SHORT COMMUNICATION

INTEGRATED WEED MANAGEMENT IN SYSTEM OF RICE INTENSIFICATION (SRI) FOR SECURED LIVELIHOOD

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Abstracts: Weeds not only cause quantitative, but also hamper the quality of produce owing to competition for nutrients, moisture, light and to some extent for space. The extent of yield reduction of rice due to weeds is estimated from 15-95 per cent (Gogai *et al*., 1996).

Keywords: Livelihood, Rice, Weed

INTRDUCTION

In order to meet the requirement of growing population there is need to boost its productivity by proper method of crop establishment and weed management to secure vigorous plant growth and assuring higher yields. SRI increases the productivity of rice by changing the management of plant, soil, water and nutrients. Farmers generally control weed manually. The physical methods are costly, labour consuming and the advantage of manual weeding could only be achieved when it is performed timely. Thus, for effectively and economically control of mixed weed flora in field, an integrated approach of weed management is required. In view of this experiment on "System of rice intensification (SRI) as influence by integrated weed management for secured livelihood" was conducted with the objectives to find integrated approach of weed management in SRI.

METHODOLOGY

The present experiment was carried out at Research cum-Instructional Farm, Department of Agronomy, IGKV, Raipur (C.G.) during *kharif* season of 2009. The experiment was conducted in Randomized Block Design (RBD). Rice variety "MTU-1010" was grown as a test crop. Rice seedlings of 14 days age were transplanted with a spacing of 20 x 20 cm. The crop was fertilized with 90, 60 and 40 kg N, P_2O_5 and K_2O ha^{-1} applied through urea, single super phosphate and muriate of potash, respectively. Organic manures as green manuring crop was grown and incorporated in soil at flowering stage.

RESULTS

Floristic composition

The weed flora of the rice field were: *Alternanthera triandra, Echinocloa colona, Fimbristylis miliacea and Cyperus iria* throughout the crop season.

Seed yield

It was also observed that all the herbicides treatments were effective and significantly enhanced the grain yield over control. The maximum grain yield and straw yield were also found under that post-emergence application of Fenoxaprop-p-ethyl 60 g ha^{-1}+ Ethoxysulfuron 15 g ha^{-1} at 20 and 35 DAT and it was closely followed by Fenoxaprop-p-ethyl 60 g ha^{-1}+ Ethoxysulfuron 15 g ha^{-1} at 20 DAT + MW performed on two ways at 35 DAT. The similar results of increased grain yield were too reported by Kolhe (1999), Rekha *et al.* (2003) and Moorthy (2002).

Weed dry matter production

Results revealed that post-emergence application of Fenoxaprop-p-ethyl 60 g ha^{-1}+ Ethoxysulfuron 15 g ha^{-1} at 20 and 35 DAT was statistically at par with hand weeding (twice) at 20 and 40 DAT for controlling weeds effectively in system of rice intensification method of rice. Fenoxaprop-p-ethyl 60 g ha^{-1}+ Ethoxysulfuron 15 g ha^{-1} at 20 DAT + MW performed on two ways at 35 DAT were next in order. The maximum weed dry matter production was found under unweeded control.

Weed control efficiency

The highest gross return and B:C ratio was obtained from Fenoxaprop-p-ethyl 60 g ha^{-1}+ Ethoxysulfuron 15 g ha^{-1} at 20 and 35 DAT followed by hand weeding and the lowest was obtained from unweeded control.

CONCLUSION

Application of Fenoxaprop-p-ethyl 60 g ha^{-1}+ Ethoxysulfuron 15 g ha^{-1} at 20 and 35 DAT was as effective as hand weeding. This was owing to high growth of crop as well as low crop-weed competition, better weed killing capacity of

herbicides and longer weed free period under these treatments.

Table 1. Grain yield (q ha^{-1}), Dry matter production, g(m^{-2}) and weed control efficiency as influenced by integrated weed management under SRI

Treatments	Grain yield (q ha^{-1})	Dry matter, g (m^{-2})		WCE
		60 DAT	At harvest	
Fenoxaprop-p-ethyl @ 60 g ha^{-1}+CME+MSM @ 4 g ha^{-1} at 20 DAT	41.16	18.26	132.85	52.05
Fenoxaprop-p-ethyl @ 60 g ha^{-1} + Ethoxysulfuron @ 15 g ha^{-1} at 20 DAT.	43.30	14.68	116.05	58.11
Fenoxaprop-p-ethyl @ 60 g ha^{-1}+ CME+MSM 4 g ha^{-1} at 20 DAT + MW (one way) at 35 DAT	45.32	14.00	113.35	59.09
Fenoxaprop-p-ethyl @ 60 g ha^{-1}+ Ethoxysulfuron @ 15 g ha^{-1} at 20 DAT + MW (one way) at 35 DAT	45.73	12.73	111.36	59.81
Fenoxaprop-p-ethyl 60 g ha^{-1} + Ethoxysulfuron 15 g ha^{-1} + MW (Two way) at 20 and 35 DAT	48.30	8.14	80.07	70.93
Fenoxaprop-p-ethyl 60 g ha^{-1}+ CME+MSM 4 g ha^{-1} at 20 DAT + MW (two way) at 35 DAT	46.90	10.82	99.83	63.97
Mechanical weeding (one way) -12, 25, 35 DAT.	40.93	20.07	148.59	46.37
Mechanical weeding (two way) -12, 25, 35 DAT	48.11	9.78	92.20	66.72
PoE followed by PoE Fenoxaprop- p –ethyl + CME+MSM @ 4 g ha^{-1} at 20 and 35 DAT	45.77	11.77	105.48	61.93
PoE followed by PoE Fenoxaprop-p-ethyl + Ethoxysulfuron 15 g ha^{-1} at 20 and 35 DAT	51.85	6.49	69.91	74.77
Hand weeding – 20, 40 DAT	50.50	7.54	77.39	72.07
Unweeded control.	21.12	46.79	277.05	
SEm ±	**0.83**	**0.66**	**4.17**	
CD at 5%	**2.02**	**1.94**	**12.24**	

CME + MSM = Chlorimuron ethyl +Metsulfuron methyl: DAT =Days after transplanting: PoE =Post emergence: MW = Mechanical weeding

REFERENCES

Gogoi, A. K., Brown, H., Cussans, G. W., Devine, M. D., Duke, S.O., Fernandes, Q.C., Helweg, A., Labrada, R. E., Lanndes, M., Kudsk, P. and Steibig, J.C. (1996). Integrated weed management of rice in high rainfall region of India: Status and Prospects. *In*: Proceedings of the second International Weed Control Congress, Copenhagen, Denmark, 25-28 June. 1-4: 715-719.

Kolhe, S.S. (1999). Evaluation of low dosage-high efficacy herbicides Fenoxaprop-p-ethyl and ethoxysulfuron in direct seeded rice under puddle condition. *Oryza*. **36** (2):177-179.

Moorthy, B. T. S. Saha S. (2002). Bio-efficacy of Certain New Herbicide Formulations in Puddle-seeded Rice. *Indian Journal of Weed Science* : **34**(1-2)