



# Floristic Inventory of Baghdad-Ul-Jadeed Campus, The Islamia University of Bahawalpur, Pakistan

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**Abstract** | The aim of the present study was to record the floristic composition and to make an account of plant diversity of Baghdad-ul-Jadeed Campus, The Islamia University of Bahawalpur covering an area of 1250 Acres. The area was divided into three categories as cultivated area, desert area and faculty area. The area was systematically explored and 305 plant species belonging to 235 genera and 78 families were recorded. Poaceae was found to be the largest family with 45 species followed by Papilionaceae (23 species), Asteraceae (18 species), Euphorbiaceae (12 species), Solanaceae (12 species), Mimosaceae (11 species), Cucurbitaceae (10 species), Moraceae (8 species), Apocynaceae (7 species), Aizoaceae (6 species), Boraginaceae (6 species) and Brassicaceae (6 species). The faculty area had the highest number of plant species (257) species followed by the cultivated area (191) then the desert area (60). The findings of this study will guide strategies aimed at better management of plant resources in the area.

**Keywords** | Baghdad-ul-jadeed campus, Natural vegetation, Cultivated plants, Life form, Floristic diversity.

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## INTRODUCTION

The Islamia University of Bahawalpur is located in Bahawalpur, Punjab, Pakistan. Bahawalpur has always been a seat of higher learning. Uch Sharif (a nearby ancient town) had one of the largest universities in the world where scholars from all over the world studied. As a continuation of this tradition a religious university (Jamia Abbasia) was established at Bahawalpur in 1925, following the academic pursuits of Jamia Al-Azhar, Egypt. The renowned scholars spread the beacon of Islam by teaching Tafseer of Quran,

Hadith, Fiqh and History along with other contemporary subjects. In view of changing scenario, Jamia Abbasia was declared a general University in 1975, and renamed as The Islamia University of Bahawalpur. Initially, it started functioning at Abbasia and Khawaja Fareed Campus with ten departments. In order to construct a modern and self-contained campus, 1250 acres of land was allotted to the university on eight Kilometer Bahawalnagar road (Figure 1).

The Baghdad-ul-Jadeed campus, the Islamia University of Bahawalpur (Baghdad-ul-Jadeed Campus, IUB) has three

basic habitats, i.e. cultivated area is specific for crop cultivation and agricultural experiment practices, desert area having sand dunes supporting xeric vegetation and faculty area specified for educational, administration, residential and recreational buildings of the campus. The climate of the area is of subtropical continental type, characterized by high temperature, low relative humidity, high rate of evaporation, strong summer winds and low and sporadic rain fall. Annual rainfall ranges between 90–200 mm and temperature between  $-2^{\circ}\text{C}$   $50^{\circ}\text{C}$ . The soil is made up of alluvial deposits with cultivated area loamy soil, while the desert areas clayey loam soil with low sand dunes at scattered places (Hameed et al., 2002).

et al., 2013, 2014a, 2014b, 2015). The present study sought to document the floristic diversity, update species naming with local names and determine species distribution in the study area. It will be helpful and serve for the conservation and sustainable management of plant resources of the area.

## MATERIALS AND METHODS

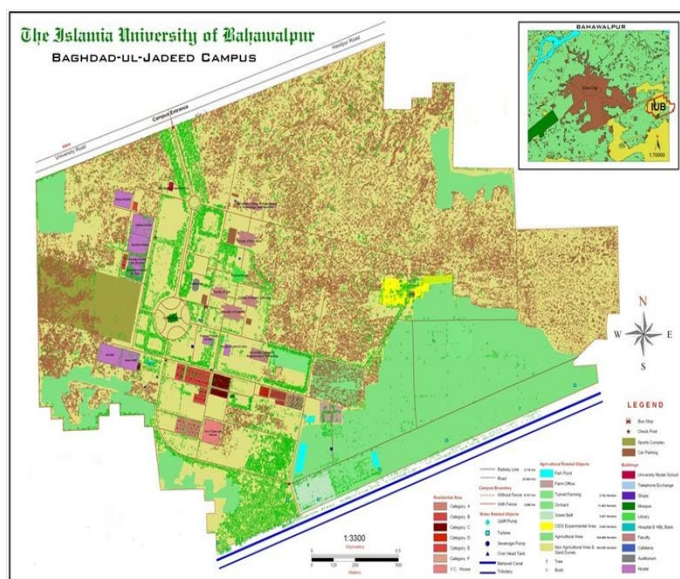
An extensive survey was carried out in the study area during the period between the years 2010–2012 with the objective of collecting plant specimens. The study area was divided into three categories on the basis of topography, soil condition and vegetation type: cultivated, desert and faculty areas. The life form, habit, wild/cultivated status was also observed and recorded. The collected specimens were identified based on previous flora descriptions (Jafri, 1966; Chaudhary 1969–1989, Ali and Nasir, 1989–1992, Ali and Qaiser, 1986; Ali and Qaiser, 1993–2007; Bhandari, 1987, THE PLANT LIST).

## RESULTS AND DISCUSSION

A total of 306 plant species belonging to 235 genera and 78 families were identified. The major plant families that contributed in the formation of vegetation of the study area were Poaceae with 45 species followed by Papilionaceae (23 species), Asteraceae (18 species), Solanaceae (12 species), Euphorbiaceae (12 species), Cucurbitaceae (10 species), Mimosaceae (11 species) and Moraceae (8 species). The complete checklist of species along with their family names in alphabetical order, local name, presence in cultivated, desert and faculty area (Habitat wise distribution) and wild or cultivated species, habit and also life form is given in (Table 1, Figure 2 and 3). The floristic composition represented by Gymnosperms with 4 families of 5 genera and 5 species while Angiosperms represented by 73 families, of which 65 families of dicots with 185 genera and 242 species while monocots contributing with 59 species, 45 genera and 9 families (Table 2).

The faculty area mostly comprises wild and exotic shrubs and trees such as *Alstonia scholaris*, *Nerium oleander*, *Plumeria rubra*, *Cassia fistula*, *Halorrhena pubescens*, *Tecoma stans*, *Bombax ceiba*, *Cordia myxa*, *Delonix regia*, *Canna indica*, *Conocarpus erectus*, *Quisqualis indica*, *Terminalai arjuna*, *Cupressus sempervirens*, *Thuja orientalis*, *Jatropha curcas*, *Lagerstroemia indica*, *Lagerstroemia speciosa*, *Hibiscus rosa-sinensis*, *Azadirachta indica*, *Melia azedarach*, *Albizia lebbbeck*, *Leucaena leucocephala*, *Ficus bengalensis*, *Ficus religiosa*, *Moringa oleifera*, *Eucalyptus camaldulensis*, *Bougainvillea glabra*, *Pongamia pinnata*, *Saraca asoca*, *Calligonum polygonoides*, *Rosa indica*, and *Tamarix aphylla*.

