

Ethnobotanical Profile of Weed Flora of District Charsadda, Khyber Pakhtunkhwa

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ABSTRACT

District Charsadda is a very important center of plant biodiversity in the central plain of Peshawar valley, Pakistan. The present study was carried out during March 2015 to April 2016 to investigate the ethnobotanical profile of common weed flora present in district Charsadda, KP, Pakistan. The study revealed that there were 40 weed species belonging to 21 families. Among them 25 weeds were annual herb, 9 weeds were perennial herb, three were annual grass, one was climbing herb, one was the parasitic weed, and one was rhizomatic grass. The dominant families were Asteraceae, Fabaceae and Poaceae having 5 species (12.5%) each followed by Ranunculaceae 3 species (7.5%). Plants were systematically arranged into botanical names, local names, families, habit, habitat, partly used, flowering periods, locality and ethnobotanical uses. The main aim of the study is the documentation and ethnobotanical information of the weed flora growing in the area.

Keywords:

Ethnobotany, Weed species, Local uses, Annual or Perennial, Wheat, Maize and Garlic Crops, District Charsadda, Khyber Pakhtunkhwa.

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INTRODUCTION

Charsadda derives its name from its headquarters town. At the time of Alexander's invasion Charsadda was known as Pushkalavati (The Lotus city). Charsadda district lies in the central plain of Peshawar valley between 34-03' to 34-28' North Latitude and 71-28' to 71-33' East Longitudes with area of is 996 square kilometres. It is bounded by Malakand district on the north, Mardan district on the east, Nowshera and Peshawar districts on the south and

Mohmand Agency on the west, Anonymous¹. The plain of Charsadda district is very fertile. The mean maximum and minimum temperatures, Precipitation and humidity recorded at Charsadda as shown in Table 1. Major crops of the area are Tobacco, Sugarcane, Sugar beet, Wheat and Maize while major vegetables are Potato, Tomato, Cabbage, Brinjals and Spinach and major fruits are Apricot, Citrus, Plum, Strawberry and Pears.

Table 1: Showing mean maximum and minimum temperature, rain and humidity.

MONTHLY MEAN MAX TEMP. (°C)												
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2014	20.7	20.1	22.6	30.0	34.8	41.2	37.6	37.0	35.5	29.9	25.5	20.8
2015	19.5	21.3	23.8	30.4	35.4	38.5	35.9	34.8	34.3	30.2	23.5	Nil
MONTHLY MEAN MIN TEMP. (°C)												
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2014	2.9	6.1	10.2	15.5	20.1	24.6	26.4	25.9	23.7	18.1	9.0	3.8
2015	4.3	9.0	11.5	17.5	21.7	24.7	26.9	25.7	21.1	16.7	10.2	Nil
MONTHLY TOTAL RAIN (MM) [-1=TRACE]												
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2014	5.2	40.6	119.7	54.8	16.6	27.8	48.4	61.0	15.0	43.2	1.2	0.0
2015	33.7	70.1	120.3	114.1	39.2	0.0	119.0	158.4	53.3	52.0	29.6	Nil
MONTHLY MEAN HUMIDITY (%) AT 0800 AM												
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2014	81	84	86	71	63	57	76	78	75	86	80	82
2015	84	83	85	81.1	64	63	82	85	79	87	86	Nil
MONTHLY MEAN HUMIDITY (%) AT 0500 PM												
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2014	52	58	86	38	37	33	66	49	51	62	53	54
2015	54	54	62	50	42	42	62	67	56	55	60	Nil

Source: Pakistan Meteorological Department

Ethnobotany is a biological and economic cultural relationship between people and plants of an area in which they exist. Indigenous knowledge of plants is as old as civilization but the term ethno botany was used for the first time by an American botanist John. W. Harsh Berger in 1896, to study plants used by primitive and indigenous communities². Weeds are considered as unwanted plants. They give 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 importance³. Sher *et al.* stated that weeds are undesirable on account of their competitive and allelopathic behavior and providing habitats for harmful organisms⁴. The yield per acre of wheat can be increased by agronomic practices including weed control. However, the authentic identification and distribution has always been a pre-requisite for weed management. Ali & coworkers defined flora as all plant species in any specific geographic region, which are

