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SUMMER WEEDS FLORA OF DISTRICT DERA ISAMAIL KHAN KHYBER PAKHTUNKHWA PAKISTAN

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ABSTRACT

Weed identification is one of the important factors in weed management process for high crop production. The presence of weeds in a specific region and their identification can aid in selection of more efficient method for their control. Due to infestation of many species of weeds in various crops in district Dera Ismail Khan, the present survey was conducted to identify the summer weeds flora of the surveyed area during the mid-summer of 2013. This survey has covered eleven locations randomly selected within the district (i.e. Bank of River Indus, Gomal University's fields and Lawns, Government Fruit Nursery Farm Agriculture Extension Department, Draban Road's fields, Bannu road's fields, Daman, Mandra Saidan, Mandra Kalan, Rang Pur, Kachi Paind Khan and Himat). From the present study, 26 weeds were identified belonging to 15 different families and two different classes i.e. Mangoliopsida and Liliopsida. Majority of the weeds were from family Poaceae (6) and family Amaranthaceae (4). Among them 13 families belong to dicotyledon while two belongs to monocot. Our survey suggests that proper control method should be launched based on the habitat and life cycle of the identified weeds (i.e. annual, biennial or perennial for effective control of these weeds).

Key words: Dera Ismail Khan, summer, weed flora.

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INTRODUCTION

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District Dera Ismail Khan is the southernmost part of Khyber Pakhtunkhawa (31°.15' and 32°.32' N and 70°.1' and 71°.20' E) with an elevation of 571ft from the sea level. The area is very convenient for production of vegetables, fruits and diversified crops (Ullah *et al.,* 2014). The area is mostly plain dry commonly called "Daman". Dera Ismail Khan has a hot desert climate with hot summers and mild winters. Precipitation mainly falls in two distinct periods: in the late winter and early spring from February to April and in the monsoon in June and July. Out of the total land area of the district (732,481 hectares), 731922 hectares area is cultivable. Of this total cultivable area, 147710, 329260 and 254952 hectares are irrigated, rain fed and Rodh Kohi land, respectively (IDV, Spat irrigation Report, 2003).

Weeds invasions are a serious issue in Dera Ismail Khan which is one of the important reasons that negatively affects the fruits, vegetables, and crops productivity. Weeds are the plants having more negative impacts than their smaller positive values. Weeds that cause production losses can be categorized as annuals, biennials and perennials and are further divided into Rabi (winter) and Kharif (summer) weeds (Khan *et al*., 2004).

Weeds have the capability to grow more rapidly and spread quickly over wider range of areas. They reproduce in high numbers, thus effectively cover native plant population. Certain plant families like Asteraceae, Poaceae, Amaranthaceae and Fabaceae constitutes the major weed flora throughout the world (Dangwal *et al.,* 2010). While, *Avena fatua*, *Phalaris minor* and *Convolvulus arvensis* have been declared as the major weeds in Pakistan (Khan and Marwat, 2006). However the weeds flora largely depends upon the local climatic condition of the area.

Weed interference is one of the important constraints, contributing towards low yields in crops. Weed flora and its composition in a crop is influenced by the type of cultivation, spacing, time of cultivation, soil characteristics, climatic conditions, cultivation practices, application of fertilizers and weed management. Weeds dramatically compete with crops for nutrients, water and space, thus reduces the yield ranging from 12 to 51 % (Rao and Singh, 1997; Mukharjee and Singh, 2005; Halder and Patra, 2007). Weeds work as energy drains in the whole ecosystem like crops, forests, range management, aquaculture and horticulture (Shah and Khan, 2006). Weeds deprive the crop plants nutrients, moisture, light, CO_2 and space. Many of the weeds acquire allelopathic properties against crops resulting in their germination deterioration and ultimately low yields (Marwat *et al*., 2006; Pervaiz and Quazi, 1992).

Global positioning system (GPS) and Geographic information system (GIS) both can help in surveying of various infested areas with weeds. Moreover, this equipment is useful in making the maps of weed distribution and population. Mapping of weeds distribution using GPS are used in some crops by many researchers (Rew *et al*., 1996; Stanford *et al*., 1996). This type of weed distribution mapping helps in the selection of terrific control measures for distinctive fields (Krueger *et al*., 1998; Williams and Mortensen, 2000). Various other weed management options have been employed in past that address weed management without threshold level of individual weed species.

