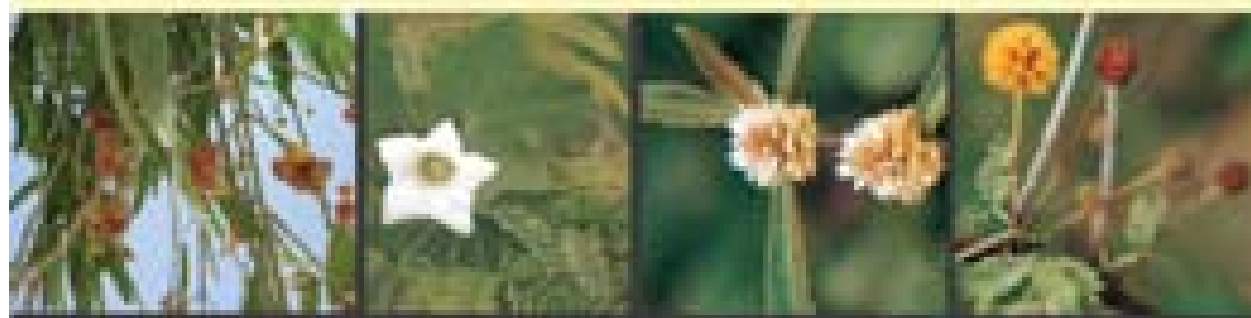


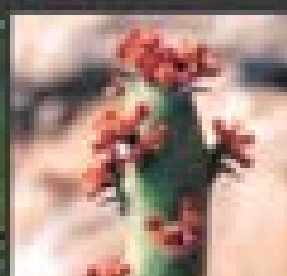


for a living planet®



Floral Guide

Indus Ecoregion



Dr. Ghulam Akbar, Ph.D
Dr. Surayya Khaloon, Ph.D



Indus for All Programme, WWF - Pakistan
2012

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WWF is one of the world's largest and most experienced independent conservation organizations, with over 5 million supporters and a global network active in more than 100 countries. WWF's mission is to stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature, by conserving the world's biological diversity, ensuring that the use of renewable natural resources is sustainable, and promoting the reduction of pollution and wasteful consumption.

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■ Preface:

This guidebook has been produced by the Indus for All Programme, the first phase of a 50 year biodiversity vision described in the Indus Ecoregion Conservation Programme. This task began in 2006 and took almost three years to complete. It involved extensive field work, collecting and preserving plant specimens and, identifying and cataloguing them based on taxonomic and botanical lines. The Guide presents details of those plant species which are most commonly observed in Indus Ecoregion. It does not, however, provide a complete listing of all plants found in the Indus Ecoregion. The guide is designed to educate and help nature lovers, researchers, students and other interested persons and groups about the variety and scope of natural flora found in selected ecosystems of the Indus Ecoregion. Although there have been some sporadic efforts, mainly by the University of Karachi, to document plant species of Sindh, no comprehensive vegetation surveys have been undertaken since 1922 when Blatter *et al.* of Bombay Natural History Museum first carried out a detailed vegetation expedition of the Indus Delta. There are two main reasons for this dearth of research on plant species. Firstly, when one compares faunal versus floral explorations, the former discipline has a clear edge over the latter mainly because of the inaccurate use of the term “biodiversity.” Biodiversity is often misinterpreted to only encompass the animal world as opposed to both plant and animal species; rather the species of all kinds of organisms and projects aimed at faunal research are frequently able to access greater funding. Second, the absence of regular natural vegetation field surveys has produced a general lack of awareness about the significance of floral wealth as a building block of the rest of the components of biodiversity. Therefore, concerted efforts are required to explore the plant wealth of this Saharo-sindian phytogeographic zone overlapping the Indus Ecoregion. This floral guidebook is one such attempt by the Indus for All Programme.

During field vegetation surveys, a total of three new species were recorded, a number of plant species were re-discovered, and additional information on endemic plant species was gathered. I am certain if botanical surveys are regularly continued many more species will be discovered, and threats to plant wealth in critical habitats will also be ascertained. As part of an ongoing effort future editions of the guide will also address ethno-botanical information with particular emphasis on the traditional use of medicinal herbs. I hope that both students and researchers who use this guide will help in our efforts to conduct periodic plant surveys, which will ultimately contribute to the conservation of biodiversity in some of the unique and globally valued ecosystems of the Indus Ecoregion.

