SURVEY OF WEED FLORA IN WHEAT FIELDS OF DISTRICT RAJOURI (J&K), INDIA

Amandeep Singh* and L.R. Dangwal

Herbarium and Plant Systematic Lab., H.N.B. Garhwal Central University
S.R.T. Campus, BadshahiThaul, TehriGarhwal, Uttarakhand -24919
Email- amanguru83@gmail.com.

Abstract: The present communication pertains to survey of weed flora in wheat fields of district Rajouri (J&K). The study was based on extensive and intensive field surveys made during November 2009 to April 2011. During the course of fields study the authors have selected 6 important agrarian blocks of district Rajouri*i.e.*Budhal, Darhal, Thanamandi, Kalakote, Nowshera and Sunderbani .Three sites were selected in each block for collection of weed species. During the study period the authors have reported a total of 104 weed species belonging to 02 monocot and 28 dicot families from the selected sites. Out of 30 weed families reported from 06 blocks of district Rajouri the predominance was shown by family Asteraceae having 25 weed species followed by family Fabaceae having 09 weed species. . The maximum infestation was shown by weeds of monocot familyPoaceae*i.eAvenafatua and Phalaris minor* in all the blocks.

Keywords: Families, weeds, wheat, agrarian

INTRODUCTION

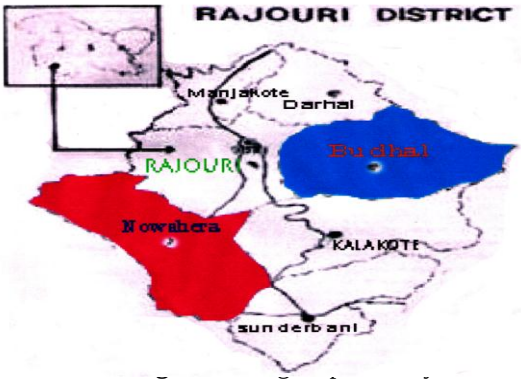
Weeds have been defined as unwanted obnoxious plant growing in places where they are generally undesirable (Dangwal*et al.* 2011).They are nuisance to agriculture mainly because of their adverse effect on crop yield (Chaudhary&Akram 1987). Weeds are harmful because they interfere with agricultural operations, add to costs, reduce crop yields and increase labour input. (Robbins *et al.* 1952). The competing ability of weeds depends on its habitat, seedling growth, seedling rate, capacity of seed germination and nature of root and shoot growth.The distribution of weeds is strongly influenced by environmental and biological factors. (Holzner1977).

Weeds alsoaffect the health and quality of life of people all over the world by causing allergies and other health hazards (Handerson& Anderson 1966). Apart from quantitative losses caused by weeds due to competition for space, sunlight, moisture, nutrients, carbon dioxide and to the antagonism (parasitism &allelopathy) they also cause qualitative indirect damage due to unitary seed reduction, contamination of seeds, slowing of tillage and harvesting practices (Asthon&Monaco 1991) and transmission of bad smells or tastes to milk and other dairy products (King 1966).

Wheat (*Tritium aestivum*L.) is an important cereal Rabi crop is a dietary mainstay for approximately one third of world population (Johnson 1984). Being staple food wheat played an important role in the economy of India hence occupies central position in agricultural policy making. The average per hectare yield of wheat in India is 2.71 tons (Annon 1997), which is far less as compared to other developed countries due to many factors (quality of germplasm, agricultural inputs, droughts, water logging and poor weed management etc.) but the problem of weeds is a serious contributor in the loss of production. Tiwari and Parihar (1993) reported that weeds reduced the yield of wheat crop in India by 34.3% and cause economic loss to producers. Dangwal*et al.* (2010) reported that weeds reduced the yield of wheat crop in the study area by 25.35%.

Study area

The study area is located at western part of Jammu division in the foot hill of Pirpanjal range. It lies in between 32^0-58' & 33^0-35' latitude and 74^0-81' longitude at an elevation range of 470 – 6000m asl, covering an area of 2630 sq.kilometers.



