

Line x tester analysis in Mungbean [*Vigna radiata* (L.) Wilczek]

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Line x tester analysis of 25 crosses obtained from 5 lines and 5 testers were made for 14 yield and its associated characters in mungbean. Among the parents, PDM 84-178, PS 16, Tap7, Chinamung, CO 4 and KM 1883 which scored high status were found to be best combiner for most of the characters studied. Nine hybrids exhibited highest *per se* performance and sca effects for most of the characters studied. The hybrid, Tap7 x KM1883 was the top performer for sca effects. The variances due to specific combining ability (SCA) were found be higher than general combining ability (GCA) variances for all the fourteen characters studied indicating predominance of non-additive give action in the inheritance of the characters studied.

Key words : Gene action, Combining ability, Mungbean.

INTRODUCTION

Mungbean [*Vigna radiata* (L.) Wilczek] is an important pulse crop of India. It is principally grown for its protein rich edible seeds, dry seeds and sprouts. It is an excellent source of easily digestible protein with low flatulence and is consumed as dhal, bean sprouts, noodles, green beans and boiled dry beans. It is a short duration legume, grown in all the three seasons' viz., *kharif*, *rabi* and summer. The *kharif* crop is grown both as inter crop and as sole crop. In summer, the crop can be grown both as sole crop after wheat or in fields vacated by crops like potato, mustard and rice. In Karnataka it is grown in area of 5, 23,384 hectares with production of 82,624 tones and average productivity of 166 kg/ha during 2004-05 (Anon, 2006). The low productivity is attributed to susceptibility of mungbean to biotic and abiotic stresses. Selection of parental lines based on their genetic value is a prime pre requisite for any successful breeding programme. The information on the combining ability status of genotypes will reflect as to how well they combine with a given genotype to produce productive populations. In this context, the information on GCA and SCA (Sprague and Tatum, 1942) aids breeder to make decision upon selection of parents for hybridization programme and to isolate promising genotypes from the segregating population. It gives an idea about nature of gene action which helps in understanding the inheritance pattern of characters. Among the different methods adopted the line x tester analysis proposed by Kempthorne, 1957 has been recommended for early evaluation of parents, because of its simplicity in both experimentation and analysis. Thus, the present investigation was carried out in mungbean

involving five lines and five testers which were hybridized in line x tester fashion to produce twenty five hybrids.

MATERIALS AND METHODS

The five Mungbean Yellow Mosaic Virus (MYMV) resistant genotypes (CO 4, BL 849, KM 1883, OBG 11 and PMB 43) were used as testers and crossed with five MYMV susceptible cultivars (Chinamung, PS16, PDM 84-178, Pusabaisaki and Tap7) and twenty five hybrids synthesized in line x tester fashion. The experiment was laid out in a R.B.D. with three replications at Experimental Field Unit of Genetics and Plant Breeding, UAS, Bangalore during *rabi* 2005. Each entry was sown in 4m length with 30 x 10 cm spacing. Recommended cultural practices were followed. However, plant protection chemicals were not sprayed at any stage of the crop to allow maximum build up of whitefly to transmit MYMV. Susceptible cultivar Chinamung was used as spreader row for MYMV infection. Every five rows of hybrids were alternated with Chinamung. The observations were recorded on ten randomly selected plants in each cross combinations and parents for MYMV incidence, days to 50 per cent flowering, plant height, primary branches per plant, clusters per plant, pods per cluster, pods per plant, pod yield per plant, pod length, seeds per pod, seed yield per plant, test weight, Biomass, shelling percentage and harvest index. The mean values of the data recorded for seed yield per plant and their attributing characters in mungbean were subjected to line x tester analysis of Kempthorne (1957) and keeping view the modification by Arunachalam (1974).