

EFFECT OF SOWING DATES AND PLANT PROTECTION ON GROWTH AND YIELD OF PIGEONPEA VARIETIES

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ABSTRACT

In a field trial conducted to study the effect of sowing dates and plant protection on growth and yield of pigeonpea varieties, an increase in grain yield by 25 per cent over control was observed with plant protection. The plant height, number of primary branches per plant, days to 50 per cent flowering, days to maturity and grain yield were significantly higher in TTB-7 compared to Hy-3C and were reduced significantly with delay in sowing from 10th July to 27th August.

KEY WORDS : Pigeonpea, Sowing dates, Plant protection

Pigeonpea is one of the important dryland pulse crops of India. For getting high yields in this crop, some of the essential factors to be considered are the proper selection of varieties, optimum time of sowing and control of insect pests. Therefore, the present study was undertaken to find out the effect of sowing dates and plant protection on growth and yield of pigeonpea varieties.

MATERIALS AND METHODS

The experiment was conducted under rainfed conditions at the University of Agricultural Sciences, Bangalore during *kharif* 1982. Two pigeonpea varieties (Hy-3C and TTB-7) were compared under four sowing dates (10th July, 22nd July, 6th August and 27th August) and two plant protection treatments (control and with plant protection). In the treatment with plant protection, the crop was sprayed with 0.2 per cent endosulfan 35 EC from flowering upto pod formation at an interval of 10 days and dusted once with malathion 5 per cent at the time of pod development. The experiment was laid out in a split plot design having plant protection treatments in the main plots and combination of varieties and sowing dates in the sub-plots with four replications. The recommended package of practices were followed throughout the crop growth period. The rainfall received during crop growth period was 515.0 mm for 10th July sowing, 464.7 mm for 22nd July sowing, 431.1 mm for 6th August sowing and 398.6 mm for 27th August sowing.

RESULTS AND DISCUSSION

The plant height, number of primary branches per plant, days to 50 per cent flowering and days to

maturity were unaffected by plant protection treatments (Table 1). Spraying of endosulfan 35 EC and dusting malathion 5 per cent significantly increased the grain yield of pigeonpea by 25 per cent over control due to higher grain weight per plant. This was due to control of pod borer and pod fly during post flowering period, which otherwise caused damage to seeds. The overall benefit of plant protection was seen in the harvest index which was significantly higher when plant protection was given.

The plant height, number of primary branches per plant, days to 50 per cent flowering and days to maturity were higher in TTB-7 compared to Hy-3C. Variety TTB-7 was also superior in grain yield compared to Hy-3C due to more number of pods per plant and higher grain yield per plant. However, the harvest index was significantly more in Hy-3C compared to TTB-7.

Plant height, days to 50 per cent flowering and days to maturity were reduced with delay in sowing. Delay in sowing from 10th July to 27th August reduced the yield of pigeonpea significantly. July 10th sowing yielded 1842 kg per ha (58 per cent more than general mean), while 12 days delay in sowing (22nd July) yielded only 1446 kg per ha (24 per cent more than general mean). Further delay to 6th August (1014 kg/ha) and 27th August (352 kg/ha) gave 13 and 70 per cent lesser yield than general mean respectively. Delayed sowings reduced the number of pods, pod weight and grain weight per plant significantly. This poor performance was due to less vegetative growth as indicated by significantly lower stalk yield. The stalk yield decreased from 1815 kg per ha in 10th July sowing to 1058 kg per ha in 27th August

Table 1. Growth, yield and yield components as influenced, plant protection treatments, varieties and sowing dates in pigeonpea

Treatments	Plant height (cm)	No. of primary branches per plant	Days to 50% flowering	Days to maturity	Grain yield (kg/ha)	Stalk yield (kg/ha)	No. of pods per plant	Pod weight per plant (g)	Grain weight per plant (g)	Harvest index (%)
Plant Protection (P)										
Control	95.8	6.7	93.0	150.0	1030	1545	54.2	32.0	16.5	29.0
With plant protection	93.0	6.4	92.0	148.0	1297	1309	56.9	34.5	19.9	37.0
C.D. @ 5%	NS	NS	NS	NS	88	120	NS	NS	3.37	5.0
Varieties (V)										
Hy-3C	85.2	5.3	90.0	145.0	1074	1131	43.7	31.8	17.2	35.0
TTB-7	103.6	7.8	95.0	153.0	1253	1723	67.4	34.7	19.2	31.0
C.D. @ 5%	3.97	0.57	0.86	0.99	114	133	5.36	NS	1.92	2.0
Sowing dates (D)										
10 July	103.5	6.9	96.0	155.0	1842	1815	85.5	55.1	32.5	38.0
22 July	101.2	5.4	94.0	153.0	1446	1587	51.4	33.2	17.7	36.0
6 August	88.5	7.8	90.0	144.0	1014	1249	47.4	28.9	16.0	37.0
27 August	84.5	6.1	90.0	145.0	352	1058	37.9	15.7	6.5	20.0
C.D. @ 5%	5.60	0.80	1.21	1.41	162	187	5.78	4.78	2.72	3.00

Table 2. Interaction effect of varieties and sowing dates on grain yield (kg/ha), pod weight per plant (g) and grain weight per plant (g)

Sowing dates	Grain yield (kg/ha)		Pod weight/plant (g)		Grain weight/plant (g)	
	Varieties		Varieties		Varieties	
	Hy-3C	TTB-7	Hy-3C	TTB-7	Hy-3C	TTB-7
10 July	1875	1809	56.3	53.9	35.7	29.4
22 July	1146	1746	26.8	39.7	12.4	23.1
6 August	936	1092	28.7	29.0	14.9	17.2
27 August	338	365	15.4	16.0	5.8	7.1
C.D. @ 5%	229		6.76		3.84	

sowing. The delayed sowing results in the plants to grow in cold weather and plants suffer for want of moisture. August 27th sowing came to maturity in the last week of January and the entire flowering phase was after the cessation of rains. Early sowing is advisable as there is better plant growth and higher grain yield. These results were in conformity with the findings of Venkataratnam and Green (1979), Roy Sharma *et al.*, (1981) and Venkataratnam and Sheldrake (1981).

The interactions of varieties and sowing dates were significant with regard to yield of pigeonpea. In 10th July sowing, the performance of both the varieties was more or less same. As the sowings were delayed, there was reduction in yield in both the varieties but the reduction was perceptible with

Hy-3C compared to TTB-7. This indicates that TTB-7 can possibly withstand delayed sowing. However, under drought conditions, the performance of both the varieties was same as evident in 27th August sowing (Table 2).

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