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RESEARCH ARTICLE

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Effect of various agronomical practices in increasing and stabilising the yield of pigeonpea varieties

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ABSTRACT

The present investigation was undertaken to assess the effect of various agronomical practices in increasing and stabilising the yield of pigeonpea newly released disease resistant varieties (*i.e.* BSMR-736 and BSMR-853) by M.A.U. for large scale cultivation in the state. The agronomical practices like different row spacings and different planting patterns will help to enhance the productivity and stabilise the yield of the newly developed pigeonpea varieties. As regards to effects, the variety BSMR-853 proved superior over BSMR-736 in increasing the yield with various agronomical practices.

KEY WORDS : Pigeonpea, Varieties, Stabilising, Yield, Row spacings, Planting patterns

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INTRODUCTION

Since the primary objective of pigeonpea cultivation has been to meet domestic requirement for food and fuel with limited market surplus of grains, as such there was not much increase in production and productivity of pigeonpea. The major pigeonpea growing state in the country is the Maharashtra with an area of 10.41 lakh hectares and productivity of 834 kg/ha. This clearly indicate that there is not much increase in yield and stagnated over a period of time with substantial fluctuations inspite of availability of number of disease resistant varieties. Therefore, the present investigation was undertaken for study.

MATERIALS AND METHODS

A field experiment was conducted at college farm, Department of Agronomy, Marathwada Agricultural University, Parbhani during *Kharif* season of 2001 to study the effect of different row spacings and planting pattern on growth and yield of two newly released pigeonpea varieties. The site of the experimental field was fairely leveled. The residual effect of previous crop was uniform. The soil was clayey in texture, low in total nitrogen, medium in available phosphorus, rich in potassium and slightly alkline in reaction.

The present experiment was laid out in Split Plot Design (SPD) with three replications. The treatments were of three row spacing (60, 90 and 120 cm), two planting patterns (normal and paired) and two varieties of pigeonpea (BMSR-736 and BSMR-853) constituting total twelve combinations. Six combinations of row spacing and planting pattern in main plots, while varieties of pigeonpea were randomly alloted as subplot treatments within each replication.

RESULTS AND DISCUSSION

The most important findings emerged from the present investigations are here-in. The mean plant height was not influenced significantly due to varieties under trial upto 90 DAS. However, the effect of the varieties on plant height were found significant then onwards *i.e.* the variety BSMR-736 recorded significantly taller plants than BSMR-853 at 120, 150 DAS and at harvest. As regards the number of functional leaves, the significant effect showed at only 90, 120 DAS and at harvest *i.e.* the number of functional leaves was significantly higher with the variety BSMR-736 compared to BSMR-853.

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Table 1 : The growth attributes influenced by pigeonpea varieties at various growth stages

Growth attributes	Treatments (planting pattern)	Days after sowing (DAS)					
		30	60	90	120	150	At harvest
Height of plant (cm)	V_1-BSMR-736	32.70	71.10	114.83	157.02	191.16	192.96
	V_2-BSMR-853	32.40	70.97	112.38	152.32	187.50	190.50
	S.E.±	0.20	0.30	0.92	1.34	0.68	0.69
	C.D. (P=0.05)	N.S.	N.S.	N.S.	4.15	2.10	2.11
Number of functional	V_1-BSMR-736	8.1	42.30	192.83	187.95	122.15	77.71
leaves	V_2-BSMR-853	7.7	41.08	191.42	186.26	121.26	75.28
	S.E.±	0.12	0.41	0.31	0.40	0.32	0.42
	C.D. (P=0.05)	N.S.	N.S.	0.98	1.25	N.S.	1.31
Number of branches	V_1-BSMR-736	3.25	4.52	11.33	13.59	14.86	16.44
	V_2-BSMR-853	3.05	4.22	10.32	11.88	14.43	15.25
	S.E.±	0.05	0.09	0.10	0.10	0.11	0.10
	C.D. (P=0.05)	0.16	0.28	0.31	0.32	0.33	0.31
Number of root	V_1-BSMR-736	13.24	27.80	12.92	---	---	---
nodules	V_2-BSMR-853	13.61	31.68	14.60	---	---	---
	S.E.±	0.31	0.97	0.37	---	---	---
	C.D. (P=0.05)	N.S.	3.02	1.16	---	---	---
Total Dry matter	V_1-BSMR-736	1.91	10.89	38.48	59.67	69.45	73.90
accumulation (gm/pl)	V_2-BSMR-853	1.95	11.25	36.96	58.24	71.75	75.20
	S.E.±	0.04	0.08	0.21	0.25	0.20	0.19
	C.D. (P=0.05)	N.S.	0.24	0.65	0.77	0.62	0.58

NS=Non-significant

Table 2 : The yield parameters influenced by different planting pattern

Treatments (planting pattern)	Yield parameters (q/ha)					Harvest index (%)
	Pod yield	Grain yield	Stalk yield	Bhoosa yield	Biological yield	
V_1-BSMR-736	25.28	16.16	29.42	9.01	71.72	22.39
V_2-BSMR-853	28.80	18.25	34.08	9.26	76.17	24.07
S.E.±	0.89	0.47	1.02	0.21	1.82	1.07
C.D. (P=0.05)	2.75	1.46	3.16	N.S.	N.S.	N.S.

NS=Non-significant

In respect of number of branches per plant, the varietal differences were observed to be significant at all the growth stages of crop. The variety BSMR-736 was found significantly better. However, in respect of root nodules the variety BSMR-853 recorded significantly higher root nodules per plant at 60 and 90 DAS. Whereas both the varieties were at par at 30 DAS. Drymatter accumulation per plant was significantly influenced by varieties at all the stages except initial stage of 30 days of sowing. The variety BSMR-736 produced significantly more dry matter per plant compared to variety BSMR-853 at 90, 120 DAS. However, at 60, 150 DAS and at harvest, variety SBMR-853 was found significantly superior over BSMR-736 in respect of total dry matter accumulation per plant (Table 1). Similar investigations were carried out by different workers (Alkenola and Whiteman, 1975; Chauhan and Singh, 1981; Kapur *et al.*, 1987).

In case of yield parameters *i.e.* pod, grain, stalk, bhoosa and biological yield (q/ha) were significantly influenced by different varieties of pigeonpea under study (Table 2). As regards the varieties, variety BSMR-853 found superior over BSMR-736 in respect of total yield attributes of pigeonpea.

In brief, growing of pigeonpea variety BSMR-853 is beneficial at various agronomical practices in increasing and stabilizing the yield of pigeonpea as compared to variety BSMR-736.

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