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RESEARCH ARTICLE

EFFECT OF WEED MANAGEMENT ON GROWTH AND YIELD COMPONENTS OF IRRIGATED BLACKGRAM

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ABSTRACT

Field experiments were conducted during 2011 and 2012 in Annamalai University, using blackgram varieties "ADT 5" and "ADT 3" in Randomized Block Design(RBD) with eight treatments and three replications. The treatments comprised of T₁ – Unweeded check, T₂ – Twice Hand weeding (15 and 30 DAS), T₃ – Pendimethalin 1.0 kgha⁻¹ as pre-emergence application on 3 DAS, T₄ – Quizalofop-ethyl 62.5 gha⁻¹ as post-emergence application on 20 DAS, T₅-Imazethapyr 75gha⁻¹ as post-emergence on 20 DAS, T₆ – Quizalofop-ethyl 31.2 gha⁻¹+ Imazethapyr 37.5 gha⁻¹ as post-emergence application on 20 DAS, T₇– Pendimethalin 1.0 kgha⁻¹ as pre-emergence application on 3 DAS + Imazethapyr 75gha⁻¹ as post-emergence on 20 DAS and T₈ – Pendimethalin 1.0 kgha⁻¹ as pre-emergence on 3 DAS+Quizalofop-ethyl 62.5gha⁻¹ as post-emergence on 20 DAS, Significant influence on growth, yield components and yield of black gram were observed in both the cropping season. Higher grain yield (1003 kg ha⁻¹ and 1175kg ha⁻¹) were recorded in twice hand weeding (T₂) and statistically on par with Pendimethalin 1.0 kgha⁻¹ as pre-emergence on 3 DAS + Imazethapyr 75gha⁻¹ as post-emergence on 20 DAS(T₇). Unweeded check recorded the least grain yield in both the season.

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INTRODUCTION

Pulses constitutes an important ingredient in Indian vegetarian diet, which are the main source of vegetable protein. The per capita availability of pulses is decreasing from 60.7g in 1951 to 39.4g in 2011 as against 60g recommended by Indian Council of Medical Research in recent years, there has been gradual decline in per capita availability of pulses. An important reason for this miserable situation in the country seems to be replacement of pulse crop with high yielding cereals. Among the various factors responsible for low productivity of irrigated black gram weeds are considered to be one of the factors due to manifold harmful effects. Weeds pose serious problems by indulging severe competition with crop plants for nutrients, moisture, light and space. Presence of weeds at critical period of crop weed competition reduced seed yield of urd bean to the tune of 80 to 90 per cent depending upon the type and intensity of weed competition. (Suresh Kumar and Angiraset *al.*, 2005). The use of herbicides offers selective and economic weed control right from the beginning giving the crop an advantage of good start and competitive superiority. On the other hand, sole dependence on manual weeding is considered to be more energy consuming. Hence there is more attention towards chemical weed control in irrigated black gram.

MATERIALS AND METHODS

Field experiments were conducted at the Experimental farm, during 2012 at department of Agronomy, Annamalai University, Annamalainagar. The soil of the experimental field is clay loam in texture with low in available nitrogen (236 kgha⁻¹), medium in available phosphorus (21.8 kgha⁻¹) and high in available potassium (234 kgha⁻¹). The treatments comprised of T₁ – Unweeded check, T₂ – Twice Hand weeding (15 and 30 DAS), T₃ – Pendimethalin 1.0 kgha⁻¹ as pre-emergence application on 3 DAS, T₄ – Quizalofop-ethyl 62.5 gha⁻¹ as post-emergence application on 20 DAS, T₅-Imazethapyr 75gha⁻¹ as post-emergence on 20 DAS, T₆ – Quizalofop-ethyl 31.2 gha⁻¹+ Imazethapyr 37.5 gha⁻¹ as post-emergence application on 20 DAS, T₇– Pendimethalin 1.0 kgha⁻¹ as pre-emergence application on 3 DAS + Imazethapyr 75gha⁻¹ as post-emergence on 20 DAS and T₈ – Pendimethalin 1.0 kgha⁻¹ as preemergence on 3 DAS+Quizalofop-ethyl 62.5gha⁻¹ as post-emergence on 20 DAS. The trial was laid out in a randomized block design with three replication plot size was 5 x 4 m for crop seed rate is 25 kg ha⁻¹(ADT3 black gram). N, P, and K were applied in the form of urea, single super phosphate and muriate of potash at 25:50:0 NPK ha⁻¹ respectively was followed as RDF. The pre-emergence herbicide viz., Pendimethalin was sprayed on 3 DAS and the post emergence herbicide Quizalofop-ethyl, Imazethapyr were sprayed on 21 DAS with 500 litres of water ha⁻¹through knapsack sprayer fitted with flood jet nozzle separately in specified plots as per the treatments schedule.