MATERIAL AND METHOD

The present communication deals with survey of weed flora in wheat fields of district Rajouri (J&K).The study was based on extensive and intensive field surveys made during November 2009 to April 2011. During the course of field surveys the authors have selected 6 important agricarian blocks of district Rajouri *i.e*. Budhal, Darhal, Thanamandi, Kalakote, Nowshera and Sunderbani. Three sites were selected in each block for collection of weed species. Periodic field trips were made twice a month in each site for collection of weed species. During this period interviews were conducted from farmers and agriculturists of each site about seasonal weed plants, their available vernacular names and flowering and fruiting season. The collected weed plants were pressed, dried, preserved and properly identified with the help of available literature, monographs by Sharma and Kachroo (1983), Swami and Gupta (1998), Kaul (1986) 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 deposited them in the H.N.B. Garhwal Central University Herbarium, Department of Botany, S.R.T. Campus, Badshahithaul, Tehri Garhwal, Uttrakhand, India.

RESULT AND DISCUSSION

During the course of study the authors have reported a total of 104 weed species belonging to 02 monocot and 28 dicot families from the study area. Out of 30 weed families reported from 06 blocks of district Rajouri, the predominance was shown by family Asteraceae having 25 weed species followed by family Fabaceae having 09 weed species. Each of the family Brassicaceae and Polygonaceae contained 08 weed species while the monocot family Poaceae was represented by 07 weed species. The family Euphorbiaceae contained 05 weed species while Caryophyllaceae was represented by 04 weed species. Each of the family Amaranthaceae, Chenopodiaceae, Ranunculaceae, Scrophulariaceae and Malvaceae were represented by 03 weed species. The families Apiaceae, Geraniaceae, Papaveraceae, Rosaceae and Solanaceae contained 02 weed species each. The remaining families *i.e*. Asclepiadaceae, Caesalpiniaceae, Campanulaceae, Cannabiaceae, Convolvulaceae, Fumariaceae, Juncaceae, Lamiaceae, Oxalidaceae, Onagraceae, Primulaceae, Rubiaceae, Verbenaceae were represented by 01 weed species. (Table 1).

District Rajouri is one of the hilly district of J&K state whose boundaries are attached to district Poonch in north, district Jammu in south, Udhampur in east and Mirpur (Pakistan) in the west. District Rajouri has two regions with characteristic topography and climate *i.e.* the temprate and sub-tropical.The temprate region comprising of the blocks Thanamandi, Darhal, Budhal and some part of Rajouri and sub-tropical region comprsising of areas like Nowshera, Kalakote and Sunderbani etc.Wheat is the major Rabi crop grown in this district. Most of the people of district Rajouri rely on agriculture as a source of livelihood. The economy of this district revolves around production of its cash crops but the per hector yield of crops in this district is less as compared to other parts of India due to many factors out of which the problem of weeds is of great concern. The management of weeds involves costs therefore, reduction in net returns make harvesting and threshing of crops costly, laborious and reduces the value of production. In the study area it was reported that most of the weeds reported from the wheat fields were herbaceous. The maximum infestation was shown by weeds of family Poaceae *i.e Avena fatua and Phalaris minor.*The weeds like *Ranunculus scleratus, Polygonum barbatum, Polygonum hydropiper, Polygonum persicaria, Euphorbia dracunculoides, Trifolium tomentosum* and *Veronica anagallis* etc. were reported particularly from irrigated sites. Although Some of the weeds reported from the study area *i.e*. *Achyranthes aspera, Calotropis procera, Cassia occidentalis, Cannabis sativa, Chenopodium album, Cynodon dactylon, Datura stramonium ,Silybum marianum and Taraxacum officinale* etc. are of medicinal importance. The weeds like *Amaranthus viridis, Chenopodium album, C. murale, Coronopus didymus, Lathyrus aphaca, Vicia hirsuta* and *Vicia sativa* are used in some cooking recipes by Gujjar tribe of the study area. Fruits of *Fragaria indica* are also edible.

