



# RESPONSE OF BLACK GRAM (*VIGNA MUNGO* L.) TO DIFFERENT WEED MANAGEMENT PRACTICES

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## Abstract

Field experiment was conducted at Annamalai University to evolve suitable weed management programme for irrigated blackgram during 2014. The experiment was laid out in Randomized Block Design (RBD), replicated thrice with ten treatments viz., T<sub>1</sub> – Unweeded check, T<sub>2</sub> – Handweeding twice on 15 and 30 DAS, T<sub>3</sub> – Alachlor 1.5 kg ha<sup>-1</sup> of pre-emergence application at 3 DAS, T<sub>4</sub> – Oxyfluorten 0.1 kg ha<sup>-1</sup> pre-emergence application at 3 DAS, T<sub>5</sub> – Imazethapyr 0.75 kg ha<sup>-1</sup> as early post emergence application at 15 DAS. T<sub>6</sub> – Quizolotop – p – ethyl 0.75 kg ha<sup>-1</sup> as early post emergence, T<sub>7</sub> – Alachlor 1.5 kg ha<sup>-1</sup> imazethapyr 0.75 kg ha<sup>-1</sup> early postemergence, T<sub>8</sub> – Oxyfluorten 0.1 kg ha<sup>-1</sup> + Imazethapyr 0.75 kg ha<sup>-1</sup>, T<sub>9</sub> – Alachlor 1.5 kg ha<sup>-1</sup> + Quizolotop – p – ethyl 0.075 kg ha<sup>-1</sup> as early post emergence, T<sub>10</sub> – Oxyfluorten 0.1 kg ha<sup>-1</sup> + Quizolofop – p – ethyl 0.075 kg ha<sup>-1</sup> as early post emergence. From the study, it may be concluded that application of alachlor 1.5 kg ha<sup>-1</sup> at 3 DAS + Imazethapyr 0.075 kg ha<sup>-1</sup> as early post emergence application at 15 DAS is considered to be judicious recommended to irrigated blackgram.

**Key words :** Black gram (*Vigna mungo* L.), agronomic practices, alachlor, DAS.

## Introduction

Pulse constitute an important ingredient in Indian vegetarian diet, which are the main source of vegetable protein. On an average, pulses contain 20-25 per cent protein, which is almost 2.5–3.0 times of the value normally found in cereals. Pulses are cheaper than meat, they are often referred to as poor man's meat in developing countries like India. Dietary protein provides amino acids for the synthesis of protein and other biological compound in the body. The pulse crop residues are nutritious feed for livestock. They are important for sustainable agriculture as they improve physical, chemical and biological properties of soil and function as mini nitrogen factory.

In Tamil Nadu, blackgram is cultivated over an area of 2.11 million ha with a production of 0.71 million tones and the productivity is 0.52 + ha<sup>-1</sup> (Naidu *et al.*, 2012). There is vast scope of extension of area as well as increasing the productivity of blackgram. Besides bringing more area under pulses, yield maximization with agronomic practices, nutrition management and foliar

spray of nutrients and head based plant protection measures are to be adopted to increase the production of blackgram.

Among the various factors responsible for low productivity of irrigated blackgram, weeds are considered to be one factor due to harmful effect. Weeds pose serious problems by including server competition with crop plants for nutrients, moisture, solar energy and space. In India, the losses due to weed in irrigated blackgram have been put range of 10 percent to as high as 80-90 per cent (Praveen *et al.*, 2000).

Presence of weeds at critical period of crop weed competition reduced the seed yield bean to the turn of 80-90 per cent depending upon the type and intensity of weed infestation (Suresh and Angiras, 2005).

Hence, weed control plays a key role in increasing the productivity of blackgram, weed control technology is a part of production system to increase the crop yield and to maintain the soil fertility. Although, hand weeding is widely practiced, herbicides are considered to be efficient and quick for timely weed control due to scarcity

