ADVANCE RESEARCH JOURNAL OF CROP IMPROVEMENT
Volume 2 Issue 2 (December, 2011) Page : 221-223

Received : August, 2011; ***Revised :*** September, 2011; ***Accepted :*** November, 2011

Research Paper

Effects of varieties and plant geometry on yield attributes and yield of summer greengram (*Vigna radiata* L.)

A.B. BHISE, S.U. PAWAR, S.S. SOLUNKE, U.N. ALSE AND G.T. KADAM

See end of the paper for authors' affiliations

Correspondence to :
S.U. PAWAR
Department of Agronomy, Marathwada Agriculture University, PARBHANI (M.S.) INDIA
Email :pawarsu7@rediffmail.com

ABSTRACT

Planting of green gram at spacing of 30 x 10 cm produced significantly higher yield (688 kg ha^{-1}) than 45 x 7.5 cm and 60 x 5 cm. The yield components *viz.,* mean number of pods plant^{-1}, number of seeds pod^{-1}, number of seeds plant^{-1}, seed yield plant^{-1}, test weight and yield were significantly influenced when crop was planted at 30 x 10 cm. Green gram variety BM-4 produced significantly higher yield (737 kg ha^{-1}) than BM-2002-01 (699 kg ha^{-1}), BPMR-145 (631 kg ha^{-1}) and Kopargaon (584 kg ha^{-1}).

Bhise, A.B., Pawar, S.U., Solunke, S.S., Alse, U.N. and Kadam, G.T. (2011). Effects of varieties and plant geometry on yield attributes and yield of summer greengram (*Vigna radiata* L.), *Adv. Res. J. Crop Improv.,* **2** (2) : 221-223.

KEY WORDS : Spacing, Varieties, Greengram, Yield, Yield attributes, *Vigna radiata* L.

The capacity of food legumes to fix atmospheric nitrogen, leaf shedding ability and also solubilize phosphorus in association with phosphobacteria and VAM make leguminous crop most effective nutrient recycling agents in nature, food legumes thus play a vital role in nutrient balance and in maintaining soil fertility.

Green gram (*Vigna radiata* L.) has attained its commercial importance in Indian agriculture and also in Maharashtra. The seed quality of summer produce is very superior as compared to *Kharif*. Hence, cultivation of summer crop provides good quality seed. The farmers usually grow mungbean without maintaining proper spacing. Row planting with appropriate spacing can help to ensure optimum plant population per unit area of mungbean, thereby increasing the yield.

Green gram in summer season can very well be introduced in cropping systems, at the same time it will give remunerative income to farmer. In general, seed produced in *Kharif* season get damaged due to continuous rains at the time of harvesting and availability of quality seed become the constrains. To overcome such situation summer green gram cultivation is best answer (Kumar *et al.*, 2009).

RESEARCH PROCEDURE

A field experiment was conducted during summer season of 2009 at experimental farm of Department of Agronomy, Marathwada Krishi Vidyapeeth, Parbhani on medium black soil with soil pH 7.57, 0.42 kg ha^{-1} available N, 202.60 kg ha^{-1} available P_2O_5 and 15.29 kg ha^{-1} available K_2O. The experiment was laid out in split plot design with three replications. The treatments consisted of 12 combinations of three spacing (30 x 10 cm, 45 x 7.5 cm and 60 x 5 cm) as main plots and 4 varieties (BM-4, BM-2002-01, BPMR-145 and Kopargaon) as sub plots. The gross size was 6 x 3 m^2 and net plot sizes were 4.8 m x 2.0 m,4.5 m x 2.25 m and 4.8 m x 2.0 m for 30 cm x 10 cm, 45 cm x 7.5 cm and 60 cm x 5 cm spacing, respectively. Sowing was done on 08th March, 2010. The crop was fertilized with 25 kg N + 50 kg P_2O_5.The recommended plant protection measures for the crop were followed.

RESEARCH ANALYSIS AND REASONING

The data on yield attributes and grain yield of greengram as influenced by different treatments are presented in Table 1.

Effect of spacing :

The yield attributes and grain yield of greengram was influenced significantly due to different treatments of spacing.

Significantly more number of pods plant^{-1} were recorded at the spacing of 30cm x 10 cm than other spacing. The highest number of seeds pod^{-1} was recorded

Table 1 : Mean number of pods plant^{-1}, number of seeds pod^{-1}, number of seeds plant^{-1}, seed yield plant^{-1} and test weight, grain yield and harvest index as influenced by various treatments

