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ETHNOBOTANIC STUDY OF THE WEEDS OF FIVE CROPS IN DISTRICT ABBOTTABAD, N-W PAKISTAN

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ABSTRACT

Out of the 36 weeds reported in this survey from District Abbottabad, 35 weeds have local and reported medicinal and some other uses. Only one plant (Poa annua) has no any indigenous or reported use. Most of these weeds are locally used for common diseases like cough, fever, diarrhoea, pain, worms and skin diseases. Some of these weeds are locally used as pot herbs and some are used as fuel, while a good number is a source of fodder for cattle.

Key words: Weeds, Ethnobotany, Medicinal use, Abbottabad

INTRODUCTION

Natural selection resulted in plants that were adapted to unstable or disturbed areas in a wide array of environments. As a consequence native plants evolved through several stages of succession, spread over thousands of years to fill the ecological niches. When man first started to deliberately grow plants for food, the concept of weeds as unwanted plants reducing crop yield through competition was born. Native or indigenous plants are responsible for the basic biological matrix of all communities and their growth form determines the community structure (Kerb, 1994). Weed infestation took on new vigour as technological advances prevailed including urbanization, extensive trade, migration, reclamation and settlement of new lands growing of new useful plants and development of livestock industry. Such weeds were either brought by different invaders inadvertently or through seed import. More over some ecological disturbances like disease, fire, and clearing of land etc made changes at micro and macro level, opened up niches for new alien and invasive weeds. Marwat (1984) has reported a total of 284 weeds from N.W.F.P.

Inspite of the negative impact on crops through competition and allelopathy, most of the weeds also have positive uses, ranges from food, fodder, medicinal, fuel and pest control. When trying to evaluate the costs and benefits of a strategy for weed management, we usually look at parameters such as crop yields, labor requirements, costs of purchasing herbicides and many more. There is one blind spot in nearly all such studies: the yield of weeds, the potential for positive use of weeds. A substantial portion of the food for people, animals and soil can come from weeds. *Solonum nigrum* is often a plant growing wild in and around fields and it is used as cooked vegetable, as a green fodder for cattle as well as a valuable medicine for intestinal, urinary, eye and skin diseases. It is also a rich source of vitamin C and is best for growing children (Chopra, 1958; Sathyavathi, 1994). A large number of weeds e.g. *Amaranthus viridis*, *Alternanthera pungens*, *Oxalis corniculata*, *O. acetosella*, *Portulaca oleracea* etc. are

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used as cooked green. Similarly more than 50% of total fodder for livestock comes from weeds on the farms (Paulavon, 2003). Nearly all the grass species and many dicotyledonous are grazed by cattle. Many weeds on the field border prevent erosion and can also be used as compost, mulch and green manure. Some of the weeds are nitrogen fixing and increase the soil fertility. There are many examples in weed-crop ecology where the complementary use of resources allows the combination of weed and crop to out-yield the crop alone by far (Aldrich, 1984).

The most important positive aspect of the weds is that nearly all of them are known to possess therapeutic properties and are used by the native people for cure of a variety of human and cattle diseases.

The present study, though mainly undertaken to make an inventory of the important weeds of the research area and their impact on different crops, has also provided an opportunity to explore the ethnomedicinal aspect of these weeds in light of the local knowledge and the published literature.

Ethnobotanical research helps in listing the traditional uses of plants of an area. It addresses the characterizing traditional knowledge to establish priorities with local communities to ensure that the local values are translated in to rational use of resources as well as effective conservation of biodiversity. The plants of an area are one of the important sources for the socioeconomic uplift of the people.

Many ethnobotanic studies in India, Nepal and Pakistan have been carried out, which include Gupta *et al.,* (1995), Singh *et al.,* (1997), Vedavathy & Mrudula (!997), Siwakoti & Siwakoti (!998), Khan (1999), Mustafa *et al.,* (2000), Ghimireet *et al.,* (1999), Hussain *et al.,* (1996), Aziz & Humayun (2003) and Gilani & Khan (2003).

