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Induced viable mutants in *Vigna mungo* (L.) Hepper

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Mutations were induced in blackgram (*Vigna mungo* (L.) Hepper) varieties namely ADT 3, ADT 5 and APK 1. Different types of macro mutants and micro mutants were screened in M_2 generation. The frequency and the spectrum of the viable mutants were estimated in M_2 generation both in M_1 plant basis and M_2 seedling basis. The highest frequency of viable mutants was recorded in ADT 3. Mutation spectrum was much wider at 60kR and it was narrow at 50kR. The variety ADT 5 had recorded wider spectrum at 60 kR and APK 1 showed higher spectrum at 50kR.

Key words :Blackgram ADT3, ADT5, APK1

Introduction

Blackgram [*Vigna mungo* (L.) Hepper] is an important kharif crop in India grown on about 2.7 lakh hectares. The seeds are mostly consumed by the people owing to its high protein content (Akhaury 1991). The natural productivity of blackgram is only 480 kg/ha (Chaturvedi and Ali, 2002). This low yield may be due to non availability of high yielding and disease resistant varieties. Natural variability is an essential pre-requisite for any successful breeding programme. Mutation breeding is a supplementary breeding programme to identify the mutants with high yield potential, early maturity, disease and pests resistance (Singh, 1981). Both physical and chemical mutagens have been used for induction of mutation in blackgram. Several high yielding varieties of blackgram were developed by mutation induction method like Co 4. The present investigation was undertaken to induce and screen mutants and recorded the spectrum and frequency of viable mutants.

Materials and Methods

Seeds of blackgram varieties ADT 3, ADT 5 and APK 1 were used for induction using the gamma ray. For irradiation, dry seeds of blackgram seeds were exposed to 10 to 100 kR gamma ray from ^{60}CO source at "Indira Gandhi Atomic Research Centre", Kalpakkam. After fixing the LD_{50} value, the treated seeds were sown in the field using randomized block design (RBD) with three replications. The M_1 generation was studied at kharif season. The M_2 generation was raised from the seeds collected from the individual M_1 plant basis as plant to progeny method. The recommended package of practices was followed. The frequency and the spectrum of viable mutants were estimated and tabulated in Table 1 and 2 for all the three varieties.

Results and Discussion

Frequency :

Viable mutants detected in M_2 population by visual observation through out the growth period and the frequencies were calculated on M_1 plant basis and M_2 seedling basis (Table 1).

ADT 3 :

The frequency of viable mutants ranged from 20.00 to 40.00 on M_1 plant basis and 1.25 to 3.06 on M_2 seedling basis due to gamma ray treatment. The maximum frequency of viable mutant was recorded at 40 kR and 60 kR in M_1 plant basis and at 60 kR on M_2 seedling basis.

ADT 5 :

The viable mutants frequency ranged from 20.00 to 50.00 (80 kR and 40 kR) on M_1 plant basis and 1.01 (70 kR) to 2.12 (80 kR) on M_2 seedling basis. The maximum frequency was recorded in 40 kR and 80 kR in M_1 and M_2 seedling basis, respectively.

APK 1 :

Frequency ranged from 30.00 (40 kR and 60 kR) to 50.00 (80 kR) on M_1 plant basis and 1.11(80 kR) to 2.65 (60 kR) on M_2 plant basis.

Among the three varieties studied the highest

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