DOI: 10.15740/HAS/AU/12.TECHSEAR(3)2017/853-856 *Agriculture Update*
Volume 12 | TECHSEAR-3 | 2017 | 853-856
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RESEARCH ARTICLE :

Evaluation of pigeonpea var. BSMR 853 under different planting methods to land configuration

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ARTICLE CHRONICLE :
Received :
13.07.2017;
Accepted :
28.07.2017

SUMMARY : The field investigation entitled "Evaluation of pigeonpea var. BSMR 853 under different planting methodsto land Configuration" conducted at Department of Agronomy, Vilasrao Deshmukh College of Agricultural Biotechonology, Latur. The soil was clayey in texture, moderate in available nitrogen, low in available phosphorus, high in available potassium and moderately alkaline in reaction. The environnemental conditions prevailed during expérimental period was not so favorable. The experiment was laid out in Factorial RBD with three replication and 24 plot , the gross and net plot size of each experimental unit was : 6.30 x 4.20 m^2 and 4.50 x 3.60 m^2, respectively .The treatments were two land configuration Flat bed and ridges and furrows treatments with Dibbling of seeds and Transplanting of seedlings . The sowing was done in polythene bag on 25th June 2014 by dibbling and transplanting done on 25th July 2014. Transplanted pigeonpea at ridges and furrows was significantly higher grain yield (1937 kg ha^{-1}) is found beneficial in improving growth characters, yield attributes and yield over all of the treatment. Lowest seed yield was recorded by treatmentof dibbled pigeonpea at flat beds (1674 kg ha^{-1}), The B: C ratio was maximum with Treatments at ridges and furrows.

KEY WORDS :
Pigeonpea,
Transplanting,
Dibbling of seed,
Land configuration,
Economics

How to cite this article : Sathe, R.K., Aglave, B.N. and Patil , V.V. (2017). Evaluation of pigeonpea var. BSMR 853 under different planting methods to land configuration. *Agric. Update*, **12**(TECHSEAR-3) : 853-856; **DOI: 10.15740/HAS/AU/12.TECHSEAR(3)2017/853-856.**

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BACKGROUND AND OBJECTIVES

Pulses crops have a specific importance for the vegetarian population of our country because pulses are the major source of protein. Among pulses Pigeonpea (*Cajanus cajan* (L.) Millsp.) is one of the major grain legume (pulse) crops of the tropics and subtropics, endowed with several unique characteristics.India ranks first in the world in terms of pulses production (25% of total world production (Anonymous, 2013-14). India accounts for 90 per cent of areas and production of the world. Pulses are grown across the country. India is producing 27.6 (22.62%) million tonn of pulses from an area of 36.3 (19.07%) million hectare with productivity (848 kg ha^{-1}). (Directorate of economics and statistics, Dept. of Agriculture and corporation). (GOI) (Anonymous, 2013-14). The pigeonpea yield is limited by number of factors such as agronomic, pathogenic, entomological, genetic factors and their interaction with environment. Among the different agronomic practices limiting the yield *viz.,* choice of a suitable geometry (plant spacing), optimum population, fertilizers etc. are the most important factors. Long duration pigeonpea can adjust to a wide range of population and spacing. In dry farmingof western Maharashtra, the rainfall is not only scanty but also erratic. Thus soil moisture becomes the most limiting factor in production of pigeonpea. In order to ensure timely sowing due to let onset of monsoon, transplanting of pigeonpea seedlings will be one of the agronomic measures to overcome delayed sowing. This technique involves raising of seedlings in the polythene bags in the nursery for a period of one month and then transplanting those seedlings in the main field, immediately after soil wettingrains.