Materials and Methods

Ethnobotanical approach, using indigenous knowledge of local communities was employed. A survey method was used to determine, in addition to various parameters of weeds, the ethnopharmacognostic aspect of these weeds. The questionnaire was presented in hilly areas, viz., Nathiagali, Goragali, Baragali, Mochi Dara, Pasala and Tandiani. None of the farmers in these areas responded to weeds issue, therefore, the questionnaire was presented in plains including agricultural lands. The response was explicit. Survey of weeds of five crops, wheat, maize, potato, onion/garlic and orchards was conducted using a sample of 200 farmers from 16 villages, 6 near Abbottabad, 3 around Haripur, 2 near Havelian, 3 on the way from Haripur to Khanpur dam and 2 near Ghazi/Tarbela during August 2001 to March 2002.

Results and Discussion

A total of 36 plants were recorded as problem weeds and out of that 16 were reported as invasive. The weeds along with the crops in which these occur are given in table 1. Almost all of these weeds possess alleged medicinal value. An account of the medicinal and other uses of these weeds, based on literature survey and information gathered from the local people is presented below.

Botanic name:	*Amaranthus hybridus* L.
Syn:	*Amaranthus chlorostachys* Willd.
Family:	Amaranthaceae
Ver. names:	Karund (Urd.), Mariro (Sind.), Chalwaiy (Push.), Trailing Amaranth (Eng.).
Locality:	Maize field and vegetables
Part Used:	Leaves.

Uses: Leaves used as vegetable. The leaves are emollient. Used as anti-dote for snake and scorpian bite (Shinwari *et al.*, 2003; Chopra, 1958).

Botanic name: *Ipomoea iriocarpa* R.Br.
Syn: *Convolvulus hispidus* Vahl.
Convolvulus hispida (Vahl.) Roem & Schult
Family: Convolvulaceae
Ver. names: Unknown
Locality: Maize field
Part Used: Whole plan
Uses: Fodder

Botanic name: *Commelina benghalensis* L.
Family: Commelinaceae
Ver. names: Kana keerai (Malaya's), Benghal day flower (Eng.)
Locality: Maize field
Part Used: Tender leaves
Uses: Tender leaves used as vegetable, Used in liver Complaints, useful in snake and scorpian bite by Irulas and Malayalis tribes (Internet).

Botanic name: *Xanthium strumarium* L.
Family: Asteraceae
Ver. names: Sungtu, Godal (Punj.), Baggiari (Push.), Gokhur kalan (Sind.) Ditch-bur (Eng.).
Locality: Maize field, dry rice field, waste land
Part U: Fruits
Uses: Cooling, efficacious in small pox, useful in urinary diseases (Memon *et al.*, 1988). Also useful as anti Inflammatory, antiallergic, and anti goiter due to 220-230 ug Iodin/g of fruit (WHO-Vietnam, 1990).

Botanic name: *Galium aparine* L.
Family: Rubiaceae
Ver. names: Indian blanket, grip grass, bed straw (Eng.)
Locality: Wheat field
Part Used: Whole plant except root
Uses: Diuretic, tonic, alterative, aparient, also used in skin diseases and general eruptions (Grieve, 1974).

Botanic name: *Tagetes minuta* L.
Family: Asteraceae
Ver. names Gul Sadburg, Ganda (Urd), English/French marigold (Eng.) Zangaley Hamasha (Push.)
Locality: Maize field, Waste- land.
Part Used: All parts
Uses: Whole plant is used for cough. Roots, seeds and flower heads are purgative, anthelmitic. Juice of flower contains iodine and used on cuts and wounds. It is insect and flea repellent (Memon *et al.*, 1988).

