

EFFECT OF DIFFERENT WEED MANAGEMENT PRACTICES ON WEED DRY MATTER AND YIELD OF MAIZE (ZEA MAYS L)

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Abstract: A field experiment was conducted at AICRP on Weed Control, VNMKV, Parbhani during *kharif* season of 2010 and 2011 to find the effect of weed control practices on yield of maize and dry weight of weeds. The data revealed that among the different weed control practices PE application of Oxyflurofen @ 0.2 kg a.i./ha followed by one hand weeding recorded significantly highest grain yields and it was at par with weed free treatment. Hand weeding showed additional benefit in increasing the yield of maize.

Keywords: Maize, weed control, yield, Herbicides.

Introduction

Maize is an important cereal crop of India. It is grown for grain as well as fodder purpose. Several weed species are strong competitors, compete with the maize crop and thus the yield is decreased. The quantities of growth factors used by weeds are thus unavailable to the crop. Presence of weeds in maize crop decreases the yield drastically. Malik *et al.* (2006) reported that herbicides proved effective in controlling weeds and produced relatively more weight of cobs, number of grains per cob, 1000-grain weight, biological yield and grain yield. Khan *et al.* (2002) reported that chemical weed control as well as hand weeding significantly increased the grain yield of maize. As there are limitations of every weed control method therefore integrated weed management is a good option for sustainable agriculture. It involves the combination of all the possible methods to suppress the weeds below economic threshold level.

Materials and methods

A field experiment was conducted at All India Coordinated Research Project on Weed Control, Parbhani during *kharif* season of 2010 and 2011 in Randomized Block design with three replications. The first four treatments were Pre-emergence use of, Oxyflurofen 0.2 kg/ha, Atrazine 1.0 kg/ha, Pendamethalin 0.75 kg/ha, Metribuzine 0.88 kg/ha, the next four treatments comprised of the use of same four herbicides combined with one hand weeding at 30DAS and the last two treatments were 2 hand weeding and weedy check. The gross and

net plot size were 4.2 x 4.2m and 3.6 x 3.6 m respectively. The sowing was done on 24/6/2010 and 8/7/2011 during first and second year of experiment respectively. The recommended dose of NPK and plant protection schedule was followed.

Results and discussion

Crop weed association

Among broad leaved weeds *Euphorbia geniculata*, *Acalypha indica*, *Parthenium hysterophorus*, *Digera arvensis*, *Mereimia emerginata*, *Ipomea maxima*, *Alternanthera sessilis*, were found to be dominant species. The dominant grassy weeds were *Cynodon dactylon*, *Brachiaria eruciformis*, *Cyperus rotundus* and *Amischophacelus cuculata* were dominant.

Dry weed weight

Significant effect of different treatments on dry weed weight of grassy as well as broad leaved weeds was observed. The data is given in table No. 2.

The significantly lower dry matter of grassy and broad leaved weeds than weedy check plots at 30 DAS was recorded with two hand weeding, which was found at par with dry weed weight of grassy and broad leaved weeds in plots treated with Pre-emergence Oxyflurofen 0.2 kg a.i./ha followed by hand weeding at 30 DAS, plots treated with Pre-emergence Atrazine 1.00 kg a.i./ha followed by hand weeding at 30 DAS and plots treated with Pre-emergence Pendimethalin 0.75 kg a. i./ha followed by hand weeding at 30 DAS. These results are in agreement with Shakoor *et al.* (1986), who reported that dry biomass of weed from the weedy control plots was significantly greater than chemical and manual weeded plots. Hafeezullah (2000) also reported similar results.

Grain yield

Soybean grain yield was significantly influenced due to various herbicidal treatments. The data indicates that, highest grain yield was recorded with treatment two hand weeding and was at par with grain yield in plots treated with Pre-emergence Oxyflurofen 0.2 kg a.i./ha followed by hand weeding at 30 DAS, grain yield in plots treated with Pre-emergence Atrazine 1.00 kg/ha followed by hand weeding at 30 DAS and grain yield in plots treated with Pre-emergence Pendimethalin 0.75 kg/ha followed by hand weeding at 30 DAS during both years of experimentation. Khaliq *et al.*, (2005) tested the efficacy of some herbicides for controlling weeds in maize (*Zea mays* L.) and reported that plots treated with formulations of Pendimethalin gave maximum weed control and produced relatively more number of grains per cob.

