Pak. J. Weed Sci. Res. 18(3): 393-411, 2012

DISTRIBUTION OF WEEDS IN WHEAT FIELDS OF DISTRICT BANNU, KHYBER PAKHTUNKHWA PAKISTAN

Hikmat Ullah Jan[1], Akhya Jan[1] and Zabta Khan Shinwari[2*]

ABSTRACT

The present study reports the weed species of wheat (Triticum aestivum) fields of ten villages viz Kakki, Ghoriwala, Taji Kala, Surani, Tapi Kala, Garera Shah Jahan, Mira Khel, Daoud Shah, Barak Zai and Domel in district Bannu, Khyber Pakhtunkhwa, Pakistan. Forty-three (43) weed species belonging to (42) genera in 25 families were found distributed as wheat's weeds in the study area. Out of the 25 families, 2 were monocotyledons, having 4 genera and 4 species. Poaceae had 3 genera and 3 species and Cyperaceae was represented by 1 genus and 1 species. Rest of the 23 families were dicots consisting of 38 genera and 39 species. The most important families in terms of species representation were Asteraceae (7 genera and 7 species) followed by Brassicaceae (6 genera and 6 species), Polygonaceae (2 genera and 3 species), Chenopodiaceae, Papilionaceae and Apiaceae (2 genera and 2 species each), Nyctaginaceae, Plantaginaceae, Solanaceae, Verbenaceae, Boraginaceae, Convolvulaceae, Gentianceae, Primulaceae, Thymelaeaceae, Malvaceae, Euphorbiaceae, Zygophyllaceae, Oxalidaceae, Ranunculaceae, Caryophyllaceae, Urticaceae, and Amaranthaceae with (1 genus and 1 species each). The present research work is a footstep towards the organization of a weed flora, which could be in the same way useful for both botanists as well as other plant scientists.

Key words: Distribution, weeds species, wheat fields, district Bannu, Pakistan.

INTRODUCTION

Weed are the undesirable plants growing in the crop fields affecting them through competition for light, space, nutrients, through allelopathy and seed contamination etc. Furthermore, some of the thorny weeds like *Sausurea* species and *Carthamus* species make them quite difficult for the farmers to eradicate them and to harvest the crops. Weeds may also harbor insect pests injurious to crops. Some of the weeds affect the quality of milk in milking cattle such as *Euphorbia* species and *Coronopus* species. Besides these, some of the weeds are useful to the farmer in terms of fodder for grazing animals like *Cynodon dactylon*, *Brachiaria ramosa*; nitrogen fixers like *Sesbania*

[1] Department of Botany Govt. Post Graduate College Bannu Pakistan.
[2] Department of Biotechnology, Quaid-i-Azam University, Islamabad, Pakistan.
*Corresponding author's email: shinwari@qau.edu.pk

sesban; and soil binders like *Paspalum paspaloides*. Some of the weeds are used in medicines such as *Verbena officinalis*, *Phyla nodiflora*, *Plantago* species, *Datura inoxia* and *Calotropis procera*. Muzlik (1970) reported that weeds cause greater losses than either insects or plant diseases. The allelopathic actions of weeds affect germination, growth, productivity and distribution of species in natural and cultivated ecosystems. Farmers who practice no weed control get 50% of less yield as compared to those who practice weed control (Munir *et al*., 1987). Hussain and Shah (1978) have observed that weed not only rob the cultivated plants of their essential food elements but also harbor insects pests and diseases injurious to the crop.

Stewart (1972) prepared an animated catalogue to the flora of Pakistan which is the only representative literature covering almost all the plants of Khyber Pakhtunkhwa. Bedunah (1992) have studied the ecology of weeds, grazing wildlife in western wild lands of USA. Khan *et al*. (2004) have worked on chemical control of weeds in *Glycine max* in Mingora (Swat) Pakistan. Sultan and Nasir (2003) performed two weeds surveys gram fields of District Chakwal. They observed ecological status of different weeds communities due to inter specific competition.

Khan *et al.* (2003) have worked on allelopathic effect of *Eucalyptus* leaf extract on seed germination and growth of Maize. Hassan *et al*. (2003) tested the weed dynamics in the rice growing areas in D.I. Khan and Sheikhupura. Khan *et al*. (2004) conducted a survey in District Bannu to collect information about the distribution and management of major Rabi, Kharif and parasitic weeds. Khan *et al*. (2004) investigated the population dynamics and management of *Orobanche* species and major Robi weeds in District Swabi. Marwat *et al*. (2003) studied the efficiency of different herbicides for controlling weeds in onion. Hanif *et al*. (2004) have determined the importance value of weeds of wheat using quadrate method.

