

## Diversity of Weed Species in Wheat Fields of Block Nowshera District Rajouri (J & K)

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Jammu and Kashmir state is one of the hilly states of India having 22 districts, out of which district Rajouri is most important agricultural district. It is located at western part of Jammu division in the foot hill of Pirpanjal range between 32°-58' and 33°-35' latitude and 74°-81' longitude at an elevation range of 370-6000 msl covering an area of 2630 sq. km. Rajouri Nowshera block is located at elevation range of 470-1200 msl and lies between 33°-10' latitude and 74°-41' longitude. Wheat is the major **rabi** crop grown in this block but the per hectare yield of wheat is less as compared to other parts of India due to high weed infestation. Although some work has been done by Rashid *et al.* (2008) in the field of ethno-botany, but yet no work has been done on weed infestation of the study area. To plan a strategy for the control of weeds, it is imperative to know the infestation.

The present study was conducted to report the diversity of weeds in three sites of block Nowshera i. e. Village Jaba (S<sub>1</sub>-Irrigated site), villages Rajal and Lam (S<sub>2</sub> and S<sub>3</sub>-Non-irrigated sites, respectively). It was based on quadrant method. The diversity of weed species was analyzed by 10 randomly placed quadrants of 1 × 1 m in each site; frequency, density and abundance were calculated after Curtis and McIntosh (1950). The Important Value Index (IVI) was determined as the sum of relative frequency, relative density and relative dominance (Curtis, 1959). The weed species from each site were collected, pressed, dried, preserved and properly identified with the help of available literature and monographs by Sharma and Kachroo (1983), Kaul (1986) and Swami and Gupta (1998) and confirmed from the authentic regional herbaria i. e. Botanical Survey of India, Northern Circle (BSD), Dehradun and Forest Research Institute Herbarium (DD), Dehradun and finally deposited in the Herbarium of H. N. B. Garhwal Central University, S. R. T. Campus, Department of Botany,

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A total of 58 weed species belonging to monocot (1) and dicot (20) families were reported from three study sites (Table 1). A total of 42, 35 and 40 weed species were reported from S<sub>1</sub>, S<sub>2</sub> and S<sub>3</sub>, respectively, out of which 22 weeds were common in all the three sites. The maximum infestation was of family Poaceae having IVI of 34.5 (*Phalaris minor*), 42.13 (*Avena fatua*) and 24.52 (*Avena fatua*) in S<sub>1</sub>, S<sub>2</sub> and S<sub>3</sub>, respectively. The weeds like *Ranunculus scleratus*, *Polygonum barbatum*, *Euphorbia dracunculoides*, *Lolium temulentum*, *Trifolium tomentosum*, *Polygonum persicaria* and *Alternanthera sessilis* were reported particularly from S<sub>1</sub> irrigated site (Jaba). The maximum infestation was shown by *P. minor*, while the minimum infestation was shown by *Silene conoidea* having IVI of 34.5 and 1.28, respectively, in S<sub>1</sub>. While in S<sub>2</sub>, maximum infestation was shown by *A. fatua* and the minimum infestation was shown by *Solanum nigrum* having IVI of 42.13 of 3.29, respectively. In S<sub>3</sub>, again the maximum infestation was shown by *A. fatua*, while the minimum infestation was shown by *Ranunculus arvensis* having IVI of 24.52 and 2.76, respectively.

Block Nowshera is an agrarian block of the district Rajouri but unfortunately its per hectare yield of crops is less as compared to other parts of India due to high weed infestations. The weedy crop sometimes leads to complete failure. The present study was conducted as first ever attempt to report the weed infestation in wheat crop of the study area. It revealed that the maximum infestation was shown by members of family Poaceae i. e. *P. minor* and *A. fatua* in all the three sites. Due to high infestation, these weeds reduced the yield significantly. The present study will help in identifying the major weeds that infest the wheat crop and thus help in planning a suitable strategy for their control.

Table 1. Important value index of some weed species in wheat fields of block Nowshera district Rajouri at three different sites

