

## Effect of Different Weed Species on Crop-weed Competition in Mustard

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Mustard crop suffers more from weed competition in early growth stages. Depending on the type of weed flora and its intensity, stage, nature and duration of crop weed competition, yield losses due to weeds varied from 25 to 45% (Singh *et al.*, 2001). Application of fertilizer to mustard under irrigated conditions offers congenial environment for weed infestation, particularly *Asphodelus tenuifolius* Cav., *Chenopodium album* L. and *Convolvulus arvensis* L. (Tomar and Namdeo, 1991). Efforts have been made to control the weeds but little information is available on individual weed species competing with mustard. Therefore, the present study was to evaluate the effect of individual weed species on mustard crop.

A field experiment was conducted during winter season of 2006-07 at Agriculture Farm, Udai Pratap College, Varanasi. The soil of experiment field was sandy clay loam in texture, low in available nitrogen (192.0 kg/ha), medium in phosphorus (21.2 kg/ha) and high in potassium (225.0 kg/ha) with a pH of 7.2. Eight weed species treatments were compared with weedy and weed free check in randomized block design replicated thrice (Table 1). Mustard variety Kranti was sown on October, 20 with recommended agronomic practices for the region. The population of individual weed species has been mentioned in the experimental plot. Reduction in seed yield due to individual weed species has been calculated by weed index, which is the measure of the crop yield reduction due to weed competition in comparison to weed free situation. Weed index was calculated by using the formula as suggested by USDA/ICAR AICRPWC (1988).

$$\text{Weed index} = \frac{X - Y}{X} \times 100$$

Where, X = Grain yield from weed free check

Y = Grain yield from treatment for which weed index is to be worked out

The relative composition of weed flora in unweeded plot of 50 days reveals *C. album* (25.5%), *F.*

Table 1. Effect of weeds dry matter accumulation on seed yield (q/ha) of mustard

Weed species	Weeds dry weight (g/m <sup>2</sup> )	Seed yield (q/ha)	Weed index (%)
<i>Chenopodium album</i>	13.90 (192.6)	10.85	45.34
<i>Fumaria parviflora</i>	12.82 (164.0)	11.25	43.32
<i>Anagallis arvensis</i>	8.90 (78.4)	14.43	27.30
<i>Melilotus indica</i>	12.78 (163.0)	12.85	35.26
<i>Euphorbia hirta</i>	7.21 (51.5)	18.79	5.34
<i>Convolvulus arvensis</i>	11.89 (140.9)	11.79	40.60
<i>Cyperus rotundus</i>	7.24 (52.0)	18.65	6.04
<i>Cynodon dactylon</i>	8.21 (67.0)	17.20	13.35
Weedy check	14.85 (220.0)	9.57	51.78
Weed free	0.71 (0.0)	19.85	0.00
LSD (P = 0.05)	0.72	1.21	-

Original data given in parentheses were subjected to square root transformation (x + 0.5) before analysis.

*parviflora* (18.9%), *A. arvensis* (15.5%), *M. indica* (13.2%), *E. hirta* (10.5%), *C. arvensis* (8.7%), *C. rotundus* (5.2%) and *C. dactylon* (2.5%) infestation. Data regarding dry matter accumulation at harvest stage are presented in Table 1. It is evident from data that maximum dry matter accumulation was recorded by *C. album*, *F. parviflora* and *M. indica* and minimum with *E. hirta*.

The seed yield of mustard was severely affected by *C. album* (45.34%) followed by *F. parviflora* (43.32%), *C. arvensis* (40.60%) and *M. indica* (35.26%). Rest of the weed species caused less reduction in seed yield. This might be due to the weeds that germinate at the same time as the crop, offer serious competition to the crop plants since they get opportunity to establish and accumulate dry matter faster than the

crop plants resulting in reduction of yield of crop plants (Gupta, 2000).

### REFERENCES

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