Studied on weeds in wheat fields of Peshawar (Hussain *et al.,* 1985), Kotli (Malik and Hussain, 1990), Mayar Jandool, Dir (Ayaz *et al.,* 1995), Attock (Shinwari *et al.,* 1990), Chitral (Hussain *et al.,* 2004) and Gojra, Toba Tek Singh (Muhammad *et al.,* 2005) have been reported. However, no such report is available from all ten villages, district Bannu. The present effort therefore was aimed at the ecological assessment of some weed species for the first time from wheat fields of Bannu. The findings helped in the management of weeds in wheat crop fields. The weed flora of wheat fields of different villages in district Bannu Khyber Pukhtunkhwa Pakistan has been documented.

An inventory and an identification checklist of the noxious weeds of the area have been made which is of great importance in

mitigation, control and management of weeds. This investigation is of paramount significance in global climate change perspective, as most of the weeds are becoming invasive and hence threatening the local biodiversity and ecosystem.

MATERIAL AND METHODS

Research Design

Ten different wheat growing villages of Bannu i.e. Kakki, Ghoriwala, Taji Kala, Surani, Tapi Kala, Garera Shah Jahan, Mira Khel, Daoud Shah, Barak Zai and Domel were selected for the data collection on weeds.

Collection of plant materials

Fresh weeds samples as research material were collected from various wheat fields of District Bannu Khyber Pakhtunkhwa Pakistan during the year 2003. Plant specimens were collected along with extensive field notes including habit, habitat, life form, phenological status, and abundance etc. (Table-1). Wheat fields of forty different villages were visited and selected for weeds collection. Later on, twenty fields for sampling randomly selected during different time periods of wheat growth. At least 10 specimens per species were collected.

Drying and preservation

Soon after collection all specimens were individually covered with paper and properly dried with the help of presser under room temperature in an open space. The dried specimens were than mounted and preserved on standard size herbarium sheet after standard method of Judd *et al*. (2002).

Identification

The entire collected specimens were then subjected to identification. Weed samples were identified with the help of flora of Pakistan (Stewart, 1972; Nasir and Ali, 1971-1995; Nasir and Rafiq, 1995) and for future reference all specimens were submitted to the herbarium in department of Botany, Govt. Post Graduate College Bannu, Khyber Pakhtunkhwa, Pakistan, vide voucher no. A-201, A-202, and so on. Micro and macro morphological characteristics were studied using a binocular stereo microscope.

Limitations

The researchers faced some difficulty during the samples collection that could influence the results of the study. Because most of the farmers were illiterate, and thus their proper communication with the researchers was very difficult. Due to the suspicious behavior, about the purpose of the study, some information provided by the farmers might be false. Unawareness about the weeds, their losses, use and control could limit the scope of information.

RESULTS AND DISCUSSION

In district Bannu, there are 42 genera and 43 species were found distributed among 25 families (Table-2). Out of 25 families, two were monocotyledons, having four genera and four species. Poaceae had three genera and three species and Cyperaceae was represented by one genus and one species. Rests of the 23 families were dicotyledonous, consisting of 38 genera and 39 species. The most important family in terms of species representation was Asteraceae having (seven genera, seven species). Asteraceae was followed by Brassicaceae having (six genera, six species), Polygonaceae (two genera and three species). Chenopodiaceae, Papalionaceae and Apiaceae (two genera and two species each), Nyctaginaceae, Verbenaceae, Boraginaceae, Euphorbiaceae Plantaginaceae, Solanaceae, Convolvulaceae, Gentianceae, Primulaceae, Thymelaeaceae, Malvaceae, Zygophyllaceae, Oxalidaceae, Ranunculaceae, Caryophyllaceae, Urticaceae, and Amaranthaceae with (one genus and one species each).

Many weeds behave and compete in different ways in different habitats. The following weeds were more frequent regarding their density and frequency in different fields where they were reported. In monocots, *Cynodon dactylon*, *Cyperus rotundus*, *Asphodelus tenuifolius*, *Poa annua*, while in dicotyledons *Convolvulus arvensis*, *Convolvulus pluricaulis*, *Boerhavia procumbens*, *Trigonella* species, *Astragulus* species and *Euphorbia* species were the dominant weeds and were serious threat to wheat crop. Local farmers also pointed out weed species to be a menace. Local farmers used different herbicides to eradicate these weeds from their wheat fields. Weeds like *Convolvulus arvensis* and *Poa annua* were abundant in district Bannu. Here the crop was dense due to low interspacing which might be a cause for abundance of *Poa annua* and *Convolvulus arvensis* because this weed grows in shady places and prefers support for unreserved growth (Akhtar and Hussain, 2007).

