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EXPLORATION AND INVENTORYING OF WEEDS IN WHEAT CROP OF THE DISTRICT MALAKAND, PAKISTAN

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ABSTRACT

District Malakand lies on the northern side of Khyber Pakhtunkhwa province of Pakistan. The landscape represents both plain and hilly regions. Various kinds of crops are grown among which wheat is cultivated on large scale. In order to explore weed species diversity in the region, a phytosociological survey was conducted in the summer 2014. Such study was required as there has been no such record of weeds diversity of the region. Different fields were selected at various localities of the district. The total number of fields selected was 120 and in each field 10, 1x1m^2 quadrats were laid. A questionnaire was also circulated to investigate about the farming practices and most dangerous species of weeds having greater effect on production and post harvest losses of wheat. Plants were collected from various localities, voucher numbers were given to specimens and other relevant data pertaining to locality i.e., habitat, habit, family, scientific and local names of each species. Mounted copy of each voucher specimen was deposited to the Herbarium of Hazara University Mansehra. This study not only provided first inventory of weed plants but it also helped point out most dangerous species related to wheat yield losses. Results of this study revealed a total of 132 weeds plant species belonging to 110 genera and 42 families. Most of the species investigated were Angiosperms. Family Asteraceae was the richest family related to species diversity with 18 species and 17 genera. It is followed by Poaceae having 16 species and 16 genera. Next in succession are family Brasicaceae with 10 genera and 16 species and family Boraginaceae with 5 genera and 7 species. Other families like Caryophyllaceae, Papilionaceae, Fabaceae, Polygonaceae, Scrophulariaceae and Umbilliferae have 6,6,4,5,4 and 3 species and 6,3,4,3,3 and 3 genera respectively. Species like Silybum marianum (Asteraceae), Emex spinosa (Polygonaceae) and Circium arvense (Asteraceae) are considered to

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be the most threatening species during the time of harvesting the crop. Further study along this line is the basic part of the on-going project which will provide a base line for the development of agricultural crops in the region.

Key words: Malakand Pakistan, weeds, wheat, yield losses.

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INTRODUCTION

Weeds are considered as unwanted plants. They gives tough time to any specific crop in which it occurs. Its diversity and distribution varies from crop to crop. Such vegetation is found abundant in cultivated fields of great economic and ecological importance (Jabeen & Ahmed, 2009). Ecologically, it is important because it provides habitat and food resources to natural fauna of various kinds such as birds and insects (Marshall *et al*., 2003; Taylor *et al*., 2006; Storkey, 2006). Such vegetation is so called weeds in cultivated fields particularly in standing crops (Ahmad *et al*., 2005) It has been observed that weeds are unwanted plants, which are harmful for cultivated crops (Hassan *et al*., 2003). These are, therefore, recommended to be removed for economic, social and aesthetic reasons (Shah *et al*., 2005). Wheat is considered as a major staple food around the world. Weeds are the only enemy which reduces the yield of this important crop. It has been observed that weeds reduces wheat yield to a major extent (Marwat *et al*., 2005).

Pakistan lies between 60° 55'to 75° 30' East longitude and 23° 45' to 36° 50' North latitude, covering an area of 80,943 km2. The study area District Malakand lies in the northern parts of the Khyber Pakhtunkhwa Province. It is located at 34° 35´ North latitude and 71° 57´ East longitude. It is bounded on the North by District Dir, on Northeast by District Swat and from East by District Buner while on the South the area is bounded by Mardan and Charsadda districts and on West by Mohmand and Bajaur Agencies (Chaghtai & Ghawas, 1976). Malakand extends from the rugged and partly glaciated mountain ranges of the Hindukush down to northern edge of the Peshawar basin. Malakand is the gateway to the Districts of Dir, Chitral, Swat districts and federally administered tribal areas (FATA) which are very famous for tourist spots (Fig. 1).