Weed identification is pre-requisite, which administers in making efficient control measures decisions. This approach permits us to decide the time and method of weed management to make the farming profitable. The fields of Dera Ismail Khan are highly infested with weeds of different species and proper identification is needed, which would make management easier. Keeping in view the importance of weeds identification, the present survey study was conducted with the objectives to identify, enlist and categorize the weeds in Dera Ismail Khan. Moreover, the study will serve as source of good information for future studies on weeds identification and control measures.

MATERIALS AND METHODS

To explore the summer weeds flora in District Dera Ismail Khan, the present study was conducted during the month of August 2013. During the study, on basis of major crops grown eleven different locations were randomly selected for collecting samples; Bank of River Indus, Gomal University's fields and Lawns, Government Fruit Nursery Farm Agriculture Extension Department, Draban Road's fields, Bannu road's fields, Daman, Mandra Saidan, Mandra Kalan, Rang Pur, Kachi Paind Khan and Himat. Survey was conducted and various weeds species were collected from different fields sown with different crops i.e. maize, sugarcane, rice and mung-bean. A total of 26 weeds specimens were collected from all the sample locations fields and water streams belonging to different genera and species. The specimens were preserved according to the standard protocols of Smith (1971) i.e. Specimens were pressed in a plant presser, which was consisted of a wooden frame (for rigidity), corrugated hardboard ventilators (to allow air to flow through the press), blotter paper (to absorb moisture), and folded newspaper (to contain the plant material). The preserved specimens were sent to the Department of Weed Science, The University of Agriculture, Peshawar for identification. After the identification of weeds, the habitats, classification and their morphology were studied from published

sources; weeds specimens were compared with photographs of the published sources and illustrations.

RESULTS AND DISCUSSION

As a result of the present study, 26 weeds were identified which were from 15 different families belonging to two different classes i.e. Magnoliopsida and Liliopsida (Table-1). Majority of the weeds were from class Mangoliopsida (19), while seven were from Liliopsida. Among them, most weeds identified from the locations were from family Poaceae (6) and Amaranthaceae (4) as shown in Table 1 and are further described as follows.

Achyranthes aspera

Achyranthes aspera belongs to family Amaranthaceae which is distributed throughout the tropical world. It is commonly known as devil's horsewhip and grows as wasteland herb everywhere. *Achyranthes aspera* is erect branched annual herb up to 15 cm in height. Its stem is angular, ribbed, thickened above the node, more or less densely hairy while flower is deflexed, congested near the apex of the axis, perfect, bracts and bracteoles sub-equal. The leaves are ovate-elliptic, acute, silky oboxillary, while it's fruiting and flowering stage tends to be from August-December (Anderson, 1983).

Amaranthus retroflexus

Amaranthus retroflexus belongs to family Amaranthaceae, which represents mostly annual or perennial herbs or sub-shrubs while some are shrubs. It is commonly known as Redroot pigweed belonging to class Mangoliopsida. This weed is of erect type, summer and annual weed that may attain height of 6.5 feet. Its leaf margins are wavy and on the lower side of leaf hairs are present. Stems also have hairs but these are short and mostly occur on the upper part of the plant. Root system is shallow taproot and mostly of reddish color. It also has single seeded utricle having 2 mm length and is wrinkled when dry. It has small, green, flowers which are produced in dense, compact, panicles, approximately 3/4 inch wide and 2 to 8 inches longer. *Amaranthus retroflexus* is an abundant seed producer and found in horticultural nursery, agronomic crops, landscapes, roadsides and in pastures and forages (Tanveer, 2003).

Amaranthus viridis

Amaranthus viridis is a cosmopolitan species in the botanical family Amaranthaceae and is commonly known as Slender Amaranth or Green Amaranth. It is also eaten as food in south India and Also in Africa. *Amarantus viridis* is found in summer season and is annual herb. Its height is approximately 1 m. Stems of *A. viridis* may have few ridges but are mostly rounded, and glabrous. Leaves have deep veins and have mid to light green color and up to 15cm long. Mostly

the inflorescence is in dense spike shape with many branches. Its flowers are small and green which mostly radiate around the stem. Fruit capsules are wrinkled, indehiscent, small and brown. The fruit contains smooth and glossy seeds (Tanveer, 2003).