In this sub-locality of district bannu the crop was grown in an orchard of *Psidium guajava.* Most of the farmers used to grow wheat and sugarcane crops together. The farmers 1st harvest the wheat crop and later the germination of sugarcane takes place. Moreover, the farmers also grew the seeds (Rhizome) of turmeric in wheat crop. Similarly, some farmers harvest wheat crop and then sow the turmeric crop. The practice of wheat with other crops has been considered more economical for the farmers. The present study concluded that *Convolvulus arvensis and Plantago lanceolata* were the weeds of ecological importance and needed to be properly managed for the better yields of wheat crop in the research area.

Table-1. Basic information of collected weed species.

S.No	Species Name	Family Name	Flowering Period	Occurrence/ Distribution	Plant habit	Relative abundance
1.	*Malvastrum coromandelianum*	Malvaceae	April-June	Wheat fields, & wastelands	Annual shrub	Rare
2.	*Oxalis corniculata*	Oxalidaceae	August-October	Wheat fields	Annual or Perennial herb	Common
3.	*Alhagi maurorum*	Papalionaceae	April-October	Wheat fields & disturbed soil	Perennial Shrubs	Common
4.	*Melilotus indicus*	Papalionaceae	Spring	Wheat fields	Annual herb	Common
5.	*Convolvulus arvensis*	Convolvulaceae	May – June	Wastelands & Wheat field	Perennial herb	Spare
6.	*Rumex dentatus*	Polygonaceae	Spring	Roadsides, and Wheat fields	Annual or Biennial herb	Common
7.	*Polygonum barbatum*	Polygonaceae	May-October	Wheat fields	Perennial herb	Common
8.	*Polygonum Plebejum*	Polygonaceae	Spring	Wheat fields	Annual herbs	Spare
9.	*Cyperus rotundus*	Cyperaceae	March-August	Disturbed soil & Wheat fields	Perennial herbs	Rare
10.	*Plantago lanceolata*	Plantaginaceae	Throughout the year	Disturbed soil & Wheat fields	Perennial herbs	Common
11.	*Boerhavia procumbens*	Nyctaginaceae	March -April	Wastelands & Wheat fields	Perennial herbs	Rare
12.	*Phyla nodiflora*	Verbenaceae	Throughout the year	Wastelands & Wheat fields	Perennial herb	Rare
13.	*Amaranthus viridis*	Amaranthaceae	April-August	Wastelands & Wheat fields	Annual herb	Common
14.	*Euphorbia helioscopia*	Euphorbiaceae	September - May	Disturbed soil & Wheat fields	Annual herb	Common
15.	*Chenopodium murale*	Chenpodiaceae	April-August	Wastelands & Wheat fields	Annual herb	Common

S.No	Species Name	Family Name	Flowering Period	Occurrence/ Distribution	Plant habit	Relative abundance
16.	*Salsola baryosma*	Chenpodiaceae	November - January	Wastelands & Wheat fields	Annual herbs or subshrub	Rare
17.	*Silene conoidea*	Caryophylaceae	February – March	Wastelands & Wheat fields	Annual herb	Rare
18.	*Ranunculus muricatus*	Ranunculaceae	Spring	Wastelands & Wheat fields	Annual or Biennial herb	Spare
19.	*Erythraea ramosissima*	Gentianaceae	March – May	Disturbed soil & Wheat fields	Annual herb	Rare
20.	*Heliotropium europeum*	Boraginaceae	February-April	Disturbed soil & Wheat fields	Annual herb	Rare
21.	*Solanum nigrum*	Solanaceae	Throughout the year	Disturbed soil & Wheat fields	Perennial herb	Common
22.	*Foeniculum vulgare*	Apiaceae	March – April	Disturbed soil & Wheat fields	Biennial or Perennial herb	Common
23.	*Torilis Japonica*	Apiaceae	March – May	Disturbed soil & Wheat fields	Annual herb	Spare
24.	*Fagonia cretica*	Zygophyllaceae	Summer	Wastelands & Wheat fields	Under Shrub	Rare
25.	*Urtica dioica*	Urticaceae	March - June	Disturbed soil & Wheat fields	Annual or perennial, herbs or shrubs	Rare
26.	*Anagallis arvensis*	Primulaceae	February –May	Wastelands & Wheat fields	Annual herb	Rare
27.	*Thymelea arvensis*	Thymelaeaceae	Late Spring	Disturbed soil & Wheat fields	Annual herb	Rare
28.	*Carthamus oxyacantha*	Asteraceae	March - June	Disturbed soil & Wheat fields	Annual herbs	Common
29.	*Calendula arvensis*	Asteraceae	March –June	Wastelands & Wheat fields	Annual herbs	Rare
30.	*Eclipta prostrata*	Asteraceae	February-April	Wastelands & Wheat fields	Annual herbs	Rare