RESOURCES AND METHODS

A field experiment was conducted on medium black soils at Vilasrao Deshmukh college of Agricultural Biotechnology, Latur, during *Kharif* season 2014-15.Geographically Latur is situated at 18^{o} 5' to 18^{o} 24' North latitude and 77^{o} 36'East longitude. Its height above mean sea level is about 633.85 m and has subtropical climate. The climate of Marathwada region on annual basis can be classified as semiarid type. The region experiences hot dry summer (March-May), cold winter (October-February) and wet humid with assured rainfall in monsoon (June- September), but due to vagaries of monsoon the crop production is always risky.The Soil was deep, black in colour with good drainage. Soil was clayey in texture. The chemical composition of experimental plots indicated that the soil was low in nitrogen, medium in phosphorus and rich in potassium content and slightly alkaline in reaction having pH 7.8. Main plots is land configurations in that ridges and furrows and flat beds are laid out with transplanting. The experimental material consist of one month's raised pigeonpea seedlings are used. Transplanting was done 25 July 2014.The entire quantity of recommended dose of fertilizer forpigeonpea (25:50::N: P_2O_5 kg ha^{-1}) was applied as basal doseat the time of sowing.The experiment was laid out in Factorial Randomized Block Design with three replications. Five plants were tagged at randomin net plot area for recording various yield components likenumber of pods per plant, number of seeds per pod, seedyield per plant (g), 100-seed weight (g), seed yield (kg ha^{-1})was computed by threshing pods from net plot, cleaned andthe seeds weight was recorded. From this seed yield perhectare was computed. The net returns (ha^{-1}) was calculatedby deducting cost of cultivation (Rs. ha^{-1}) from gross returnsand B:C was worked out as a ratio of gross returns (ha^{-1}) to cost of cultivation (Rs. ha^{-1}).The basal dose of fertilizer 25:50 NP kg ha^{-1} was given at the time of seeding and transplanting. The variety used in experiment was BSMR 853 is a medium duration white seeded variety, which mature in 170 to 180 days. It is resistant to wilt and sterility mosaic. It is a high yielding variety and has wider adaptability and harvested on 20 and 21 January 2015. The crop received 464.9 mm rainfall during the study period.

OBSERVATIONS AND ANALYSIS

The data on yield components, seed yield, stalk yield, husk yield, net returns and B:C are presented in Table 1 and 2.The differences in the seed yield differed significantly among the two factors pigeonpea .The data on mean seed yield (kg ha $^{-1}$) is revealed that seed yield was influenced significantly by different land configuration treatment and planting methods treatments. The average seed yield was 1806 kg ha^{-1} recorded due to various treatments under study.The effect of land configuration on seed yield was found to be significant. The land configuration treatment of ridges and furrow was recorded highest seed yield 1937 kg ha^{-1} and it was found to be significantly superior over flat bed planting 1674 kg ha^{-1}. The seed yield per hectare was influenced significantly due to various planting treatments. The treatment 90 x 60 cm with transplanting of pigeonpea was recorded highest seed yield 2164 kg ha^{-1} and was significantly superior over all other treatments. The transplanting of pigeonpea at 90 x 20 cm and dibbling at 90 x 20 cm were at par with each other regarding seed yield. The lowest seed yield was recorded due to dibbling treatment 90 x 20 cm 1600 kg ha^{-1}. The interaction effect land configuration and planting treatments was found to be non significant. The mean stalk yield in (kg ha^{-1}) as influenced by various treatments in given Table 1. The mean stalk yield recorded was 2486 kg ha^{-1}. The land configuration treatment ridges and furrow was found to be significantly superior over treatment in recording stalk yield 2627 kg ha^{-1}. Stalk yield recorded by the treatment of ridges and furrow significantly superior over flat bed planting 2345 kg ha^{-1}. It was significantly superior over

90 x 20 cm with transplanting 2311 kg ha^{-1} and dibbling at 90 x 20 cm 2219 kg ha^{-1} There was significant effect of land configuration on husk yield. The configuration treatments of ridges and furrow produced significantly higher husk yield 854 kg ha^{-1} over flat bed planting 742 kg ha^{-1}. The treatment 90 x 20 cm with transplanting 758 kg $ha^{-1}$and dibbling at 90 x 20 cm 744 kg ha^{-1}. The land configuration treatment of ridges and furrow recorded more number of pods per plant as compared to flat bed planting. The number of pods per plant was affected significantly by planting treatment. These results are in accordance with the result obtained by Puste and Jana (1996). The grain, stalk, husk, and biological yield per hectare were influenced by land configuration and spacings treatments. In land configuration treatments of ridges and furrow recorded more grain yield over flat bed planting. This may attributed due to beneficial effect of moisture conservation in experimental field which was useful for development of more yield attributes per plant. Similar result was reported by Pendke *et al.* (2004) in pigeonpea and Asewar and Jadhav (2009) in cotton. Also significant effect of transplanted pigeonpea at the spacing of 90 x 60 cm over other planting treatments in pigeonpea.The data on gross monetary returns (Rs. ha-

