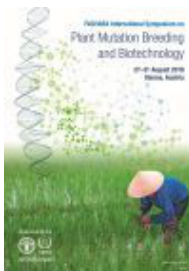


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GAMMA RAYS APPLICATION IN THE DEVELOPMENT OF RICE LINES TOLERANT TO ARYLOXYPHENOXYPROPIONATE HERBICIDES

The aryloxyphenoxypropionate herbicides (APPs) are graminicides with excellent control of many grass weeds species, including weedy rice (*Oryza sativa* L.). These herbicides block the fatty acid biosynthesis by inhibition of the enzyme acetyl-CoA carboxylase (ACCCase), and cause the death of the plant. Inducing mutation by applying gamma rays to seeds, two rice lines resistant to APPs herbicides were developed. Plant dose-response assays confirmed the resistance to the APPs herbicides quizalofop-p-ethyl and haloxyfop-p-methyl. The carboxyl-transferase (CT) domain fragments of ACCCase from the resistant biotype and susceptible control were sequenced and compared. A point mutation was detected in the amino acid position 2027 (Rice Genome Annotation Project: Os05g22940.1). Results indicated that resistance to APPs is a consequence of an altered ACCase enzyme that confers resistance. The use of APPs herbicide resistant rice lines represents an innovative and promising alternative for weedy-rice control in paddy rice systems.

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