S.No	Species Name	Family Name	Flowering Period	Occurrence/ Distribution	Plant habit	Relative abundance
31.	*Cirsium arvense*	Asteraceae	February –April	Wastelands & Wheat fields	Annual or perennial herb	Rare
32.	*Filago germanica*	Asteraceae	Spring	Disturbed soil & Wheat fields	Annual herbs	Rare
33.	*Ifloga fontanesii*	Asteraceae	March-August	Disturbed soil & Wheat fields	Annual Herb or under shrub	Rare
34.	*Lactuca dissecta*	Asteraceae	February –April	Wastelands & Wheat fields	Annual herb	Common
35.	*Alopecurus myosuroides*	Poaceae	November - January	Disturbed soil & Wheat fields	Annual herb	Common
36.	*Avena sativa*	Poaceae	May-October	Disturbed soil & Wheat fields	Annual herb	Spare
37.	*Phalaris minor*	Poaceae	September - May	Wastelands & Wheat fields	Annual herb	Spare
38.	*Leptaleum filifolium*	Brasicaceae	March –April	Disturbed soil & Wheat fields	Annual herb	Rare
39.	*Coronopus didymus*	Brasicaceae	November - January	Disturbed soil & Wheat fields	Annual or Biennial herb	Common
40.	*Eruca sativa*	Brasicaceae	April-June	& wheat fields	Annual herb	Common
41.	*Neslia apiculata*	Brasicaceae	Spring	Wastelands & wheat fields	Annual herb	Rare
42.	*Sisymbrium irio*	Brasicaceae	March –April	Wastelands & wheat fields	Annual or Biennial herb	Common
43.	*Lepiduim apetalum*	Brasicaceae	May-October	& wheat fields	Annual herb	Rare

Family Plantaginaceae

***Plantago lanceolata* L.**

Perennial herbs, acaulescent. Leaves membranous, narrow, lanceolate to narroa, elliptic, glabrous, acute, nerves 5. Spikes dense, conic, cylindrical, subglobse to globose. Sepals 3- 3.5 mm long, glabrous or at the margin villose, anterior sepals connate, or ovate. Corolla lines narrow ovate to ovate. Seeds 2, smooth. Distribution: Kakki (Bannu). Flowering period: Throughout the year.

Family Nyctaginaceae

***Boerhavia procumbens* (Banks), Local name: pundraookh (Bannu)**

A perennial straggling herb. Stem woody below, branches often reddish. Leaves unequal, opposite, ovate. Flowers in diffuse axillary panicles. Perienth campanulate, pinkish. Stamens 2-3, exerted. Anthrocarp turbinate to broadly clavate, 5-ribbed, glandular or papilose. Distribution: Mira Khel. Flowering period: March-April.

Family Verbenaceae

Phyla nodiflora,* Syn: *Lippia nodiflora

A widely creeping perennial herb, rooting at nodes, glabrous or pubescent. Leaves opposite, spathulate, subsesssile, toothed towards the rounded apex; peduncles with 1-3 cm long flowering heads. Flowers white or pinkish, 2-lipped. Fruit globose-oblong, glabrous, splitting into 2-1 seeded pyrenes. Distribution: Taji Kala. Flowering period: Throughout the year.

Family Amaranthaceae

***Amaranthus viridis* L., Local name: Sorma**

Annual herb, stem glabrous or hairy. Leaves long petaliod. Flowers arranged in dense axillary clusters of terminal leafless spikes. Perienth segments, membranous. Stigmas 2-3. Seeds 1-1.25 mm, dark brown to black. Distribution: Garera Shah Jahan. Flowering period: April-August.

Family Euphorbiaceae

***Euphorbia helioscopia* L.**

Annual, erect, glabrous herbs. Leaves alternate on the main stem in whorls above, shortly stalked or not, finally toothed. Involucres in umbellate cymes. Glands 4. Capsule globose, smooth, rounded at the back. Distribution: Surani (Bannu). Flowering Period: September - May.

Family Chenpodiaceae

***Chenopodium murale* L.**

Annual, sub glabrous, somewhat fetid herb. Leaves 2-7 cm; more or less sharply toothed petiolate. Flowers clusters in lax sepals small obtusely keeled. Stigmas 3. Seed rounded, dull black, wrinkled. Distribution: Tapi Kala: Flowering Period: April-August.

