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Micro-mutations for fruit number, fruit length and fruit yield characters in gamma-irradiated M_2 generation of ANKUR-40 variety of okra [*Abelmoschus esculentus* (L.) Monech]

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SUMMARY

For the present investigation, the dry seeds (10% moisture) of ANKUR-40 Var. Okra were gamma-irradiated with 15, 30, 45 & 60 and 75 doses. The seeds collected from M_1 were sown in separate progeny rows of each of the treatments to raise M_2. In M_2, the observations were recorded on number of fruits per plant, fruit length and fruit yield per plant characters. The analysis of variance and computation of variability parameters were made treatment wise for the three characters. The study revealed that plant population differed significantly under 15, 30 and 45 kR for fruits/plant under control, for fruit length and under 30 kR for fruit yield per plant character, 30 kR gamma-rays was emerged as the best treatment for the improvement in fruit yield in Okra.

Key words : Micro-mutations, Gamma-rays, *Abelmoschus esculentus*, Fruit yield.

Gaul (1961) classified mutation in two categories as macro mutations and micro mutations. Macro mutations can be identified either by naked eye under conditions of natural growth or by the use of appropriate creeening procedure such as creation of artificial epiphytoties of disease and adoption of bio-chemical, sieves.

Mutations affecting minor genes that can be isolated and fixed only by adopting biochemical procedures are called micro mutations (Swaminathan, 1965). These can be identified and isolated in the form of increased variances at progeny or population level in M_2 and subsequent generations. The micro mutations are of great importance in plant breeing. Gaul (1965) was of the view that miromutations are useful in plant breeding for two reasons,

(i) They might occur more frequently than micro - mutations,

(ii) They often do not affect vitality adversely as macro mutations because of minute change of physiological nature and are less drastic.

The best use of micro mutations in plant breeding was made in the extensive and pioneering work of Gregory (1956, 1961, 1965), Scossiroli (1968), Singh and Yadav (1987). Mutation affecting a quantitative trait of a crop can be induced by irradiation and phenotypic selection can accumulate positive mutations to produce better strains (Gregory, 1964). Hence the present investigation was under taken with the objective to get improvement in the vegetable crop okra.

MATERIALS AND METHODS

The materials consisted of dry seeds (10% moisture) of Ankur-40 variety of okra treated with 0 (untreated) , 15 kR, 30 kR, 45kR, 60 kR and 75kR doses of gamma – rays. The sowing of the material was done at the earliest possible after treatment (21st March, 2003) to raise the M_1 generation in RBD of four replications of 4 rows each with row length as 3 M. in *zaid* season at Agriculture Research Farm of RBS College, Bichpuri, Agra. To raise the M_2 generation seeds from 20 competitive plants from each treatments of each of the replicates were taken in equal amount. The M_2 comprised 20 progeny rows of 2 M. length each. Each of the treatments was raised in separate progeny rows replicated 4 times in kharif , 2003.

Observation were recorded for the characters viz. number of fruit/plant, fruit length and fruit yield per plant in each of the treatments under each of the replicates. Analysis of variance and computation of variability parameters were made treatment wise for the three characters under study as per conventional methods.

RESULTS AND DISCUSSION

Analysis of variance (RBD) was made treatment wise for the three characters viz. fruits per plant,. fruit length (cm) and fruit yield per plant (gm). The results are presented in ANOVA Table 1. The plant population differed significantly from each other under 15, 30 and 45 kR for fruits per plant, under control for fruit length

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