



Evaluation of Post Emergence Herbicides Alone and in Combination with Imazethapyr on Weed Control in Rice Fallow Blackgram

A S Rao

Integrated Weed Management Unit, Regional Agricultural Research Station, Lam, Guntur 522 034

ABSTRACT

A field experiment was conducted during rabi 2002-03 at Agricultural college Farm, Bapatla to evaluate the bioefficacy of different post emergence herbicides like imazethapyr (63 and 31g ha⁻¹), fenoxaprop ethyl (56 and 28g ha⁻¹) and cyhalofop butyl (100 and 50 g ha⁻¹) alone and as tank mixtures with imazethapyr on weed control in rice fallow blackgram in a randomized block design with three replications. Results indicated that all the weed control treatments significantly reduced the weed dry weight and recorded higher seed yield and yield attributes over weedy check. Among the treatments, alone application of fenoxaprop ethyl 56g/ha recorded the highest seed yield (725 kg ha⁻¹), net returns (Rs.7,125 ha⁻¹) and B:C ratio of 0.65 and was on par with cyhalofopbutyl 100 g ha⁻¹ (653kg ha⁻¹) and treatment combinations involving higher dose of these herbicides. Tank mixing of imazethapyr with grassy herbicides like fenoxaprop ethyl and cyhalofop butyl offer no additional advantage. Further higher dose of imazethapyr 63g ha⁻¹ caused slight injury to crop but the injury symptoms vanished in a week. The unchecked weed growth through out the crop growth period caused 55 percent reduction seed yield compared to fenoxaprop ethyl 56g ha⁻¹.

Key words : Imazethapyr, Post emergence herbicides, Rice fallow blackgram.

During rabi, rice fallow black gram grown as relay crop by broad casting the sprouted seeds of black gram two to three days before the harvesting of paddy crop in Coastal districts of AP. The crop survives entirely on residual moisture and fertilizer only, as there is no field preparation, and inter cultivation is also not possible because of broad costing black gram in standing paddy crop, The crop infested with heavy flush of broad leaf as well grassy weeds, there by result in yield loss of 53 per cent (Appanna *et.al.*, 1998). As farmers are presently using grassy herbicides, broad leaf weeds became a problem. To increase the spectrum of weed control, the present study was under taken to find out effective herbicide mixture in rice fallow black gram for realizing the potential yields.

MATERIAL AND METHODS

Field experiment with thirteen treatments (Table1) was conducted in a randomized block design with three replications at Agricultural College Farm, Bapatla during rabi 2002-03. The soil of the experimental field was sandy clay loam in texture with pH of 7.9. The soil was low in available nitrogen and phosphorous and high in available potassium. The sprouted seeds of black gram (LBG 648) were broadcasted in the standing rice

crop two days before its harvest. The post emergence herbicide treatments were applied at 15 DAS (Days after sowing) using a spray volume of 500 l/ha. The crop did not receive any irrigation and survived entirely on residual moisture and fertilizer. Where as, the preceding rice crop received a fertilizer dose of 120:60:60 kg/ha of NP₂O₅ and K₂O, respectively. The data on weed dry weight was recorded at 60 DAS and harvest only.

RESULTS AND DISCUSSION

The dominant weed flora of the experiment field consisted of *Echinochloa colonum*, *Panicum xylopodium* (vari.Trin), *Dinebra retroflexa*, *Leptochloa chinensis* (grasses), *Cyperus rotundus*, *Cyperus killinga* (sedges), *Grangea maderaspetana*, *Cardanthera uliginosa*, *Eclipta alba*, *Ammania baccifera*, *Chrozophora rotteleri* (broad leaf weeds).