Salsola baryosma

A hairy much branched annual herbs or sub shrubs; 90-120 cm tall, stem stout, branchlets slender, hairy when young,; leaves alternate, minute sub globose, fleshy, densely crowded, the floral leaves rather longer imbricate, forming a short spikes bracteolets. Distribution: Ghoriwala. Flowering Period: November –January.

Family Caryophylaceae

***Silene conoidea* L.**

Annual erect, glandular and pubescent herb. Stem dichotomously branched. Leaves sessile 3-5 multiplying by 0.4 cm oblong or oblanceolate, spathulate below, lanceolate above, acute, entire. Flowers in terminal panicles, pedicellate. Calyx 2-3 cm, many nerves, glandular, 5- parted. Petals pink, entire emerginate. Stamens 5, style one, stigma 3. Capsule ovoid contracted above, included in the calyx. Distribution: Kaki. Flowering Period: February –March.

Family Ranunculaceae.

***Ranunculus muricatus* L.**

An erect or diffused annual or biennial herbs, glabrous, leaves long-stalked shortly lobed, base round or cuneate. Flowers yellow. Sepals reflexed rather shorter than the petals. Achene in large globose heads, flate, and beak hooked. Distribution: Kaki. Flowering Period: Spring.

Family Gentianaceae

***Erythraea ramosissima* Pers.**

Annual herb 2-15 inch high, leaves 1 over 2-3 over 2 inches long ovate. Bracts conspicuous. Flowers sessile, pink or white calyx teeth linear, nearly equaling the corolla tube. Flowering Period: March – May. Distribution: Ghoriwala.

Family Boraginaceae

***Heliotropium europeum* L.**

Annual herb, erect, 30-75 cm, leaves large for the group, long petioled, blade up to 5 cm. Flowering Period: February-April. Distribution: Daud Shah Bannu.

Family Solanaceae

***Solanum nigrum* L.**

Perennial herb, erect, 30-60 cm tall branched. Leaves ovate, lanceolate, 2-5 cm. flowers small, white, berry about 6 mm in diameters yellow red or black when ripe. Flowering Period: Almost throughout the year. Distribution: Daud Shah Bannu.

Family Umbelliferae (Apiaceae)

Foeniculum vulgare

An erect, medium to large sized, biennial or perennial herb. Leaves 2-4 pinnates, segments linear. Flowers yellow in compound umbels, bracts absent, bracteoles absent or few, linear calyx teeth

none, petals notched, fruit oblong, not flattened, ridges prominent, furrows with oil glands, seeds flattened. Distribution: Barakzai. Flowering Period: March – April.

***Torilis Japonica* (Houtt)**

Annual herb and their plants is 3-50 cm tall. Leaves 1-2 pinnate, segments lanceolate, pannitifid to pinnatisect. Peduncles up to 15cm long, involucres of long linear, Rays 4-10, spreading 1-1.5 cm long hispid. Involucel of several linear, hispid bractlets. Fruit oval to ovoid, 3-4 mm long, spines incurved. Distribution: Barakzai. Flowering period: March –May.

Family Zygophyllaceae

***Fagonia cretica* L.**

A small woody under shrub up to 2-5 feet high, branches stiff, angled, glabrous or puberulous. Leaves opposite, 1-3 foliate, entire or elliptic, up to 2 cm, long petiole variable. Stipules modified into spines. Sepals deciduous. Petals spathulate, with a marked claw. Stamens inserted on the disk. Distribution: Barakzai. Flowering Period: Summer.

Family Urticaceae

***Urtica dioica* L.**

An erect medium sized herb, root perennial, stem annual, slender but little branched, grooved, covered with stinging hairs, leaves 5-10cm by 2.5-6.3 cm, ovate or lanceolate, wrinkled, teeth large, regular, petiole 6 mm to 5 cm long, stipule united, male and female flowers on separate plants, fewer minute green. Distribution: Kaki. Flowering Period: March-June.

Family Primulaceae

***Anagallis arvensis* L.**

Annual herb, erect or procumbent, 12-30 (-40) cm tall, glabrous, leaves ovate, sessile, entire, opposite, shorter than the peduncles. Flowers solitary on long axillary peduncles, variable in size and color, bluish scarlet or whitish. Capsule about 6 mm across, with single persistent style, many seeded, seed trigonous. Distribution: Kaki (Bannu). Flowering Period: February –May.

Family Thymelaeaceae

***Thymelea arvensis* Cank**

Annual very slender, glabrous, flowers axillary sessile minute. Stem 8-18 inch. Leaves 1/3 -1/2 inch. Flowers hermaphrodite, perianth appressed. Fruit 1/10-1/18 inch long ovoid, narrow upward. Flowering Period: Late Spring. Distribution: Tapi Kala.