characteristic of a geological period or that inhabit a particular ecosystem⁵. The flora includes the number of species. The principal object of a Flora is to afford the means of determining any plant growing in the area circumscribed. A good Flora is one that provides work for correct identification of plant and their utilization could be taken on scientific and systematic basis. Medicinally important plants are necessary for the production of the various drugs and curing diseases. People use 26 species of the vascular plants of the Mianwali district used for different purposes i-e as a medicine, as furniture and agricultural implements and as a food⁶. Bhushan *et al.* stated that the study of direct relationship between man and plants⁷. The villagers have their own remedies for medicinal treatment by using various plants or plant products present in their vicinity. Ibrar *et al.* estimated that there were 37 fuel species, 37 fodder species, 31 medicinal species, 18 edible species and 10 vegetables species which are used in our daily life⁸. Valuable economic and ethno medicinal flora of the area are decreasing. Sustainable utilization and conservation of the flora of the area is strictly recommended⁹. Ali *et al.* reported 65 species belonging to 35 families, from the Valley coined to the ethno medical domain of the Tirat Valley, Swat District, Pakistan¹⁰. Pandey *et al.* suggested that plant part used by the locals are: the whole plants (41.5%) followed by seed, 4 leaves, 11 flowers, 9 roots, 4 barks, 7 gums, 4 stems, 1 fruit, 7 resins and 1 wood, stem and acorns¹¹. The uses of ethnomedicinal plants should be confirmed the experimental and phytochemical studies to increase the safety and effectiveness of these plants and witness to develop modern drug development¹². Zabeehullah *et al.* explored traditional knowledge of ethno medicinal plants of District Charsadda, KP Pakistan¹³. The current studies focused on the information regarding indigenous uses of plants for medicinal purposes. 60 species of plant included 34 families have been recorded. During investigation, the data revealed that 56% of folk medicinal knowledge comes from people above the age of 60 years while 26% comes from between ages of 25-59 years. While 13% comes from between age of 10-24. Children of ages 8-10 are below got 7% of medicinal plants traditionally knowledge.

MATERIALS AND METHODS

The study was carried out in the flowering seasons during 2015-2016 and plant specimens were collected from different crops field Viz Wheat, Maize and sugar cane fields and were kept in presser, dried for a week and identified with the help of flora of Pakistan¹⁴⁻¹⁶. The ethnobotanical information from the local inhabitants were gathered (including Hakeem, farmer, shopkeepers and old age people of the area) through discussion method and interviews. Geological information were obtained from the office of Geological Survey of Pakistan, Peshawar. Population data were obtained from census report (1998), from Department of Geography, University of Peshawar.

RESULTS AND DISCUSSION

The current study is based on economic importance of weed flora of district Charsadda, Pakistan. The study revealed a total of 40 species belonging to 21 families. The leading families are Asteraceae, Fabaceae and Poaceae 5 species (12.5%) each followed by Ranunculaceae 3 species (7.5%). Amaranthaceae, Apiaceae, Brassicaceae, Plantaginaceae, Caryophyllaceae 2 species (5.4%) each while the remaining 14 families are monophylitic and comprised on single species (2.5%) each (Table 2).

Table 2: Summary of percentage of different families.

S.No.	Families	No. of species	Percentage%
1.	Asteraceae	5	12.5%
2.	Fabaceae	5	12.5%
3.	Poaceae	5	12.5%
4.	Ranunculaceae	3	7.5%
5.	Amaranthaceae	2	5%
6.	Apiaceae	2	5%
7.	Brassicaceae	2	5%
8.	Caryophyllaceae	2	5%
9.	Plantaginaceae	2	5%
10.	Boraginaceae	1	2.5%
11.	Cannabinaceae	1	2.5%
12.	Chenopodiaceae	1	2.5%
13.	Convululaceae	1	2.5%
14.	Cuscutaceae	1	2.5%
15.	Euphorbiaceae	1	2.5%
16.	Fumariaceae	1	2.5%
17.	Lamiaceae	1	2.5%
18.	Oxiliidaceae	1	2.5%
19.	Papaveraceae	1	2.5%
20.	Polygonaceae	1	2.5%
21.	Solanaceae	1	2.5%
Total		40	100%

Among them 25 species are annual herb, 9 species were perennial herb, 3 is annual grass, 1 is annual climbing herb, 1 is parasitic weed and one is rhizomitic grass (Table 3).

