

Development of high yielding mutant lines in sesame (*Sesamum indicum* L.)

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Three diverse sesame genotypes namely Rama, SI 1666 and IC 21706 were treated with both physical (γ -rays) and chemical (ethyl methane sulphonate, EMS) mutagens, separately. Three doses of γ -rays (200 Gy, 400 Gy and 600 Gy) and four concentrations of EMS (0.5%, 1.0%, 1.5% and 2.0%) were used to induce mutations. Simultaneously inter-varietal crosses of these three genotypes were also treated with EMS. Mutant generations from M_1 to M_4 and induced mutants on M_1 from F_1M_1 to F_4M_4 were raised. Based on seed yield, oil content and fatty acid composition nineteen superior M_4 lines and seven promising F_4M_4 lines were selected for multilocation trials to assess the stability of desirable variation. These 26 elite lines were evaluated in seven locations over four consecutive years. Out of twenty six, three M8 lines viz. CUMS-09 (sesame mutant 9 of Calcutta University), CUMS-11 (sesame mutant 9 of Calcutta University) and CUMS-17 professed their stability for seed yield and yield components. Out of three, CUMS-09 and CUMS-11 were derived from the genotype SI 1666, whereas CUMS-17 was developed from IC 21706. Apart from higher seed yield these three superior mutant lines also possessed high oil percentage with relatively more PUFA content than the control. The developed mutant lines have already been enlisted in ICAR trials for evaluation as new mutant varieties of sesame. Hopefully, these promising and stable mutant lines having higher seed yield, oil yield and improved oil quality would impose sesame production and productivity once the mutant lines proved their worth in multilocation trials.

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