Botanic name: *Avena fatua* L.
Family: Poaceae
Ver. names: Jamdar (Push.), Javi (Urd.), Oats (Eng.)
Locality: Wheat field.
Part Used: Whole plant
Uses: Fodder for cattle

Botanic name: *Carthamus oxycantha* M.B.
Family: Asteraceae
Ver. names: Azghakay (Push.), wild sunflower, wooly distaff thistle (Eng.)
Locality: Wheat field, Orchards
Part Used: Flowers, seeds
Uses: Flowers laxative, diaphoretic, useful in fevers, measles, eruptive skin diseases, Seeds eaten by children (Grieve, 1974).

Botanic name: *Silybum marianum* Gaertn.
Family: Asteraceae
Ver. names: Mrrian thistle (Eng.),
Locality: Wheat field, Orchards
Part Used: Whole herb root, leaves, seeds and hull
Uses: Seeds are lactagogue, used in jaundice. Root is useful against all melancholy diseases (Grieve, 1974). Young plants used as green fodder.

Botanic name: *Achyranthus aspera* Linn.
Family: Amaranthaceae
Ver. Names: Puthkanda (Urd.), Gishkay, Spaoboty (Push.), Prickly caff-flower (Eng.)
Locality: Maize field, waste- land
Part Used: Whole herb, leaves, seeds and root
Uses: Whole plant and especially the roots is anti-inflammatory and uterine stimulant. Root extract is also used to expel stone from urinary tract, in post-partum haematometra and dysmenorrhoea. The seeds are emetic (WHO-Vietnam, 1990; Shinwari *et al.*, 2003).

Botanic name: *Echinochloa colonum* L.
Syn: *E. crus-galli* (L.)P.Beauv. Agrost., *nicum colonum* L. *Panicum crusgalli* L.
Family: Poaceae
Ver. names: Barnyard-grass
Locality: Maize field
Part used Leaves. Seeds
Uses: Fodder, birds eat its seeds. Grains cooked in W.Rajistan

Botanic name: *Tulipa stellata* Hk.f.
Syn: *Tulipa clusiana*
Family: Liliaceae

Ver. names: Ghantol (Push.), Tulip (Eng.)
Locality: Wheat field
Part used: Flowers
Uses: Ornamental

Botanic name: *Fumaria indica* (Hausskn) H.N. Pugsley in J.L.S.
Syn: *Fumaria officinalis* Linn., *Fumaria parviflora* W.& A.
Family: Fumariaceae
Ver. names: Papra (Push.), Shahtra (Urd.), Fumikory (Eng.)
Locality: Wheat field
Part used: Whole plant
Uses: Blood purifier, antipyretic, pot- herb, cattle food (Chopra, 1958).

Botanic name: *Cyperus rotundus* L.
Syn: *Cyperus difformis* L. Amoen.
Family: Cyperaceae
Ver. names: Nagar- mutha (Urd.), Nut or sedge grass (Eng.)
Locality: Maize, Vegetables
Part Used: Whole plant, root
Uses: Antidysenteric (Chopra, 1958), anthelmintic, emenagague, appetizer, treatment of thirst, fever, ulcers, sores, vomitting, eye infammation, itching (Memon *et al.*, 1988). Dry powdered root aromatic and used by women for perfuming their hairs (Grieve, 1974). Stem tubers edible, children like it.

Botanic name: *Trianthema portulacastrum* L.
Syn: *Trianthema obcordata* Roxb., *Trianthema monogyna* L.
Family: Aizoaceae
Ver. names: Narma (Urd.), Bishkapra (Pun.), carpet weed (Eng.)
Locality: Maize and vegetable fields
Part Used: Whole plant
Uses: Analgesic, purgative, stomachic, used for the treatment of anaemia, bronchitis, piles, imflammation, liver troubles, asthma, itch, chronic ulcer, night-blindness, diseases of blood and skin (Memon *et al.*, 1988).

Botanic name: *Poa annua* L.
Family: Poaceae
Ver. names: Blue grass, annual meadow grass (Eng.)
Locality: Wheat and vegetable fields
Part used: Shoot and leaves
Uses: Grazed by cattle

Botanic name: *Coronopus didymus* (L.) Sm.
Syn: *Lepidium didymium* L., *Senebiera didyma* (L.) Pers., *Senebiera pinnatifida* DC.
Family: Brassicaceae
Ver. names: Water-cress, lesser swine-cress (Eng.)