Dr. Ghulam Akbar

■ Acknowledgements:

It took almost three years of field work by the plant scientists of WWF – Pakistan's Indus for All Programme in collaboration with botanists from Karachi University to gather data, collect specimens, photograph specimens and render illustrations of those specimens whose pictures were not available. The researchers were ably supported by many others who provided different kinds of assistance during the compilation of this study.

The compilation of this field guide was made possible by the detailed ecological Baseline Studies the Indus for All Programme undertook over five selected sites: Keti Bunder (coastal and deltaic ecosystem in Thatta District), Keenjhar Lake (freshwater ecosystem in Thatta District), Pai Forest (forest ecosystem in Shaheed Benazirabad District), Chotiari Reservoir (freshwater-desert ecosystem in Sanghar District) and Keti Shah (riverine ecosystem in Sukkur District).

The authors gratefully acknowledge the efforts of Mr. Imran, post-graduate student University of Karachi; Drs. Abdul Khaliq and Rehmatullah Qureshi, Arid Agriculture University and Mr. Babar Khan, Head WWF Northern Areas at Gilgit for their help in the field.

We would also like to express our sincere appreciation for Mr. Shakil Khaskheli from Shah Abdul Latif University Khairpur who not only photographed many plants species, developed illustrations of those plants whose pictures were unavailable but also entertained all of us in the field with his musical talents. We would also like to thank a number of university interns for their help in compiling the study under our guidance.

Finally, this study would not have been possible without the support of the Indus for All Programme's staff who made the necessary arrangements to ease our difficult field work and the Embassy of the Kingdom of the Netherlands for their financial help.

Authors

■ How to use this Floral Guide:

This guidebook includes the existing floral species of Indus Eco-region. It starts from the introduction chapter which describes all about Sindh, major ecosystem and their ecological profile. It is equipped with all the relevant data, photographs and world wide distribution. The herbaceous and shrubby species are grouped under Bryophytes, Pteridophytes, Gymnosperms and Angiosperms (Dicotyledons and Monocotyledons).

Each page of each section provides the family name, scientific name and available English and Local names of the species. The description of each species is brief and not too technical. Information is also provided on flowering period, habitat and uses. These are given in following pattern:

Description: It includes the type of plant i.e, herb, shrub, grass, tree etc. It also includes the size of the plant, the shape and color of flowers fruits and leaves.

Flowering Period: It means the month in which the species produces flowers e.g, from March to May and if found whole the year then it is stated as "throughout the year".

Habitat: This part tells the reader about the kind most of common growing places of the specie as various specie have different habitat e.g, some grow on stony and rocky places and some on wet and moist places etc.

Uses: It comprise of economical and ethnobotanical uses of plants.