Botanical names followed by local name. Plants were systematically arranged into botanical name, local name, habit, crops field, habitat, part used, ethnobotanical uses, flowering periods and their localities are shown in Table 4.

Table 3: Summary of percentage habit class.

S.No.	Habit class	No. of species	Percentage %
1.	Annual herb	25	62.5%
2.	Perennial herb	9	22.5%
3.	Annual grass	3	7.5%
4.	Parasitic weed	1	2.5%
5.	Rhizomatic grass	1	2.5%
6.	Climbing herb	1	2.5%
	Total	40	100%

Table 4: Checklist of ethnobotanical profile of common weed flora growing in district Charsadda, KP, Pakistan.

S.No.	Family/ Botanical Name	Local Name	Habit	Crop field	Habitat	Part used	Ethnobotanical Uses	Flowering periods	Locality
1.	Amaranthaceae								
	<i>Achyranthus aspera</i> L.	Kotheri	Annual herb	Maize field	Cultivated and waste fields	Whole plant	Diuretic, toothache, cough, asthma, astringent, laxative and also used for removal of kidney stone.	June-August	Through out Charsadda
	<i>Amaranthus viridis</i> L.	Gankhar	Perennial herb	Wheat and Garlic field	Cultivated and waste fields	Leaves, stem and seeds	Vegetable and commonly used as fodder	April-June	Through out Charsadda
2.	Apiaceae								
	<i>Scandix pecten veneris</i> L.	Kali ziri	Annual herb	Wheat field	Cultivated fields	Whole plant	Grazed as fodder.	March-May	Shabqadar, Tangi, Umarzai
	<i>Torilis leptophylla</i> (L.) reichenb.f.	Zangali gajer	Annual herb	Wheat field	Cultivated fields	Whole plant	Commonly used as fodder	Feb-April	Shabqadar, Tangi, Umarzai
3.	Asteraceae								
	<i>Artimisia</i> sp.	Tarkha	Perennial herb	Wheat field	Cultivated fields	Whole plant	Diuretic, febrifuge, anodyne, and anti-inflammatory.	May-August	Shabqadar, Sherpao, Umarzai
	<i>Circium arvense</i> (L.) Scop.	Azghakey	Perennial herb	Wheat field	Disturbed places	Leaves	Fodder and boiled water are used for diarrhoea	May-August	Through out Charsadda
	<i>Parthenium hysterophorous</i> L.	Zangley tarkha	Annual herb	Wheat and Garlic field	Disturbed places	Whole plant	Fodder and fuel	April-October	Through out Charsadda

