Internat. J. Plant Sci. Vol.2 No.1 January 2007 : 57-59

Gamma-rays induced genetic variability in Ankur-40 variety of Okra [Abelmoschus esculentus (L.) Monech]

B.K. SHARMA* AND M.N. MISHRA

Department of Plant Breeding & Genetics, R.B.S. College, Bichpuri, AGRA (U.P.) INDIA

(Accepted :September, 2006)

SUMMARY

The present investigation was carried out at R.B.S Colege Bichpuri, Farm in Zaid and kharif seasons of 2003. For the experiments the dry seeds (10% moisture) of Okra Var. Ankur-40 were irradiated with 15, 30, 45, 60 and 75 kR doses of gamma-rays to raise the M_1 generation in zaid and the seed obtained from all of the M_1 competitive plants were used to raise M_2 in progenies rows of each of the treatments including control (the untreated one) in kharif 2003. The observations were recorded for germination percentage, days to flower bud initiation, fruit girth, fruit length, fruit weight per capsule, number of seeds per capsule, number of fruits per plant , fruit yield per plant and seed yield per plant . The M_2 data recorded on single plant basis were averaged out and used for computation of analysis of variance and variability parameters for the characters under study. The study revealed significant differences amongst treatments for the characters days to flower bud initiation fruit yield per plant. The estimates of parameters of statistical and genetic variability showed a wide range of variability for all the characters. Maximum range was observed for fruit yield per plant. The coefficient of variance was highest for fruit yield per plant and phenotypic coefficient of variance was highest for fruit length and the heritability was higher for number of fruits per plant. The genetic advance was highest for the seeds yield per plant. Thus selection for number of fruits per plant will be effective for improvement in okra.

Key words : Okra, Variability, Induced, Mutation.

Improvement in yields is a prime target of most of the breeding programe,. Further yield is a polygenically controlled complex phenomenon being influenced by several other components singally or jointly contributing to it. Okra being a self pollinated crop has less variability and through conventional crossing technique the creation of variability has been a tedious job and through artificial induction of mutations, it is easy to create variability as compared to hybridization. The mutation breeding has been extensively used to develop many beneficial varieties of various crop plants, hence the present investigation was carried out to access the variability induced by various doses of gamma rays.

MATERIALS AND METHODS

The materials consisted of dry seeds (10% moisture) of Ankur-40 Variety of Okra treated with 0 (controluntreated), 15 kR, 30 kR, 45 kR, 60 kR and 75 kR doses of gamma rays. The sowing of the materials was done at the earliest possible after treatment (21^{st} March, 2003), to raise the M₁ generation, in RBD of four replications of 4 rows each with row length as 3 M. in zaid season, at Agricultural Research Farm at R.B.S. College, Bichpuri, Agra. To raise the M₂ generation seeds from all the competitive M₁ plants from each of the treatments of each of the replicates were taken in equal amount.

The M_2 comprised 20 progeny rows of 2 M length of each of the treatments and was raised in separate progeny rows replicated 4 times in kharif, 2003. The sowing was done on 28^{th} June, 2003, Observations were recorded on the characters viz, days to flower bud initiation, fruits per plant, fruit length, fruit yield per plant, plant height at maturity and seeds per fruit from 50 randomly selected, competitive plans of each of the 20 progenies of each of six treatments and four replications.

The data recorded on plant basis in M_2 were averaged out over the treatments and the analysis of variance was made according to Panse and Sukhatme (1961). The estimates of parameters of variability were computed out according to method suggested by Burton (1952) and Burton and Devane (1953) and the heritability in broad sense according to Hanson, et al (1956) and genetic advance as given by Johnson, et al (1955).

RESULTS AND DISCUSSION

The analysis of variance based on plot-wise data is presented in ANOVA table 1. The table showed that the treatments differed significantly from each other for the character, days to flower bud initiation, fruit length, fruit yield/plant, number of seeds per plant. The findings of