In faculty area, grassy lawn also having some wild grasses



**Figure 1:** Map of Baghdad-ul-Jadeed Campus, IUB, Pakistan. (Source: Geography Department; The Islamia University of Bahawalpur, Pakistan)

The floristic studies of an area are a prerequisite for ecological and phytogeographical studies and conservation management activities. From an ecological point of view, studies on vegetation structure need to link the flora and vegetation with habitat types (Nicholes, 1930). Floristic inventories provide a baseline for future taxonomic, ecological, ethnobotanical, phytochemical investigations and conservation managements. Ecosystems are continually changing due to pollution, deforestation, habitat destruction and fragmentation. Thus periodic updating of floral diversity in the form of checklists of a region is necessary to understand species to species and species to environment interactions (Tastad et al., 2010; Shaheen et al., 2014; Shinwari et al., 2012, 2015). Many researchers have worked on floristic inventories, composition and vegetation structure in different parts of Pakistan and also floristic studies of different universities campuses also recorded (Sant, 1962; Singh, 1967; Arshad and Rao, 1994; Arshad and Akbar, 2002; Qureshi et al., 2011; Singh, 2011; Ahmad et al., 2012; Malik et al., 2013; Choudhary et al., 2014; Wariss

and herbaceous species as *Cenchrus biflorus*, *Cenchrus ciliaris*, *Cymbopogon jwarancusa*, *Dactyloctenium aegyptium*, *Cynodon dactylon*, *Dichanthium annulatum*, *Digitaria sanguinalis*, *Panicum antidotale*, *Ochthochloa compressa*, *Poa annua*, *Vicia sativa*, *Oxalis corniculata*, *Fumaria indica*, *Euphorbia prostrata*, *Sonchus asper* and *Launaea nudicaulis*.

*cum*, *Launaea resedifolia*, *Heliotropium crispum*, *Nonea edgeworthii*, *Farsetia hamiltonii*, *Haloxylon salicornicum*, *Suaeda fruticosa*, *Citrullus colocynthis*, *Boerhavia repens*, *Solanum surattense*, *Corchorus depressus* and *Tribulus terrestris*.

Different crops grown in cultivated area which also having some weeds as *Digera muricata*, *Carthamus oxycantha*, *Cirsium arvense*, *Conyza bonariensis*, *Eclipta alba*, *Coronopus didymus*, *Stellaria media*, *Anagallis arvensis*, *Cyperus rotundus*, *Melilotus officinalis*, *Echinochloa colona*, and *Solanum nigrum*.

The majority of the plant species in the study area were cultivated species. It is interesting that the majority of the cultivated plants were the ornamentals, few species was edible ones and many having a medicinal value. In conclusion, University campuses are very diverse and dynamic systems which contain wild and many locally adapted crops, also known as landraces. Hence, these are particularly interesting for in situ conservation and sustainable management of plant resources.

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CONFLICT OF INTEREST

The authors declare that they have no competing interest.

AUTHOR CONTRIBUTION

Hafiz Muhammad Wariss collected field data and prepared early draft of manuscript while help in preparing and designing the manuscript and figures.

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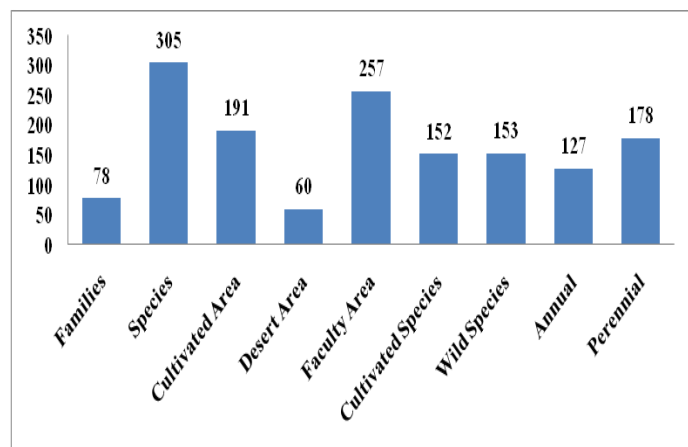


Figure 2: Floristic composition, habitat distribution, wild or cultivated species and life form at Baghdad-ul-Jadeed Campus, IUB.

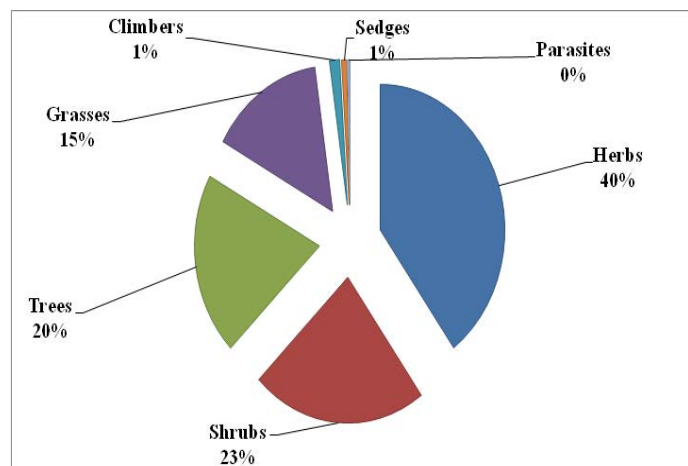


Figure 3: Habit of the recorded species at Baghdad-ul-Jadeed Campus, IUB

Table 2: Comprehensive breakdown of plant groups at Baghdad-ul-Jadeed Campus, IUB.

Plant Group	Genera	Species	Families
Gymnosperms	5	5	4
Dicots	185	241	65
Monocots	45	59	9
Total	235	305	78

Several of the naturally growing herbs, Shrubs and woody species in the desert area like *Acacia nilotica*, *Acacia jacquemonti*, *Capparis decidua*, *Calotropis procera*, *Aerva javanica*, *Dipterygium glaucum*, *Dalbergia sissoo*, *Leptadenia pyrotechnica*, *Crotalaria burbia*, *Asphodelus tenuifolius*, *Limeum indi-*

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**Table 1:** A complete list of distribution, status (cultivated/wild), habit and life form of plant species at Baghdad-ul-Jadeed Campus, IUB.