Cenchrus longispinus

Cenchrus longispinus aslo known as Spiny Burr Grass or Gentle Annie is specie of grass belongs to family poaceae and class liliopsida which are monocotyledons. This weed has annual life cycle, grows in summer and has branching culms of 2½' long; from the base, it produces several culms which sprawl round the ground. The culms are mostly covered with the sheaths of leaves and of light green color. It is hairless and terete whereas its nodes are green or reddish green glabrous. It is mostly found along roadsides, lawns, and waste ground. It blooms from mid-summer to early fall. It is cross pollinated which occur mostly through wind. After pollination, the burs turn brown. The root system is fibrous (Weeds control manual, 1988).

Convolvulus arvensis

Convolvulus arvensis belong to family Convolvulaceae and is a species of bindweed. It is perennial in nature and has climbing or creeping habit and mostly grows up to 0.5–2 m high. Its leaves are arranged spirally with 1-3 cm petiole and are 2-5 cm long in arrowhead-shape. The flowers have five slightly darker and of pink color radial stripes. It is trumpet-shaped with 1.0-2.5 cm diameter, white or pale pink color. Flowers develop in funnel shape in the mid-summer and are mostly of white to pale pink color. Fruit are light brown, rounded and 1/8 in. (0.3 cm) wide. Each fruit contains 2 seeds which remain viable in the soil for decades (Tanveer, 2008).

***Conyza canadensis* (L.)**

Canadian horseweed is the common name of *Conyza canadensis* (L.) is an annual weed from family Asteraceae. Its height ranges up to 1.5 m tall having hairy stems. It has slenderical leaves which are 2–10 cm long and up to 1 cm broad with margins which are coarsly toothed. It has dense Inflorescence which is 1 cm in diameter, with a ring of white or pale purple ray florets and a centre of yellow disc florets. It can be found in fields, meadows, and gardens throughout its native range (Fred and Robbins, 1952).

***Corchorus trilocularis* L.**

Corchorus trilocularis L. commonly called as wild jute belongs to family Tiliaceae and class Mangoliopsida. It is deciduous, branched annual herb up to 1 m tall in height usually erect. Young branches of *C. trilocularis* L. look purplish in colour and sparsely hairy. Its flowers occur in 1-3 flowered leaf-opposed clusters while sepals are narrowly lanceolate, as long as the petals. *Corchorus trilocularis* produces

solitary yellow cup-shaped flowers from July to November (Anderson, 1983).

Cucumis melo

Cucumis melo commonly called as wild melon belongs to family Cucurbitaceae and class Mangoliopsida. It is an annual trailing herb with large palmately-lobed leaves and bears tendrils. Its flowers have bell-shaped corollas deeply five-lobed which may be either male or female both grows on the same plant. The male flowers have three stamens while the ovary in the female flowers has three cells (Tanveer, 2003).

Cynodon dactylon

Cynodon dactylon commonly called as Bermuda grass belongs to family Poaceae and class Liliopsida. *C. dactylon* have short grey-green blades which are 2–15 cm long having rough edges. Its stem can grow 1–30 cm tall and is erect type which is slightly flattened and tinged purple colour. At the top of the stem, seed heads are arranged in a cluster of 2-6 spikes. The root system is deep and root can grow over 2 m deep in drought situations with penetrable soil. Normally the root mass is in the 60 cm below the surface. Normally it creeps besides the soil surface and develops roots wherever a node touches the ground (Tanveer, 2003).

***Cyperus rotundus* L.**

C. rotundus L. commonly called as Cocograss, Java grass, nut grass, purple nut sedge belongs to family Cyperaceae and class Liliopsida. It is a perennial monocot which may be up to a height of 140 cm. From the base of plant, leaves sprout in ranks of 3 around 5–20 cm long. It has bisexual flower and has 3 stamina and 3 stigma carpel. Its fruit is in a three-angled achene. It likes dry conditions but can also survive in moist soils, mostly grows in wastelands and crop fields (Weeds control Manual and herbicide guide, 1988).

Datura metel

Datura metel is a shrub-like perennial Herb commonly known as Thorn apple belongs to family Solanaceae and class Mangoliopsida. Datura metel grows in the wild in all the warmer parts of the world, and is Cultivated worldwide for its chemical and ornamental properties. It is slightly furry, with dark violet shoots and oval to broad oval leaves that are often dark violet as well. *Datura metel* grows up to height of 3 ft while colour of flowers range from white to cream (Fred and Robbins, 1952).

