

Efficacy of Fenoxaprop and Competing Ability of Wheat Cultivars Against Wild Oat

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Wild oat (*Avena ludoviciana* L.) is the most prevalent grassy weed of wheat in northern India. Being strong competitor, it reduces wheat yields by 16 and 46% with an infestation of 40 and 160 plants m⁻², respectively (Balyan and Malik, 1989). Competitive advantage of various crops to weeds appears to be influenced by crop morphology. Plant height and early ground coverage are positively correlated to competing ability in wheat. Keeping these points in view, a field experiment was undertaken during 2000-01 and 2001-02 to study the competing ability of four wheat cultivars (PBW 343, UP 2338, HD 2687 and WH 711) as sub-plots under three weed management practices (Weed-free, weedy and fenoxaprop at 120 g ha⁻¹) as main plots in split plot design with four replications. The soil of the experimental field was sandy loam in texture, low in available N (223 kg ha⁻¹), medium in available P (14.8 kg ha⁻¹) and high in available K (432 kg ha⁻¹) with slightly alkaline in reaction (pH 8.1). Wheat varieties using seed rate of 100 kg ha⁻¹ were sown on November 15, 2000 and November

20, 2001. The herbicide was applied with a knapsack sprayer fitted with flat fan nozzle; using 625 l water ha⁻¹ 30 DAS. Since there was similar trend during both the years, the data were subjected to pooled analysis. The field was mainly infested with *A. ludoviciana* (95%) and broadleaf weeds predominantly *Chenopodium album* (5%) was manually removed before spraying.

Among weed control treatments, weed-free condition resulted in significantly higher number of spikes, longer earheads, 1000-grain weight and consequently higher grain yield of wheat (Table 1). It was closely followed by fenoxaprop 120 g ha⁻¹ due to effective control (81-85%) of wild oat (*Avena ludoviciana* L.). All the yield attributes (except spike length) and grain yield of wheat were significantly lower in unweeded check. Among wheat cultivars, HD 2687 being statistically at par with other cultivars resulted in maximum reduction in the dry weight of *A. ludoviciana* at 60 and 90 DAS. Yield and yield attributes were statistically at par among different varieties; however, grain

Table 1. Effect of various wheat cultivars and weed control treatments on the dry weight of *A. ludoviciana*, tillers number and yield and yield attributes of wheat (Pooled data of 2000-01 and 2001-02)

Treatment	Dry weight of <i>A. ludoviciana</i> (g m ⁻²)		Tillers (No. m ⁻²)	Spikes (No. m ⁻²)	Spike length (cm)	1000-grain weight (g)	Grain yield (kg. ha ⁻¹)
	60 DAS	90 DAS					
Weed control							
Weed-free check	0.0	0.0	529.5	510.5	10.0	43.3	5545
Weedy check	116.7	174.3	358.5	336.0	9.4	40.2	3728
Fenoxaprop 120 g ha ⁻¹	20.0	25.9	481.0	468.5	9.9	42.2	4974
LSD (P=0.05)	8.4	8.8	24.0	34.0	NS	1.8	370
Varieties							
PBW 343	49.2	68.3	469.5	447.5	9.7	42.1	4903
UP 2338	43.9	63.6	446.0	429.5	9.7	42.0	4592
HD 2687	41.0	61.1	454.0	435.0	9.8	41.2	4619
WH 711	48.0	73.8	463.5	445.5	9.7	42.1	4883
LSD (P=0.05)	NS	NS	NS	NS	NS	NS	NS

NS-Not Significant.

yield was more in PBW 343. This may be due to difference in inherent potential of different cultivars. The dry weight accumulation by weeds at 60 and 90 DAS was maximum in plots with variety WH 711 followed by PBW 343, UP 2338 and HD 2687 but the differences were non-significant. Anderson (1983) also reported variation in the competing ability of different wheat varieties with weeds. Weeds growing throughout the crop season resulted in 32.6% reduction in the grain

yield of wheat.

REFERENCES

- Anderson, B. 1983. Competition between cereal varieties and weeds. *Mordisk Jordbrugsforskning* 65 : 268.
- Balyan, R. S. and R. K. Malik, 1989. Wild oat (*Avena ludoviciana*) competition with wheat (*Triticum aestivum*) : Effect of nitrogen fertilization. Seasonal Rep. of Res. Project Agron. 2 & 4 on Weed Control. p. 31.