Family	Species	Local Name	Cultivated area	Desert Area	Faculty Area	Cultivated/ Wild	Habit	Life Form
Agavaceae	<i>Frucraea foetida</i> (L.) Haw.		-	-	+	Cultivated	Shrub	Perennial
Aizoaceae	<i>Gisekia pharnaceoides</i> L.		+	+	+	Wild	Herb	Annual
	<i>Limeum indicum</i> Stocks ex T. Anderson		-	+	-	Wild	Herb	Annual
	<i>Sesuvium sesuvioides</i> (Fenzl) Verdc.		+	-	+	Wild	Herb	Annual
	<i>Trianthema portulacastrum</i> L.	Lal itsit	+	+	+	Wild	Herb	Annual
	<i>Trianthema triquetra</i> Rottl. and Willd.	Alvaiti	+	-	+	Wild	Herb	Annual
	<i>Zaleya pentandra</i> (Linn.) Jeffrey	It sit	+	-	+	Wild	Herb	Annual
Amaranthaceae	<i>Achyranthes aspera</i> Linn.	Phut kanda	+	-	-	Wild	Shrub	Perennial
	<i>Aerva javanica</i> (Burm. F.) Juss. Ex J.A. Schultes	Bui	+	+	+	Wild	Shrub	Perennial
	<i>Alternanthera sessilis</i> (Linn.) DC.		+	-	+	Wild	Herb	Perennial
	<i>Amaranthus viridis</i> Linn.		+	-	+	Wild	Herb	Annual
	<i>Digera muricata</i> (L.) Mart.	Tandula	+	-	+	Wild	Herb	Annual
Anacardiaceae	<i>Mangifera indica</i> L.	Aam	+	-	+	Cultivated	Tree	Perennial
Apiaceae	<i>Anethum graveolens</i> Linn.	Soy	+	-	+	Wild	Herb	Annual
	<i>Foeniculum vulgare</i> Mill.	Saunf	+	+	+	Cultivated	Herb	Annual
	<i>Trachyspermum ammi</i> (L.) Sprague	Ajwain	-	-	+	Cultivated	Herb	Annual
Apocynaceae	<i>Alstonia scholaris</i> (Linn.) R.Br.	Gul-shetaan	-	-	+	Cultivated	Tree	Perennial
	<i>Carissa carandas</i> Linn.	Karanjwa	-	-	+	Cultivated	Shrub	Perennial
	<i>Holarrhena pubescens</i> (Buch.-Ham.) Wall. Ex G. Don	Chandni	-	-	+	Cultivated	Shrub	Perennial
	<i>Nerium oleander</i> Linn.	Kaner	-	-	+	Cultivated	Shrub	Perennial
	<i>Plumeria rubra</i> L.	Gul cheen	-	-	+	Cultivated	Shrub	Perennial
	<i>Tabernaemontana divaricata</i> (L.) R.Br. ex Roem. & Schult.	Chiti chandni	-	-	+	Cultivated	Shrub	Perennial
	<i>Thevetia peruviana</i> (Pers.) Schum.	Peeli kaner	-	-	+	Cultivated	Shrub	Perennial
Araucariaceae	<i>Araucaria cunninghamii</i> Sweet		-	-	+	Cultivated	Tree	Perennial
Arecaceae	<i>Livistona chinensis</i> (N.J. Jacquin) R. Brown ex Martius	Fan Palm	-	-	+	Cultivated	Tree	Perennial
	<i>Phoenix dactylifera</i> Linn.	Khajor	+	-	+	Cultivated	Tree	Perennial
	<i>Phoenix sylvestris</i> (Linn.) Roxb.	Khaji	+	-	+	Wild	Tree	Perennial

Asclepiadaceae	<i>Calotropis procera</i> (Ait.) Ait. F.	Ak	+	+	+	Wild	Shrub	Perennial
	<i>Caralluma edulis</i> (Edgew.) Hook. f.	Seetu	-	-	+	Cultivated	Herb	Annual
	<i>Leptadenia pyrotechnica</i> (-Forssk.) Decne.	Khip	+	+	+	Wild	Shrub	Perennial
Asparagaceae	<i>Asparagus officinalis</i> L.	Asparagus	-	-	+	Cultivated	Climber	Perennial
Asphodelaceae	<i>Asphodelus tenuifolius</i> Cav.	Piazi	+	-	+	Wild	Herb	Annual
Asteraceae	<i>Carthamus oxycantha</i> M.Bieb.	Poli	+	+	+	Wild	Herb	Annual
	<i>Carthamus tinctorius</i> L.	Qurtam	-	-	+	Cultivated	Herb	Annual
	<i>Cichorium intybus</i> L.	Kasni	+	-	+	Cultivated	Herb	Annual
	<i>Cirsium arvense</i> (L.) Scop.	Laih	+	-	+	Wild	Herb	Annual
	<i>Conyza bonariensis</i> (L.) Cronquist.	Phulni	+	-	+	Wild	Herb	Perennial
	<i>Echinops echinatus</i> Roxb.	Unt katara	-	+	+	Wild	Herb	Annual
	<i>Eclipta alba</i> (L.) Hassk.	Bhangra	+	-	+	Wild	Herb	Perennial
	<i>Helianthus annuus</i> L.	Soraj mukhi	+	-	+	Cultivated	Shrub	Annual
	<i>Laphangium luteolum</i> (L.) Tzvelev		-	-	+	Wild	Herb	Annual
	<i>Launaea nudicaulis</i> (L.) Hook.f.	Bhattal	+	+	+	Wild	Herb	Perennial
	<i>Launaea resedifolia</i> Druce		+	+	+	Wild	Herb	Perennial
	<i>Orbivestus cinerascens</i> Sch.Bip.		-	-	+	Wild	Shrub	Perennial
	<i>Pulicaria crispa</i> Sch.Bip.	Bui	-	-	+	Wild	Herb	Perennial
	<i>Silybum marianum</i> (L.) Gaertn.	Unt katara	-	-	+	Cultivated	Herb	Annual
	<i>Sonchus arvensis</i> L.		+	-	+	Wild	Herb	Annual
	<i>Sonchus asper</i> (L.) Hill.		+	-	+	Wild	Herb	Annual
	<i>Sonchus oleraceus</i> (L.) L.		+	-	+	Wild	Herb	Annual
	<i>Xanthium strumarium</i> L.	Leedha	+	-	-	Wild	Herb	Annual
Bignoniaceae	<i>Tecoma stans</i> (Linn.) Juss. Ex H	Tecoma	-	-	+	Cultivated	Shrub	Perennial
	<i>Campsis radicans</i> (Linn.) Seem.	Tecoma bail	-	-	+	Cultivated	Climber	Perennial
Bombacaceae	<i>Bombax ceiba</i> Linn.	Sumbal	+	-	+	Cultivated	Tree	Perennial
Boraginaceae	<i>Cordia myxa</i> L.	Lasora	+	-	+	Cultivated	Tree	Perennial
	<i>Gastrocotyle hispidata</i> (Forssk.) Bunge		+	+	-	Wild	Herb	Annual
	<i>Heliotropium crispum</i> - Desf.	Kali bui	+	+	+	Wild	Herb	Perennial
	<i>Heliotropium europaeum</i> L.		+	-	+	Wild	Herb	Annual
	<i>Heliotropium strigosum</i> Willd.		-	-	+	Wild	Herb	Annual
	<i>Nonea edgeworthii</i> A. DC.		+	-	-	Wild	Herb	Annual