Family Compositae (Asteraceae)

***Carthamus oxyacantha* Boiss**

Annual herb, Publrulous stem and branches white, leaves oblong, toothed upper ½. Flowers orange yellow. Fruit achenes

obovoid, pappus 0. Distribution: Collected from Kotka Imam Shah in the fields of wheat fields.

***Calendula arvensis* L.**

Annual herb, Large and more robust with winder heads. Leaves broader, obtuse or acute, dentate or entire. Flowering Period: March – June. Distribution: Wheat fields.

***Eclipta prostrata* L.**

Annual herbs. Leaves opposite, sessile, 1-2 cm broad, heads about 7 mm across, white, flowering almost throughout the year. Distribution: weed of wheat fields. Collected form Garera Shah Jahan.

***Cirsium arvense* L.**

Annual or perennial erect herb. Stem simple or branched. Leaves sessile sinuate. Heads purple. Aachen linear oblong, compressed, smooth, pappus brownish. Flowering Period: February – April. Distribution: Tapi Kala

***Filago germanica* Linn**

Annual herb, Woody all over branches from the base. Leaves obovate-oblong apiculate stems braches 2-6 inch, flexuous. Head 6-20, 1/8 inch long yellowish.

Distribution: Domel area Bannu.

***Ifloga fontanesii* Cass**

Annual herb or under shrub. Leaves linear, head 2-3 hustling amongst the leaves throughout the length of the braches. Stem woody. Branches 4-6 inches. Distribution: Collected from Domel area.

***Lactuca dissecta* Donponder**

Annual herb, glabrous. Stem branched. Leaves entire or layrate. Petiole cauline ½ at base. Head 1/2 – 1/2 inch erect narrow cylindrical few fids, outermost involucral bract minute ovate, innermost linear, achense oblanceolate. Distribution: Weed of wheat fields. Collected from Domel area of Bannu.

Family Poaceae (Graminae)

Alopecurus myosuroide

Annual herb, leaf blades linear flat, 15-30 cm long, 4-6 mm broad glabrous. Ligule membranous. Spike cylindrical 5-15 cm long, 1-2 cm wide. Destribution: Taji Kala.

***Avena sativa* L.**

Annual herbs. Inflorescence a panicle of spikelet's lemma glabrous. Distribution: Weed of wheat fields. Collected form Garera Shah Jahan, Bannu.

***Phalaris minor* Retz.**

Annuals herb; branched, 20-90 cm talls; leaf blades linear, 10-25 cm long, 1-1.7 cm broad. Panicle cylindrical up to 6 cm long 1-5 cm wide. Distribution: Common weed of wheat fields. Collected from Surani area.

Family Cruciferae (Brasicaceae)

***Leptaleum filifolium* (Will) D.C.**

An annual herb 2.5-6 inch high. Branching from the base. Leaves filiform entire; lobes linear. Flowers small, white or pinkish. Pod up to 1 inch long, 2-3 cm broad, almost indehiscent; stigmatic lobes pressed together to form a cone; seed biseriate. Distribution: Common in Domel area. Flowering Period: March –April.

***Coronopus didymus* L.**

Annual or biennial herbs. Leaves stalked. Flowers minute. Petals white. Fertile stamens usually 2, rarely 4. Valves separating at maturity into 1-seeded achene like nutlets, style very minute. Distribution: Weed of wheat fields Surani area Bannu.

***Eruca sativa* Mill**

Annual 1-2 feet high herb, with scattered hairs. Leaves; sessile. Flowers large, pale yellow. Fruit I inch long. Stigma simple or lobed. Seeds biseriate. Distribution: Surani area.

***Neslia apiculata* F.M.**

An annual herb tall, stiff, leaves radical 1-2 inch, lanceolate. Flowers many, on long slender pedicels, sepals erect, yellowish. Petals golden yellow, ovary 4-ovuled. Distribution: Surani (Bannu).

***Sisymbrium irio* L.**

Annual or biennial herb. Leaves petaloid, segments remotes spreading toothed, terminal, and large. Flowers yellow. Petals longer than the sepals. Seed ovoid. Distribution: Kaki area. Flowering Period: March –April.

***Lepiduim apetalum* L.**

An annual glabrous, 1-2 feet high herb. Basal leaves long, petaliod. Flowers small in elongated racemes, whitish pink. Pods obovate to oblong or winged. Style somewhat longer. Distribution: Kaki bannu.

Family Malvacae (Mallow family)

Malvastrum coromandelianum* (L.), Syn: *Malva coromandelianum (L.)