	<i>Sonchus oleraceus</i> L.	Shodapay	Annual herb	Wheat field	Cultivated and waste fields	Whole plant	Fodder, febrifuge, sedative, diuretic It also increase milk production in cattle	April-June	Through out Charsadda
	<i>Taraxacum officinale</i> Weber.	Zyar guli	Perennial herb	Wheat field	Waste places	Rhizome, roots and leaves	Fodder, constipation, laxative, diuretic, bitter tonic, vegetable. Rhizomes are used for coffee preparation.	April-June	Through out Charsadda
4.	Boraginaceae								
	<i>Buglossoides arvensis</i> (L.) Johnston.	Not known	Annual herb	Wheat and Garlic field	Cultivated fields	Leaves	Leaves are used as diuretic	March-April	Sherpao, Umarzai, Tangi
5.	Brassicaceae								
	<i>Brassica campestris</i> L.	Sharsham	Annual herb	Wheat field	Cultivated fields	Whole plant	Fodder, vegetable oil and salad	March-April	Through out Charsadda
	<i>Coronopus didymus</i> (L.) Sm.	Sakha botay	Annual herb	Wheat and Garlic field	Waste places	Leaves and shoots	Fodder and blood pressure	May-August	Through out Charsadda
6.	Cannabinaceae								
	<i>Cannabis sativa</i> L.	Bhang	Perennial herb	Wheat, Onion and Garlic field	Waste places	Leaves and flowering buds	Laxative, sedative, stimulant, diuretic, narcotics.	April-July	Through out Charsadda
7.	Caryophyllaceae								
	<i>Cerastium glomeratum</i> L.	Patewah	Annual herb	Wheat field	Waste places	Whole plant	Juices are obtained and are used to relieve headaches.	April-July	Shabqadar, Umarzai, Tangi
	<i>Silene conoidea</i> L.	Mangotai	Annual herb	Wheat field	Dried places	Whole plant	Laxative and purgative and commonly used as fodder	May-July	Sherpao, Umarzai, Tangi
8.	Chenopodiaceae								
	<i>Chenopodium album</i> L.	Zangali gankhar	Annual herb	Wheat and rice field	Waste places	Whole plant	Abdominal pain, anthelmintic, laxative, vegetable and fodder	March-May	Through out Charsadda
9.	Convululaceae								
	<i>Convululus arvensis</i> L.	Prewatai	Climbing herb	Wheat and Garlic field	Cultivated fields	Whole plant	cancer and stomach disorder	March-April	Through out Charsadda
10.	Cuscutaceae								
	<i>Cuscuta reflexa</i> Roxb.	Banafsha	Parasitic weed	Wheat field	Parasite on other plant	Shoots	Diuretic, anthelmintic, jaundice, vomiting and	April-June	Sherpao, Umarzai, Tangi

							diabetic.		
11.	Euphorbiaceae								
	<i>Euphorbia helioscopia</i> L.	Mandaroo	Annual herb	Wheat, Onion and Garlic field	Cultivated field	Root and shoot	Constipation, anthelmintic, cholera Latex are used for stoppage of menses in young female	April-July	Through out Charsadda
12.	Fabaceae								
	<i>Lathyrus aphaca</i> L.	Materr	Annual herb	Wheat field	Waste places	Whole plant	Mostly used as fodder Seeds are edible	March-April	Shabqadar, Sherpao
	<i>Medicago lupulina</i> L.	Peshtari sagh	Annual herb	Wheat field	Cultivated fields	Whole plant	Fodder, vegetable and for constipation	April-June	Through out Charsadda
	<i>Medicago polymorpha</i> L.	Peshtari sagh	Annual herb	Wheat field	Cultivated fields	Whole plant	Fodder, vegetable and leaves are used for bitter taste	March-April	Through out Charsadda
	<i>Trifolium repens</i> L.	Shautal	Perennial herb	Wheat and sugar cane field	Cultivated fields	Whole plant	Fodder and vegetable The flowers are used as honey bee attractants	May-June	Through out Charsadda
	<i>Vicia sativa</i> L.	Mater palli	Annual herb	Wheat field	Cultivated fields	Whole plant	Fodder, seeds are used for bitter taste	June-August	Shabqadar, Umarzai, Tangi, Sherpao
13.	Fumariaceae								
	<i>Fumaria indica</i> (Hauskn.) H.N Pugsley	Papa	Annual herb	Wheat field	Cultivated fields	Shoots	Blood purifier, antipyretic, whooping cough, sore throat Commonly used as fodder	April-June	Through out Charsadda
14.	Lamiaceae								
	<i>Lamium amplexicula</i> L.	Gulabi gulli	Annual herb	Wheat field	Cultivated fields	Whole plant	Laxative and stimulant	March-May	Shabqadar, Umarzai
15.	Oxilidaceae								
	<i>Oxalis corniculata</i> L.	Qarghi mewa	Perennial herb	Wheat and Garlic field	Moist and shady places	Leaves and roots	Fodder, anthelmintic, stomach pain Leaves are used for bitter taste	April-June	Through out Charsadda
16.	Papaveraceae								
	<i>Papaver dubium</i> L.	Qashqash	Annual herb	Wheat field	Cultivated fields	Seeds and capsule	Narcotics and purgative The capsule are used to make tea taken orally for cold and cough	Feb-April	Shabqadar, Tangi, Sherpao
17.	Plantaginaceae								
	<i>Plantago lanceolata</i> L.	Asphaghol	Perennial herb	Wheat field	Cultivated fields and waste places	Whole plant	Digestive, constipation, vomiting and diarrhea	March-May	Shabqadar
	<i>Plantago major</i> L.	Asphaghol	Perennial	Wheat	Cultivated	Leaves	Constipation	May-July	Shabqadar, Umarzai