The present study may be helpful in identification of weeds of Rabi crops. It may be helpful for taxonomists, agriculturists and scientists involved in the management of weeds. Further research work is needed in the fields of weed control, weed biology and weed utilization as the component of integrated weed management.

Acknowledgement

The authors are highly thankful to Chief Agriculture Officer Rajouri S.Manjeet Singh for providing financial assistance and important guidelines during the course of study. Authors are also thankful to farmers and agriculturists of the study area for providing valuable information about seasonal weed species.

Table 1. Showing 104 Weed Species along with their Botanical names, Families, available Vernacular names and Flowering and Fruiting season.

S.No.	Family	Botanical name	Vernacular name.	Flowering &fruiting season
01)	Apiaceae	*Caucalis leptophylla* L.	Cheechra	Mar.-May
		Scandix pectin-veneris L.	Seeng booti	Feb.-May
02)	Asteraceae	*Ageratum conyzoides* L.	Booti	Dec.-Feb.
		Bidens pilosa L.	Saryala	Sept.-Nov.
		Blainvillea latifolia (L.f.) D.C.	-	Apr.-Nov.
		Blumea mollis (D.Don) Merrill	-	Jan.-Oct.
		Centaurea iberica Trev.	Chiti kandyari	Dec.-Mar.
		Cichorium endivia L.	-	Feb.-May
		Cirsium arvense Syn.	Kandyari	Jan.-Mar.
		Conyza ambigua Dc.	Booti	Apr.-May
		Conyza bonarensis L.	Booti	Aug.-Sept.
		Conyza Canadensis L.	-	Feb.-Sept.
		Cnicus arvensis (L.) Hoffman	Kandyari	Apr. – May
		Eclipta alba L.	-	Jan.-Dec.
		Galinsoga parviflora Cav. Icon	-	Throughout the year
		Gnaphalium indicum L.	-	Apr.-Jun.
		.*Lactuca dissecta* D.Don	-	Apr.-Sept.
		Laggera aurita L.f., Suppl.	-	Mar.-Apr.
		Parthenium hysterophorus L.	Congress booti	Jun. –Sept.
		Saussurea heteromalla D.Don	-	Mar.-May
		Silybum marianum L.	Kantili	Jun.- Aug.
		Sonchus arvensis L.	-	Apr.-Oct.
		Sonchus asper L.	Badi hand	Jun. –Oct.
		Sonchus oleraceus L.	Hand	Jan.-Apr.
		Tagetus minuta L.	Junglee gutta	Sept.-Dec.
		Taraxacum officinale Weber.	Hand	Mar.- Oct.
		Youngia japonica (L.) DC.	-	Throughout the year.
03)	Amaranthaceae	*Achyranthes aspera* L.	Pooth kanda	Aug.-Dec.
		Amaranthus spinosus L.	Chelari	Sept.-Oct.
		Amaranthus viridis L.	Junglee ganar	Aug.-Nov.
04)	Asclepiadaceae	*Calotropis procera* (Ait.) F.	Aak	Apr.-Jul.
05)	Brassicaceae	*Capsella bursa-pastoris* Medik.	-	Jan.-Mar.
		Cardamine hirsuta L.	-	Apr.-Aug.
		Cardamine impatiens L.	-	Feb.-May
		Camelina sativa L.	-	Feb. – Apr.
		Eruca sativa Garsault	Teera	Jan.-Apr.
		Coronopus didymus (L) Smith.	-	Apr.-Oct.
		Lepidium sativum L.	-	Feb.-May
		Lepidium virginicum L.	-	Feb.-May
06)	Caesalpiniaceae	*Cassia occidentalis* L.	Phali	Sept.-Nov.
07)	Campanulaceae	*Campanula canescens* Wallich.	-	Mar.-Jun.
08)	Cannabiaceae	*Cannabis sativa* L.	Bhang	Jul.-Sept.
09)	Caryophyllaceae	*Cerastium glomeratum* Thuillier	-	May-Sept.
		Saponaria vaccaria L.	-	Mar.-Apr.
		Silene conoidea L.	Doda ghass	Mar.-Apr.
		Stellaria media L.	-	Feb.-Mar.
10)	Chenopodiaceae	*Chenopodium album* L.	Bathua	Apr.-Jun.
		Chenopodium ambrosioides L.	-	Aug.- Oct.
		Chenopodium murale L.	Laal bathua	May-Oct.
11)	Convolvulaceae	*Convolvulus arvensis L.*	Bill	Apr.-Sept.