Annual shrub. Branches with appressed hairs. Leaves 3-5 nerved, coarsely serrate, and stellate hairy. Stipules entire or denticulate. Flower auxiliary, solitary or in fascicles. Epicalyx segments strigose hairy. Calyx fused below the middle. Lobes triangular. Petals obliquely obovate, hairy at base. Fruit globose; mericarp deeply covered with a short apicle awn. Distribution: Garera Shah Jahan. Flowering period: April- June.

Family Oxalidaceae

***Oxalis corniculata* L.**

Annual or perennial, creeping herb. Leaflets broader than long. Obcordate-tomentose. Flowers single or in 2-5 flowered auxiliary

umbels, pedicels up to 15mm long, deflexed in fruit. Bracts 3-5, linear. Calyx 5, linear lanceolate, pilose. Corolla 5, yellow, filaments glabrous. Gynaecium 5, pubescent styles longer than the shorter stamens. Capsule 1-2.5 cm long, sub-cylindric, pubescent. Seeds 1-5 mm long, brown transversely ribbed. Distribution: Bannu Tapi Kala. Flowering period: Aug-Oct.

Family Papalionaceae

***Alhagi maurorum* Churpf Phus. Oek. Local name: Tandah**

Small shrubs, up to 200 cm tall. Root very deep. Stem woody. Leaves simple, small, apiculate, stipules minute. Racemes auxiliary, ending in spine. Calyx glabrous. Corolla longer than calyx, pink or reddish-violet pods glabrous curved or straight, constricted between the seed. Seed 1 several (9). Distribution: Tapi Kala. Flower and Fruit Period: April-October.

***Melilotus indicus* L., Syn: *Melilotus parviflora* (Desf)**

Annual erect herb, 20-60 (-90) cm tall. Leaflets obovate or lanceolate, Toothed above the middle, truncate or emerginate, 1.5-2.5 cm long. Pod 2-3.5 cm long, usually 1-seeded, glabrous. Distribution: Garera Shah Jahan. Floral Period: Spring.

Family Convolvulaceae

***Convolvulus arvensis* L.**

Annual or perennial, usually twining glabrous or sub glabrous herbs with 30-90 cm (or more) long stamens; leaves stalked; ovate or lanceolate with articulate or hastate bases, 2.5 – 7.5 cm long. Peduncles solitary auxiliary, bearing 1-4 flowers. On short or long pedicels; flowers. About 2 cm across, pink, with yellowish center. Distribution: Garera Shah Jahan. Flowering period: May–June.

Family Polygonaceae

***Rumex dentatus* L.**

Annual erect 30-60 cm tall with large basal leaves and oblong to linear leaves; Flowers in distinct whorls minute green. Distribution: Garera Shah Jahan. Floral period: Spring.

***Polygonum barbatum* L.**

An annual herbs 2-3 feet high or document below. Stem glabrous or nearly so. Leaves 2-7 inch long sessile or sub-sessile, linear to lanceolate or acuminate or acute, tapering or sometimes rounded at the base, margin and midrib beneath shortly ciliate; strigose. Flowers white; bracts crowded, perienth leaves 1 over 10 inch long, stamens 5-8; Styles always 3, connate below. Distribution: Kaki (Bannu). Floral Period: May-October.

Anagallis arvensis

Plantago lanceolata

Amaranthus viridis

Foeniculum vulgare

Melilotus indicus

Alhagi maurorum

Carthamus oxyacantha

Euphorbia helioscopia

Convolvulus arvensis

Cirsium arvense

Polygonum plebejum

Cyperus rotundus

Oxalis corniculata

Calendula arvensis

Urtica dioica

Polygonum barbatum

Phyla nodiflora

Silene conoidea

Ranunculus muricatus

Heliotropium europium

Solanum nigrum

Torilis Japonica

Fagonia cretica

Eclipta prostrata

***Polygonum plebejum* L.**

An annual or perennial herbs smooth or some-what rough, diffusely or densely branched, prostrate herb, often with a woody root stalk, stem many from the root, up to three over two feet. Leaves long sessile. Flowers axillary, solitary or in clusters of 2-4, sub-sessile. Perienth leaves about one over ten inches long, styles 3. Distribution: Found in Kaki. Floral period: Spring.

Family Cyperaceae

***Cyperus rotundus* L.**

Perennial herbs. Stem erect, variable in height, stoloniferous, bearing black tubers. Leaves linear, flate. Inflorescence, umbel of more or less condensed spikes; primary rays 2-8; bearing short spikes of 3-10 slender and brown spikelets; bracts 3, variable in length, leafy; spikelets linear, sub acute, reddish brown, 10-50 flowered, compressed. Fruit type nut, trigonous brown or yellow. Distribution: Garera Shah Jahan. Flowering period: March-August.