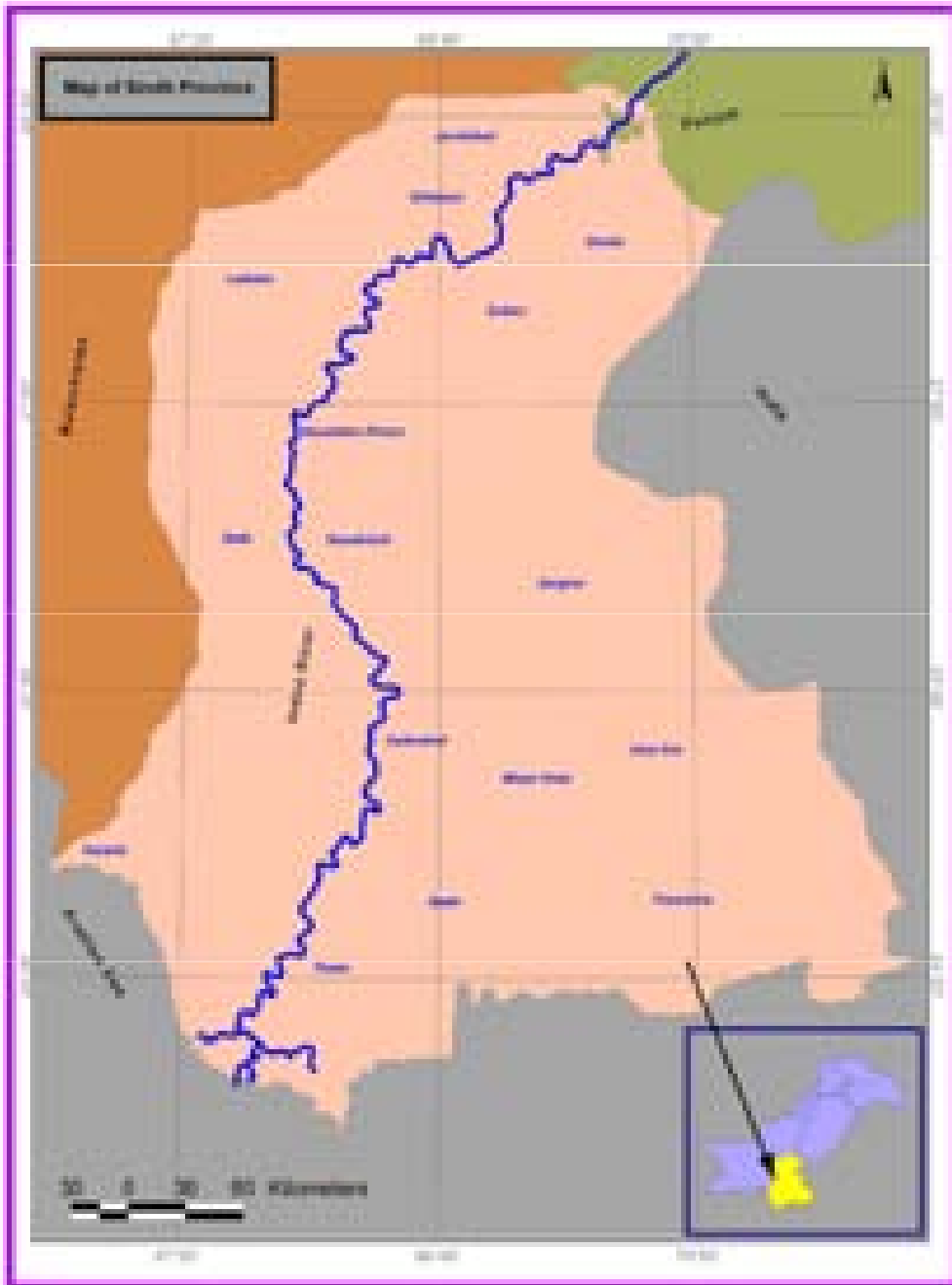
Distribution: It includes world wide occurrence of the specie. Distribution map is given on the left side of each page which shows location of the specie in the Sindh province only.

The index of family names and scientific names of species is given at the end to be used as a quick locator for the user about the species. Similarly glossaries of botanical terms and pharmacological terms are also given at the end of the book. For further information and assistance a list of references are also given. In short it is a comprehensive guidebook which can be used as an informative tool for students, researchers, and any one interested in the natural flora.

01 Introduction

Sindh is the third largest province (area wise) of Pakistan stretching about 579 km from north to south and 442 km (extreme) or 281 km (average) from east to west, with an area of 140,915 km². It is situated between 23° and 29° north latitude and between 67° and 71° east longitude. It is bordered by Balochistan and the Punjab from north, on the east by Rajasthan (India), on the south by the Runn of Kutch and the Arabian Sea and on the West by Lasbela and Kalat districts of Balochistan province. Traversed by the Indus River it has been continuously inhabited since at least 2500 BC. It also derives its name from the River Indus, which in ancient times was known as Sindhudesh, Sindhu being the original name of the River and desh meaning territory.