Brassicaceae	<i>Coronopus didymus</i> (Linn.) Smith	Jangli Haloon	+	-	+	Wild	Herb	Annual
	<i>Eruca sativa</i> Mill.	Tara mera	-	-	+	Cultivated	Herb	Annual
	<i>Farsetia hamiltonii</i> Royle	Fareed buti	-	+	+	Wild	Herb	Perennial
	<i>Lepidium sativum</i> Linn.	Halion	+	-	+	Cultivated	Herb	Annual
	<i>Malcolmia africana</i> (-Linn.) R. Br.		+	-	+	Wild	Herb	Annual
	<i>Sisymbrium irio</i> Linn.		+	-	+	Wild	Herb	Annual
Caesalpiniaceae	<i>Bauhinia purpurea</i> Linn.	Kachnar	-	-	+	Cultivated	Tree	Perennial
	<i>Cassia fistula</i> Linn.	Amal tas	-	-	+	Cultivated	Tree	Perennial
	<i>Cassia occidentalis</i> Linn.	Chasko	+	-	-	Wild	Shrub	Annual
	<i>Delonix regia</i> (Bojer) Rafin.	Gold mohar	-	-	+	Cultivated	Tree	Perennial
	<i>Parkinsonia aculeata</i> Linn.	Walaiti kikar	-	+	+	Cultivated	Tree	Perennial
Cannaceae	<i>Canna flaccida</i> Salisb	Gul-aaqeeq peeli	-	-	+	Cultivated	Herb	Perennial
	<i>Canna indica</i> Linn.	Gul-aaqeeq surkh	-	-	+	Cultivated	Herb	Perennial
Capparidaceae	<i>Capparis decidua</i> (Forssk.) Edgew.	Karir, deela	-	+	+	Wild	Shrub	Perennial
	<i>Capparis spinosa</i> Linn.	Deela	-	-	+	Wild	Herb	Perennial
	<i>Cleome viscosa</i> L.		+	-	+	Wild	Herb	Annual
	<i>Dipterygium glaucum</i> -Decne.	Fehl	-	+	+	Wild	Herb	Perennial
Caryophyllaceae	<i>Arenaria serpyllifolia</i> L.		-	-	+	Wild	Herb	Annual
	<i>Spergula arvensis</i> L.		+	-	-	Wild	Herb	Annual
	<i>Spergularia media</i> (L.) Presl		+	-	+	Wild	Herb	Annual
	<i>Stellaria media</i> (L.) Vill		+	-	+	Wild	Herb	Annual
Chenopodiaceae	<i>Chenopodium album</i> Linn.	Bathu	+	-	+	Wild	Herb	Annual
	<i>Chenopodium murale</i> Linn.	Krund	+	-	+	Wild	Herb	Annual
	<i>Haloxylon salicornicum</i> (Moq.) Bunge ex Boiss.	Lana	-	+	-	Wild	Shrub	Perennial
	<i>Salsola imbricata</i> Forssk.	Lani	+	+	+	Wild	Shrub	Perennial
	<i>Suaeda fruticosa</i> Forssk. Ex J. F. Gmelin	Kali lani	+	+	+	Wild	Shrub	Perennial
Combretaceae	<i>Conocarpus erectus</i> L.		-	+	+	Cultivated	Shrub	Perennial
	<i>Quisqualis indica</i> Linn.	Jhumka bail	-	-	+	Cultivated	Climber	Perennial
	<i>Terminalia arjuna</i> (Roxb. Ex DC.) Wight & Arm	Arjan	+	-	+	Cultivated	Tree	Perennial
Convolvulaceae	<i>Convolvulus arvensis</i> Linn.	Vanvari	+	-	+	Wild	Herb	Perennial
Cucurbitaceae	<i>Citrullus colocynthis</i> (-Linn.) Schrad.	Kor tumma	+	-	+	Wild	Herb	Perennial

