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PERFORMANCE OF COWPEA (*VIGNA SINENSIS* L.) CULTIVARS UNDER DIFFERENT DATES OF PLANTING AND ROW SPACING

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ABSTRACT

Studies on the performance of Cowpea (*Vigna sinensis* L.) cultivars under different dates of planting and row spacing revealed that planting of cowpea at 30 to 45 cm was found most optimum. Amongst cultivars, C 152 and V 37 were found to perform better than V-38.

KEYWORDS: Cowpea, Spacing, Varieties, Dates of Planting.

Cowpea (*Vigna sinensis* L.) is one of the most important *Kharif* pulse crops of Rajasthan. With the introduction of new cultivars, information on their performance under different dates of planting and row spacing is the most important to get higher production. Keeping this objective in mind, new cultivars were evaluated to find out the optimum time of planting and row-spacing.

MATERIALS AND METHODS

The experiment to study the performance of new cowpea genotypes under different dates of planting and row spacing was conducted at Agricultural Research Station, Durgapura, Jaipur during *Kharif* seasons of 1978 and 1979. The experiment was laid out in a split plot design with three replications. The treatments included combinations of four dates (15, 30 June, 15, 30 July) in 1978 and 20 June, 5, 20 July and 4 August in 1979) and three genotypes (C 152, V 37, and V 38) in main plots and four row spacings (22.5, 30, 45.0 and 60 cm) in sub-plots. The plot size was 5 x 3.6m. The soils were sandy to sandy loam with 0.1 per cent organic carbon, 68 kg.ha⁻¹ available P₂O₅ and 140 kg.ha⁻¹ available

K₂O, pH of 8.2 and the E.C. of soils saturation extract at 25°C was 0.17 ds.m⁻¹.

Basal fertilizer application at the rate of 20 kg.ha⁻¹ N and 40 kg.ha⁻¹ P₂O₅ was done. The inter-row spacing of 10 cm was kept constant in all the treatments. The genotype C 152 took 74 and 73 days whereas genotypes V 37 and V 38 took 80 and 75 days and 84 and 77 days for complete maturity during 1978 and 1979, respectively.

The weather data for the crop growing period is presented in Table 1.

RESULTS AND DISCUSSION

Effect of dates of planting :

A perusal of data in Table 1 revealed that sowing of cowpea in the third week of June i.e. on 15th June in 1978 and 20th June in 1979 recorded significantly higher yield over other dates of planting. During 1978, 15th June planted crop gave higher grain yield, probably be due to higher number of pods plant⁻¹ and grains pod⁻¹ inspite of significantly lower thousand grain weight, but, during 1979 higher grain yield was

obtained due to more number of pods plant⁻¹ and thousand grain weight.

Further, significant reduction in yield was recorded with successive delay in planting during 1979, but during 1978 no significant yield reduction was recorded when planting was delayed beyond July 15. The two years mean data showed yield reduction of 17.6, 59.8 and 60.7 per cent, respectively, with second, third and fourth date of planting as compared to first date of planting. In blackgram, best sowing date was June 30, and any delay beyond this reduced the yield considerably (Sharma, 1969). However, Bhatnagar et al. (1976) obtained reduced yield of blackgram when sowing was delayed beyond July 15.

The yield during 1979 was very poor due to adverse weather conditions. The higher yield during 1978 could be attributed to sufficient and well distributed rainfall of 791.6 mm received in 52 rainy days compared to rainfall of 309 mm in 25 rainy days received during 1979 between January 14th end of October, which resulted in better vegetative and reproductive processes in plants and higher harvest index.

Cultivars :

Amongst various genotypes, V 37 and C 152, performed explicitly better than V-3 during 1978, but during 1979, C-152, recorded higher yield over other genotypes. However noteworthy variation in yield amongst various genotypes in 1979 might be due to adverse weather conditions which resulted in poor yield which could not reach the level of significance.

Row spacing :

It was found that row-spacing of 22.5, 30 and 45 cm did not show significant variation with each other but gave significantly higher yield over 60 cm spacing during 1978. In spite of well distributed rainfall, low yield in 60 cm wide rows was due to lower number of plants unit area⁻¹ which could not compensate for higher yield. However, during 1979, row spacing of 30 and 45 cm recorded significantly higher grain yield as compared to closer spacing (22.5 cm) and wider spacing (60 cm). Significantly higher yield in row spacing of 30 and 45 cm as compared to closer (22.5 cm) and wider (60 cm) spacing was probably due to more competition for moisture and lower number of plants unit area⁻¹ under closer and wider spacings, respectively, during 1979.

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Table 1. Effect of dates of planting and row spacing on yield attributing characters and yield of cowpea cultivars.

Treatments	No. of pods/plant ¹		No. of grains/pod ¹		Thousand grain weight(g)		Yield(Grains kg.ha ⁻¹)		Yield(straw kg.ha ⁻¹)						
	1978	1979	Average	1978	1979	Average	1978	1979	Average	1978	1979	Average			
<u>Dates of planting</u>															
June 15/June 20	30.6	16.9	23.8	13.4	9.3	11.4	77.3	73.9	76.6	1361	473	917	3711	1854	2783
June 30/July 5	27.3	13.8	20.6	13.3	8.8	11.1	78.8	71.0	74.9	1179	332	756	3498	1578	2538
July 15/July 20	27.9	7.8	17.9	13.1	5.8	9.5	74.3	66.9	70.6	610	127	369	2770	1612	2191
July 30/Aug.4	20.8	3.8	12.3	11.9	2.5	7.2	71.9	62.7	67.3	695	25	260	2420	1469	1945
S.Em +	1.2	0.29	-	0.14	0.28	-	0.35	0.24	-	61	8	-	119	63	-
C.D.(5%)	3.52	0.85	-	0.42	0.82	-	1.04	0.70	-	179	24	-	350	186	-
<u>Cultivars</u>															
C-152	27.4	10.6	19.0	12.9	6.4	9.7	75.8	69.5	72.7	1046	277	662	4426	1653	3040
V-37	28.2	10.6	19.4	13.3	7.0	10.2	77.8	69.7	73.8	1107	200	654	2920	1705	2313
V-38	24.6	10.5	17.6	12.09	6.5	9.7	71.2	66.7	70.0	730	241	486	2704	1528	2116
S.Em +	1.04	0.25	-	0.12	0.24	-	0.30	0.21	-	53	7	-	104	55	-
C.D.(5%)	NS	NS	-	0.36	NS	-	0.90	0.60	-	155	21	-	304	NS	-
<u>Row Spacing(cm)</u>															
22.5	24.9	9.9	17.4	12.44	6.1	9.3	75.8	69.0	72.4	960	231	596	3508	1952	2730
30.0	27.0	10.7	18.9	12.9	6.6	9.8	75.5	68.8	72.2	1051	261	656	3690	1699	2695
45.0	27.7	10.6	19.2	13.1	6.8	10.0	75.8	64.8	72.1	1043	279	661	3563	1569	2566
60.0	27.3	11.1	19.2	13.8	7.1	10.5	75.0	68.2	71.6	789	186	488	2639	1295	1967
S.Em +	0.77	0.31	-	0.13	0.19	-	0.33	0.36	-	35	9	-	103	54	-
C.D.(5%)	NS	NS	-	0.36	0.53	-	NS	NS	-	99	26	-	291	133	-

NS - Not Significant