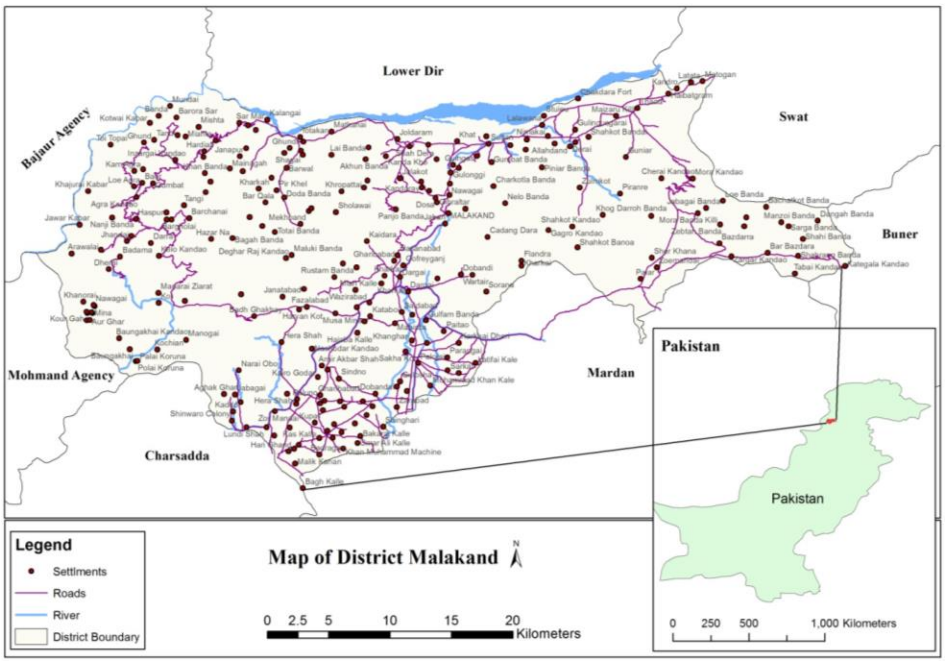

Figure 1. Map of District Malakand, Pakistan.

The project area of the District Malakand is consisted of two main Tehsil- Tehsil Dargai (Sama Ranizai) and Tehsil Batkhila (Swat Ranizai). Tehsil Dargai (Sama Ranizai) lies in the foot hills of District Malakand. It is bounded in the North and North Western side by Tehsil Batkhila. In the South and South Eastern side it is surrounded by Tehsil Takhtabai of District Mardan. In the South Western side it is surrounded by Tehsil Tangai of District Charsadda. And in the North Eastern side it is separated from district Bunir by a series of large mountains. Most of the area of Tehsil Dargai is plain which provides a large and valuable land for Agriculture. Tehsil Batkhila (Swat Ranizai) extend from Mohmand and Bajour Agencies in the North and South Western side. It is separated from lower Dir by River Swat. In the North of this Tehsil lies District Swat.

Agriculture is the primary source of income for the local population of the area. The major economic crops in the area are Wheat, Sugarcane, Tobacco, Rice and Maize. In addition to it, various kinds of vegetables and orchard are also grown in the project area. Wheat in the project area occupies major part of agricultural land. It is therefore considered to be analyzed for research purposes. Total cultivated area for wheat in District Malakand is 26727 hectares in which total irrigated land is 9715 hectares and total un-irrigated land is 17012 hectares. In Tehsil Dargai total estimated area sown for

wheat crop in 2013-14 is 10440 hectares in which 5465 hectares is un-irrigated and 4975 hectares is irrigated (Statistical Officer Dargai Agri Deptt).

Weeds ecological attributes varies from place to place. Most of the weeds' body structure is very delicate and therefore are easily affected by the environment and other important factors. Plant scientists usually study the economically important and wild plant species separately. Studies along this aspect shows that weed scientists especially in developing countries worked only on a single or limited number of weed species. Such species are associated with a specific crop for example wheat, maize, sugar cane, rice, etc. These kind of studies are often related to the production of crops, herbicide impacts upon the weeds and soil related factors and impacts on weeds and crops. Few of such kind of literature is mentioned as under.

In Khyber Pakhtunkhwa, the impacts of herbicides and different seed rates were investigated for integrated weeds management in wheat crop. Wheat crop is also studied for the alleviation of its drought induced effects. For example, The Canada thistle – *Circium arvence* which is considered as the most dangerous species for wheat crop was investigated for its control through the use of two biologically control agents and the use of herbicides. The results show that integrating control methods are most effective in the growth of *Circium arvence* than the use of a single approach for the control of this species (Sciegienka *et al.*, 2011). Like other natural vegetation weeds also grow in association with each others. There is widespread study going on in analyzing the natural vegetation and on the formation of natural communities by the use of multivariate analysis such as CCA, DCA, etc, In the Western Himalayas, the natural vegetation has been classified using the phyto-climatic gradients of the vegetation and region. Its vegetation was also studied for species composition and community structure (Khan *et al.*, 2013, Shaheen *et al.*, 2012). Species and community diversity of vascular flora along with environmental gradients through indicator species analysis in Naran valley was studied. The Two Way Cluster Analysis (TWCA) and Indicator Species Analysis (ISA) recognized 5 plant communities with significant indicator species. ISA analysis revealed that the mountain aspect, altitude from the sea level and soil depth were the strongest environmental variables ($p \leq 0.05$) for determining the community structure (Khan *et al.*, 2011).