	<i>Citrullus lanatus</i> (Thunb.) Mats. & Nakai	Tarbooz	+	-	+	Cultivated	Herb	Annual
	<i>Praecitrullus fistulosus</i> (Stocks) Pangalo	Tinday	+	-	+	Cultivated	Herb	Annual
	<i>Cucumis melo</i> subsp. <i>melovar. melo</i>	Kharbooz	+	-	-	Cultivated	Herb	Annual
	<i>Cucumis melo</i> subsp. <i>agrestis</i> var. <i>agrestis</i> Naudin	Chibhar	+	-	+	Wild	Herb	Annual
	<i>Cucumis sativus</i> Linn.	Kheera	+	-	-	Cultivated	Herb	Annual
	<i>Cucurbita moschata</i> (Duch. Ex Lam.) Duch. Ex Poir.	Halwa-kadoo	+	-	+	Cultivated	Herb	Annual
	<i>Luffa cylindrica</i> (Linn.) Roem.	Ghia-tori	+	-	+	Cultivated	Herb	Annual
	<i>Momordica charantia</i> Linn.	Karela	+	-	+	Cultivated	Herb	Annual
	<i>Mukia maderaspatana</i> (-Linn.) M.J. Roem.	Chirati	+	-	-	Wild	Herb	Annual
Cupressaceae	<i>Cupressus sempervirens</i> L.	Saroo	+	-	+	Cultivated	Tree	Perennial
	<i>Thuja orientalis</i> L.	Mor-pankh	+	-	+	Cultivated	Shrub	Perennial
Cuscutaceae	<i>Cuscuta reflexa</i> L.	Akas-bail	+	-	+	Wild	Parasite	Annual
Cycadaceae	<i>Cycas revoluta</i> Thunb.	Cycas	-	-	+	Cultivated	Tree	Perennial
Cyperaceae	<i>Cyperus rotundus</i> Linn.	Murki	+	+	+	Wild	Sedge	Perennial
Euphorbiaceae	<i>Chrozophora plicata</i> (Vahl) A. Juss. Ex Spreng.	Neel-kari	+	+	+	Wild	Herb	Annual
	<i>Euphorbia granulata</i> Forssk.	Hazar dani	+	-	-	Wild	Herb	Annual
	<i>Euphorbia helioscopia</i> L.	Chatri dhodak	+	-	+	Wild	Herb	Annual
	<i>Euphorbia hirta</i> L.	Dhodak	+	-	+	Wild	Herb	Annual
	<i>Euphorbia prostrata</i> Ait.	Hazar dani	+	-	+	Wild	Herb	Annual
	<i>Euphorbia royleana</i> Boiss.	Danda thor	+	-	+	Cultivated	Shrub	Perennial
	<i>Euphorbia tirucalli</i> L.		-	-	+	Cultivated	Tree	Perennial
	<i>Jatropha integerrima</i> Jacq.		-	-	+	Cultivated	Shrub	Perennial
	<i>Jatropha curcas</i> L.		-	-	+	Cultivated	Shrub	Perennial
	<i>Phyllanthus emblica</i> L.	Amla	-	-	+	Cultivated	Shrub	Perennial
	<i>Putranjiva roxburghii</i> Wall.		-	-	+	Cultivated	Shrub	Perennial
	<i>Ricinus communis</i> L.	Arind, harnoli	+	-	+	Cultivated	Shrub	Perennial
Fumariaceae	<i>Fumaria indica</i> (Hausskn.) Pugsley	Pit-papra	+	-	+	Wild	Herb	Annual
Gentianaceae	<i>Centaurium pulchellum</i> (Sw.) Druce		+	-	+	Wild	Herb	Annual
Lamiaceae	<i>Lallemantia royleana</i> (Benth.) Benth.	Tukhm malanga	-	-	+	Cultivated	Herb	Annual
	<i>Mentha arvensis</i> L.	Podina	+	-	-	Cultivated	Herb	Perennial
	<i>Ocimum basilicum</i> L.	Niazbo	+	-	+	Cultivated	Herb	Perennial



	<i>Ocimum tenuiflorum</i> L.	Tulsi	+	-	+	Cultivated	Herb	Perennial
Liliaceae	<i>Allium cepa</i> Linn.	Piaz	+	-	+	Cultivated	Herb	Annual
	<i>Allium sativum</i> Linn.	Thoom,Lah-sin	+	-	-	Cultivated	Herb	Annual
	<i>Aloe vera</i> (L.) Burm. F.	Kanwar gandal	-	-	+	Cultivated	Herb	Perennial
	<i>Ruscus hypophyllum</i> Linn.		-	-	+	Cultivated	Shrub	Perennial
Linaceae	<i>Linum usitatissimum</i> Linn.	Alsi	+	-	-	Cultivated	Herb	Annual
Lytheraceae	<i>Lagerstroemia indica</i> Linn.		-	-	+	Cultivated	Shrub	Perennial
	<i>Lagerstroemia speciosa</i> (-Linn.) Pers.		-	-	+	Cultivated	Shrub	Perennial
	<i>Lawsonia inermis</i> Linn.	Mehndi	-	-	+	Cultivated	Shrub	Perennial
Malvaceae	<i>Abelmoschus esculentus</i> (-Linn.) Moench	Bhindi	+	-	+	Cultivated	Shrub	Annual
	<i>Abutilon muticum</i> (Del.ex DC.) Sweet	Akari	+	-	-	Wild	Shrub	Perennial
	<i>Gossypium hirsutum</i> Linn.	Kappas	+	-	-	Cultivated	Shrub	Annual
	<i>Hibiscus rosa-sinensis</i> Linn.	Show flower	-	-	+	Cultivated	Shrub	Perennial
	<i>Malvastrum coromendelianum</i> (Linn.) Garcke		+	-	-	Wild	Shrub	Perennial
Meliaceae	<i>Azadirachta indica</i> Adr. Juss.	Neem	+	-	+	Cultivated	Tree	Perennial
	<i>Melia azedarach</i> Linn.	Bakain	+	-	+	Cultivated	Tree	Perennial
Mimosaceae	<i>Acacia ampliceps</i> Maslin	Australian kikar	+	-	+	Cultivated	Tree	Perennial
	<i>Acacia farnesiana</i> (Linn.) Willd.	Australian kikar	+	-	+	Cultivated	Tree	Perennial
	<i>Acacia jacquemontii</i> Benth.	Banwali	-	+	-	Wild	Tree	Perennial
	<i>Acacia nilotica</i> (Linn.) Delile	Kikar	+	+	+	Wild	Tree	Perennial
	<i>Acacia victoriae</i> Benth.	Australian kikar	+	-	+	Cultivated	Tree	Perennial
	<i>Albizia lebeck</i> (L.) Benth.	Shareen	+	-	+	Cultivated	Tree	Perennial
	<i>Leucaena leucocephala</i> (Lam.) de Wit	Ipil-Ipil	+	-	+	Cultivated	Tree	Perennial
	<i>Pithecellobium dulce</i> (Roxb.) Benth.	Jangal jalebi	-	-	+	Cultivated	Tree	Perennial
	<i>Prosopis cineraria</i> (Linn.) Druce	Jand	+	+	+	Wild	Tree	Perennial
	<i>Prosopis glandulosa</i> Torr.	Maskit	+	+	+	Wild	Tree	Perennial
	<i>Prosopis juliflora</i> (Swartz) DC.	Maskit	+	+	+	Wild	Tree	Perennial
Molluginaceae	<i>Mollugo cerviana</i> (L.) Seringe		+	-	+	Wild	Herb	Annual
Moraceae	<i>Ficus bengalensis</i> L.	Bohir	-	-	+	Cultivated	Tree	Perennial
	<i>Ficus benjamina</i> L.	Ficus	-	-	+	Cultivated	Shrub	Perennial
	<i>Ficus carica</i> L.	Anjeer	+	-	+	Cultivated	Tree	Perennial