Desmostachya bipinnata

Desmostachya bipinnata commonly known as Halfa grass, Big cordgrass, Salt reed-grass belongs to family Poaceae and class Liliopsida. It is perennial weed and sometimes used as fodder for

livestock. It usually grows in hot and dry situation and goes up to the height of 2 meter. Leaf blades of *D. bipinata* ranges up to 65cm long and 3.8-10.5 mm wide when unrolled. The lower leaf-sheaths of it are leathery type while its inflorescence ranges up to 60 cm long with either spaced or clustered spikelets (Tanveer, 2008).

***Echinochloa colona* L.**

Echinochloa colona L. commonly known as jungle rice belongs to family Poaceae and class Liliopsida. It is a wild grass originated from tropical Asia and classified as a species of *Panicum*. It is the wild ancestor of the cultivated cereal crop Echinochloa frumentacea. It is an annual weed grows up to the height of 30-100 cm high. It is green to purple in colour, tufted and shortly stoloniferous. Culms of *Echinochloa colona* L. are glabrous, cylindrical, erect and decumbent. The leaves are flat, 10 to 25 cm long, 3-7 mm wide, sometimes tinged with red at their base while its inflorescence composed of racemes. It is considered as noxious weed in several crops but mostly found in rice crop (Anderson, 1983).

Echinochloa crus-galli

Echinochloa crus-galli commonly called as Barnyardgrass belongs to family Poaceae and class Liliopsida. It is a summer annual with thick stems that may reach 5 feet in height. Leaves are without hairs (glabrous), auricles, and ligules, and the leaf sheaths are often tinted red or maroon at the base. At the base of leaf few short hairs are present. Stem of *Echinochloa crus-galli* is erect, thick, glabrous, and may be tinted red to maroon at the base. Its inflorosence is panicle and ranging from 4 to 16 inches in length (Tanveer, 2003).

Haloxylon ammodendron

Haloxylon ammodendron commonly known as saxaul belongs to family Amaranthaceae and class Mangoliopsida. The *Haloxylon ammodendron* varies from a large size shrub to a small size tree i.e. 2-8m (rarely 12m). Its trunk is brown and up to 25 cm diameter. It has heavy wood which is coarse and has spongy bark. The inflorescences is in the form of short lateral shoots mostly borne on stems. It has a winged fruit which is of 8 mm diameter whereas the seed diameter is 1-5 mm. It fruitsin October to November (Anderson, 1983).

***Malvastrum coromandelianum* (L.)**

Malvastrum coromandelianum (L.) Commonly called as Threelobe false mallow belongs to family Malvaceae and class Mangoliopsida. It is Annual or short-lived perennial suffrutex less than 1 m in height with most parts covered in rough stellate hairs. Leaves of *Malvastrum coromandelianum* (L.) are lanceolate and margins coarsely serrate. Flowers solitary in the upper leaf axils and cream or pale yellow in colour. Epicalyx segments linear, 5 × 1 mm. This

species is similar to Sida spp. but is distinguished by the presence of epicalyx bracts (Weeds control Manual and herbicide guide, 1988).

Oxalis corniculata

Oxalis corniculata commonly known as creeping wood-sorrel belongs to family oxalidaceae and class mangoliopsida. It is also known as Sleeping Beauty. It belongs to family oxalidaceae and has delicate-appearing, low-growing, herbaceous plant. The stem is narrow, creeping type which roots at the nodes. The leaves aretrifoliate which are further subdivided into three rounded leaflets and are of clover shape. Its fruit is 1-2 cm long narrow cylindrical capsule and consists of its explosive discharge of the contained, 1 mm long seeds (Anderson, 1983).

Parthenium hysterophorus

Parthenium hysterophorus commonly known as Santa Maria Feverfew, Whitetop Weed, carrot-grass belongs to family Asteraceae and class Mangoliopsida. *Parthenium hysterophorus* is a weed of semi-arid, subtropical, tropical and warmer temperate regions. *Parthenium hysterophorus* is a short-lived (annual), much-branched, upright (erect) harbeceaous plant that forms a basal rosette of leaves during the early stage of growth. It usually grows 0.5-1.5 m tall but can occasionally reach up to 2 m or more in height. Leaves on the upper branches decrease in size and are also less divided than the lower leaves. Numerous small flower-heads (capitula) are arranged in clusters at the tips of the branches (in terminal panicles). Each flower-head (capitulum) in borne on a stalk (pedicel) 1-8 mm long. Flowering can occur at any time of the year, but is most common during the rainy seasons (Weeds in Kansas. 1941).

