locations in 4 provinces, Roi–Et, Buriram, Srisaket and Ubon Ratchthani, in 2006. Under simulated flood condition, after transplanting for 30 days flood condition was imposed for 12 days with depth of water of 120 cm. The results showed that all 13 lines of KDML–BC were much better tolerant than KDML105 (recipient) that was not able to tolerant to submergence. Rice plants were kept to flowering to observe for grain yield. KPSKD19 gave the highest grain yield (581 g/m²) whereas KDML105 gave only 132 g/m². Under farmer field condition, grain yield of KDML–BC lines ranged from 256–518 kg/rai and KDML105 yield was 428 kg/rai. Farmer preference for agronomic character and grain qualities was conducted at 2 experimental sites. HPSL1 are acceptance of agronomic character. KPSKD5 one of KDML–BC lines obtained the highest score of acceptance.