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SPECTRUM FREQUENCY AND SEGREGATING PATTERN OF SOME USEFUL MACRO MUTANTS IN SESAME (*SESAMUM INDICUM* L.) THROUGH INDUCED MUTATION

Induced mutagenesis has been effectively employed to improve the productivity and generate variability of morphological and physiological characters. In sesame, the plant architecture is poorly adapted to conventional farming system because of its seed shattering behaviour at maturity, indeterminate growth habit, and long maturity duration. Our aim was: 1) to select early maturing, non-shattering, determinate mutant types, 2) to study the breeding behaviour to make the sesame suitable for multiple cropping system for ensuring higher yield. Two popular variety in West Bengal, Rama and Tillotama were exposed to different doses viz.; 250, 300, 350, 400 and 450 Gy of gamma rays at the Bhaba Atomic Research Centre and grown (along with control: unirradiated seeds) during pre-monsoon 2015, 2016 and 2017 as M1, M2 and M3 generation, respectively, at the University experimental farm of Visva-Bharati in West Bengal, India. The spectrum of chlorophyll mutation observed in M2 generation was narrow because only albina, chlorina and xantha mutations occurred in different treatments. Highest mutation frequency of chlorophyll mutations (1.38%) was induced at 350 Gy for both varieties Rama and Tillotama, however, chlorina types were more frequent (0.93%). Different macro mutants were recorded under different doses in M2 generation viz.; shattering resistant, early maturing types, determinate growth habit, cluster type capsules and combination of these traits. Breeding behaviour of the selected M2 macro mutants were studied in M3 generation and found consistent. All the three types of chlorophyll mutations along with macro mutants segregated in the ratio of 15 normal: 1 mutant, hence, suggesting that inheritance of chlorophyll and morphological mutation is governed by the double recessive genes. Induced mutation offers the possibilities of increasing useful variability in sesame, especially improved yield through determinate growth habit, non-shattering plant architecture and early maturity.

Country or International Organization

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