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RADIATION INDUCED MUTATIONS IN GENETIC ENHANCEMENT AND DEVELOPMENT OF NEW VARIETIES IN BLACK GRAM [VIGNA MUNGO (L.) HEPPEL]

Black gram [*Vigna mungo* (L.) Hepper], popularly known as urd-bean or mash, is a grain legume rich in protein (25-28%), widely cultivated in the Indian subcontinent and to a lesser extent in Thailand, Australia and other Asian and South Pacific countries. Genetic improvement in this crop is hindered due to its cleistogamous nature and narrow genetic base. As genetic variability is a pre-requisite for any crop improvement programme, induced mutation provides an important source for generating variability. Radiation (gamma, X-rays and neutron) induced mutants were identified for various morphological and biochemical traits, creating a pool of genetic variability. These mutants were used in cross breeding programmes to develop high yielding disease resistant varieties in black gram. The effective blend of mutation and recombination breeding at Bhabha Atomic Research Centre has resulted in the release of 5 black gram varieties (TAU-1, TAU-2, TPU-4, TU94-2 and TU-40) by incorporating desirable traits like large seed, wider adaptability, resistance to disease and improved quality. These varieties have been developed from mutants directly or by using them in cross breeding programme. For example, a black gram variety, N0.55 was irradiated with gamma rays (150-750 Gy) and fast neutrons (20-60 Gy) to obtain large number of mutants. The large seed mutants, UM-196 and UM-201, were used in cross breeding with the elite cultivar T-9 for developing high yielding varieties TAU-1, TAU-2, TPU-4, TU94-2 and TU-40. TAU-1 has become the most popular variety in Maharashtra state, occupying the maximum area under black gram cultivation. Induced mutations will continue to play an increasing role in generating genetic variability for various traits as a major component of environmentally sustainable agriculture.

Country or International Organization

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