		herb	field	fields and waste places	and seeds	and dysentery			
18.	Poaceae								
	<i>Avena sativa</i> L.	Jamdar	Annual herb	Wheat field	Cultivated fields	Leaves, stem and seeds	Commonly used as fodder. Antispasmodic, nerve tonic. Extract are used for soothe skin	March-June	Through out Charsadda
	<i>Cynodon dactylon</i> (L.) Pers.	Kabal	Rhizomitic grass	Wheat, Onion, Maize, Rice and Sugar cane fields	Every where	Whole plant	For blood purifier, jaundice and dysentery	April-Sep	Through out Charsadda
	<i>Phalaris minor</i> Retz.	Wakha	Annual grass	Wheat field	Cultivated and waste places	Whole plant	Commonly used as fodder	March-May	Through out Charsadda
	<i>Poa annua</i> L.	Wakha	Annual grass	Wheat field	Cultivated and waste places	Whole plant	Fodder and used for cleaning of utensils	April-October	Through out Charsadda
	<i>Rostraria cristata</i> (L.) Tzvelev.	Narri wakha	Annual grass	Wheat field	Cultivated and waste places	Whole plant	Grazed by animal as fodder	April-July	Through out Charsadda
19.	Polygonaceae								
	<i>Rumex hestatus</i> D. Don	Shalkhay	Annual herb	Wheat and sugar cane field	Cultivated fields and waste places	Leaves	Astringic, diuretic and stomachic. Leaves are used as cattle fodder	April-June	Through out Charsadda
20.	Ranunculaceae								
	<i>Adonis aestivalis</i> L.	Mekhaki	Annual herb	Wheat field	Moist places	Flowers	Diuretic, cardio tonic, laxative and stimulant	March-June	Umarzai, Sherpao, Tangi
	<i>Ranunculus arvensis</i> L.	Zyar gulay	Annual herb	Wheat field	Moist places	Whole plant	Grazed by animals as fodder	May-July	Umarzai, Tangi, Shabqadar
	<i>Ranunculus muricatus</i> L.	Zyar gulay	Annual herb	Wheat field	Moist places	Whole plant	Toxic and laxative. Mostly used as fodder	April-June	Umarzai, Sherpao, Tangi
21.	Solanaceae								
	<i>Solanum nigrum</i> L.	kachmachoo	Annual herb	Maize and sugar cane field	Waste places	Fruits, leaves and stem	Inflammation, dysentery and for low blood pressure	April-June	Through out Charsadda

Table 5: Summary of percentage of the plant parts used for traditional medicine and economic importance.

S.No.	Parts used	No. of species	Percentage%
1.	Whole plant	24	60%
2.	Leaves	3	7.5%
3.	Leaves, stem and seeds	2	5%
4.	Shoot	2	5%
5.	Flower	1	2.5%
6.	Rhizome, roots and leaves	1	2.5%
7.	Leaves and shoots	1	2.5%
8.	Leaves and flowering tops	1	2.5%
9.	Leaves and roots	1	2.5%
10.	Leaves and seeds	1	2.5%
11.	Leaves, fruits and stem	1	2.5%
12.	Roots and shoots	1	2.5%
13.	Seeds and capsule	1	2.5%
Total		40	100%