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All the agronomic practices were carried out uniformly to raise the crop.

RESULT AND DISCUSSION

Crop biometrics:

Growth components

Among the weed management practices hand weeding twice on 15 and 30 DAS (T_2) significantly recorded higher values on growth components like plant height, LAI (4.43) and DMP (920 kg ha^{-1}). A weed free environment till the critical period of crop growth by hand weeding twice facilitated good crop growth.

crop growth offered the highest yield components. This result are in agreement with the findings of Malliswariet *al* (2008). Among the chemical weed control methods pendimethalin 1.0 kg ha^{-1} as pre-emergence application on 3 DAS + Imazethapyr 75 g ha^{-1} as post-emergence on 20 DAS (T_7) recorded the highest values on yield components viz., number of pods per plant (32.03), number of seeds per pod (7.76) and test weight (4.69) comparable to that of twice hand weeding.

It could be attributed to significantly lower weed population, dry matter accumulation of weeds and hence higher seed yield, higher number of pods per plant, higher number of seeds per pod and test weight. The similar result was reported by Bhengraet *al.*, (2010). The unweeded check recorded the least value of yield components.

Effect of weed management on growth and yield components of irrigated blackgram

Treatments	Plant height (cm) 30 DAS	Plant height (cm) 45 DAS	LAI at flowering	DMP at harvest kg ha^{-1}	No. of pods per plant	No. of seed per pod	Seed yield kg ha^{-1}	Haulm yield kg ha^{-1}
T_1 – unweeded check	18.0	32.5	2.95	127	15.75	6.03	516	850
T_2 – Twice Hand weeding (15 and 30 DAS)	29.4	43.2	4.43	920	32.60	7.80	1003	1700
T_3 – Pendimethalin 1.0 kg ha^{-1} as pre-emergence application on 3 DAS	22.0	38.5	3.29	315	23.39	7.25	750	1133
T_4 – Quizalofop-ethyl 62.5 g ha^{-1} as post-emergence application on 20 DAS	20.1	34.0	3.06	169	17.63	6.32	590	908
T_5 – Imazethapyr 75 g ha^{-1} as post-emergence on 20 DAS	21.1	35.5	3.23	207	20.57	7.50	640	950
T_6 – Quizalofop-ethyl 31.2 g ha^{-1} + Imazethapyr 37.5 g ha^{-1} as post-emergence application on 20 DAS	24.0	40.0	3.47	494	26.27	7.36	833	1200
T_7 – Pendimethalin 1.0 kg ha^{-1} as pre-emergence application on 3 DAS + Imazethapyr 75 g ha^{-1} as post-emergence on 20 DAS	29.2	43.0	4.39	907	32.03	7.76	970	1685
T_8 – Pendimethalin 1.0 kg ha^{-1} as pre-emergence on 3 DAS + Quizalofop-ethyl 62.5 g ha^{-1} as post-emergence on 20 DAS	27.1	41.6	3.79	690	26.50	7.58	900	1300
SEd	0.6	0.61	0.14	68.5	1.05	0.11	18.80	17.75
CD(P=0.05)	1.41	1.23	0.28	137	2.10	NS	37.61	35.51

