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THAI RICE BREEDING FOR FLOOD TOLERANCE THROUGH ELECTRON BEAM-INDUCED MUTATION

There are two types of flood in Thailand which has affected to rice. The first is deep water flood which features as a prolonged flooding, and the second is a flash flood which is a sudden and short period flooding. Deep water flood is predictable, on the contrary flash flood is extremely unpredictable and may occur at any stage of rice growth. The flood in 2011 was the worst flood ever experienced in the country and it had largely affected rice field of Thailand. Thus, submergence-tolerant rice is highly desirable and expected to enhance food security. The objective of this study was to improve the variety RD49 for submergence tolerance. RD49 was used as a plant material to be mutated because it has short growth duration (100 days) and is resistant to brown planthopper. Five hundred grams of seed were irradiated with 300 Gy electron-beam. The M1 seed populations were pre-germinated and disseminated, then 500 panicles were collected from the main tiller of each M1 to obtain M2 seeds. Five hundred rows or 10,000 plants of M2 generation were planted as panicle/row. Twenty-six plants were selected from each row as M3 seeds. Agronomic traits of M2 plants were observed and the M3 lines were evaluated for submergence tolerance. Unfortunately, the experiment was affected by salinity due to the rising sea water level. The remaining materials were collected for submergence tolerance screening in the next generation. About 213 lines were identified as submergence tolerant rice lines (M4). The plants survival was 85-95%, comparable to tolerant check (95%) and significantly higher than susceptible check (0%). Currently, the materials will undergo evaluation in advance experiments.

Country or International Organization

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