**Table 1 :** Response of blackgram to different weed management practices.

Treatment	Total weed count (m <sup>2</sup> )	WCE	Plant height (cm)	LAI at flowering	Seed yield (Kgha <sup>-1</sup> )
T <sub>1</sub> - Unweeded control	107.86	-	20.35	1.01	438.97
T <sub>2</sub> - Handweeding twice 15 and 30 DAS	22.46	82.48	35.16	2.97	820.63
T <sub>3</sub> - Alachlor 1.5 kgha <sup>-1</sup> pre-emergence	89.68	30.19	23.98	1.47	529.92
T <sub>4</sub> - Oxyflurofen 0.1 kgha <sup>-1</sup> pre-emergence	99.43	20.87	22.09	1.24	491.88
T <sub>5</sub> - Imazethpyr 0.075 kgha <sup>-1</sup> early post emergence	66.77	47.13	27.11	1.93	619.72
T <sub>6</sub> - Quizolotop-p-ethyl 0.075 kgha <sup>-1</sup> early post emergence	76.13	39.57	25.43	1.69	570.84
T <sub>7</sub> - Alachlor 1.5 kgha <sup>-1</sup> + Imazethapyr 0.075 kgha <sup>-1</sup>	25.19	81.75	34.38	2.88	813.57
T <sub>8</sub> - Oxyflurofen 0.1 kgha <sup>-1</sup> + Imazethpyr 0.075 kgha <sup>-1</sup>	33.54	70.6	32.94	2.65	750.85
T <sub>9</sub> - Alachlor 1.5 kgha <sup>-1</sup> + Quizolofop-p-ethyl 0.075 kgha <sup>-1</sup>	45.19	63.40	30.82	2.39	650.81
T <sub>10</sub> - Oxyfloroten 0.01 kgha <sup>-1</sup> +Quizolofop –p– ethyl 0.075 kgha <sup>-1</sup> .	58.26	56.27	28.71	2.17	659.93
S.Ed.	1.99	0.07	0.53	0.07	12.40
CD (P=0.05)	4.51	0.18	1.20	0.18	28.06

of laboru cost. Thus, manual weeding is expensive, laborious and time consuming in irrigated blackgram.

### Materials and Methods

Field experiment was conducted at Annamalai University experimental farm during 2014 in randomized block design with ten treatment and replicated thrice. The treatment consists of *viz.*,

T1 - Unweeded control

T2 - Handweeding twice 15 and 30 DAS

T3 - Alachlor 1.5 kgha<sup>-1</sup> pre-emergence application 3 DAS

T4 - Oxyflurofen 0.1 kgha<sup>-1</sup> pre-emergence application

T5 - Imazethpyr 0.075 kgha<sup>-1</sup> early post emergence application on 15 DAS

T6 - Quizolofop-p-ethyl 0.075 kgha<sup>-1</sup> early post emergence application on 15 DAS.

T7 - Alachlor 1.5 kgha<sup>-1</sup> + Imazethapyr 0.075 kgha<sup>-1</sup>

T8 - Oxyflurofen 0.1 kgha<sup>-1</sup> + Imazethpyr 0.075 kgha<sup>-1</sup>

T9 - Alachlor 1.5 kgha<sup>-1</sup> + Quizolofop-p-ethyl 0.075 kgha<sup>-1</sup>.

T10 -Oxyfloroten 0.01 kgha<sup>-1</sup> + Quizolofop – p – ethyl 0.075 kgha<sup>-1</sup>.

The observation on total weed count, weed control efficiency plant height, LAI and seed yield were recorded.

### Results and Discussion

Total weed count among the weed control treatments, the least total weed population m<sup>2</sup> was recorded in hand weeding at twice at 30 and 45 DAS recorded 22.46 m<sup>2</sup> at 30 DAS and 40.81 ml on 45 DAS. It was on par with Alachlor 1.5 kgha<sup>-1</sup> as pre-emergence application at 20

DAS + imazethapyr 0.075 kgha<sup>-1</sup> as early post emergence application at 3 DAS. The total weed count of 25.19m<sup>2</sup>, 43.18m<sup>2</sup> at 30 and 45 DAS of Alachlore 1.1 kgha<sup>-1</sup> + imazethapyr 0.075 kgha<sup>-1</sup>. This might be due to effective weed control achieved under these weed management treatment.

### Growth parameters

#### Plant height and lead area index

Among the treatments, hand weeding twice at 30 DAS produced taller plants 35.16 cm. The same result were found on leaf area index. The efficient and better control of weds in twice hand weeding at 15 and 30 DAS throughout the crop growth period favoured better nutrient, uptake and growth by the crop.

#### Seed yield

Among the weed control measures, hand weeding twice at 15 and 30 DAS significantly registered the highest seed yield of 820.63 kgha<sup>-1</sup>. However, it was on par with alachlor 1.5 kgha<sup>-1</sup> + imazethapyr 0.075 kgha<sup>-1</sup> (813.57 kgha<sup>-1</sup>). The unweeded control registered the least seed yield at 438.97 kgha<sup>-1</sup>.

These treatments results in better control of weeds and provided weed free condition for longer period of crop growth and resulted in increased all growth and yield parameter as well as it might be due to effective control of weeds. The finding were reported by Singh et al., 2014.

### Conclusion

In the view of in adequate labour for weeding and high labour cost application alachloro 1.5 kgha<sup>-1</sup> as pre-emergence application 3 DAS + Imazathapyr 0.075 kg as early post emergence application of 15 DAS.

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