Conclusion

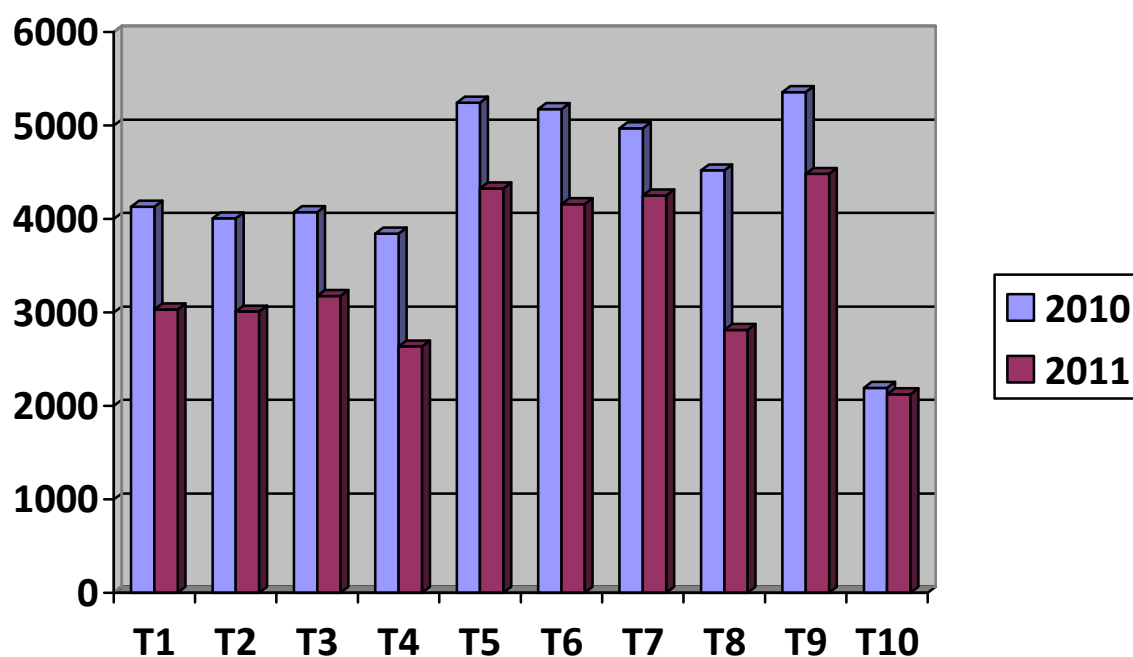
The highest grain yield and lowest dry weed weight was recorded with two hand weeding which was found at par with use of Pre-emergence Oxyflurofen 0.2 kg/ha followed by hand weeding at 30 DAS, use of Pre-emergence Atrazine 1.00 kg/ha followed by hand weeding at 30 DAS and use of Pre-emergence Pendamethalin 0.75 kg/ha followed by hand weeding at 30 DAS

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Table 1: Grain yield of Maize (Kg/ha) as influenced by different treatments

Treatments	Grain yield (kg/ha)		
	2010	2011	Mean
T1-PE Oxyflurofen0.2 kg/ha	4130	3032	3581
T2-PE Atrazine 1.0 kg/ha	4005	3010	3508
T3-PE Pendimethalin 0.75 kg/ha	4072	3176	3624
T4-PE Metribuzine 0.88 kg/ha	3843	2635	3239
T5-PE Oxyflurofen0.2 kg/ha+HW	5244	4324	4784
T6-PE Atrazine 1.0 kg/ha+HW	5175	4158	4667
T7-PE Pendimethalin0.75 kg/ha+HW	4970	4250	4610
T8-PE Metribuzine 0.88 kg/ha+HW	4518	2814	3666
T9- 2 HW	5356	4480	4918
T10-Weedy check	2192	2124	2158
SE \pm	261	204	-
CD at 5 %	774	598	-



Treatment wise yield of maize (Kg/ha)

Table 2: Dry weed weight at 30 DAS and 60 DAS as influenced by different treatments

Treatments	Grassy weeds				Broadleaved Weeds			
	2010		2011		2010		2011	
	30DAS	60DAS	30DAS	60DAS	30DAS	60DAS	30DAS	60DAS
T1- PE Oxyflurofen 0.2 kg/ha	6.25	11.50	5.96	14.10	4.30	15.05	5.20	15.10
T2- PE Atrazine 1.0 kg/ha	9.43	15.49	8.34	14.14	12.50	19.88	10.18	18.45
T3- PE Pendimethalin 0.75 kg/ha	12.67	15.13	12.72	15.21	16.00	19.78	14.20	19.10
T4- PE Metribuzine 0.88 kg/ha	13.58	8.00	13.18	10.10	17.16	22.20	15.14	21.48
T5- PE Oxyflurofen 0.2 kg/ha+HW	4.20	5.41	5.28	6.14	7.26	8.76	8.10	9.67
T6- PE Atrazine 1.0 kg/ha+HW	4.53	6.23	5.73	6.32	7.50	9.96	8.14	10.16
T7-PE Pendimethalin 0.75 kg/ha+HW	5.50	6.90	5.20	7.10	7.58	10.32	8.57	10.12

T8- PE Metribuzine 0.88 kg/ha+HW	6.70	6.98	5.80	7.00	8.76	11.10	9.26	11.18
T9- 2 HW	2.61	2.89	2.50	3.10	3.24	6.16	4.32	7.16
T10- Weedy check	16.01	19.56	15.40	20.21	18.91	35.58	17.31	34.50
SE_t	1.01	1.26	1.20	1.50	1.17	1.33	1.20	1.46
CD at 5 %	3.01	3.74	3.34	4.23	3.48	3.96	3.46	4.16