The earliest reference of the settlement in this area has been found in the oldest written record of the subcontinent, the Rig Veda. Other references are also found in the Mahabharata, the ancient Hindu epic. The sites that can be considered Sindh's crowning glory are the Indus Valley Civilization at Mohenjodaro (located on the right bank of the Indus) in Larkana District, and Makli, the world's largest necropolis in Thatta District, both of which are classified as World Heritage Sites. The first Muslim invader of the sub-continent, Muhammad Bin Qasim invaded Sindh in 712 AD, making Sindh an important foothold for Muslims. Sindh is also referred to as "Bab-al-Islam" (Gate of Islam) as it was the first place of orientation of Islam in the South Asia. Since then Sindh has been a gateway for people entering the subcontinent from Asia, Africa, and even Europe (wikipedia.org).



(ii)

1.1 Climate:

✍ Sindh falls in the category of hot and arid land due to low and scanty rainfall. Average annual rain fall in Sindh is only 150 to 250 mm. There are three climatic regions in Sindh, the lower, middle and the upper Sindh. The lower Sindh (Lar) comprises the Indus Delta, is comparatively cool and takes benefit from the moderating effect of sea. It is affected by the coastline and has damper, humid, South-Western winds in summer and North-Eastern winds in winter make the climate of this region as maritime with rainfall little less than the Middle Sindh. The maximum temperature reaches upto 45 °C (occasionally upto 47 °C) in summers. The middle Sindh (Vicholo), extends about hundred miles north of Hyderabad, has lower summer temperature than Upper Sindh but higher than the Lower Sindh. Upper Sindh (Siro) which is centered at Jacobabad has a harsh climate. It is one of the hottest places in summer and coldest in winter as temperature rises upto 52 °C in May and June occasionally frost occurs in winter. The air is generally very dry. The highest peak of Khirthar range (Kuttey ji Qabar) occasionally receives snowfall.

Overall Sindh has a continental climate with the variation between summer and winter temperatures. It falls into the region of monsoon climate with distinguished characteristics of a marked rainy season during the late summer. The hot weather begins in March and continues till the beginning of the monsoon in July. The mean maximum temperature reaching the 43 °C in May, while in the winter temperature is often mild (minmum between 5-10 °C) in most parts of the province, but occasionally falls below 0 °C in upper Sindh (Smyth. 1919).

1.2 Physiography:

Sindh is a low and flat plain basin of Indus except the Khirthar range along its border with Balochistan and Nagarparkar mountainous region in the south-east; and desert area of the east. According to physical framework, Sindh can be divided into three distinct physiographic regions: (Huges. 1876).

A) The western mountain region:

The western part of Sindh, bounded by mountain region, consists of hill ranges from Khirthar, Bhit, Bhadra and Lakhi. Khirthar mountain range starts from Karachi near Manghopir and ends in the western part of Larkana.

b) Indus flood plain and Delta:

Indus delta has its apex near Thatta below which Indus River spreads to form the deltaic plains. Indus flood-plains comprise of alluvial plain which is divisible into upper and lower Indus plains. Upper Indus plain lies in the North of the delta where five rivers of Punjab converge in it, while Lower Indus plain lies in the Southern part of the delta and marked only by Indus River. Sindh lies largely in the deltaic plains of Lower Indus Valley.

C) Deserts:

The eastern part of Sindh is bounded by desert which covers an area of approximately 68,000 km² and comprises of Thar, Nara and Kohistan. Thar Desert is spread on an area of 23,000 km², Tharparkar, Mithi and Umerkot districts lie in the Thar Desert, with the Runn of Kutch in the south.

Nara desert extends on an area of 22,000 km² and represent four districts of Sindh, Shaheed Benezirabad (formerly Nawabshah), Sukkur, Khairpur and Sanghar. Kohistan with an expansion of 23,000 km² embodied the parts of Dadu, Larkana and Thatta districts.

1.3 Demographic profile:

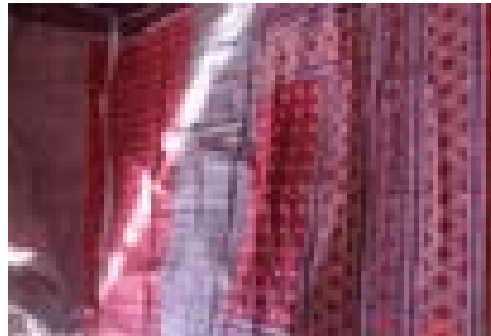
Sindh comprises of 23 districts, 160 towns and 1094 union councils. Owing to the migration of people across the country its population has been increasing at a much faster pace than the overall population of Pakistan. The Population of Sindh province is estimated to be 46.4 million (Census 2008). Within Sindh, growth patterns were substantially different. For example, the proportion of the urban population increased substantially from 29 percent in 1951 to 49 percent in 1998, as compared to 17 to 35 percent in Pakistan, respectively.