S. No.	Family	Botanical name	IVI of S <sub>1</sub>	IVI of S <sub>2</sub>	IVI of S <sub>3</sub>
1.	Amaranthaceae	(i) <i>Achyranthes aspera</i> L.	5.20	5.42	6.31
		(ii) <i>Alternanthera sessilis</i> (L.) DC.	7.23	-	-
		(iii) <i>Amaranthus spinosus</i> L.	1.95	-	9.37
		(iv) <i>Amaranthus viridis</i> L.	3.58	5.45	-
2.	Asclepiadaceae	(i) <i>Calotropis procera</i> (Ait.) F.	-	-	4.87
3.	Asteraceae	(i) <i>Bidens pilosa</i> L.	5.30	4.71	5.51
		(ii) <i>Conyza ambigua</i> DC.	3.79	6.78	4.05
		(iii) <i>Conyza bonariensis</i> L.	7.66	5.34	4.45
		(iv) <i>Cirsium arvense</i> Syn.	11.42	-	5.63
		(v) <i>Galinsoga parviflora</i> Cav.	-	-	8.68
		(vi) <i>Parthenium hysterophorus</i> L.	3.66	3.72	4.63
		(vii) <i>Silybum marianum</i> L.	-	8.31	6.60
		(viii) <i>Sonchus asper</i> L.	-	11.04	7.21
		(ix) <i>Taraxacum officinale</i> Weber.	-	11.85	6.92
4.	Brassicaceae	(i) <i>Capsella bursa-pastoris</i> Medik.	4.65	-	7.05
		(ii) <i>Cornopus didymus</i> L.	4.61	7.64	-
5.	Caesalpiniaceae	(i) <i>Cassia occidentalis</i> L.	-	5.58	-
6.	Cannabiaceae	(i) <i>Cannabis sativa</i> L.	3.79	4.33	4.63
7.	Caryophyllaceae	(i) <i>Silene conoidea</i> L.	1.28	7.09	8.00
		(ii) <i>Stellaria media</i> L.	8.23	9.25	9.21
8.	Chenopodiaceae	(i) <i>Chenopodium album</i> L.	-	3.87	6.96
		(ii) <i>Chenopodium murale</i> L.	-	-	8.15
		(iii) <i>Chenopodium ambrosioides</i> L.	3.83	-	-
9.	Convolvulaceae	(i) <i>Convolvulus arvensis</i> L.	3.95	8.85	6.12
10.	Euphorbiaceae	(i) <i>Euphorbia dracunculoides</i> Lamk.	4.57	-	-
		(ii) <i>Euphorbia geniculata</i> Orteg.	2.70	12.58	6.00
		(iii) <i>Euphorbia helioscopia</i> L.	-	11.26	7.89
		(iv) <i>Euphorbia hirta</i> L.	2.86	-	7.72
		(v) <i>Euphorbia prostrata</i> Aiton.	2.92	5.13	-
11.	Fabaceae	(i) <i>Indigofera dosua</i> Buch.	3.03	-	-
		(ii) <i>Lathyrus aphaca</i> L.	18.36	8.58	5.97
		(iii) <i>Medicago denticulata</i> Willd.	22.15	5.28	14.78
		(iv) <i>Medicago polymorpha</i> L.	-	10.08	-
		(v) <i>Melilotus indica</i> L.	6.62	-	-
		(vi) <i>Trifolium repens</i> L.	7.87	-	-
		(vii) <i>Trifolium tomentosum</i> L.	10.75	-	-
		(viii) <i>Vicia hirsuta</i> L.	6.25	4.97	5.50
		(ix) <i>Vicia sativa</i> L.	4.89	3.31	3.66
12.	Fumariaceae	(i) <i>Fumaria parviflora</i> Lamk.	5.40	-	4.73
13.	Malvaceae	(i) <i>Malva parviflora</i> L.	-	17.17	14.22
		(ii) <i>Malvestrum coromendalianum</i>	3.24	6.24	5.41
14.	Oxalidaceae	(i) <i>Oxalis corniculata</i> L.	4.14	5.04	6.45
15.	Poaceae (Monocot)	(i) <i>Avena fatua</i> L.	13.53	42.13	24.52
		(ii) <i>Cynodon dactylon</i> L.	11.97	-	-
		(iii) <i>Lolium temulentum</i> L.	6.26	-	-
		(iv) <i>Phalaris minor</i> Retz.	34.5	14.1	21.89
16.	Polygonaceae	(i) <i>Polygonum barbatum</i> L.	5.70	-	-
		(ii) <i>Polygonum persicaria</i> L.	5.27	-	-
		(iii) <i>Rumex nepalensis</i> Spreng.	6.77	9.55	6.18
17.	Primulaceae	(i) <i>Anagalis arvensis</i> L.	8.01	7.64	7.24
18.	Ranunculaceae	(i) <i>Ranunculus arvensis</i> L.	1.98	4.06	2.76
		(ii) <i>Ranunculus leatus</i> L.	-	-	4.75
		(iii) <i>Ranunculus sceleratus</i> L.	2.79	-	-
19.	Rosaceae	(i) <i>Fragaria indica</i> Andrews.	-	6.45	-
20.	Rubiaceae	(i) <i>Galium aparine</i> L.	-	7.97	8.17
21.	Solanaceae	(i) <i>Datura stramonium</i> L.	-	-	3.05
		(ii) <i>Solanum nigrum</i> L.	2.85	3.29	3.53
		(iii) <i>Solanum xanthocarpum</i> Schrad.	-	-	3.84

## REFERENCES

- Curtis, J. T. and R. P. McIntosh. 1950. The inter-relations of certain analytic and synthetic phytosociological characters. *Ecol.* **31** : 434-455.
- Curtis, J. T. 1959. *The Vegetation of Wisconsin—An Ordination of Plant Communities*. University of Wisconsin Press, Madison, Wisconsin.
- Kaul, M. K. 1986. Weed flora of Kashmir Valley. *J. Econ. Tax. Bot. Additional Series*. Scientific Publishers, Jodhpur, India.
- Swami, A. and B. K. Gupta. 1998. *Flora of Udhampur*. Bishan Singh, Mahendrapal Singh Publications, Dehradun, India.
- Sharma, B. M. and P. Kachroo. 1983. *Flora of Jammu and Plants of Neighbourhood*. Bishan Singh, Mahendrapal Singh Publications, Dehradun, India.
- Rashid, Abdul, V. K. Anand and Jawaid Serwar. 2008. Less known wild edible plants used by Gujjar tribes of district Rajouri, Jammu and Kashmir State, India. *Int. J. Bot.* **4** : 219-224.