Portulaca oleracea

Portulaca oleracea commonly known as Verdolaga, Pigweed, Little Hogweed, Pursley belongs to family Portulacaceae and class Mangoliopsida is an annual succulent. It grows up to the size of 40 cm in height. It has smooth, reddish, mostly prostrate stems and alternate leaves clustered at stem joints and ends. The yellow flowers have five regular parts and are up to 6 mm wide. Depending upon rainfall, the flowers appear at any time during the year. The flowers open singly at the center of the leaf cluster for only a few hours on sunny mornings. Seeds are formed in a tiny pod, which opens when the seeds are mature (Tanveer, 2008).

***Ruellia strepens* L**

Ruellia strepens L commonly known as smooth ruellia, limestone wild petunia belongs to family Acanthaceae and class Mangoliopsida. It is perennial herb which grows up to the size of 30 cm - 1 m tall. Stem of *R. strepens* L consist of few branches in ascending sequence and sides of the stem covered by small strips of apprised

hairs. Its leaves occurs on opposite distinct stalks (at least 0.5 cm long) sparsely covered with short apprised hairs, up to 15 cm long and an abruptly narrowed base. Flowers blue-lavender, slightly bilaterally symmetric and situated either at the end of leafy axillary branches, or at the middle of the stem in clusters of one to three. Flowering mostly occurs in June to August (Tanveer, 2008).

***Solanum nigrum* L.**

Solanum nigrum L. commonly known as Black-berry Nightshade, Petty Morel, Wonder Berry belongs to family Solanaceae and class Mangoliopsida. It is herb or short-lived perennial shrub weed, sometimes purple-green, hairy with glandular and simple, non-glandular hairs. Leaves ovate, mostly 4–7 cm long and 2–5 cm wide, margins entire or shallowly lobed. Its Inflorescences consists of 4–12-flowered while its peduncle ranges from 10–20 mm long in size. Flowering mainly occurs in spring (Tanveer, 2008).

***Sorghum halepense* (L.)**

Sorghum halepense (L.) commonly known as Jhonson grass, Aleppo grass, Aleppo milletgrass belongs to family Poaceae and class Liliopsida. It is perennial weed and may be up to 6 1/2 feet high. Leaves may be toothed at the top, rolled in the shoot whereas ligule is membranous. Its Stem is usually rounded to flattened; mostly without hairs but hairs may be present along the margins rarely. Sheaths may be green to maroon. Its Flowers occur in inflorescence of panicle.

***Tribulus terrestris* L.**

Tribulus terrestris L. commonly known as Puncturevine belongs to family Zygophyllaceae and class Mangoliopsida. Leaves are opposite, each consisting of 4-8 pairs of spear shaped leaflets. There are long hairs on the leaf margins and lower surface. Stems are round and hairy. Flowers are yellow in colour. *Tribulus terrestris* L. grows up to the height of 2m height. Its seeds are enclosed in a woody star-shaped structure 5-7 mm long and 5-6 mm wide (Fred and Robbins 1952).

Veronica anagallis-aquatica

Veronica anagallis-aquatica commonly known as Water Speedwell, Sessile Water-speedwell belongs to family Scrophulariaceae and class Mangoliopsida. It occurs in many types of moist and wet habitat, and it is semi-arid, often growing in shallow water along stream banks, in ponds, and in other wetland environments. It is a rhizomatous perennial herb with stems growing 10 centimeters to about a meter in maximum length. It may be decumbent, the stem spreading along the ground and rooting where it touches moist substrate, or erect in form. The inflorescence is a raceme of many flowers arising from the leaf axils (Tanveer, 2008).

