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INTEGRATED WEED MANAGEMENT IN PIGEONPEA + BLACK GRAM SYSTEM

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ABSTRACT

Field experiments were conducted to study the impact of integrated approach on weed flora, weed dry matter production and the yield of pigeonpea + black gram intercropping systems at the National Pulses Research Centre, Vamban during the rainy seasons (*kharif*) of 1994 and 1995. Pre-emergence application of fluchloralin @ 1 kg/ha followed by hand weeding on 25 days after sowing offered good scope for significant reduction in weed density and weed dry matter production and registered significantly higher yield in main crop as well as inter crops.

KEY WORDS : Fluchloralin, pigeonpea, black gram, weed, intercrop

The slow growth and poor coverage of foliage in pulses favour more weed population. The conventional methods of weed control (hoeing and hand weeding) are very laborious and expensive. More over, weeding during critical growth stages may not be possible due to paucity of farm labour. Chemical weed control is not effective through out the crop period. Hence, integration of both chemical and manual weeding is the most efficient method to check the weed flora. The information on the integrated weed management in pigeonpea + black gram is scanty and hence an attempt was made to study the weed flora (WF), weed dry matter production (DMP) and yield in this cropping system.

MATERIALS AND METHODS

The experiments were conducted at the National Pulses Research Centre, Vamban during *kharif* 1994 and 1995 under rainfed condition. The soil of the experimental field was alfisol (red lateritic) with moderate acidic reaction (pH 6.0), low in available N, medium in available P and K. The total rainfall received from June to October was 524 mm and 566 mm in 1994 and 1995, respectively. The experiment was laid out in completely randomised block design with three replications. The net plot size was 4.0 x 3.0 m. The treatments were weedy check (T1), weed free check (T2), stable bed preparation (T3), one hand weeding on 25 days after sowing (DAS) (T4), two hand weedings on 25 and 50 DAS (T5), pre-emergence application of pendimethalin @ 1kg/ha. (T6), pre- emergence application of pendimethalin @ 1.5 kg/ha (T7), pre- emergence application of fluchloralin @ 1kg/ha (T8), pre-emergence application of fluchloralin @ 1.5 kg/ha (T9), pre-emergence application of alachlor @ 1 kg/ha (T10), pre-emergence application of alachlor @ 1.5 kg/ha (T11), pre-emergence application of fluchloralin @ 1 kg/ha + one hand weeding on 25 DAS (T12), pre- emergence application of pendimethalin @ 1 kg/ha + one hand weeding on 25 DAS (T13), pre-emergence application of alachlor @ 1 kg/ha + one hand weeding on 25 DAS (T14) and pre-emergence application of pendimethalin @ 1 kg/ha + pre-emergence application of alachlor @ 1kg/ha (T15).

The cropping system adopted were pigeonpea + black gram with 2:1 paired row system. Essential agronomic and need based crop management practics were followed as per requirement of the crop.

RESULTS AND DISCUSSION

The data on yield and yield attributes revealed that (Table 1) decrease in weed flora and weed dry weight increased the yield of both main and intercrop. Among the treatments, pre-emergence application of fluchloralin @ 1 kg/ha followed by hand weeding on 25 DAS significantly increased the yield of both main and intercrop. Sootrakar *et al.* (1995) reported that pre- emergence application of fluchloralin @ 0.9 kg/ha followed by hand weeding on 25 DAS recorded higher yield in sesame. Similarly, Misra and Misra (1995) observed that integration of chemical and mechanical weeding recorded higher yield and net income in black gram. Keeping the field weed free

Table 1. Weed density, DMP and yield in different treatments

Treatments	Weed flora (no./m^2)	Weed flora (no./m^2)	Weed DMP (kg/ha)	Weed DMP (kg/ha)	Yield of inter crops (kg/ha)	Yield of inter crops (kg/ha)	Yield of main crop (kg/ha)	Yield of main crop (kg/ha)
	1994	1995	1994	1995	1994	1995	1994	1995
T1	14.7	18.2	45.2	44.5	96	55	294	278
T2	4.9	5.8	17.8	16.8	336	225	942	871
T3	9.2	11.9	30.6	27.1	297	205	848	865
T4	10.8	11.7	36.2	35.2	247	99	386	383
T5	7.1	8.9	23	21.4	238	121	767	620
T6	10.6	11.5	14.1	36.8	2789	179	441	688
T7	10.8	11.8	37.3	37.3	279	196	537	648
T8	10.7	11.3	35.6	34	263	186	438	647
T9	10.6	13.7	34.7	31.3	281	155	447	642
T10	11.9	12	42.9	40.3	315	157	493	740
T11	12.4	13	39.3	37.2	272	151	580	720
T12	6.8	9.5	25.1	21.4	351	210	959	947
T13	8.3	9.0	27.0	25.6	243	197	755	797
T14	5.9	5.8	22.8	24	292	200	447	929
T15	6.4	6.5	23	28.8	123	45	649	244
CD (5%)	0.5	1.2	0.84	2.0	24	17	32	96

Treatment details as per the text. DMP : Dry matter production

through out the cropping period was uneconomical. However, pre-emergence application of fluchloralin @ 1 kg/ha followed by hand weeding on 25 DAS was economical and on par with weed free check.

The data on WF and weed DMP revealed that pre-emergence application of fluchloralin @ 1 kg/ha followed by hand weeding on 25 DAS significantly reduced the weed density and weed DMP and it was comparable with weed free check. Ahuja and Yaduraju (1995) observed that decreased weed population and weed dry weight due to fluchloralin application in pigeonpea + wheat cropping system. It can be concluded that pre-emergence application of fluchloralin @ 1 kg/ha followed by hand weeding on 25 DAS would help in increasing the yield of pigeonpea + black gram cropping system.

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EFFECT OF ORGANIC MANURES AND FERTILIZER NITROGEN ON POST HARVEST SOIL NUTRIENT STATUS, NUTRIENT UPTAKE AND YIELD OF TRANSPLANTED RICE

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ABSTRACT

Field experiments conducted at Annamalai University, Annamalai Nagar during *samba* 1991 and *navarai* 1992 showed that post harvest soil available nutrient status, crop nutrient uptake and grain yield of rice were favourably influenced by the application of bio-digested pressmud at 10 t/ha along with the recommended dose of fertilizer nitrogen *viz.*, 150 and 120 kg N/ha for medium and short duration rice varieties respectively.

KEY WORDS : Organic manures, nitrogen, nutrient status, yield