

Performance of Post Emergence Weedicide in Soybean + Pigeon pea Intercropping

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Among various constraints in crop production weed control is important one but generally neglected by many farmers. The crop yield loss is 20 to 77 percent due to weeds (Karchamia et al 2001). Timely weed management is an important factor to increase the crop productivity. The degree of loss depends upon intensity and kind of infesting weed. Manual weeding during critical growth stages is sometimes not possible due to uncertain weather, soil condition and labour problems. Inter cropping suppress the growth of weeds up to 25% (Sobney *et.al.* 1989). It is very essential to find out alternative to manual labour for weed control, which has more weed control efficiency. At present many promising and selective herbicides are available which can control weeds effectively. The intercropping of Soybean + Pigeon pea has been recommended by VNMKV, Parbhani and adopted on large scale by farmers. A very limited work on weed management in Soybean + Pigeon pea intercropping has been done as an application of weedicide. The adequate information regarding use of pre emergence weedicide is available the post emergence is the best option for using weedicide in this intercropping.

A field experiment was carried out during Kharif 2012 at experimental farm of weed science research centre, VNMKV, Parbhani in a randomized block design with seven treatments (T1-PE Pendimethaline 30% EC@0.75a T2 – POE - Imazethapyr 10%SC@0.100 g kg/ha at 25 DAS, T3 – Quizalofop ethyl 5% EC (POE) @0.050 kg/ha at 25 DNS, T4 – Chlorimurozon methyl (POE) 25% @ 0.010 kg/ha at 25 DAS, T5 – Imazethapyr + Imazimox (POE) 70% W4 @ 0.10 kg/ha at 25 DAS, T6 – Two Hand weeding & hoeing at 20 and 40 DAS and T7 – weedy check, replicated thrice. Weedicide were sprayed as per treatments. The crop were sown on 3rd July 2012 in 2:1 row proportion. Soybean (var. JS 335) and Pigeon pea (Var. BSMR – 736) were sown at 30 X 5 cm and 90 x 20 cm respectively by drilling. A common dose of fertilizer 30 – 60 kg NPK/ha was applied at the time of sowing. The crop were harvested at their maturity.

Effect on Growth Factors: Plant height (cm), leaf area (dm²) and plant dry matter (g/ plant) were significantly highest in treatment of Imazethapyr + Imazimox 70% wg@ 1.0 kg/ha at 25 DAS (Table – 2) as compared to all other weed control treatments.

Effect on Grain yield & Straw yield: yield of Soybean, Pigeon Pea and Soybean equivalent Yield was significantly highest due to application of Imazethapyr + Imazimox 70% wg @ 0.1 kg/ha treatment and was on par with treatment of 2 HW and Hoeing at 20 and 40 DAS and superior over rest of the treatments similar trend was observed in case of straw yield (Table – 3). These results are in confirmation with Reddy *et.al.* (2003), Kushwaha and Vyas (2005), Singh and Jolly (2004).

Effect on dry weed weight and weed control efficiency : In case of both monocot and dicot weeds, dry weed weight at 90 DAS was significantly lowest due to T5 – Imazethapyr + Imazimox 70% WG @ 0.1 kg/ha, which was highest in unweeded control treatment (T7). Weed control efficiency of monocot & dicot weeds was significantly highest due to T5 as compared to all other treatments and weedy check at 90 DAS (Table 1) Similar results were also reported by Kukheria *et.al.* 2001, Reddy *et.al.* 2003. In case of dicot weeds, lowest weed control efficiency was observed in treatment (T3) Quizalofop ethyl 5 % EC POE @ 0.050 kg/ha.

Application of Imazethapyr + Imazimox 70% wG @ 0.1 kg/ha found to be effective in controlling weeds in soybean + pigeon pea intercropping and obtaining highest equivalent yields.

References

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Table 1 Dry weed weight (g/m²) and weed control efficiency (%) as informed by various weed control treatments.