Treatments	Number of pods plant^{-1}	Number of seeds pod^{-1}	Number of seeds plant^{-1}	Seed yield plant^{-1} (g)	Test weight (g)	Yield (kg ha^{-1})	Harvest index(%)
Spacing							
S_1 – 30 cm x 10 cm	10.92	6.66	66.99	2.92	40.88	688	29.18
S_2 – 45 cm x 7.5 cm	9.25	7.08	66.15	2.64	40.10	670	27.58
S_3 – 60 cm x 5 cm	8.35	7.98	64.50	2.80	39.69	630	27.12
S.E. $\pm$	0.03	0.25	0.30	0.07	0.19	10.84	0.32
C.D. (P=0.05)	0.10	0.74	0.90	0.22	0.58	32.40	0.96
Variety							
V_1 – BM-4	11.60	6.47	75.00	2.97	39.92	737	29.10
V_2 – BM-2002-01	9.03	7.31	70.00	2.93	41.17	699	28.23
V_3 – BPMR-145	9.00	6.80	64.01	2.66	40.00	631	27.27
V_4 – Kopargaon	8.39	8.60	53.17	2.59	39.80	584	26.83
S.E. $\pm$	0.02	0.23	0.50	0.08	0.27	29.63	0.42
C.D. (P=0.05)	0.06	0.69	1.50	0.25	0.81	78.89	1.26
Interaction (S x V)							
S.E. $\pm$	0.06	0.43	0.80	0.15	0.46	42.72	0.75
C.D. (P=0.05)	NS	NS	NS	NS	NS	NS	NS
G. mean	9.51	7.26	65.55	2.79	40.10	662	27.90

NS=Non-significant

at the spacing of 60 x 5 cm and it was significantly more than other treatments of spacing. The highest number of seeds plant^{-1} were recorded by spacing 30cm x 10 cm and was at par with number of seeds plant^{-1} recorded at the spacing of 45cm x 7.5 cm. The highest test weight was recorded at the spacing of 30cm x 10 cm and was significantly more than other treatments of spacing. The grain yield of green gram was influenced significantly by different treatments of plant spacing. The highest grain yield of green gram was recorded at the spacing of 30cm x 10 cm (688 kg ha^{-1}) and was at par with the grain yield recorded at the spacing of 45cm x 7.5 cm (670 kg ha^{-1}) and significantly superior over the grain yield recorded at the spacing of 60cm x 5.0 cm. The results are in line to those reported by Prasad and Yadav (1990).

As regards to the seed yield plant^{-1}, it was highest at the spacing of 30cm x 10 cm and was significantly higher over both the remaining treatments of spacing.

The data on harvest index indicated that, the highest harvest index was recorded at the spacing of 30cm x 10 cm (29.18) and was significantly higher than the harvest index recorded at the spacing of 45cm x 7.5 cm and 60cm x 5 cm. Similar results were reported by Singh *et al.* (1993).

Effects of varieties:

The yield attributes and grain yield of greengram was influenced significantly due to different varieties. Significantly highest number of pods plant^{-1} than other varieties were recorded by the variety BM-4. The highest number of seed pod^{-1} (8.60) was recorded by the variety Kopargaon and it was significantly more than other varieties. The variety BM-4 produced significantly highest number of seeds plant^{-1} and highest seed yield plant^{-1}, it was significantly superior over other varieties. The varieties BM-2002-01 recorded highest test weight (41.17 g) which was significantly more than test weight recorded by variety BM-4 (39.92 g), BPMR-145 (40.00 g) and Kopargaon (39.80 g). Rezai and Hasanzadeh (1995) also observed differences in yield attributing characters under different varieties of green gram.

The yield of green gram was significantly influenced by the different varieties. The variety BM-4 recorded significantly highest grain yield (737 kg ha^{-1}) over other varieties. Differential yield potential due to different green gram varieties was reported by Cordoto (1973), Malik *et al.* (2006)

As regards to harvest index, the variety BM-4 recorded significantly higher (29.10) harvest index over BPMR-145 and Kopargaon and was at par with BM-2002-01), Malik *et al.* (2006), also observed differential harvest indices in different green gram varieties.

Authors' affiliations:

A.B. BHISE, S.S. SOLUNKE, U.N. ALSE AND G.T. KADAM, Department of Agronomy, Marathwada Agriculture University, PARBHANI (M.S.) INDIA

LITERATURE CITED

Cordoto, R.V. (1973). Yield performance of seven improved mung varieties at the Iglan experiment station. *Phillipine J. Plant Industry*, **36** (113): 15-20.

Kumar, R., Nandan, R., Kumar., V., Prasad, S. and Singh, D. (2009). Response of summer mungbean (*Vigna radiata*) cultivars. *Indian J. Agril. Sci.*, **79** (4) : 309-312.

Malik, M.A., Saleem, M., Ali, F.A. and Isha, R.A.F. (2006.). Effect of sowing dates and planting patterns on growth and yield of mungbean (*Vigna radiata* L.). *J. Agric. Res.*, **44** (2) : 139-146.

Prasad, T. and Yadav, D.S. (1990). Effect of irrigation and plant density on yield attributes and yield of green gram and black gram. *Indian J. Agron.*, **35** (1) : 99-101.

Rezai, A. and Hasanzadeh, A. (1995). Effect of planting date and plant density on yield, yield components and their varital distribution in green gram (*Vigna radiata* L.). *Indian J. Agric. Sci.*, **26** (2) : 19-31.

Singh, R.V., Gwal, H.B. and Sharma, A.K. (1993). Performance of mungbean genotypes under different row spacing in summer season. *Indian J. Pulse Res.*, **6** (2) : 205-206.

****
******