Moreover such natural vegetation also attracts the attention of the researchers for ethno botanical studies. Similarly in Hindu Kush valleys the natural vegetation has been studied for ethno ecological purposes (Murad *et al.*, 2012). Generally, multivariate analysis techniques are applied on the pine forests of moist temperate regions

of Pakistan in order to observe the effects of the environmental complex on vegetation of the studied areas. Multivariate techniques including cluster analysis (Ward's agglomerative method and TWINSPAN a divisive method) as well as ordination (DECORANA) were used to explore vegetation composition and structure of canopy trees and understory (shrubs and herbs) vegetation and their relationship with the associated environmental factors (Siddique *et al*., 2010). In lower areas a survey of such kind was undertaken to explore floristic composition and vegetation classification of the natural vegetation of Tehsil Takht-e-Nasrati, District Karak in summer 2010-2011. The study was conducted within four distinct stands which was further divided into 22 sites for clear communities' segregation. Hierarchical Cluster Analysis (HCA) and Detrended Correspondence Analysis (DCA) were used for the plant communities' classification. Plant species of each community type were presented together with the information on dominance and sub-dominance species (Khan & Hussain., 2013).

In Iran there is a huge research undertaken on the forest communities and to identify and compare the plant species diversity. Classification of the vegetation was conducted using the TWINSPAN Algorithm. Species richness, Shannon, and Simpson indices were applied to quantify diversity of the different communities (Rad *et al*., 2009). Such techniques have not been used so far in Pakistan for weed flora.

Of the studies mentioned above research is under way in developed and under developed nations to investigate about the weeds as a whole in community level. In such kind of studies weed scientists compare the weeds of different localities to different environmental factors and their variability, richness, composition and diversity to different farming practices. For example, in Doon valley of India a multivariate statistical analysis was applied on the diversity and composition of weed communities in wheat fields by using TWINSPAN and Polar ordination (Gupta *et al*., 2008). In Iran weeds species of wheat was investigated for its relative dominance in the Tabriz County (Hassannejad & Ghafarbi 2013). In Iran a study of similar nature was carried out to investigate the weeds population indices in irrigated wheat fields of the Zanjan Province (Kakhki *et al*., 2013). Similarly in Iran the grass communities are studied by using the relative dominance of the species in the wheat crop. In such studies a new grass as a new weed species was investigated for the flora of Iran (Hassannejad and Ghisvandi, 2013).

Review of available literature show the lack of research on weed communities in Pakistan. Therefore, the present project as the first in its nature in Pakistan in which weeds of wheat crop was studied as an aggregate. It will not only help in providing a base line for other

studies like inter-specific competitions, establishing wild plants communities within economically important crops but also will be of immense importance to control weeds by means other than the usage of chemicals. Objectives of the present study were to document all the weed species of wheat crop to provide a base line for further ecological studies.

MATERIALS AND METHODS

Two different approaches were used to accomplish the study for weed species analyses in the winter wheat crop. (1) Collection of weeds data from the winter wheat fields. (2) Identification of species using flora of Pakistan and herbaria specimens.

Fields of different sizes were selected in the project area randomly. The field selection criteria were such that each field was at a distance of at least one kilometer away from the first. Thus the total numbers of plots were 120 in the area. The fields in the area were of different shapes for example square, rectangular, triangular and irregular. Furthermore area wise also the fields were different from each others. The minimum area of the field was selected as one acre. Other selected fields have larger area of two, three and four acres was also studied.

A mixture of quadrat-transects method was used in each plot. The quadrates were laid equidistantly in each field along transects. The numbers of quadrats taken in each field were 10 in number. However changes was brought according to species area curve. The size of quadrat was $1\times1m^2$. In each quadrat the number of weed species was counted. All the species were identified with the help of the Flora of Pakistan (Nasir and Ali, 1972; Ali and Qaiser, 2004). These specimens were dried, processed, mounted on standard herbarium sheets and submitted to the Herbarium, Department of Botany, Hazara University Mansehra Pakistan. All the other phytosociological measures will be taken into consideration as the next part of the current project.