	<i>Ficus elastica</i> Roxb. Ex Hornem.	Rubber plant	-	-	+	Cultivated	Tree	Perennial
	<i>Ficus infectoria</i>	Pilkhan	-	-	+	Cultivated	Tree	Perennial
	<i>Ficus religiosa</i> L.	Peepal	+	-	+	Cultivated	Tree	Perennial
	<i>Morus alba</i> L.	Toot	+	-	+	Cultivated	Tree	Perennial
	<i>Morus macroura</i> Miq.	Shatoot	+	-	+	Cultivated	Tree	Perennial
Moringaceae	<i>Moringa oleifera</i> Lam.	Suhajna	+	-	+	Cultivated	Tree	Perennial
Musaceae	<i>Musa paradisiaca</i> Linn.	Keela	-	-	+	Cultivated	Herb	Perennial
Myrtaceae	<i>Callistemon lanceolatus</i> (Sm.) Sweet.	Bottle brush	+	-	+	Cultivated	Tree	Perennial
	<i>Eucalyptus camaldulensis</i> Dehnh.	Safeeda	+	-	+	Cultivated	Tree	Perennial
	<i>Eucalyptus citriodora</i> Hook.	Safeeda	+	-	+	Cultivated	Tree	Perennial
	<i>Eugenia jambolana</i> Lam.	Jaman	+	-	+	Cultivated	Tree	Perennial
	<i>Psidium guajava</i> L.	Amrood	+	-	+	Cultivated	Tree	Perennial
Neuradaceae	<i>Neurada procumbens</i> L.	Chapri	-	+	-	Wild	Herb	Annual
Nyctaginaceae	<i>Boerhavia repens</i> Linn.	Biskhapra	+	+	+	Wild	Herb	Perennial
	<i>Bougainvillea glabra</i> -Choisy		-	-	+	Cultivated	Shrub	Perennial
	<i>Bougainvillea spectabilis</i> Willd.		-	-	+	Cultivated	Shrub	Perennial
Oleaceae	<i>Jasminum grandiflorum</i> Linn.	Chambali	-	-	+	Cultivated	Shrub	Perennial
	<i>Jasminum humile</i> Linn.	Chambali	-	-	+	Cultivated	Shrub	Perennial
	<i>Jasminum sambac</i> (Linn.) Ait.	Motia	-	-	+	Cultivated	Shrub	Perennial
	<i>Olea europaea</i> Linn.	Zaitoon	-	-	+	Cultivated	Tree	Perennial
Oxalidaceae	<i>Oxalis corniculata</i> L.	Khatti booti	+	-	+	Wild	Herb	Perennial
Papaveraceae	<i>Argemone mexicana</i> Linn.	Sattya nasi	+	-	-	Wild	Herb	Annual
	<i>Papaver somniferum</i> Linn.	Khaskhas	-	-	+	Cultivated	Herb	Annual
Papilionaceae	<i>Alhagi maurorum</i> Medic.	Jamahan	+	+	+	Wild	Shrub	Perennial
	<i>Crotalaria burhia</i> -Buch.-Ham. Ex Benth.	Chag	-	+	+	Wild	Shrub	Perennial
	<i>Crotalaria medicaginea</i> var. <i>medicaginea</i>		+	-	-	Wild	Shrub	Annual
	<i>Cyamopsis tetragonoloba</i> (Linn.) Taubert	Gawar	-	-	+	Cultivated	Shrub	Annual
	<i>Dalbergia sissoo</i> Roxb.	Sheesham	+	-	+	Wild	Tree	Perennial
	<i>Erythrina suberosa</i> Roxb.	Gul-nishtar	-	-	+	Cultivated	Tree	Perennial
	<i>Glycyrrhiza glabra</i> Linn.	Mulathi	-	-	+	Cultivated	Shrub	Perennial
	<i>Indigofera sessiliflora</i> DC.		+	-	-	Wild	Herb	Annual
	<i>Medicago polymorpha</i> Linn.	Maina	+	-	+	Wild	Herb	Annual
	<i>Medicago sativa</i> Linn.	Lucran	+	-	-	Cultivated	Herb	Annual
	<i>Melilotus alba</i> Desr.	Sinji chiti	+	-	+	Wild	Herb	Annual
	<i>Melilotus officinalis</i> (Linn.) Pall.	Sinji peeli	+	-	+	Wild	Herb	Annual
	<i>Psoralea corylifolia</i> Linn.	Banchi	-	-	+	Wild	Herb	Annual