The percentage of the part used of economically important plant species are; whole plant (24 species, 60%), leaves, stem and seeds (2 species, 5%), leaves (3 species, 7.5%), shoots (2 species, 5%), rhizome, roots and leaves (1 specie, 2.5%), leaves and shoots (1 specie, 2.5%), leaves and flowering buds (1 specie, 2.5%), flowers (1 specie, 2.5%), roots and shoots (1 specie, 2.5%), leaves and roots (1 specie, 2.5%), seeds and capsule (1 specie, 2.5%), leaves and seed (1 specie, 2.5%), fruits, leaves and stem (1 specie, 2.5%) are shown in Table 5. These plants species were collected from different crops field viz wheat, Maize and sugar cane fields. Some economically weed species are growing on cultivated and waste fields some were growing on waste, disturbed, dried, moist and shady places and some are parasite on other plants. The plants which are used for the treatment of various ailments are toothache, cough, asthma, removal of kidney stone, anti-inflammatory, diarrhoea, increase milk production in cattle, constipation, relive headache, anthelminthic, anti-cancer, stomach disorder, vomiting, jaundice, diabetic, cholera, whooping

cough, blood purifier, sore throat, laxative, stimulant, diuretic, stomach pain, narcotics, purgative, digestive, nerve tonic, dysentery, antispasmodic, astringic, cardio tonic, stimulant, low blood pressure and inflammation and some are economically importance and used for different purposes i-e vegetable, vegetable oil, fuel, coffee, salad, edible, bitter tonic, insect attractants, cleaning of utensils and mostly are used as fodder. The local people of Charsadda have been totally depend on plant resources for their various ailments since time to time specially poor people. The inhabitants know about the preparation of the useful plants through long experience. Charsadda is very large and therefore local inhabitants of the area are totally depending on natural resources as compared to urban people. The present work showed that local inhabitants of the area are most familiar and rich in indigenous knowledge of plant resources also their ethno botanical and ethno medicinal uses to treat for various purposes. Several hakims (local healers) famous not only locally but also the people from other parts of the country visit them for treatment. Many of them do not charge anything for their service that guide the people and treat them without any payment⁶. Traditional uses of plant help ecologists, pharmacologists, taxonomists, watershed and wild life managers in their efforts for improving the wealth of area⁸. Many scientists carried out various ethno botanical researches as some of prominent are; Jan *et al.* elaborate the indigenous uses of 26 ethno botanically important weeds belonging to 16 families from common weeds of Dir, Kohistan Valley, Khyber Pakhtoonkhwa, Pakistan¹⁷. Razzaq *et al.* studied and documented total of 50 taxa, belonging to 32 families are used for various purposes to elaborate the ethno medicinal plant potential of Changa valley district Shangla, Pakistan¹⁸. Farooq *et al.* screened out 72 plant species from tehsil Birmal of South Waziristan Agency included 49 medicinal plants, 16 forage, 11 fuel wood, nine vegetables, six agriculture tools, six ornamentals, four nectariferous, three tonic, two each for fencing and spices and one each for timber, furniture, confectionary and desserts, narcotic, cosmetic and insect repellent¹⁸. Local community was using 58 plant species belonging to 52 genera and 34 families for different purposes from Banda Daud Shah, District Karak, Pakistan²⁰. According to Naz *et al.* 80 plant species belonging to 64 genera and 36 families used by local

inhabitants for the treatment of various ailments. Hadi and his co-worker explore the ethno botanical uses of weeds were also investigated²². For this purpose local 15 males and 10 females were interviewed about the indigenous use of these weeds. About 200 local inhabitants were found that utilizing 52 plants of 37 families for various ethno botanical purposes, such as timber, fodder and forage²³. Fazalullah *et al.* also conducted the same study as 40 weeds species were observed from the wheat crop belonging to 21 families and 38 genera for their medicinal values and ecological importance from lower Dir²⁴. According to Prabhu & Vijayakumar, 27 species of plants distributed in 27 genera belonging to 18 families were identified as commonly used ethno medicinal plants by ethnic people. Wani *et al.* estimated 27 threatened plants along with their ethno botanical uses from District Baramulla, Kashmir, Jammu and Kashmir, India²⁶. Jan *et al.* also investigated the same ethnobotanical study from Tehsil Tangi, District Charsadda²⁷. 38 families were reported in which 4 families were monocot and 34 families were dicot. Among them 50 species were medicinally treated for various diseases in which (6 spp) were used for Diarrhea, Dysentery and pain killer, (4 spp) used for Asthma and diabetes, (3 spp) were used as anti-septic and (2 spp) as a Laxative. This work is the first ever report on economic importance of the weed flora of district Charsadda, KP, Pakistan which might help for future intensive and extensive researcher.

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