12)	Euphorbiaceae	*Euphorbia dracunculoides Lamk*.	Doodal	Nov.-Jan.
		Euphorbia geniculata Orteg.	Badi doodal	May-Jul.
		Euphorbia helioscopia L.	Doodal	May-Jul.
		Euphorbia hirta L.	Choti doodi	Sept.-Oct.
		Euphorbia prostrata Ait.	Doodi	Jul.-Sept.
13)	Fabaceae	*Lathyrus aphaca* L.	Jangli matar	Feb.-Mar.
		Lathyrus sphaericus Retz.	-	Feb.-May
		Medicago denticulata Willd.	Saridi	Apr.-Jul.
		Medicago lupulina L.	Saridi	Nov.-May
		Melilotus indica L.	Maithi ghass	Mar.-Apr.
		Trifolium repens L.	Jangli stal	Apr.-Jul.
		Trifolium tomentosum L.	Jangli stal	Mar.-Apr.
		Vicia hirsuta (L.) S.F. Gray	Choti phali	Mar.-Apr.
		Vicia sativa L.	Choti phali	Mar.-Apr.
14)	Fumariaceae	*Fumaria parviflora* Lamk.	Daniya ghass	Sept.-Nov.
15)	Geraniaceae	*Geranium ocellatum* Cambess.	-	Feb.- May
		Geranium wallichianum D.Don	-	Jul.–Oct.
16)	Juncaceae	*Juncus bufonius* L.	-	Mar.-Sept.
17)	Lamiaceae	*Lamium amplexicaule* L.	-	Mar.- May
18)	Malvaceae	*Malva parviflora* L.	Sonchal	Mar.- Apr.
		Malva verticillata L.	Soonchal	Aug.-Oct.
		Malvastrum coroman delianum Syn.	_	May- Aug.
19)	Onagraceae	*Oenothera rosea* (L.) Herit.	-	Mar.-Nov.
20)	Oxalidaceae	*Oxalis corniculata* L.Syn.	Khatti methi	Feb.-Nov.
21)	Papaveraceae	*Argemone mexicana* L.	Kantili	Apr.-Oct.
		Papaver dubium L.	-	Mar. –May
22)	Poaceae	*Avena fatua* L.	Gandial	Mar.-Apr.
		Cynodon dactylon (L.) Pers.	Ghass	Apr.-Jul.
		Dicanthium annulatum Forsk.	-	Jan.-Dec.
		Koeleria phlloides (Vill.) Pers.	-	Apr.-May
		Lolium temulentum L.	-	Mar.-Apr.
		Phalaris minor Retz.	Sitti	Mar.-Apr.
		Phleum paniculatum Hudson	Sitti	Mar.-Apr.
23)	Polygonaceae	*Polygonum aviculare* L.	-	Feb.-Nov.
		Polygonum barbatum L.	Chitti booti	Feb.-Nov.
		Polygonum hydropiper L.	-	Jan.-Dec.
		Polygonum persicaria L.	-	Feb.-Nov.
		Rumex crispus L.	Arphali	Mar.-May
		Rumex dentatus L.	Arphali	Mar.-Apr.
		Rumex nepalensis Sprengel	Arphali	Apr.- Oct.
		Rumex obtusifolius L.	Arphali	Mar.-Apr.
24)	Primulaceae	*Anagallis arvensis* L.	Krishna neel	Feb.-Apr.
25)	Ranunculaceae	*Ranunculus arvensis* L.	Chuchumba	Mar.-Apr.
		Ranunculus leatus L.	_	Mar.-Apr.
		Ranunculus scleratus L.	Chuchumba	Mar.-Apr.
26)	Rubiaceae	*Galium aparine* L.	Chechra	Feb.-Mar.
27)	Rosaceae	*Fragaria indica* Andrews	Laal akhra	Mar.-May
		Potentilla fragarioides L.	-	Apr.-Aug.
28)	Scrophulariaceae	*Antirrhinum orontium* L.	Doda	Feb.-May
		Veronica anagallis L.	-	Feb.- Oct.
		Veronica persica Poir.	Neela	Feb.- Dec.
29)	Solanaceae	*Datura stramonium* L.	Datura	Apr.-July
		Solanum nigrum L.	Kach mach	Aug.-Sept.
30)	Verbenaceae	*Verbena officinalis* L.	-	Jun.- July