REFERENCES CITED

Akhtar, N. and F. Hussain. 2007. Weeds of wheat fields of village Qambar, District Swat, Pakistan. Pak. J. Pl. Sci. 13(1): 33-37.

Ayaz, M., F. Hussain and Z. Muhammad. 1995. Floristic composition of weeds in the Wheat fields of Mayar Jandool, Distt. Dir. J. Sci. & Technol. 19: 23–28.

Bedunah, D.J. 1992. The complex ecology of weeds, grazing and wild life. Western Wildlands, Summer, 18: 6-11.

Hussain, Z. and S.H. Shah. 1978. Effect of different chemicals on emergence weeds in tobacco seed beds. Pak. Tobac. 2(2): 35-36.

Hussain, F., A. Murad and M.J. Durrani. 2004. Weed communities in the wheat fields of Mastuj, District Chitral, Pakistan. Pak. J. Weed Sci. Res. 10: 101-108.

Hussain, F., K.B. Marwat and K. Ahmad. 1985. Eco taxonomic studies on the weeds of Wheat fields in Peshawar Valley. Gomal Univ. J. Res. 5: 27-35.

Hassan, G., H. Khan, K.B. Marwat and M.A. Khan. 2003. Studies on weed seed dynamics in soil seed bank of rice based cropping system of Pakistan. Pak. J. Weed Sci. Res. 9(3-4): 259-264.

Hanif, Z., S.A. Khan, K.B. Marwat, I.A. Khan and Ikramullah. 2004. Important weeds of Wheat crop of malakandher farm, NWFP agriculture university, Peshawar. Pak. J. Weed Sci. Res. 10(3-4): 109-112.

Judd, W.S., C.S. Campbell, E.A. Kellogg, P.F. Stevens and M.J. Donoghue. 2002. Plant Systematics: A Phylogenetic approach. 2nd ed. Sinauer Associates, Inc., Sunderland, MA.

Khan, M., M. Ashraf and Q.S.U. Din. 2004. Chemical control of weeds in Soybean (*Glycine max* L.). Pak. J. Weed Sci. Res. 10(3-4): 161-168.

Khan, E.A, A. Khan, H.K. Ahmad, H. Himayatullah and F.U. Khan. 2003. Allelopathic effects of eucalyptus leaf extracts on germination and growth of Maize (*Zea Mays* L.). Pak. J. Weed Sci. Res. 9(1-2): 67-72.

Khan, N., I. Khan, M.A. Khan and H. Khan. 2004. Major Rabi And Kharif Weeds Of Agronomic Crops Of District Bannu. Pak. J. Weed Sci. Res. 10(1-2): 79-86.

Khan, H., K.B. Marwat, M.A. Khan and N. Khan. 2004. Distribution and control of Broomrape (*Orobanche* spp.) and other major weeds in district Sawabi, NWFP. Pak. J. Weed Sci. Res. 10(3-4): 193-200.

Malik, Z.H. and F. Hussain. 1990. The distribution of some weeds in wheat fields of Kotli, Azad Kashmir. Sarhad J. Agric. 6: 1–4.

Muhammad, S., T.A. Cheema, Z. Bashir and R. Mehmood. 2005. Analytical characteristics of weeds of wheat crop of Tehsil Gojra, Toba Tek Singh, Pakistan. Pak. J. Pl. Sci. 11: 57-60.

Marwat, K.B., B. Gul, I.A. Khan and Z. Hussain. 2003. Efficacy of different herbicides for controlling weeds in onion. Pak. J. Weed Sci. Res. 9(3-4): 223-228.

Muzlik, T. J. 1970. Weed biology and control. Mc Graw hill Book co; New York.

Munir, M., R. Khan and A. Rashid. 1987. Evaluation of fluazifop-butyl to control khabbal (*Cynodon dactylon* L.) in mustard. Proc. Pak-Indo-US Weed Control Workshop, 235-238.

Nasir, E. and S.I. Ali. 1971-1995. Flora of Pakistan. Pakistan Agricultural Research Council, Islamabad.

Nasir, Y.J. and R.A. Rafiq. 1995. Wild Flowers of Pakistan. Oxford University Press, New Delhi.

Shinwari, Z.K., S. Gorsi and M.R. Awan. 1990. Taxonomic studies on the weeds of wheat fields of Attock district. Pak. J. Weed Sci. Res. 3: 31-41.

Stewart, R.R. 1972. An annotated catalogue of vascular plants of West Pakistan and Kashmir. Fakhri Press, Karachi, p. 102.

Sultan, S. and Z.A. Nasir. 2003. Dynamics of weed communities in gram fields of Chakwal, Pakistan. Asian J. Plant Sci. 2(17-24): 1198-1204.