

Research Note

Studies on variability parameters for seed density in gamma - rays in mung bean

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An investigation was carried out on K-851 variety of mung bean (*Vigna radiata* L. *wilczek*) to assess the some seed quality parameters in gamma rays irradiated M_2 population of mung bean with gamma-rays doses 5 KR to 40 KR under dry and 5 KR to 20 KR under (pre-soaked in water) and 25, 30, 35 and 40 KR (wet condition) of treatments. The estimates of parameters of $\bar{a}^2 p$, $\bar{a}^2 g$ variance, GCV, PCV, h^2 (b) % and G. A. were increased over control in the medium to higher doses (5-30 KR) of gamma-rays, but $\bar{a}^2 p$, $\bar{a}^2 g$, h^2 (b) % and G. A. decrease in highest dose 40 KR over control.

Genetic variability is essential for any crop improvement programme. The creation and management of genetic variability becomes key base to breeding. The utility of induced mutation for the crop improvement of quantitative and qualitative characters in mung bean is well recognized. The present study was undertaken to study the mutagenic effects of gamma rays induced variability for certain quantitative and qualitative characters.

Dry dormant and wet mung bean seeds (pre-soaked in water) and (post-soaked for 6 hours in water) variety K. 851 sealed in air tight polythene bags were exposed to 5, 10, 15, 20, 25, 30, 35, 40 KR (dry condition) and 5, 10, 15 and 20 KR (pre-soaked) and 25, 30, 35 and 40 KR (wet condition) dose, respectively of ^{60}CO gamma-rays at 2.2 KR per minute intensity at the Division of Genetics, I. A. R. I., New Delhi. Making a total experimental material consisting of eighteen diverse genotypes of mung bean was grown during the summer season (18th March, 2001) at research farm of R. B. S. College Bichpuri, Agra (U. P.). The material was planted in a Randomized Block Design with three replications. Each plot consisted of five rows of 3 m length with row to row and plant to plant spacing of 30 and 10 cm, respectively. Observations were recorded on five competitive plants in each plots. Timely agronomic practices were adopted to ensure good plant stand. The observations were recorded on seed density parameters.

A systematic study was carried out in *Vigna radiata*

L. *wilczek* to seed quality parameters in M_2 generation in K-851 variety of mung bean. The alteration in range, mean, coefficients of phenotypic and genotypic variances, heritability and genetic advanced as per cent over mean of M_2 populations were observed for seed density. Their parameters-wise description is being given below:

The maximum range (6.86-12.62) for the seed density was estimated under 10 KR (pre-soaked) treatment, being followed by (7.90-13.01) under 25 KR (post-soaked) treatment and the lowest range was estimated as (5.29-7.26) under 5 KR (pre-soaked) treatment. The maximum mean (9.56) for seed density was estimated under 35 KR (post-soaked) treatments, being followed by (9.21) under 40 KR (post-soaked) treatment while the lowest (6.11) under 30 KR (dry) treatment. The maximum (20.30 per cent) CV was estimated under the wet control being followed by (18.10 per cent) under 10 KR (dry) treatment with the lowest (9.23 per cent) CV under 25 KR (post-soaked) treatment. The maximum (2.1743) environmental variance was estimated under pre-soaked control, being followed by 1.8011 under 40KR (post-soaked), 1.3746 under 10KR (dry) and the lowest (0.566) under 5KR (dry) treatment. In case of pre-soaked and post-soaked treatments all the treatments showed lower estimate of environmental variance than that under the control. The maximum (2.3356) genotypic variance was estimated under 10KR (pre-soaked) treatment being followed by 2.2456 under 30KR (dry) with the lowest as zero under pre-soaked control and its 5 KR and 20KR treatments also under 30 KR (post-soaked) treatment.

The maximum (2.994) estimated phenotypic variance was recorded under 10 KR (pre-soaked) being followed by 2.612 under 30 KR (dry) treatments and the lowest (0.4581) being estimated under 5 KR (pre-soaked) treatments. The maximum (24.50 per cent) GCV was estimated under 30 KR (dry) treatments, being followed by 17.52 per cent under 10 KR (per-soaked) treatments with the lowest as zero under per-soaked control, 5 KR and 20 KR with 30 KR (post-soaked) treatments. The maximum (26.43 per cent) PCV was estimated under 30

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