



Effect of different herbicides on diverse weed flora and productivity of Indian mustard

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Rapeseed and mustard are the major group of oilseed crops grown in Jammu region on a sizeable acreage in Jammu region on an area of more than 28000 ha. The average productivity of the state is 801 kg/ha in 2013-14 which is far below the national average productivity of 1176 kg/ha. Weeds are one of the major factors which cause considerable reduction in the yield of Indian mustard which ranges to an extent of 30-70% and more (Kachroo and Bazaya 2006). There are limited options available for the farmers thereby increasing the risk for development of herbicide resistance in weeds of mustard crops in the future thereby necessitating research for finding new herbicides which can be used for control of diverse weed flora of rapeseed mustard crops thereby helping in management of weeds as well as development of herbicide resistance in weeds in rapeseed mustard

METHODOLOGY

Field experiment was conducted at the Research farm, Chatha, Jammu during the *rabi* season of 2012-13 to evaluate the effect of different herbicides on diverse weed flora and yield of Indian Mustard (*Brassica juncea*) under irrigated conditions of Jammu. The experiment consisting of 12

treatments which were arranged in a randomized block design with 3 replications. The crop variety ‘RSPR 01’ was sown in lines 30 cm apart with plant to plant distance of 10 cm on 25/10/2012 and harvested on 19/3/2013. The crop was raised using standard package and practices recommended for the region. Data on weed growth, yield performance and economics were recorded using standard procedure.

RESULTS

The data revealed that weeds caused 66.81% reduction in grain yield of Indian mustard when compared with weedy check plots. The major weeds present in the experimental field were *Medicagodenticulata*, *Euphorbia helioscopia*, *Phalaris minor*, *Ranunculus arvensis*, *Rumex retroflexus*, *Anagallis arvensis*, *Cirsium arvensis*, *Cannabis sativa*, *Parthenium hysterophorus* and *Avenaludoviciana*. Among the different herbicides treatments, pre emergence application of oxyfluorfen at 0.15 kg/ha (PE) though being at par with either application of pendimethalin at 1.0 kg/ha (PE), pendimethalin at 0.75 kg/ha (PE)stomp extra 38.7 CS or trifluralin at 0.75 kg/ha (PPI) significantly reduced the total weed population and total weed biomass besides significant

Table 1. Effect of different herbicides on weed density, yield and economics of India Mustard

Treatment	Total weed density (no./m ²) at 60 DAS			Weed control efficiency (%)	Grain yield (kg/ha)	Weed Index (%)	Net returns (₹/ha x 10 ³)	B:C ratio
	Broad leaf	Grasses	Total					
Oxidiagryl @ 0.09 kg/ha (Pre.)	6.70 (46.67)	3.37 (10.67)	7.44 (57.33)	48.81	1295	19.01	18.35	1.31
Trifluralin @ 0.75 kg/ha (PPI)	2.87 (8.00)	2.95 (8.00)	4.04 (16.00)	85.71	1487	7.00	22.58	1.55
Oxyfluorfen @ 0.15 kg/ha (Pre.)	2.49 (5.33)	1.82 (2.67)	2.95 (8.00)	92.86	1513	5.38	23.38	1.62
Quizalofop @ 0.06 kg/ha (Post)	7.10 (54.67)	2.49 (5.33)	7.51 (60.00)	46.43	1290	19.32	17.64	1.21
Clodinafop @ 0.06 kg/ha (Post)	7.46 (57.33)	3.20 (9.33)	8.09 (66.67)	40.47	1241	22.39	16.70	1.17
Isoproturon @ 1.0 kg/ha (Pre.)	3.95 (14.67)	4.24 (17.33)	5.72 (32.00)	71.43	1363	14.76	20.29	1.47
Isoproturon @ 1.0 kg/ha (Post)	4.82 (24.00)	5.0 (25.33)	6.9 (49.33)	55.96	1322	17.32	19.25	1.40
Pendimethalin @ 1.0 kg/ha	2.75 (6.67)	2.49 (5.33)	3.61 (12.00)	89.29	1502	6.07	92.16	1.53
Pendimethalin @ 0.75kg./ha	4.11 (17.33)	4.57 (20.00)	6.12 (37.33)	66.67	1343	16.01	20.93	1.31
Pendimethalin (Stomp Extra 38.7 CS) @0.75 kg/ha	8.0 (2.95)	9.33 (3.20)	4.26 (17.33)	84.53	1483	7.25	22.70	1.55
Weedy check	7.61 (60.00)	7.22(52.00)	10.49 (112.00)	0.0	907	43.28	18.53	0.69
Weed free	1.0 (0.00)	1.0 (0.00)	1.0 (0.00)	1.00	1599	0	22.03	1.10
LSD (p=0.05)	1.98	2.28	4.26	-	122.25	-	-	-

*Figures in parenthesis are original values subject to “x+1 square root transformations

reduction in nitrogen uptake by weeds and higher weed control efficiency and lowest weed index than weedy check in comparison thereby resulting in significant increase not only in the yield attributes and nitrogen uptake of Indian Mustard but also the grain yield of Indian mustard. Maximum B:C ratio was observed with application of oxyfluorfen at 0.15 kg/ha. However, post emergence application of quizalofop at 0.06 kg/ha and clodinafop at 0.06 kg/ha resulted in significant control of grassy weeds only.

CONCLUSION

It was concluded that application of Oxyfluorfen at 0.15 kg/ha, pendimethalin at 1.0 kg/ha (PE), pendimethalin stomp extra 38.7 CS at 0.75 kg/ha (PE) and trifluralin at 0.75 kg/ha (PPI) was most effective in controlling weed flora and increasing the grain yield as well as profitability of Indian mustard in Jammu region.

REFERENCES

Kachroo D and Bazaya BR. 2006. Integrated weed management in mustard (*Brassica juncea*) under irrigated condition. *Journal of Oilseed Research* **23** (1): 55-59