***Xanthium strumarium* L.**

Xanthium strumarium L. commonly known as Rough cocklebur belongs to family Asteraceae and class Mangoliopsida. It is a species of annual plants and monoecious. *Xanthium strumarium* invades farmland, old lands, roadsides, wastelands, riverbanks and overgrazed pasturelands and size ranges 1.2 m in hight. It has stout stems, green, brownish or reddish-brown in colour, often red-spotted that are rough and hairy. The leaves are alternate, dull green on the upper surface and paler below, with short bristly hairs on both surfaces. *X. strumarium* flowers are yellowish green, located in special, almost spherical apical capitula, inconspicuous, in the leaf axil. The fruit is called a bur, its ovoid (oval shaped) and it measures about 1.3-3.5 mm long, green, turning yellow and then brown in stalked axillary clusters. Each bur has two stout, curved or straight horns and is covered with hooked spines (Anderson 1983).

Ziziphus oenoplia

Ziziphus oenoplia commonly known as Jackal Jujube, Small-fruited Jujube or Wild Jujube belongs to family Rhamnaceae and class Mangoliopsida. It falls in the category of shrubs and deciduous evergreen weed. The leaves are simple, alternate, ovate-lanceolate, acute and oblique. The flowers have green colour and in sub sessile axillary cymes. The fruit is a globose drupe, black and shiny when ripe, containing a single seed. It grows along roadside (Fred and Robbins, 1952).

CONCLUSION

It is concluded that these weeds identified are harmful for summer crops i.e. maize, sugarcane, rice and mung-bean. These weeds are the one of the most important factors involved in high cost of production and low yields. They share the nutrients and growth resource with major crops and affect their quality as well as quantity. These weeds must be discarded at proper time for early control.

Table-1. Botanical classification of the reported summer weeds in Dera Ismail Khan, Pakistan

Botanical Name	Common Name	Class	Family
Achyranthes aspera	Prickly Chaff Flower, Devil's Horsewhip	Mangoliopsida	Amaranthaceae
Amaranthus retroflexus	Redroot pigweed	Mangoliopsida	Amaranthaceae
Amaranthus viridis	Slender Amaranth, Green Amaranth	Mangoliopsida	Amaranthaceae
Cenchrus longispinus	Spiny Burr Grass or Gentle Annie	Liliopsida	Poaceae
Convolvulus arvensis	Field bindweed	Mangoliopsida	Convolvulaceae
Conyza canadensis (L.)	Canadian horseweed	Mangoliopsida	Asteraceae
Corchorus trilocularis L.	Wild Jute	Mangoliopsida	Tiliaceae
Cucumis melo	Wild melon	Mangoliopsida	Cucurbitaceae
Cynodon dactylon	Bermuda grass	Liliopsida	Poaceae
Cyperus rotundus L.	Java grass, nut grass, purple nutsedge	Liliopsida	Cyperaceae
Datura metel	devil's trumpet, Thorn Apple	Mangoliopsida	Solanaceae
Desmostachya bipinnata	Halfa grass, Big cordgrass, Salt reed-grass	Liliopsida	Poaceae
Echinochloa colona L.	jungle rice	Liliopsida	Poaceae
Echinochloa crus-galli	Barnyardgrass	Liliopsida	Poaceae
Haloxylon ammodendron	Saxaul.	Mangoliopsida	Amaranthaceae
Malvastrum coromandelianum (L.)	Threelobe false mallow	Mangoliopsida	Malvaceae
Oxalis corniculata	Creeping woodsorrel	Mangoliopsida	Oxalidaceae
Parthenium hysterophorus	White top Weed, carrot grass	Mangoliopsida	Asteraceae
Portulaca oleracea	Pigweed, Little Hogweed, Pursley	Mangoliopsida	Portulacaceae
Ruellia strepens L.	smooth ruellia, limestone wild petunia	Mangoliopsida	Acanthaceae
Solanum nigrum L.	Black-berry Nightshade, Petty Morel	Mangoliopsida	Solanaceae
Sorghum halepense (L.)	Johnson grass, Aleppo grass, milletgrass	Liliopsida	Poaceae
Tribulus terrestris L.	Puncturevine	Mangoliopsida	Zygophyllaceae
Veronica anagallis-aquatica	Water Speedwell, Sessile Water-speedwell	Mangoliopsida	Scrophulariaceae
Xanthium strumarium L.	Rough cocklebur	Mangoliopsida	Asteraceae
Ziziphus oenoplia	Jackal Jujube, Small-fruited Jujube	Mangoliopsida	Rhamnaceae

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