Locality: Wheat and vegetable fields
Part used: Not known
Uses: Insect repellent. Brings bad odour in cattle's milk

Botanic name: *Chenopodium murale* L.
Family: Chenopodiaceae
Ver. names: Bathu (Urd.,Pun.), Sarmay, Binakai (Push.), Goose foot (Eng.)
Locality: Wheat and vegetable fields, waste land
Part used: Leaves, seeds
Uses: Seeds are used in villages for washing hair and Clothes, diuretic, aphrodisiac, Anthelmintic, used for abdominal pain, treatment of piles, sore eye, used as pot herb and fodder (Memon *et al.*,1988).

Botanic name: *Ranunculus muricatus* L.
Family: Ranunculaceae
Ver. names: Chambel (Urd.), Jaghagha (Push.), Buttercup (Eng.)
Locality: Wheat field
Part used: Whole plant
Uses: Slightly poisonous. A decoction of the plant is used forasthma, periodic fever and as a purgative for goats (Shinwari *et al.*, 2003).

Botanic name: *Euphorbia helioscopia* L.
Family: Euphorbiaceae
Ver. names: Mandaroo (Push.), Ganda boti (Pun.), Sun spurge, Cat's milk (Eng.)
Locality: Wheat and vegetable fields
Part used: Shoot, leaf, root, latex
Uses: Cathartic, anthelmintic. Latex applied to eruptions. Latex poisonous, causing swelling, ulceration, irritation. Used as fish poison. Considered useful in chronic and prolonged fevers (Chopra, 1958; Shinwari *et al.*, 2003).

Botanic name: *Sorghum halepense* (L.) Pers.
Syn: *Holcus halepensis* L.
Family: Poaceae
Ver. names: Jangli jawar (Urd.), Gua (Sin.), Johonsongrass (Eng.)
Locality: Maize field, orchards
Part used: Grain
Uses: Feeding cattle, horse and poultry. Diuretic and demulcent if taken as a decoction. Leaves poisonous to cattle due to presence of hydrocyanic acid (Grieve, 1974).

Botanic name: *Cannabis sativa* Linn.
Syn: *Cannabis indica* Lamk.
Family: Cannabaceae

Ver. names: Bhang (Urd., Push.), Indian hemp, Marihuana, Pot (Eng.)
Locality: Wasteland, roadside
Part used: Flowering tops of pistillate plants (Charas), seeds.
Uses: Sedative, hypnotic, narcotic, alleviates the feeling of fatigue. Mostly used for euphoric purposes, encourages sleep & sooths restlessness. Extract of fresh leaves, mixed with milk and almond kernels is called "Tandai", which is a cold drink, producing pleasure and excitement. The seeds are used as feed for hen, pigeon and birds (Chopra, 1958; Shinwari *et al.*, 2003).

Botanic name: *Datura alba* Nees.
Syn: *Datura fastuosa* L.
Family: Solanaceae
Ver. names: Dhatura, Mangaz (Push.), Dhtura (Urd.), Thorn apple (Eng.)
Locality: Waste land
Part used Leaves, seeds, root
Uses: Poisonous, but also a very useful medicinal plant. Leaves are smoked to relive asthma, applied externally on swollen limbs. Extract of leaf is helpful in toothache, headache, epilepsy, parkensonism, haemorrhoids, boils and sores. Juice of flower if used for ear-ache. The fruit juice is applied for curing dandruff and falling hairs (Chopra, 1958; Shinwari *et al.*, 2003).

Botanic name: *Convolvulus arvensis* L.
Family: Convolvulaceae
Ver. names: Hiran Khari (Urd.), Prawatai (Push.), Field bind weed (Eng.)
Locality: Maize, Wheat fields and Orchards
Part used: Vegetative parts
Uses: Used as poultice for painful joints, skin disorders. Used as fodder (Chopra, 1958; Shinwari *et al.*, 2003).

