

Weed composition of groundnut (*Arachis hypogaea* L.) in Haryana

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Groundnut (*Arachis hypogaea* L.) is the most important oilseed crop of India. It has poor competitive ability against weeds due to its slow growth behavior with prostrate nature of growth, which permits early and vigorous crop weed competition and results in yield losses up to 80 % (Prusty *et al.*, 1990). The critical period of crop-weed competition is estimated to be 2-6 weeks after sowing. The magnitude of loss as a result of crop-weed competition depends upon type of weed species, associated with crop, their densities and duration of competition with crop. Crop type and soil properties has great influence on the occurrence of weed species (Andreasen *et al.*, 1991). The type of irrigation, cropping pattern, weed control measures and environmental factors has a significant influence on the intensity and infestation of weeds (Saavedra *et al.*, 1990). So, knowledge of weed species associated with crops in a region is, therefore, pivotal and necessary to plan and execute a sound and economical weed management schedule depending upon various factors affecting weed distribution in different areas. The present survey was the first attempt in totality to cover groundnut growing districts of Haryana state to study the composition of weed flora of groundnut crop.

To study the floristic composition of weeds in groundnut in South-Western Haryana, 26 fields were surveyed in Sirsa and Fatehabad districts of state during August, as this period depicted most appropriate representation of majority of weed species as the weeds have cumulative effects of all agronomic practices, soil type, fertilizer and irrigation application and weed control measures adopted during initial crop growing period. The road map of Haryana state was followed and routes were planned to establish sampling localities as equidistantly as possible (about 10 Kms) avoiding inhabited areas. Four observations on density of individual weeds were recorded per field at one spot by using quadrat of (0.5 x 0.5 m), 100 meters deep inside the fields. Pooled average values of observations on weed density and relative frequency of individual weeds were thus calculated as per method suggested by Raju (1977) given below:

Relative density (R.D. %)

$$\text{Relative density (R.D. \%)} = \frac{\text{No. of individuals in all quadrates}}{\text{No. of all species in all quadrates}} \times 100$$

Relative frequency (R.F. %)

$$\text{Relative frequency (R.F. \%)} = \frac{\text{No. of occurrences of species in a district}}{\text{Total no. of occurrences of all species}} \times 100$$

IVI (Importance Value Index) = Relative density + Relative frequency

The survey revealed that a total of 18 species were found to infest the crop, out of which 3 were grassy viz. *Dactyloctenium aegyptium*, *Digitaria sanguinalis*, and *Eragrotis tremula*, one was sedge (*Cyperus rotundus*) and 14 were broadleaved weeds viz. *Trianthema portulacastrum*, *Digera arvensis*, *Molluga disticha*, *Tribulus terrestris*, *Cleome viscosa*, *Corchorus tridens*, *Corchorus olitrus*, *Phyllanthus niruri*, *Portulaca oleracea*, *Cucumis callosus*, *Ipomea spp.*, *Physallis minima*, *Crotolaria spp.*, *Commelina benghalensis*. Among grassy weeds, *Dactyloctenium aegyptium* was most important weed with relative density of 48.9% and IVI value of 65.6%. This weed occurred at 85% of sites surveyed. *Cyperus rotundus* was major sedge with IVI value of 39.5% with relative frequency of 15.2% occurring at 79% sites surveyed. *Digera arvensis* and *Trianthema portulacastrum* were major broadleaf weeds with relative density of 9.94 and 2.1%, relative frequency of 16.7 and 9.72% and IVI value of 26.6 and 11.8%, respectively. *Corchorus tridens* and *Tribulus terrestris* were other important weeds with IVI value of 5.3 and 3.72%, respectively. Climber *Ipomea pestigridis* occurred at 14.2% sites only.

Similar weed flora was also earlier observed in groundnut grown in light textured soils in Sirsa and Fatehabad districts of state (Punia *et al.* 2010). So, careful monitoring of the weed flora could be of much

Table 1: Weed flora of groundnut and in Sirsa and Fatehabad districts of state

Name of weed	Density(No./m ²)	RD (%)	Frequency(%)	Relative frequency (%)	IVI
<i>Dactyloctenium aegyptium</i>	18.2	48.9	85.7	16.7	65.6
<i>Digitaria sanguinalis</i>	0.35	0.95	21.4	4.18	5.13
<i>Cyperus rotundus</i>	9.07	24.3	78.6	15.2	39.5
<i>Trianthema portulacastrum</i>	0.78	2.1	50.0	9.72	11.8
<i>Digera arvensis</i>	3.71	9.94	85.7	16.7	26.6
<i>Cleome viscosa</i>	0.14	0.38	14.3	2.77	3.15
<i>Tribulus terrestris</i>	0.35	0.95	14.3	2.77	3.72
<i>Corchorus tridens</i>	0.42	1.14	21.4	4.16	5.3
<i>Corchorus olitorius</i>	0.07	0.19	7.14	1.38	1.57
<i>Physalis minima</i>	1.14	3.05	21.4	4.16	7.21
<i>Eragrostis tremula</i>	0.26	0.38	7.14	1.38	1.76
<i>Phyllanthus niruri</i>	0.35	0.95	14.3	2.77	3.72
<i>Callosus cucumis</i>	0.07	0.19	7.14	1.38	1.57
<i>Crotolaria medicaginea</i>	0.28	0.76	7.14	1.38	2.14
<i>Ipomoea pestigridis</i>	0.14	0.38	14.3	2.77	3.15
<i>Portulaca oleracea</i>	1.14	3.05	35.7	6.94	9.99
<i>Mollugo distachya</i>	0.21	0.57	21.4	4.16	4.73
<i>Commelina benghalensis</i>	0.64	1.72	7.14	1.38	3.1

practical value in implementing an effective control measure depending upon the threshold value to keep the weeds at bay at an economical viable cost.

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