REFRENCES

Anonymous.*Quarterly bulletin of statistics.*F .A .O (Food & Agriculture organization) 1997; 10.

Asthon, F.M.,T.J.Monaco(1991).Weed Sci., Principles and Practices.3rdedition.JohnWiley and Sons, New York.

Chaudhary,S.A.,Akram,M. (1987).Weeds of Saudi Arabia and theArabianpeninsulaRegional Agriculture and Water research Center,Minisitary of Agriculture and Water,Riyadh,Saudi Arabia. 246.

Dangwal, L.R,Singh,Amandeep,Singh,Tajinder,Sharma,Antima,Sharma,Chanchal(2010). Common weeds of Rabi (winter) cropsof tehsils Nowshera district Rajouri (J&K), India. *Pak. j. Weed Sci.Res*.16 (**1**):39-45.

Dangwal, L.R, Singh,Amandeep, Singh,Tajinder,Sharma,Chanchal (2010). Effects of weeds on the yield of wheat crop in tehsil Nowshera.*Journal of American science*6(**10**), 405-407.

Dangwal, L.R, Singh,Amandeep,Singh,Tajinder, Sharma,Antima(2011). Common weeds of Kharif crops of Block Sunderbani district Rajouri (Jammu &Kashmir), Pak. *j. WeedSci.Res*.17 (**1**):9-15.

Handerson, M., J.G. Anderson (1996).Common Weeds of South Africa Memoirs of the Botanical Surveys of South Africa.N 37 Deptt. Agric. Tech.Svc Republic of South Africa.

Holzner, W. (1977).Weed species and Weed communities.*Vegetatio*.38 (**1**):13-20

Johnson V. A. World wheat production.(1984; PP 1-5.) In: *Genetic improvement in yield of wheat* (Ed.):E.L. Smith. CSSA Special publication no. 13.

Kaul, M.K.(1986). Weed flora of Kashmir valley. *Journal of Economic and TaxonomicBotany*, additional series Scientific Publishers, Jodhpur, India.

King,J. Lawerence(1996).Weeds of the World-Biology and Control.Interscience Publishers, inc.NewYork.

Robbins, W.,Crafts,A.S.,Rayner, **R.N.**(1952).Weed Control.*McGraw Hill*, 660.

Swami, A., Gupta,B.K.(1998).Flora of Udhampur.Bishan Singh, Mahenderapal Singh, Dehradun, India.

Sharma, B.M., Kachroo,P. (1983). Flora of Jammu and plants of neighbourhood.Bishen Singh, Mahendrapal Singh, Dehradun, India.

Tiwari R.B., Parihar,S.S. (1993). Weed management studies in wheat. *Ind. J .weed sci*. 25 (**3-4**):120-22.