	<i>Rhynchosia capitata</i> (Heyne ex Roth) DC.		+	-	+	Wild	Herb	Annual
	<i>Rhynchosia minima</i> (Linn.) DC.		+	-	+	Wild	Herb	Perennial
	<i>Vigna radiata</i> (L.) Wilczek	Mongi dal	+	-	-	Cultivated	Herb	Annual
	<i>Pongamia pinnata</i> (Linn.) Pierre	Sukh chan	+	-	+	Cultivated	Tree	Perennial
	<i>Saraca asoca</i> (Roxb.) de Wilde	Ulta ashok	-	-	+	Cultivated	Tree	Perennial
	<i>Sesbania sesban</i> var. <i>sesban</i>	Jantar	+	-	-	Wild	Shrub	Annual
	<i>Trifolium alexandrinum</i> Linn.	Berseem	+	-	-	Cultivated	Herb	Annual
	<i>Trigonella monantha</i> ssp. <i>incisa</i> (Benth.) Ali		+	-	-	Wild	Herb	Annual
	<i>Vicia sativa</i> Linn.	Rawari	+	-	+	Wild	Herb	Annual
	<i>Vigna unguiculata</i> subsp. <i>cylindrica</i> (Linn.) van Eseltine	Rawan	+	-	+	Cultivated	Shrub	Annual
Pedaliaceae	<i>Sesamum indicum</i> Linn.	Til	-	-	+	Cultivated	Herb	Annual
Pinaceae	<i>Pinus roxburghii</i> Sargent	Pinus	-	-	+	Cultivated	Tree	Perennial
Piperaceae	<i>Piper nigrum</i> L.	Kali mirch	-	-	+	Cultivated	Shrub	Perennial
Plantaginaceae	<i>Plantago ovata</i> Forssk.	Isabghol	-	-	+	Cultivated	Herb	Annual
Poaceae	<i>Aristida adscensionis</i> Linn.	Lumb	-	+	+	Wild	Grass	Annual
	<i>Aristida funiculata</i> Trin. & Rupr.	Lumb	-	+	+	Wild	Grass	Annual
	<i>Arundo donax</i> Linn.	Narra	+	-	+	Wild	Grass	Perennial
	<i>Avena fatua</i> subsp. <i>meridionalis</i> Malz.	Jai, Javi	+	-	-	Cultivated	Grass	Annual
	<i>Bambusa glaucescens</i> (Willd.) Sieb. Ex Munro	Bans	-	-	+	Cultivated	Grass	Perennial
	<i>Brachiaria reptans</i> (Linn.) Gardner & Hubbard		+	-	+	Wild	Grass	Annual
	<i>Cenchrus biflorus</i> Roxb.	Leedha	+	+	+	Wild	Grass	Annual
	<i>Cenchrus ciliaris</i> Linn.	Dhaman	+	+	+	Wild	Grass	Perennial
	<i>Cenchrus setigerus</i> Vahl	Dhaman	+	+	-	Wild	Grass	Perennial
	<i>Chloris gayana</i> Kunth		-	-	+	Cultivated	Grass	Perennial
	<i>Cymbopogon jwarancusa</i> (Jones) Schult.	Qatran, Khawi	+	+	+	Wild	Grass	Perennial
	<i>Cymbopogon citratus</i> (DC.) Stapf.	Lemon grass	-	-	+	Cultivated	Grass	Perennial
	<i>Cynodon dactylon</i> (Linn.) Pers.	Khabar, talla	+	+	+	Wild	Grass	Perennial
	<i>Dactyloctenium aegyptium</i> (Linn.) Willd.	Madhana ghaa	+	+	+	Wild	Grass	Annual
	<i>Desmostachya bipinnata</i> (-Linn.) Stapf	Dhabb	+	+	+	Wild	Grass	Perennial
	<i>Dichanthium annulatum</i> (Forssk.) Stapf		+	-	+	Wild	Grass	Annual

<i>Digitaria sanguinalis</i> (Linn.) scop.		+	-	+	Wild	Grass	Annual
<i>Diplachne fusca</i> (Linn.) P. Beauv. Ex Roem. & Schult.	Kallar gha	+	-	-	Wild	Grass	Perennial
<i>Echinochloa colona</i> (Linn.) Link	Sawank	+	-	+	Wild	Grass	Annual
<i>Eleusine indica</i> (Linn.) Gaertn.		-	-	+	Wild	Grass	Annual
<i>Eragrostis barrelieri</i> Day.		+	-	+	Wild	Grass	Annual
<i>Hordeum vulgare</i> Linn.	Jao	+	-	-	Cultivated	Grass	Annual
<i>Imperata cylindrica</i> (Linn) Rauschel.		+	-	-	Wild	Grass	Perennial
<i>Lasiurus scindicus</i> Henr.	Sewan	-	+	+	Wild	Grass	Perennial
<i>Ochthochloa compressa</i> (-Forssk.) Hilu	Ghandhel, Chember	+	+	+	Wild	Grass	Perennial
<i>Panicum antidotale</i> Retz.	Murrat	+	+	+	Wild	Grass	Perennial
<i>Panicum turgidum</i> Forssk.	Bansi ghaa	-	-	+	Cultivated	Grass	Perennial
<i>Paspalum paspalodes</i> (Michx.) Scribner		+	-	-	Wild	Grass	Perennial
<i>Pennisetum divinum</i> (Gmel.) Henr.		-	-	+	Cultivated	Grass	Perennial
<i>Pennisetum glaucum</i> (Linn.) R. Br.	Bajra	+	-	-	Cultivated	Grass	Annual
<i>Phalaris minor</i> Retz.		+	-	+	Wild	Grass	Annual
<i>Poa annua</i> Linn.		+	-	+	Wild	Grass	Annual
<i>Polypogon monspeliensis</i> (-Linn.) Desf.	Dumbi citi	+	-	+	Wild	Grass	Annual
<i>Saccharum bengalense</i> Retz.	Sarkanda, Kana	+	+	+	Wild	Grass	Perennial
<i>Saccharum officinarum</i> Linn.	Ganna	+	-	-	Cultivated	Grass	Perennial
<i>Saccharum spontaneum</i> Linn.	Sachi sir	+	+	-	Wild	Grass	Perennial
<i>Setaria pumila</i> (Poir.) Roem. & Schult.		+	-	+	Wild	Grass	Annual
<i>Setaria verticillata</i> (Linn.) P. Beauv.		-	-	+	Wild	Grass	Annual
<i>Sorghum halepense</i> (Linn.) Pers.	Baroo	-	-	+	Wild	Grass	Annual
<i>Sorghum bicolor</i> (Linn.) Moench.	Jawar	+	-	-	Cultivated	Grass	Annual
<i>Sporobolus ioclados</i> (Nees ex Trin.) Nees		-	-	+	Wild	Grass	Perennial
<i>Tragus roxburghii</i> Panigrahi		+	-	+	Wild	Grass	Annual
<i>Triticum aestivum</i> Linn.	Gandam	+	-	-	Cultivated	Grass	Annual
<i>Vetiveria zizanioides</i> (Linn.) Nash	Khaskhas	-	-	+	Cultivated	Grass	Perennial
<i>Zea mays</i> Linn.	Maki, Corn	+	-	-	Cultivated	Grass	Annual