Botanic name: *Alternanthera pungens* Kunth in H.B.K.
Family: Amaranthaceae
Ver. names: Unknown
Locality: Vegetables
Part Used: Leaves, Fruits
Uses: Cooked as vegetable, decoction of the fruits relieves itching.

Botanic name: *Malvastrum coromendelianum* (L.) Garcke
Syn: *Malva coromendelianum* L., *Malvastrum tricuspidatum* (Ait.) A. Gray.
Family: Malvaceae
Ver. names: Not known
Locality: Waste land

Part used: Leaves and flowers
Uses: Diaphoretic, emollient, cooling. Leaves also used in inflamed sores. Flowers used in cough, chest and lung diseases. Decoction of the leaf is given in dysentery. Smelling of the root helps preventing vomiting.

Botanic name: *Broussonetia papyrifera* Vent. Tabl.
Family: Moraceae
Ver. names: Shand toot, Gul toot (Push.)
Locality: Waste land, road side
Part Used: Wood
Uses: Wood used for fuel. A notorious allergen.

Botanic name. *Robinia pseudo-acacia* L.
Family: Papilionaceae
Ver. names: Locust tree, False acacia (Eng.), Kikar (Push.)
Locality: Roadside
Part Used: Wood, flowers and leaves
Uses: Wood used for fuel also for fencing, leaves fodder for goats. A honeybee visiting species. (Shinwari *et al.*, 2003).

Botanic name. *Ailanthus altissima* (Mill.) Swingle.
Syn: *Toxicodendron altissimum* Miller.
Family: Simarubaceae
Ver. names: Angrazai bektanra (Push.), Tree of heaven (Eng.)
Locality: Road side
Part Used: Wood, bark and leaves
Uses: Leaves fodder for cattle, Wood used for construction and low quality furniture, also for making honey bee boxes and water mill pulley and for fuel. Bark is anthalmintic. Bark juice mixed with milk is used for dysentery and diarrhea (Shinwari *et al.*, 2003).

Botanic name: *Sisymbrium irio* L.
Family: Brassicaceae
Ver. names: Jangli sarsoon (Sin.), Khub Kalan ,Khakshir (Urd., Per.), Maktrusa, Naktrusa (Pun.), London rocket (Eng.).
Locality: Waste land
Part Used: Leaves, Seeds
Uses: Leaf infusion given in throat and chest affections. Seeds expectorant, stimulant, used in asthma, febrifuge. Externally the seeds are used as a stimulating poultice (Zaman & Khan, 1970).

Botanic name: *Pistia stratiotes* L.
Family: Araceae
Ver. names: Jal kumbi (Pun.), Water cabbage (Eng.)
Locality: Rice field
Part Used: Whole plant
Uses: Anti-septic, anti-dysenteric, anti-tubercular (Chopra, 1958).

Botanic name: *Phragmites australis* L.
Family: Poaceae
Ver. names: Nul (Urd.), Common Ditch Reed (Eng.)
Locality: Rice field
Part Used: Culm, Twigs, Whole plant.
Uses: Young twigs used as fodder, culm is used as pipes for tobacco smoking (Chelum), also for writing. Whole plant prevent erosion (Recently planted along side Abbottabad-Nathiagali road to prevent erosion and sliding).

Botanic name: *Imperata cylindrica* (L.) P.Beauv.
Family: Poaceae
Ver. names: Wakha (Push.), Binding grass (Eng.)
Locality: Orchards
Part Used: Shoot, dry rhizome
Uses: Shoot used as a fodder and forage. Dry rhizome used as diuretic, febrifuge and antipyretic (Shinwari *et al.*,2003).