The environmental factors define the structure, composition, diversity and richness of the plant communities. Weeds are no exception to it because these undesirable species have soft structure and high growth rates, thus are affected by the environment of an area. In the study area a weather station was installed to quantify the environmental variables viz., temperature, Rainfall, wind direction and wind speed.

For the measurement of different coordinates such as latitude, longitude and altitude Geographical Positioning System GPS (Garmin eTrex· HC series, vista HCx) was used in each sample fields of the area.

Soil samples were taken from each sampled area for analyzing its ph and quantity of other elements. The collection methodology for soil analysis was such that a compact soil sample was taken from each field at a depth of 20cm. These samples were observed and analyzed for its physical and chemical properties in the laboratory by applying various techniques.

RESULTS AND DISCUSSION

Results of the current project show the preliminary exploration of weeds diversity in District Malakand. Frequent visits and data collection indicates the presence of 132 weed species in the area. These species belongs to 42 families and 110 genera. The largest number of genera and species were found in the family *Asteraceae* (17 genera and 18 species). It is followed by *poaceae* with 16 genera and 16 species. Next in succession are family *Brassicaceae* (10 genera and 13 species), *Boraginaceae* (5 genera and 7 species), *Caryophyllaceae* (6 genera and 6 species), *Fabaceae* (4 genera and 4 species), *Papilionaceae* (3 genera and 6 species), *Polygonaceae* (4 genera and 6 species), *Scrophulariaceae* (3 genera and 4 species), *Amaranthaceae* (3 genera and 3 species), *Umbilliferae* (3 genera and 3 species) *Papaveraceae* (2 genera and 3 species), *Iridaceae, Cyperaceae, Gentianaceae, Malvaceae* and *Labiatae* each one have (2 genera and 2 species), *Plantaginaceae, Rosaceae, Ranunculaceae, Chenopodiaceae, Euphorbiaceae, Linaceae, Solanaceae* and *Verbinaceae* each have (1 genera and 2 species), *Asphodelaceae, Nyctaginaceae*, *Cannabaceae*, *Convolvolaceae, Acanthaceae, Fumariaceae, Rubiaceae, Geraniaceae, Amaryllidaceae, Juncaceae, Lamiaceae*, *Zygophyllaceae, Liliaceae, Valerianaceae, Onagraceae, Oxalidaceae* and *Primulaceae* each have (1 genera and 1 species) (Table-1). All of the species in the current study belong to angio sperms. Among the total families only six families belong to Monocots these includes *Poaceae, Iridaceae, Cyperaceae, Asphodelaceae*, *Liliaceae* and *Amaryllidaceae* all the rest belongs to Dicots (Table-2). Among the total number of species 23 species belongs to monocots and the rest 109 species belong to dicots.

District Malakand has been blessed with variable land and climate. Numerous crops are grown here by farmers to earn their livelihood and to play their share in the economic uplift of the country. Among other crops wheat is grown on larger scale in the area. Associated with these crops is some natural flora which is considered as unwanted (Hassan *et al*., 2003). These unwanted plants are called weeds. Weeds variability in structure, composition and ecology puts threats to the development and growth of economically important crops such as wheat. Weed species results in the loss of production by

occupying space in the fields and competition with crops for nutrients absorption and absorption of sun light for photosynthesis (Memon 2004). Minbashi *et al.* (2008) recorded 87 weed species within irrigated wheat fields in Tehran Province. Similarly Moeini *et al*., (2008b) showed that 87 species were observed within irrigated wheat fields in Tehran province. During this study vital broad leaved species *Discurania suphia, Polygonum aviculare, Fumaria vaillantii* and *Galium tricornatum.* Dominant grass weed species were *Avena ludoviciana, Hordium spontaneum* and *Secale cereal. Convolvolus arvensis, Cirsium arvense and Cardaria draba* were widely distributed species in pre-harvesting stage of wheat in the province. Study of similar nature was conducted in the Sari region of Jamkhanhln wheat and Barley fields in which 22 weed species belonging to 9 families were identified (Yazdani *et al.*, 2008). Hassannejad *et al.* (2011) recorded 24 weeds grasses in Barley fields at East Azerbaijan province of Iran. Hassannejad *et al*., (2013) recorded 118 weed species belonging to 24 families in wheat fields of Tabriz county Iran. In this study, *Ermopyrum bonaepartis, Acroptilon repense, Cardaria draba, Chenopodium album, Polygonum aviculare* and *Convolvulus arvensis* were the dominant species on the basis of relative dominance index. Poaceae, Brassicaceae and Asteraceae were dominant plant families observed. Keshavarz *et al*. (2008) observed 27 species belonging to 13 families competing with wheat crop by studying its dispersion and dominance in the wheat fields of Kohgiloyeh and Boier Ahmed province in Iran.

