



Research Paper

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Radiation induced variability studies in chrysanthemum under net house

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ABSTRACT : An experiment was carried out at the Polyhouse Unit Department of Horticulture, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola during the year 2008-09 for VM₃ generation. The mutants detected in VM₂ generation have been vegetatively multiplied and planted separately as progeny row to grow the VM₃ generation. The results revealed that reduction in the vegetative growth parameters viz., plant height, plant spread, branches per plant, leaves per plant, leaf length, leaf width, length of petiole, leaf area and chlorophyll content was recorded in VM₃ generation as compared to the control - Akola Local. The yield contributing characters like flower heads per plant and flower yield had recorded the maximum values under the control - Akola Local and high yield mutant obtained from 2.0 K_R dose of gamma rays. However, the days required for bud initiation and days required for full bloom were found to be earlier in the early and dwarf mutants isolated from 2.0 and 3.0 K_R doses of gamma rays than the control and other mutants. The quality parameters like diameter of flower head, length and diameter of peduncle, disc per head and ray florets and floral whorls were reduced as compared to the original cultivar 'Akola Local'. The flower colour and head shape mutants were detected in 2.0 K_R dose of gamma rays.

KEY WORDS : Chrysanthemum, Gamma radiation, Net house, Kilorad (K_R), Vegetative mutation

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Chrysanthemum is one of the most beautiful and perhaps the oldest flowering plant, commercially grown in different parts of the world. It is commonly known as the "Queen of the East" and "Autumn Queen" and is the symbol of royalty in Japan. Flowers of chrysanthemum are highly priced for its vast range of shape and sizes of flowers, brilliance of colour tones, exceptionally hardy nature, relatively ease to grow all the year round and for versatile use. Mutation breeding by radiation has been widely utilized to upgrade the well adapted plant varieties with improved agricultural characteristics. Novelty visible in any form is of high value in ornamental crops and hence, the mutation breeding plays a key role in the improvement of ornamental crops in general and chrysanthemum in particular. The most extensive work has been done for producing novelties in chrysanthemum through induced mutation by x-rays, gamma rays, chemical mutagens and colchicines (Datta, 2001). All the present day colourful chrysanthemums are the result of

extensive hybridization, spontaneous and induced mutations and selections. Sports or spontaneous somatic mutation have played a very important role in the evolution of many garden chrysanthemums. For a modern and industrialized horticulture, there is always a demand and necessity for new varieties. The possibilities for creating the different forms and improving chrysanthemum are infinite and a breeder will always have future goal to work towards. In consideration of the importance of mutation breeding in producing novelty characteristics in chrysanthemum, the present study was undertaken to find out the performance of gamma irradiated mutants in VM₃ generation, morphological characters of irradiated mutants and to locate the high yielding mutant with desirable traits.

RESEARCH METHODS

The experiment was conducted at the Floriculture Unit, Department of Horticulture, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola during the year 2008-09. The experiment