Botanic name *Cynodon dactylon* (L.) Pers.
Syn. *Panicum dactylon* L., *Digitaria dactylon* (L.) Scop.
Family: Poaceae
Ver names. Kabal (Push.), Dhab (Urd.), Bermuda grass (Eng.)
Locality. Ubiquitous weed
Part Used: Whole plant, root
Uses: Fresh fodder, for planting in lawns. Juice of the fresh plant is applied on cuts and fresh wounds, also used in hysteria, epilepsy, insanity. Useful in cystitis. Used along with rose for jaundice. Infusion of root is used for stopping bleeding from piles, also used as diuretic (Grieve, 1974; Shinwari *et al.*, 2003).

Botanic name: *Parthenium hysterophorus* L.
Syn: *Agyrochaeta bipinnatifida* Cav.*Vallanova bipinnatifida*
Ort.
Family: Asteraceae
Ver. names: White top, Carrot grass, Congress grass (Eng.)
Locality: Road sides
Part Used: Whole plant
Uses: Whole plant is stimulating, anti-hysteric, flea repellent. Root decoction is used in dysentery, anti-amoebic. Pharmacologically active against neuralgia and certain types of rheumatism (Singh et al. 1996). It may causes allergy and disorders in cattle (Khalid, 2000).

Table-1. Weed list based on Farmers response of 5 major crops of the area and their association with crops

Sr.No	Name of Weed	Family	Name of Crop/Locality
1	*Amaranthus hybridus*	Amaranthaceae	Maize/Vegetable
2	*Ipomoea eriocarpa*	Convolvulaceae	Maize
3	*Commelina benghalensis*	Commelinaceae	Maize
4	*Xanthium strumarium*	Asteraceae	Maize/Waste land
5	*Galium aparine*	Rubiaceae	Wheat
6	*Tagetes minuta*	Asteraceae	Maize/Waste land
7	*Avena fatuta/sterillis*	Poaceae	Wheat
8	*Carthamus oxycantha*	Asteraceae	Wheat/Orchards
9	*Tulipa stellata*	Liliaceae	Wheat
10	*Silybum marianum*	Asteraceae	Wheat/Orchards
11	*Achyranthus aspera*	Amaranthaceae	Maize
12	*Echinochloa colonum/cruss-galli*	Poaceae	Maize
13	*Fumaria indica*	Fumaraceae	Wheat/Vegetable
14	*Cyperus rotundus/iria/difformis*	Cyperaceae	Maize/Vegetable
15	*Trianthema portulacastrum*	Aizoaceae	Maize/Vegetable
16	*Poa annua*	Poaceae	Wheat/Vegetable
17	*Coronopus didymus*	Brassicaceae	Wheat/Vegetable
18	*Chenopodium murale/album*	Chenopodiaceae	Wheat/Vegetable
19	*Ranunculus laetus/muricatus*	Ranunculaceae	Wheat
20	*Euphorbia helioscopia*	Euphorbiaceae	Wheat/Vegetable
21	*Sorghum halepense*	Poaceae	Maize/Orchards
22	*Cannabis sativa*	Cannabaceae	Waste land
23	*Datura alba*	Solanaceae	Waste land
24	*Convolvulus arvensis*	Convovulaceae	Maize/Wheat/Orchards
25	*Alternanthera pungens*	Amaranthaceae	Vegetable
26	*Malvastrum coromendalianum*	Malvaceae	Waste land
27	*Emex spinosus*	Polygonaceae	Wheat
28	*Broussonetia papyrifera*	Moraceae	Waste land/Road side
29	*Robinia pseudoacacia*	Papilionaceae	Road side
30	*Ailanthus altissima*	Simarubaceae	Road side
31	*Sisymbrium irio*	Brassicaeae	Waste land
32	*Pistia stratiotes*	Araceae	Rice
33	*Phragmites australis*	Poaceae	Wheat
34	*Impreta cylindrica*	Poaceae	Orchards
35	*Cynodon dactylon*	Poaceae	Ubiquitous weed
36	*Parthenium hysterophorus*	Asteraceae	Road side

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