Among the chemical weed control methods pendimethalin 1.0 kg ha^{-1} as pre-emergence application on 3 DAS + Imazethapyr 75 g ha^{-1} as post-emergence on 20 DAS (T_7) recorded higher values of plant height LAI (4.39) and DMP (907 kg ha^{-1}). This treatment was on par with hand weeding twice on 15 and 30 DAS in growth parameters. Observation of Angiras and Rana (1995) lend support for the present trend of result. The similar finding was reported by Sunil Kumar (2010). Unweeded check recorded the least growth parameters such as plant height and LAI, because of the poor control of weeds that leads to more weed count, the highest weed DMP and heavy competition between crop and weeds. This result is in line with the earlier findings of Chaudhary *et al.* (2005).

Yield components and yield

The number of pods per plant was significantly influenced by weed management practices. Among the treatments hand weeding twice on 15 and 30 DAS (T_2) significantly recorded higher values on yield components like number of pods per plant (32.60). There is no significant difference among the weed management practices on the number of seeds per pod. Hand weeding twice on 15 and 30 DAS provided a perfect weed free environment all throughout the critical period of

Crop yield

Hand weeding twice on 15 and 30 DAS provided a perfect weed free environment all throughout the critical period of crop growth offered the highest seed yield of 1003 kg ha^{-1} . The results are in agreement with the findings of Malliswariet *al.* (2008). Among the chemical weed control methods pendimethalin 1.0 kg ha^{-1} as pre-emergence application on 3 DAS + Imazethapyr 75 g ha^{-1} as post-emergence on 20 DAS (T_7) registered the highest value of seed yield of 970 kg ha^{-1} comparable to that of twice hand weeding. It could be attributed to significantly lower weed population, DMP of weeds and hence higher seed and haulm yield. This results are in agreement with the findings of Meenaet *al.* (2009), Bhengra et al (2010). The unweeded check recorded the least seed yield of 516 kg ha^{-1} was due to severe competition of weeds in unweeded checks results in suppression of crop growth and thereby reduction in seed yield.

Conclusion

From the study, it may be concluded that the application of Pendimethalin 1.0 kg ha^{-1} as pre-emergence on 3 DAS + Imazethapyr 75 g ha^{-1} as post-emergence on 20 DAS (T_7) is considered to be a judicious recommendation to increase the

growth and yield of irrigated blackgram in view of inadequate labour and higher weeding cost.

REFERENCES

- Angiras, N.N. and M.C. Rana 1995. Dose and time of applications of imazethapyr for weed control in soybean (*Glycine max*). *Indian J. Agron* 40: 59-63
- Bhengra S., M.C. Jerai, S. Kandeyang and A.C.Pandey. 2010. Effect of integrated weed management practices on yield and economics of pigeon pea (*Cajanuscajan L. Millsp*) under rainfed condition. IJTA Serial publications. 28(1-2): 261-264
- Chaudhary, B.M. J.J Patel. and D.R. Delvadia, 2005. Effect of weed management practices and seed rate on yield of chickpea. *Indian J.Weed Sci.*, 37(3&4): 271-272.
- Malliswari, T., P.Maheswara Reddy, G.KarunaSagar and V.Chandrika. 2008. Effect of irrigation and weed management practices on weed control and yield of black gram. *Indian J.Weed Sci.*, 40(1&2): 85-86.
- Meena D.S. Baldev Ram and ChamanKumari Jadon. 2009. Effect of integrated weed management on growth and productivity of soybean. *Indian J.Weed Sci.*, 41(1&2): 93-95.
- Suresh Kumar and N.N. Angiras 2005. Efficacy of pendimethalin under different planting methods of blackgram (*Vigna mungo*). *Indian J.Weed Sci.*, 37(3&4): 216-219.