No.	Treatments	Dry weed weight at 90DAS		Weed control efficiency at 90 DAS	
		Monocot	Dicot	Monocot	Dicot
T ₁	PE Pendimethaline 30% EC@0.75a	11.49	9.30	50	42
T ₂	POE - Imazethapyr 10%SC@0.100 gr kg/ha at 25 DAS	14.45	8.76	37	45
T ₃	Quizalofop ethyl 5% EC (POE) @0.050 kg/ha at 25 DAS	6.79	12.41	41	23
T ₄	Chlorimuron methyl (POE) 25% @ 0.010 a2 kg/ha at 25 DAS	13.50	11.46	74	29
T ₅	Imazethapyr + Imazimox (POE) 70% W4 @ 0.10 kg/ha at 25 DAS	5.89	7.72	74	52
T ₆	Two Hand weeding & hoeing at 20 and 40 DAS	13.50	8.66	40	44
T ₇	weedy check	23.23	16.20	--	--
	SE	0.84	0.68	--	--
	CO	2.61	2.12	--	--

Table 2 Mean plant height (cm) leaf area (dm²) and Plant dry matter as influenced by different treatment.

Sr. No.	Treatment	Mean plant height (cm)		leaf area (dm ²)		Plant dry matter	
		Soy	P pea	Soy	P pea	Soy	P pea
T ₁	PE Pendimethaline 30% EC@0.75a	56.75	152.20	1.79	48.4	55.43	247.7
T ₂	POE - Imazethapyr 10%SC@0.100 gr kg/ha at 25 DAS	56.93	153.87	1.85	50.6	57.60	259.6
T ₃	Quizalofop ethyl 5% EC (POE) @0.050 kg/ha at 25 DAS	57.50	158.23	1.90	52.7	57.17	281.1
T ₄	Chlorimuron methyl (POE) 25% @ 0.010 a2 kg/ha at 25 DAS	55333	152.10	1.70	47.6	54.25	240.6
T ₅	Imazethapyr + Imazimox (POE) 70% W4 @ 0.10 kg/ha at 25 DAS	59.08	176.49	2.01	54.7	62.98	288.5
T ₆	Two Hand weeding & hoeing at 20 and 40 DAS	57.99	157.73	1.73	51.4	57.13	250.7
T ₇	weedy check	52.29	144.10	1.42	47.6	54.12	238.5
	SE	1.22	5.72	0.057	1.10	1.69	0.43
	CD	3.78	17.62	0.176	3.41	5.23	1.32

Table 3 Gran yield of soybean Pigeon Pea and Soy equi yield as influenced by different treatments.

No	Treatment	Grain yield (q/ha)			Straw yield (q/ha)		
		Soy	P pea	SYE	Soy	P pea	Soy + PP
T ₁	PE Pendimethaline 30% EC@0.75a	13.2	9.4	13.5	22.4	27.3	49.7
T ₂	POE - Imazethapyr 10%SC@0.100 gr kg/ha at 25 DAS	15.5	11.5	16.6	24.3	31.4	55.7
T ₃	Quizalofop ethyl 5% EC (POE) @0.050 kg/ha at 25 DAS	16.7	12.9	18.6	25.7	31.7	57.4
T ₄	Chlorimuron methyl (POE) 25% @ 0.010 kg/ha at 25 DAS	14.0	10.3	14.8	24.0	30.8	54.8
T ₅	Imazethapyr + Imazimox (POE) 70% W4 @ 0.10 kg/ha at 25 DAS	22.3	15.2	21.9	30.2	35.3	65.5
T ₆	Two Hand weeding & hoeing at 20 and 40 DAS	20.5	13.7	19.7	29.9	32.9	62.8
T ₇	weedy check	12.8	8.7	12.2	22.0	25.3	47.3
	SE	1.31	1.17	0.87	1.29	1.14	--
	CD	4.05	3.62	2.68	3.97	3.53	--