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IMPACT OF MUTANT VARIETIES IN MALAYSIA: CHALLENGES AND FUTURE PERSPECTIVE OF MUTATION BREEDING

Malaysia had made a substantial achievement in plant mutation breeding with the use of nuclear techniques and related biotechnologies not only in the development of new mutant varieties but also in the establishment of an excellent nuclear research centre. A total of 53 mutant varieties have been developed including rice (19), banana (1), groundnuts (2), orchids (6), chrysanthemums (7), hibiscus (3), roselles (3), and other ornamental and landscaping plants (12). Most of the new ornamental varieties have been developed by both acute and chronic gamma rays using irradiation of seeds, rooted cuttings, bulbs and tissue cultures. Food crops that have economic impact for sustainable agricultural production are mutant varieties of banana, Novaria and rice, MRQ 74, MR219-9 and MR219-4. Novaria is a selection made from a Grande Naine mutant, GN-60A identified from gamma ray-treated populations of the Biotechnology Laboratory, in Seibersdorf, Austria. It was the first mutant variety officially released by Malaysian Nuclear Agency as a new cultivar in 1995 for its improved characteristics such as early flowering, short stature and high yield. MRQ 74 is a type of high quality fragrance rice which is resistance to blast and was an indirect mutant variety released in 2003. One of its parental lines for cross-breeding was Mahsuri Mutant which was developed through mutation breeding using gamma-rays. In 2014 two new mutant varieties of rice, MR219-9 and MR219-4 have been selected using gamma irradiation which are drought tolerance, high yield and resistant to blast. Despite these achievements, applications of induced mutation have decreased during the last 10 years due to reduced funding. Mutation breeding is still promising techniques for the development of new and novel varieties in combination with advanced molecular genetics that can bring plant mutation breeding into a new era.

Country or International Organization

Malaysia

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