Our findings are of similar nature like the above sited literature in which 132 weeds plant species belonging to 110 genera and 42 families were observed. Most of the species investigated were Angiosperms. Family *Asteraceae* was the richest family related to species diversity with 18 species and 17 genera. It is followed by *Poaceae* having 16 species and 16 genera. Next in succession are family *Brasicaceae* with 10 genera and 16 species and family *Boraginaceae* with 5 genera and 7 species. Such results are similar to the finding of Hassannejad *et al.* (2013) which might show similarity in climatic and other environmental conditions of Iran as our next neighboring country. Other families like *Caryophyllaceae*, *Papilionaceae*, *Fabaceae*, *Polygonaceae*, *Scrophulariaceae* and *Umbilliferae* have 6,6,4,5,4 and 3 species and 6,3,4,3,3 and 3 genera. Species like *Silybum marianum (Asteraceae), Emex spinosa (Polygonaceae)* and *Circium arvense (Asteraceae)* are considered to be the most threatening species during the time of harvesting the crop. It also shows similarity in the above cited studies in which *Circium arvense* was founded as the dominant species in pre harvesting stage which might be due to similarity in the climatic factors and edaphic factors of weeds species in wheat fields.

Table-1. Distribution of weed genera and species among families

S.No	Family	No of Genera	No of Species	S.No	Family	No of Genera	No of species
1	*Asteraceae*	17	18	22	*Euphorbiaceae*	1	2
2	*Poaceae*	16	16	23	*Linaceae*	1	2
3	*Brassicaceae*	10	13	24	*Solanaceae*	1	2
4	*Boraginaceae*	5	7	25	*Verbinaceae*	1	2
5	*Caryophyllaceae*	6	6	26	*Asphodelaceae*	1	1
6	*Fabaceae*	4	4	27	*Nyctaginaceae*	1	1
7	*Papilionaceae*	3	6	28	*Cannabaceae*	1	1
8	*Polygonaceae*	4	6	29	*Convolvolaceae*	1	1
9	*Scrophulariaceae*	3	4	30	*Acanthaceae*	1	1
10	*Amaranthaceae*	3	3	31	*Fumariaceae*	1	1
11	*Umbilliferae*	3	3	32	*Rubiaceae*	1	1
12	*Papaveraceae*	2	3	33	*Geraniaceae*	1	1
13	*Iridaceae*	2	2	34	*Amaryllidaceae*	1	1
14	*Cyperaceae*	2	2	35	*Juncaceae*	1	1
15	*Gentianaceae*	2	2	36	*Lamiaceae*	1	1
16	*Malvaceae*	2	2	37	*Zygophyllaceae*	1	1
17	*Labiatae*	2	2	38	*Liliaceae*	1	1
18	*Plantaginaceae*	1	2	39	*Valerianaceae*	1	1
19	*Rosaceae*	1	2	40	*Onagraceae*	1	1
20	*Ranunculaceae*	1	2	41	*Oxalidaceae*	1	1
21	*Chenopodiaceae*	1	2	42	*Primulaceae*	1	1

