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Short Communication

VARIATION FOR YIELD AND YIELD COMPONENTS IN THE EARLY SEGREGATING GENERATIONS OF A WIDE CROSS BETWEEN MUNGBEAN AND URDBEAN

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Mungbean (*Vigna radiata* (L.) Wilczek) has desirable characters including erect growth habit, large number of seeds/pod, early maturity and desired quality traits. Urdbean (*V. mungo* (L.) Hepper) has useful characters including synchronous maturity, non-shattering pods, bold seeds, more durable resistance to mungbean yellow mosaic virus [1]. The desirable traits can be transferred from one species to another by wide hybridization. The present investigation was undertaken to study the extent of variability generated from cross between mungbean (cv. Pant Moong-2) and urdbean (cv. AMP-36). Mungbean was used as the female parent.

The cross was made in the *Kharif* of 1988. F_1 generation was grown in 1989. The F_1 plants were partially fertile (mean 1.0 seed/pod) and intermediate in morphological characters between the parents. The F_2 generation was grown in the *kharif*, 1990. There were only four plants in the F_2 generation. Of these, two resembling urdbean did not survive beyond one month and the two like mungbean were fertile and produced seed. Some characters of these two plants are compared with the parents in (Table 1).

Half of the seed of these plants was saved and the rest was sown in *Kharif*, 1991 to advance generation. The F_3 and F_4 generations, alongwith parents were grown in the Kharif, 1992 in a randomized block design with two replications. Each parent was represented by two rows and the F_3 and F_4 by six rows of 4 m length. Interplant distance between and within rowas was 30 and 10 cm, respectively. In the F_3 and F_4 populations a few plants similar to urdbean died after one month. Observations were recorded on all plants in the F_3 and F_4 generations for days to first flower, plant height (cm), number of primary branches/plant, bunches/plant, pods/plant, 100-seed weight (g) and yield/plant (g). Ten randomly selected plants of each parent were measured.

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Table 1. Important characteristics of the F_2 plants of a wide cross involving mungbean and urdbean

Generation	Days to first flower	Plant height (cm)	Pod length (cm)	Seeds per pod	100-seed weight (g)
Parent					
Pant moong-2	31	45.2	6.46	9.2	4.00
AMP-36	33	30.2	4.08	5.9	5.00
F_2					
Plant No.3	35	48.0	5.00	5.8	3.35
Plant No.4	35	32.0	3.30	3.4	3.22

Analysis of variance revealed that the differences among treatments were highly significant for all characters. The mean, range and variance for each character are presented in Table 2.

Table 2. Variation for yield and yield components in F_3 and F_4 populations of a wide cross of mungbean and urdbean (Pant Moong-2 × AMP-36)

Generation/ parameter		Days to first flower	Plant height (cm)	Primary branches per plant	Bunches per plant	Pods per plant	100-seed weight (g)	Yield per plant (g)
Pant moong-2	M	31.2	67.6	3.7	15.8	67.4	3.8	7.3
	R	30-32	52-77	2-6	10-21	45-82	3.5-4.5	3.5-10.7
AMP-36	M	32.9	70.8	3.9	25.8	72.4	5.2	11.2
	R	31-34	41-98	2-8	19-30	59-90	4.9-6.1	8.1-12.2
F_3	M	33.6	68.6	2.4	12.9	59.3	2.7	8.3
	R	31-54	29-107	1-5	2-49	8-224	2.1-3.7	1.2-27.8
	V	77.3	531.8	1.6	54.9	1910.9	8.6	43.2
F_4	M	31.7	59.6	2.3	11.3	48.5	2.8	8.2
	R	30-43	29-94	1-6	3-46	8-177	2.2-3.7	1.4-34.5
	V	58.9	381.1	1.5	64.4	1457.5	0.5	47.8

Note : M = mean; R = Range, V = variance

The means were generally similar or decreased in F_3 and F_4 progenies as compared to the parents. The seed size of F_3 (2.7 g/100 seeds) and F_4 (2.8 g/100 seeds) families decreased appreciably as compared to the parents; Pant Mung-2 (4.0 g/100 seeds) and AMP-36 (5.2 g/100 seeds).

Large number of F_3 and F_4 plants were towards the upper limit of range and showed the superiority over the parents for most of the characters, except for 100 seed weight. At the same time considerable number of F_3 and F_4 plants also showed extreme expression towards the lower limit of range, which ultimately reduced the overall mean of these families.

In general all characters except 100 seed weight exhibited a wide range of variation with a high frequency of plants with extreme expression in segregating populations. Similar results were also reported in wide crosses of *V. mungo* × *V. mungo* var. *silvestris* [2]. From this study as well as from the earlier work it may be concluded that wide crosses may extend the gene pool and thus extend the scope for combining desirable characters from both species.

REFERENCES

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