Polygonaceae	<i>Calligonum polygonoides</i> Linnaeus	Phog	-	+	+	Wild	Tree	Perennial
	<i>Persicaria glabra</i> (Willd.) M. Gomes	Kala vera	+	-	-	Wild	Herb	Perennial
	<i>Rumex dentatus</i> Linnaeus	Jangli palak	+	-	+	Wild	Herb	Annual
Portulacaceae	<i>Portulaca oleracea</i> Linn.	Launak	+	-	+	Wild	Herb	Annual
	<i>Portulaca quadrifida</i> Linn.	Launak	+	-	+	Wild	Herb	Annual
Primulaceae	<i>Anagallis arvensis</i> L.		+	-	+	Wild	Herb	Annual
Punicaceae	<i>Punica granatum</i> Linn.	Anar	+	-	+	Cultivated	Tree	Perennial
Ranunculaceae	<i>Nigella sativa</i> L.	Kalonji	-	-	+	Cultivated	Herb	Annual
	<i>Ranunculus muricatus</i> L.		+	-	-	Wild	Herb	Annual
	<i>Ranunculus sceleratus</i> L.		+	-	+	Wild	Herb	Annual
Resedaceae	<i>Oligomeris linifolia</i> (Vahl.) Macbride		-	-	+	Wild	Herb	Annual
Rhamnaceae	<i>Zizyphus mauritiana</i> Lam.	Beri	+	+	+	Cultivated	Tree	Perennial
	<i>Zizyphus nummularia</i> (Burm. F.) Wight & Arn.	Beri	+	+	+	Cultivated	Tree	Perennial
	<i>Zizyphus spina-christi</i> (L.) Willd.	Beri	+	+	+	Wild	Shrub	Perennial
Rosaceae	<i>Prunus persica</i> (L.) Batsch	Aroo	+	-	+	Cultivated	Tree	Perennial
	<i>Rosa banksiae</i> W. T. Aiton	Gulab	+	-	+	Cultivated	Shrub	Perennial
	<i>Rosa centifolia</i> L.	Gulab	+	-	+	Cultivated	Shrub	Perennial
	<i>Rosa x damascena</i> Herrm.	Gulab	+	-	+	Cultivated	Shrub	Perennial
	<i>Rosa indica</i> L.	Gulab	+	-	+	Cultivated	Shrub	Perennial
Rubiaceae	<i>Gardenia jasminoides</i> J. Ellis		-	-	+	Cultivated	Shrub	Perennial
	<i>Hamelia patens</i> Jacquin		-	-	+	Cultivated	Shrub	Perennial
Rutaceae	<i>Citrus aurantifolia</i> (Christm.) Swingle	Kaghzi nimbo	-	-	+	Cultivated	Tree	Perennial
	<i>Citrus sinensis</i> (Linn.) Osbeck,	Malta	+	-	+	Cultivated	Tree	Perennial
	<i>Murraya paniculata</i> (Linn.) Jack	Marva	-	-	+	Cultivated	Tree	Perennial
Salicaceae	<i>Populus euphratica</i> Olivier	Popular	-	-	+	Cultivated	Tree	Perennial
Salvadoraceae	<i>Salvadora oleoides</i> Decne	Jal, Peelu	-	+	+	Wild	Tree	Perennial
Sapindaceae	<i>Dodonaea viscosa</i> (Linn.) Jacq.	Sanatha	-	-	+	Cultivated	Shrub	Perennial
Sapotaceae	<i>Manilkara zapota</i> (L.) P. van Royen	Chiku	-	-	+	Cultivated	Shrub	Perennial
Scrophulariaceae	<i>Leucophyllum candidum</i> I.M. Johnst.	Silvri	-	-	+	Cultivated	Shrub	Perennial
Simmondsiaceae	<i>Simmondsia chinensis</i> (Link) C.K. Schneid.	Jjoba	-	+	+	Cultivated	Tree	Perennial
Solanaceae	<i>Capsicum annum</i> L.	Lal mirch	+	-	+	Cultivated	Shrub	Perennial
	<i>Cestrum nocturnum</i> L.		-	-	+	Cultivated	Shrub	Perennial
	<i>Cestrum diurnum</i> L.	Din-ka-raja	-	-	+	Cultivated	Shrub	Perennial
	<i>Datura innoxia</i> Miller	Dhatora	+	+	+	Wild	Shrub	Perennial

	<i>Lycopersicon esculentum</i> - Miller	Tamatar	+	-	+	Cultivated	Herb	Annual
	<i>Nicotiana plumbaginifolia</i> Viv.	Jangli tam- bakoo	+	-	+	Wild	Herb	Annual
	<i>Physalis divaricata</i> D. Don	Mamoolay	+	-	+	Wild	Herb	Annual
	<i>Solanum melongena</i> L.	Baingan	+	-	+	Cultivated	Herb	Annual
	<i>Solanum nigrum</i> L.	Mako	+	-	+	Wild	Herb	Annual
	<i>Solanum surattense</i> Burm. F.	Kaindari	+	-	+	Wild	Herb	Annual
	<i>Withania coagulans</i> (Stocks) Dunal	Paneer	+	-	-	Wild	Shrub	Perennial
	<i>Withania somnifera</i> (L.) Dunal	Ak sin	+	-	+	Wild	Herb	Annual
Sterculiaceae	<i>Brachyhiton populneum</i> (Schott & Endl.) R. Br.		+	-	-	Cultivated	Tree	Perennial
	<i>Pterospermum acerifolium</i> (Linn.) Willd.		-	-	+	Cultivated	Tree	Perennial
Tamaricaceae	<i>Tamarix aphylla</i> (L.) Karst.	Ukhan	+	+	+	Wild	Tree	Perennial
	<i>Tamarix dioica</i> Roxb. ex Roch	Lai	-	+	-	Wild	Shrub	Perennial
Tiliaceae	<i>Grewia asiatica</i> Linn.	Falsa	+	-	+	Cultivated	Shrub	Perennial
	<i>Corchorus depressus</i> (- Linn.) Stocks	Boh phalli	-	+	-	Wild	Herb	Perennial
	<i>Corchorus trilocularis</i> Linn.		+	-	+	Wild	Herb	Annual
Typhaceae	<i>Typha domingensis</i> Pers.	Dib	-	-	+	Wild	Sedge	Perennial
Verbanaceae	<i>Duranta repens</i> Linn.		-	-	+	Cultivated	Shrub	Perennial
	<i>Lantana camara</i> Linn.		-	-	+	Wild	Shrub	Perennial
	<i>Phyla nodiflora</i> (Linn.) Greene	Bukan booti	+	-	-	Wild	Herb	Perennial
Vitaceae	<i>Vitis vinifera</i> Linn.	Angoor	-	-	+	Cultivated	Climber	Perennial
Zygophyllaceae	<i>Fagonia bruguieri</i> var. <i>laxa</i> Boiss.	Damahan	-	+	+	Wild	Herb	Perennial
	<i>Peganum harmala</i> Linn.	Harmal	-	+	-	Wild	Herb	Perennial
	<i>Tribulus longipetalus</i> Viv.	Bhakra	-	+	+	Wild	Herb	Annual
	<i>Tribulus terrestris</i> Linn.	Bhakra	+	+	+	Wild	Herb	Annual