All the weed control treatments significantly reduced the weed dry weight over weedy check at both stages of observations (Table 1). Among the treatments, fenoxaprop ethyl 56 g ha⁻¹ and cyhalofop butyl 100 kg ha⁻¹ significantly recorded the lowest weed dry weight, with a weed control efficacy (WCE) of 58 and 45 per cent at 60 DAS and harvest, respectively. In general, the higher dose of herbicides recorded higher WCE

Table 1. Effect of different treatments on weed dry weight, yield and yield parameters of rice fallow blackgram

Treatments	Dose (g ai ha ⁻¹)	Weed dry weight (g m ⁻²)		Crop dry weight(g m ⁻²) at harvest	No of pods plant ⁻¹	No.of seeds pod ⁻¹	100 seed weight (g)	Seed yield (kg ha ⁻¹)	Net returns (Rs./ ha ⁻¹)	BCR (Rs./ Rupee)
		60 DAS	Harvest							
T1-Imazethapyr	63	3.7 (13.6)	8.6 (70.0)	182	18.5	5.9	4.86	570	3,118	0.28
T2-Imazethapyr	31	4.4 (19.2)	10.3 (106.0)	148	15.9	5.9	4.87	444	416	0.04
T3-Fenoxapropethyl	56	2.9 (8.2)	7.1 (50.0)	225	20.8	6.0	5.54	725	7,125	0.65
T4-Fenoxapropethyl	28	3.9 (14.9)	8.8 (78.3)	162	11.2	5.9	5.40	483	1,450	0.14
T5-Cyhalofop butyl	100	2.9 (8.3)	7.0 (50.0)	202	13.4	5.9	5.38	653	4,675	0.40
T6-Cyhalofop butyl	50	4.3 (18.2)	9.2 (85.0)	205	15.7	6.1	5.15	466	900	0.08
T7- Imazethapyr + Fenoxapropethyl	63+28	4.1 (16.3)	8.4 (71.7)	190	17.9	6.0	4.96	518	1,443	0.12
T8- Imazethapyr + Fenoxapropethyl	31+28	4.2 (18.0)	10.3 (105.0)	160	13.0	5.7	4.93	5.1	1,466	0.12
T9- Imazethapyr + Fenoxapropethyl	31+56	4.2 (17.8)	8.5 (73.3)	175	13.0	5.4	5.30	622	4,166	0.36
T10- Imazethapyr + Cyhalofop butyl	63+50	3.5 (11.8)	7.4 (55.0)	215	10.3	5.9	5.54	604	3,268	0.28
T11- Imazethapyr + Cyhalofop butyl	31+50	3.9(14.7)	9.6 (91.7)	207	15.4	6.1	5.24	518	1,566	0.14
T12- Imazethapyr + Cyhalofop butyl	31+100	3.5 (12.7)	7.6 (58.3)	187	10.4	5.5	5.54	622	3,466	0.29
T13-Weedy check	-	6.9(47.5)	12.8(163.3)	100	8.3	4.3	4.31	326	1,850	0.19
CD (P=0.05)	-	1.08	1.57	42.0	3.7	0.7	NS	112	-	-

and offer no advantage in tank mixing with imazethapyr.

All the cyhalofop butyl and fenoxaprop ethyl treatments either alone or in combination with imazethapyr at lower doses did not cause any injury to black gram. Where as, the treatments involving higher dose of imazethapyr (63 g ha^{-1}) caused slight injury to crop and the injury symptoms vanished in a week. All the treatments significantly recorded higher seed yield, crop dry weight, number of pods per plant and number of seeds per pod over weedy check (Table 1). Among the treatments, alone application of fenoxaprop ethyl 56 g ha^{-1} recorded highest seed yield (725 kg ha^{-1}) and was on par with alone application of cyhalofop butyl 100 g/ha and also the treatment combinations involving higher dose of these herbicides. This indicates there was no benefit in tank mixing imazethapyr with grassy herbicide like fenoxaprop ethyl and cyhalofop butyl. The reason for reduced weed control (antagonism) is not exactly known and requires further investigation. The

uncontrolled weed growth during crop growing period resulted in a yield loss of 55 per cent compared to fenoxaprop ethyl 56 g ha^{-1} which recorded the highest yield. Regarding economics, the highest net monetary returns and benefit cost ratio were obtained with post emergence application of fenoxaprop ethyl 56 g ha^{-1} (Rs 7,125 ha^{-1} and 0.65, respectively), this was followed by post emergence application of cyhalofopbutyl 100 g ha^{-1} (Rs 4,675 ha^{-1} and 0.40 respectively).

From the results, it can be summarized that alone post emergence application of fenoxaprop ethyl 56 g ha^{-1} applied at 15 DAS was found to be effective and economical for weed management in rice fallow blackgram.

LITERATURE CITED

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(Received on 24.01.2011 and revised on 18.04.2011)