Sindhi is the principal spoken language that makes up 60% followed by Urdu speakers 20%. Other linguistic groups from all over the country are Pashto (5%); Punjabi (7) %; Gujarati/Memon (3%); Baluchi (2%); Seraiki (1%) and others (2%). Other languages include Kutchi (both dialects of Sindhi), Khowar, Thari, Persian/Dari and Brahui. The religious composition of Sindh also varies. The majority of residents are Muslim (91), followed by Hindus forming 7.5%. Smaller groups of Christians (0.97%), Ahmadi (0.14%); Parsis or Zoroastrians, Sikh and a tiny Jewish community (of around 500) can also be found in the province (Wikipedia.org).

1.4 Culture of Sindh:

Sindh has a rich and most diverse cultural heritage. Inherited from prehistoric times it keeps lasting traces from different ages with rich traditions. Sindhi culture is known for its specific traditions which belong to one of the oldest civilizations of the world known as Indus valley civilization. Sindhi is the main language which emerged as the confluence of some Arabic, Persian and Balochi words over time. Its culture has a unique assemblage of architecture, religion, literature and music. Sufism is prevalent in Sindh. The essence of Sufism can clearly be seen in the Sindhi poetry such as that of Shah Abdul Latif Bhitai and Hazrat Sachal Sarmast.

Sindh is conventionally a large producer of cotton cloth. The cloth which is very common and a symbol of Sindhi culture is Ajrak. From the settlements of Mounds of Dead (Mohen Jo Daro), a sculpture was found covered in ajrak. So it is believed that ajrak is as old as the Indus civilization. Along with ajrak, Rilli is another Sindhi emblem and part of the heritage and culture. Rilli is a patchwork sheet which is made by small pieces of different colors and different kinds of geometrical shapes and stitch together making elaborate designs. It is used as bedspread as well as



The epitome of Sindhi culture; Ajrak

a blanket. Khadi and Susi are the two other kinds of cloths that have their own image in Sindhi culture. Sindh is known all over the world for its cultural heritage of art and handicraft.

1.5 Cultural and Historical Sites of Sindh:

Sindh is a wonderful land having a texture of natural beauty which is embodied by sea, rivers, lakes, delta, forests, deserts, creeks and mountains. It has a tremendous potential for tourism as all areas of Sindh are rich in cultural heritage. Numerous ruins scattered throughout the territory offer a constant reminder of the area's history. Remains of Indus Valley Civilization as well as those of other periods enhance the beauty of its ancient historic and cultural aspects. The legendary river (River Indus) is said to have started flowing since millions of years and remnants of this civilization of 3rd millennium B.C. at Mohen Jo Daro testify to the great civilized past of Sindh. Other sites like Harappa, Chanhu-daro, Lothal, Kot Dijji, were also highly developed cities that narrate about a civilization which had began around 3000 BC, reached apex by 2000, and completely perished by 1000 B.C. Its influence had a major impact on the lives of past and present inhabitants (Gregory 2002).

(I) Moen jo Daro:

Mohen Jo Daro is an ancient civilization that flourished in Indus Valley 5000 years ago. In Sindhi language Moen Jo Daro means Mound of the dead. It is situated on the right bank of Indus at a distance of 24 km from Larkana, and covers an area of 250 hectares.

It represents various phases of urban growth and reorganization. It was preserved with the help of UNESCO in 1980. The layout of city was well planned, neat and orderly in manner. The city was not only built by fire baked bricks but also had a brick lined sewerage system. It is a wonderful architectural site which showed advancement of humanity thousands of year's ago.