Table-2. Weed species inventory from wheat fields of District Malakand

S. No	Family	Species	Division	Monocot	Dicot
1	*Asteraceae*	*Artemisia vulgaris Linnaeus*	A	--	D
		Calendula arvensis L.	A	--	D
		Carbinea bennidicta L.	A	--	D
		Carthamus lanatus L.	A	--	D
		Carthamus oxyacantha M.Bieb.	A	--	D
		Centurea calitrapa L.	A	--	D
		Cirsium arvense (Linnaeus) Scopoli	A	--	D
		Conyza bonariensis (L.) Cronquist	A	--	D
		Lactuca dissecta D. Don	A	--	D
		Launaea procumbens (Roxburgh) Ramayya & Rajagopal	A	--	D
		Parthenium hysterophorus L.	A	--	D
		Pseudognaphalium affine (D. Don)	A	--	D
		Saussurea heteromalla (D. Don) Hand.-Mazz.	A	--	D
		Silybum marianum (Linnaeus) Gaertner	A	--	D
		Sonchus asper (Linnaeus) Hill			
		Taraxacum officinale F. H. Wiggers			
		Xanthium strumarium Linnaeus			
		Youngia japonica (Linnaeus) Candolle			
2	*Poaceae*	*Alopecurus myosuroides Hudes.,*	A	M	--
		Aristida adscensionis Linn.	A	M	--
		Avena fatua Linn.	A	M	--
		Brachypodium distachyon (Linn.) P. Beauv.	A	M	--

		Bromus pectinatus Thunb.	A	M	--
		Cenchrus ciliaris Linn.	A	M	--
		Cynodon dactylon (Linn.) Pers.	A	M	--
		Dicanthium anulatum (Forssk.) Stapf	A	M	--
		Lolium temulentum Linn.	A	M	--
		Phalaris minor Retz.	A	M	--
		Phleum paniculatum Huds.	A	M	--
		Poa annua Linnaeus	A	M	--
		Polypogon fugax Ness ex Steud.	A	M	--
		Rottboellia exaltata Linn t.			
		Sorghum halepense (Linn.) Pers.			
		Sporobolus diander (Retz.) P. Beauv.			
3	*Brassicaceae*	*Alyssum desertorum Stapf.*	A	--	D
		Arabis saxicola Edgew.	A	--	D
		Capsella bursa-pastoris (L.) Medik.	A	--	D
		Coronopus didymus (Linn.) Smith	A	--	D
		Goldbachia laevigata (M. Bieb.) DC.	A	--	D
		Lepidium apetalum Willdenow	A	--	D
		Lepidium pinnatifidum Ledeb.	A	--	D
		Malcolmia africana (Linn.)	A	--	D
		Nasturtium officinale R. Br. in Aiton	A	--	D
		Raorippa montana (Wall. ex Hook. f. & T. And.) Small			
		Sisymbrium altissimum Linn.			
		Sisymbrium erysimoides Desf.			

		Sisymbrium heteromallum C.A. Mey. in Ledeb.			
4	*Boraginaceae*	*Arnebia euchroma (Royle ex Benth.)* *Arnebia guttata Bunge.* *Heliotropium cabulicum Bunge in Bull.* *Heliotropium ulophyllum Rech.* *Lindelofia anchusoides (Lindl.)* *Lithospermum erythrorhizon Siebold & Zuccarini* *Nonea edgeworthii A. DC.*	A A A A A A	-- -- -- -- -- --	D D D D D D
5	*Caryophyllaceae*	*Acanthophyllum grandiflora Boiss.* *Arenaria serpyllifolia L.* *Cerastium fontanum Baumgarten* *Silene conoidea L.* *Spergula fallax (Lowe) E. H. L.* *Stellaria media (L.) Vill*	A A A A A	-- -- -- -- --	D D D D D
6	*Fabaceae*	*Lathyrus latifolius Linnaeus* *Medicago minima (Linn.)* *Melilotus indicus (Linnaeus) Allioni* *Viccia benthamii L.*	A A A A	-- -- -- --	D D D D
7	*Papilionaceae*	*Lathyrus aphaca Linn.* *Lathyrus sphaericus Retz.* *Medicago denticulata Willd.* *Medicago polymorpha Linn.* *Vicia monantha Retz.* *Vicia sepium Linn.*	A A A A A	-- -- -- -- --	D D D D D

