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APPLICATION OF MUTATION TECHNIQUES IN THE DEVELOPMENT OF GREEN CROP VARIETIES IN SRI LANKA: WAY FORWARD

The Department of Agriculture (DOA) in Sri Lanka has initiated mutation breeding in the 1960's with the introduction of a cobalt-60 source. The first rice mutant variety, M1273 was released for general cultivation in 1971. M1273, derived from H-4 irradiated with 35 kR gamma rays, was suitable for regions affected with occasional drought. Indirect rice mutant variety, developed by crossing a short mutant line, BW267-3 with a highly adaptable variety, was released as BW372 in 2013. It is moderately resistant/ tolerant to blast, bacterial leaf blight, brown plant hopper, gall midge and iron toxicity thus, increased the productivity on marginal rice cultivation lands to 3 –4t/ha. The popular Groundnut variety “Thissa” is a mutant, previously developed by irradiation with gamma rays at 200 Gy. Main improved attributes were high yield, medium maturity (90-100 days) and high oil content (42%). “Thissa” presently covers 80% of groundnut cultivated area in Sri Lanka. A sesame mutant line, derived from the variety MI-3 irradiated at 200 Gy with ⁶⁰Co gamma rays, was released as “Malee”(ANK-S2) in 1993. It is a high yielding variety (1.1-1.8 t/ha) with resistant to Phytophthora blight. A cherry type mutant tomato variety, developed by irradiation of seeds with gamma rays (320 Gy), was released as “Lanka Cherry” in 2010. Improved attributes are pear shaped fruits and bacterial wilt resistance. Narrow genetic variability in many crops is a constraint to the development of new varieties adapted to climate change. Hence the DOA is emphasizing integration of induced mutagenesis in conventional breeding programme to develop resistant/tolerant varieties with high yield, quality and health promoting functional properties in field and horticultural crops. The newly installed gamma radiation chamber facilitates to create genetic variability in food crops thus paving way for the development of greener varieties.

Country or International Organization

Sri Lanka

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