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THE SUCCESS OF IMI TOLERANT RICE VARIETIES IN LATIN AMERICA

The Institute of Genetics “Ewald A. Favret” (IGEAF) INTA, has a long tradition in Plant Mutation Research that began in the year 1949. The IGEAF has made important contributions about the effects of different physical and chemical mutagens and mutator genes on barley and described novel uses of barley and wheat mutants in basic research and breeding. Besides, it has done a pioneering work through the interaction with public and private breeding programs to use mutation induction techniques for improving many different crops, like sunflower, sorghum, lemon and orange. The first real success of an induced mutant in Argentina corresponded to the peanut mutant cv Colorado irradiado, which was released by INTA in 1972, reaching some years later a maximum cultivated area of 262,000 ha. The most important impact was more recently achieved by the INTA Rice Breeding Program when looking for mutants having tolerance to imidazolinone (IMI) herbicides to better fight the infestation by weedy red rice, the most harmful weed of this crop worldwide. Through direct selection on M2 plants derived from sodium azide seed mutagenesis treatments, five different alleles of the acetohydroxyacid synthase (AHAS) gene conferring IMI tolerance were isolated. The allele ala122thr was used to develop several IMI tolerant varieties that in 2016/2017 covered 40 % of the rice area in Argentina. Furthermore, they were disseminated in other Latin American countries where rice integrates the daily diet of most families. They covered 70 % of the irrigated area in the region, Brazil being the main producer where they were grown in 834,000 ha. Moreover, some varieties carrying this allele have been recently liberated in Italy, Greece, Romania and Portugal. The IMI tolerant rice varieties have contributed to increase productivity and quality, and have been also very useful to recover rice fields abandoned for being severally invaded by red rice.

Country or International Organization

ARGENTINA

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