8	*Polygonaceae*	*Persicaria glabra (Willd.)* *Polygonum aviculare Linnaeus* *Polygonum patulum M. Bieb* *Polygonum plebejum R. Br.* *Rumex dentatus Linnaeus* *Emex spinosa (L.)*	A A A A A A	-- -- -- -- -- --	D D D D D D
9	*Scrophulariaceae*	*Mazus pumilus (N. L. Burman) Steenis* *Verbascum thapsus Linn.* *Veronica anagallis-aquatica Linnaeus* *Veronica polita Fries*	A A A A	-- -- -- --	D D D D
10	*Amaranthaceae*	*Achyranthus aspera Linn.,* *Alternanthera sessilis (Linn.)DC.,* *Amaranthus viridis Linn.*	A A A	-- -- --	D D D
11	*Umbilliferae*	*Eryngium coeruleum M-Bieb.* *Scandix pecten-veneris Linn.* *Torilis nodosa (L.) Gaertn.*	A A A	-- -- --	D D D
12	*Papaveraceae*	*Hypecoum pendulum Linn.* *Papaver hybridum Linn.* *Papaver rhoeas Linn.*	A A A	-- -- --	D D D
13	*Iridaceae*	*Iris decora Wall.* *Moraea sisyrinchium (L.)*	A A	M M	-- --
14	*Cyperaceae*	*Carex fedia Nees* *Cyperus rotundus Linnaeus.*	A A	M M	-- --

15	*Gentianaceae*	*Jaeskia oligosperma Nuttall in J.* *Swertia ciliata (G. Don)*	A A	-- --	D D
16	*Malvaceae*	*Malva neglecta Wallr.* *Malvastrum coromandelianum (Linnaeus) Garcke*	A A	-- --	D D
17	*Labiatae*	*Mentha longifolia (L.) L.* *Salvia hians Royle ex Benth. in Hook.*	A A	-- --	D D
18	*Plantaginaceae*	*Plantago amplexicaulis Cav. sb sp-bauphula* *Plantago lanceolata Linn.*	A A	-- --	D D
19	*Rosaceae*	*Potentilla supina L.* *Potentilla reptans L.*	A A	-- --	D D
20	*Ranunculaceae*	*Ranunculus arvensis L.* *Ranunculus muricatus L.*	A A	-- --	D D
21	*Chenopodiaceae*	*Chenopodium album Linnaeus* *Chenopodium murale Linnaeus*	A A	-- --	D D
22	*Euphorbiaceae*	*Euphorbia helioscopia L.* *Euphorbia prostrata Ait.*	A A	-- --	D D
23	*Linaceae*	*Linum corymbulosum Rchb.* *Linum perenne Linn.*	A A	-- --	D D
24	*Solanaceae*	*Solanum nigrum L.* *Solanum surattense Burm. f.*	A A	-- --	D D
25	*Verbinaceae*	*Verbena officinalis Linn.* *Verbena tenuisecta Briq.*	A A	-- --	D D
26	*Asphodelaceae*	*Asphodelus tenuifolius Cav.*	A	M	--
27	*Nyctaginaceae*	*Boerhavia procumbens Banks ex Roxb.*	A	--	D
28	*Cannabaceae*	*Cannabis sativa Linn.*	A	--	D
29	*Convolvolaceae*	*Convolvulus arvensis Linn.*	A	--	D

30	*Acanthaceae*	*Dicliptera roxburghiana (Nees) Clarke*	A	--	D
31	*Fumariaceae*	*Fumaria indica (Hausskn.)*	A	--	D
32	*Rubiaceae*	*Galium aparine L.*	A	--	D
33	*Geraniaceae*	*Geranium rotundifolium* L.	A	--	D
34	*Amaryllidaceae*	*Ixiolirion tataricum (Pall.)*	A	M	--
35	*Juncaceae*	*Juncus biflorus Elliott*	A	--	D
36	*Lamiaceae*	*Lamium amplexicaule L.*	A	--	D
37	*Zygophyllaceae*	*Tribulus terrestris Linn.*	A	--	D
38	*Liliaceae*	*Tulipa stellata Hook.*	A	M	--
39	*Valerianaceae*	*Valerianella muricata (Stev.)*	A	--	D
40	*Onagraceae*	*Oenothera rosea L' Her. ex Ait.*	A	--	D
41	*Oxalidaceae*	*Oxalis corniculata L.*	A	--	D
42	*Primulaceae*	*Anagallis arvensis L.*	A	--	D

Keys: A- Angiosperm, M- Monocot, D- Dicot.

CONCLUSION

In our findings, only six families belonged to Monocots including Poaceae, Iridaceae, Cyperaceae, Asphodelaceae, Liliaceae and Amaryllidaceae while all the rest belonged to Dicots. And among the total number of species 23 species belonged to monocots and the rest 109 species belonged to dicots. The study was helpful in finding the most important weed species in the area threatening wheat crop and also in changing the farming practices for management of the weeds.

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