Indian Journal of Weed Science 41(1&2) : 109-110, 2009 **Short communication**

Efficacy of new herbicides in wheat under south Saurashtra region of Gujarat

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ABSTRACT

Experimental site constituted by monocot weeds *viz., Brachiaria* spp. *Echinochloa colonam* L. Cav. dicot weeds *viz., Amaranthus viridis*, *Digeria arvensis, Chenopodium album* and *Euphorbia hirta* L. and sedges *viz., Cyperus rotundus* L. Integration of pendimethalin as pre-emergence (PE) with clodinafop, metsulfuron-methyl and 2,4-D amine salt post emergence with or without hand weeding proved effective in reducing weed density and dry weight of weeds. Significantly the higher yield attributing characters were recorded under weed free, closely followed by pendimethalin 0.9 kg/ha as pre emergence followed by one hand weeding at 35-40 DAS. The maximum net return was obtained under pendimethalin 0.9 kg/ha as pre-emergence + 1 HW at 35-40 DAS and which was closely followed by pendimethalin 0.9 kg/ha PE + clodinafop 60 g/ha as post emergence at 35-40 DAS.

Key words : Wheat ,Weeds, Pendimethalin, Clodinafop, 2,4-D amine, Metsulfuron- methyl

Infestation of wheat crop with weeds is one of the major reasons for low productivity of wheat in Saurashtra region of Gujarat. No written recommendation is available for weed control in wheat for this region. Hence present investigation was undertaken to provide appropriate options to farmers for effective weed management in wheat.

An experiment was conducted during *rabi* season of 2008-09 at Junagadh Agricultural University, Junagadh (Gujarat). The soil of the experimental field was clay in texture, low in available nitrogen and medium in available phosphorus and potash, slightly alkaline in reaction with pH of 8.05. Total 12 treatments were assigned in randomized block design with three replications by growing wheat variety. *GW- 366* at 22.5 cm row spacing using 120 kg seed/ha. Herbicides used were pendimethalin at 0.9 kg/ha applied as pre emergence and metsulfuron-methyl at 6 g/ha, 2,4-D amine salt at 0.75 kg/ha and clodinafop 60 g/ha at 35 DAS at spray volume of 500 lit/ha. Spraying was done by manual operated knapsack sprayer. Follow up weeding operation after herbicide application as per treatment. The crop was grown by adopting standard package of practices recommended for the region.

The predominant weed flora recorded on the experimental site consisted weeds *Brachiaria* spp., *Echinochloa colonam, Amaranthus viridis, Digera arvensis, Chenopodium album, Euphorbia hirta.* and *Cyperus rotundus.*

Among herbicide treatments (Table1) pre-emergence pendimethalin resulted in efficient control of both grassy and broad leaf weeds, whereas that of clodinafop resulted in excellent control of grassy weeds while post-emergence application of metsulfuron-methyl and 2,4-D amine controled broad leaf weeds efficiently. However, integration of one hand weeding with pendimethalin 0.9 kg pre emergence, pendimethalin at 0.9 kg/ha pre emergence + clodinafop at 60 g/ha as post emergence, pendimethalin at 0.9 kg/ha as pre emergence + metsulfuron-methyl at 6 g/ha as post emergence and pendimethalin at 0.9 kg/ha as pre emergence + 2,4-D amine at 0.75 kg/ha post em at 35 DAS proved more effective in reducing the weed density at harvest in comparison to herbicide application alone. pendimethalin 0.9 kg/ha pre-emergence + 1 HW at 40 DAS was proved superior to rest of the treatments by recording minimum dry weight of weeds and remained at par with pendimethalin 0.9 kg/ha pre emergence + clodinafop 60 g/ha, 2 HW at 20 and 40 DAS, pendimethalin 0.9 kg/ha + metsulfuron-methyl 6 g/ha and pendimethalin 0.9 kg/ha as pre emergence + 2,4-D amine 0.75 kg/ha with weed control efficiency of 90.69, 88.10, 87.87, 87.51 and 86.49%, respectively. Though the maximum grain and straw yield was recorded with pendimethalin 0.9 kg/ha + 1 HW at 40 DAS followed by pendimethalin 0.9 kg/ha *fb* clodinafop 60 g/ha (T_8), pendimethalin 0.9 kg/ha + metsulfuron-methyl 6 g/ha (T_6) and pendimethalin 0.9 kg/ha + 2,4-D amine 0.75 kg/ha (T_7). Results regarding yield are of close vicinity to those by Balyan and Malik

Table 1. Effect of different treatments on weed population, dry weight, weed control efficiency at harvest and yield of wheat

Treatments	Weed population at harvest		Dry weight of weeds (kg/ha)	Weed control efficiency (%)	Grain yield (kg/ha)	Straw yield (kg/ha)
	Grassy weeds	Broad leaf weeds				
Pendimethalin	3.3 (10.3)*	3.6 (12.3)*	224.8	84.39	3723	4386
Pendimethalin *fb*1 HW at 40 DAS.	1.8 (2.67)	2.4 (5.00)	133.7	90.69	4307	4896
Metsulfuron- methyl	6.0 (35.7)	2.7 (6.67)	424.6	70.62	3486	3704
2,4-D amine	6.1 (36.3)	2.6 (6.67)	446.4	69.15	3460	3679
Clodinafoppropargyl	2.1 (4.00)	5.5 (29.3)	358.2	75.18	3521	3891
Pendimethalin. + metsulfuron methyl	3.0 (8.33)	1.8 (3.00)	180.6	87.51	4074	4649
Pendimethalin + 2,4 - D amine salt	2.9 (8.33)	1.9 (3.33)	196.3	86.49	4046	4506
Pendimethalin + clodinafoppropargyl	1.7 (2.33)	3.5 (12.0)	171.8	88.10	4159	4780
1 HW at 20 DAS.	3.3 (10.3)	3.2 (10.0)	297.5	79.41	3624	4110
2 HW at 20 and 40 DAS	2.1 (4.00)	2.0 (3.67)	175.6	87.87	4280	4783
Weed free	0.7 (0.0)	0.7 (0.0)	0.00	100.00	4403	5016
Unweeded control	6.2 (38.3)	6.2 (38.0)	1452.0	0.00	2703	2965
LSD (P=0.05)	0.61	0.54	69.8	-	644	720

* Actual values are given in parenthesis which was transformed by $\sqrt{x+0.5}$ transformation for analysis, DAS- Days after sowing, HW - Hand weeding

(2000) and Singh and Ali (2004). This might be due to the efficient control of weeds with lower dry matter production of weeds and higher crop growth and yield by the treatments during crop growth period.

REFRENCES

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