Table 1 : Yield and yield parameters of pigeonpea genotypes as influenced by land configuration under planting methods

Treatments	No of pod per plant (g)	Seed yield per plant (g)	100 seed weight (g)	Seed yield (kg ha^{-1})	Stalk yield (kg ha^{-1})	Husk yield (kg ha^{-1})
Land configurations(L)						
Flat bed	182.67	67.92	106.92	1674	2345	742
Ridges and furrows	206.03	95.42	112.42	1937	2627	854
S.E. ±	3.13	1.26	0.97	76	90	23
C.D. (P=0.05)	9.50	3.82	2.94	232	274	72
Planting methods (P)						
Dibbling by seed 90x20	185.80	69.50	107.33	1600	2219	744
Transplanting 90x20	189.27	68.67	108.50	1668	2311	758
S.E. ±	4.43	1.78	1.37	108	127	33
C.D. (P=0.05)	13.44	5.41	4.16	329	387	101
Interactions						
S.E. ±	6.26	2.52	1.94	153	180	47
C.D. (P=0.05)	NS	7.65	NS	NS	NS	NS
Mean	194.35	81.67	109.67	1806	2486	799

NS=Non-significant

Table 2 : Economics of pigeonpea genotypes as influenced by land configuration under planting methods

Treatments	Cost of cultivation (Rs.)	Gross returns (Rs.)	Net returns (Rs.)	B:C
Land configurations (L)				
Flat bed	26,435	70,325	43,055	2.6
Ridges and furrows	27,250	81,364	55,362	2.9
S.E. ±	-	3223	3300	-
C.D. (P=0.05)	-	9776	10010	-
Planting methods (P)				
Dibbling by seed 90x20	26,030	67,214	40,996	2.5
Transplanting 90x20	26,030	70,063	42,176	2.6
S.E. ±	-	4558	4667	-
C.D. (P=0.05)		13826	14156	-
Interactions				
S.E. ±	-	6446	6600	-
C.D. (P=0.05)	-	NS	NS	-
Mean	26,266	75,844	49,208	2.8

NS=Non-significant

[1]), net monetary returns (Rs. ha^{-1}) and benefit: cost ratio it was revealed that the transplanted pigeonpea wider spacing of 90 x 60 cmgave higher gross monetary returns (Rs. 75844 ha^{-1}), net monetary returns (49208 ha^{-1}) and high benefit: cost ratio (2.8). The lowest B:C ratio was recorded by narrow spacing 90 x 20 cm (2.5). This may be due to higher economic yield produced by the wider range of spacing and plant population ha^{-1}. These results are in conformity with the results of Antaravalli *et al*. (2002). The land configuration treatment ridges and furrow was found beneficial in improving growth characters, yield contributing characters and yield in pigeonpea as compared to flat bed planting.

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REFERENCES

Anonymous (2012-13). Directorate of Economics and statistics, Department of agriculture and corporation, Govt. of India.

Antaravalli, M.B., Halikatti, S.I., Kajjidoni, S.T., Hiremath, S.M. and Koti, R.V. (2002). Influence of different population and geometry on the growth characters of pigeonpea genotypes in vertisols of Dharwad. *Karnataka J. Agric.Sci*., **15**(2):246-252.

Antaravalli,M. B., Halikatti, S.I., Kajjidoni, S.T., Hiremath, S.M. (2002b). Effect of planting geometry on the yield, yield components and economics of pigeonpea genotypes in vertisols of Dharwad. *Karnataka J. Agric. Sci*., **15**(3):466-471.

Asewar, B.V. and Jadhav, A.S. (2009). Performance of cotton based intercropping system with *in-situ* water management. *J. Maharashtra Agric. Univ*., **34**(2):229-230.

Chauhan, R.S. and Singh, K.B. (1981). Response of pigeonpea varieties to level of phosphorus and row spacing under rain fed condition. *Indian J. Argon*., **26**(1):49-52.

Pendke, M.S., Lomte, M.H. and Gitte, A.U. (2004). Effect of soil and water conservation practices on runoff, soil loss and yield of pigeonpea. *J. Maharashtra Agric. Univ*., **29** (3):319-321.

Puste, A.M. and Jana, P.K. (1996). Response of pigeonpea cultivars to spacing. *Indian Agric.*, **40**(1):53-56.