The ruins of Mohenjodaro

(II) Bhambore

Bhambore previously known as Deebal occupies a unique status of being gateway for Islam's advent in the subcontinent. It was conquered by renowned young Arab warrior Muhammad bin Qasim in AD 712. Bhambore is the local name of ruins situated on the north bank of the

65 km to the east of Karachi to Thatta. The remains of the fort are quite well maintained and easily marked among the heaps of broken bricks, coins and other artifacts found here clearly confirmed that this area had a Muslim population from the 8th to the 13th century AD. Popular folklore Sassi Punno a well known love story links to Bhambore. There is a mosque that is probably one of the oldest mosques in sub continent.



Fort bin Qasim - Bhambore

(III) Ranikot:

It is the largest historic stone fort in the world. It was used by Talpurs who ruled Sindh from 1783 to 1843. The whole architecture of the fort is comprised of gypsum and lime cut sand stone. It is situated in the Khirthar range about 30 km southwest of Jamshoro district of Sindh, approximately 90 km north of Hyderabad. This beautiful oldest palace is the sign of ancient Sindh. The 18-mile boundary wall is visible from a great distance and has much resemblance to the Great Wall of China.



A magnificent view of the Ranikot Fort

A large natural sweet water or spring emerging from an underground source is named as Parryen jo taro (spring of fairies).

(IV) Thatta:

Thatta is a historical town with 22,000 inhabitants near the Keenjhar Lake, 80 Km east of Karachi. It had been a capital of Sindh in the past and at least four Muslim dynasties ruled over it. It was a place which renowned for its trade and manufactures but its glory has completely departed. It is a marvelous, ancient city of Sindh and all of its major monuments are listed among the world heritage sites. The only monuments that survive the former glory of Thatta are Shahjehani Masjid (Mosque) and the tombs on the Makli Hills. These monuments reflect the city as a center of Islamic art.

a) Shahjehani Masjid

Shahjehani Masjid is a masterpiece and one of the finest buildings in Thatta. It was built in 1647 by the order of Mughal Emperor Shah Jehan as a memorial of his regard for the inhabitants. The whole mosque measures, 51,850 square feet. The interior of this building is beautifully painted with harmony of colors is highly remarkable. It is decorated by blue kashi tiles mostly with a white background but yellow and purple has also been used in its background.

b) Makli Hills

Makli hills are situated on Thatta highway 102 km southwest of Jamshoro. These are world largest graveyard with a diameter of approximately 8 km and supposed to be an eternal home for 125,000 of Sufi saints, kings, queens, philosophers and scholars. The grave stones and mausoleum stones represent the different eras and dynasties and reveal the history of many bygone days. There are monuments of Summa period (14th to 16th centuries), the Tarkhan & Arghun period (16th century), and the Mughul period (16th to 18th centuries). The finest feature of these buildings are the art work of stone



World's largest graveyard; Makli Hill

engraving, perforated stonework and beautiful glazed tile work in the shape of panels and dados (Smyth, 1919).

(V) Chaukundi Tomb:

The 16th century historic burial site chaukundi tombs located on the National Highway, 27 km from Karachi, comprise of innumerable sandstone graves with strangely-carved motifs in the form of stepped rectangle. This site is famously known as chaukandi due to this rectangular shape as chaukandi means four cornered. It is beautifully carved with various designs of jewellery, floral patterns and even horses and swords of men. The tombs are of various sizes and designs fall into two basic types. One type comprises of pillars supporting the roof while other are in the shape of oblong pyramid about 2- 4 m high.

(VI) Kot Diji Fort:

It is an important archaeological site on the National Highway, located in the Rohri Hills of Khairpur. It is situated on the old alluvium of the Indus valley. It was formerly known as fort Ahmadabad. It is surrounded by 12 ft mud wall with bastion throughout its length and a huge iron gate. According to historians and archeologists it is the earliest phase of Harrapan civilization which is dated around 2800-2600 B.C.

(VII) Shrines of Sindh:

Sindh is known for its deeply rooted sufi tradition which brought together the Hindus and Muslims in shared cultural world. There are numerous shrines of sufi saints in Sindh which are visited by hundreds of people daily from all around the country. These shrines are known as hotbeds for the religious innovation. Shrines played an important role not only as a centre of worship but also influence the art and culture, economic, social and political activities. The famous and most visited shrines by peoples from all parts of country are as follows:

Bhit Shah is known as the resting place of the renowned saint, sufi scholar and a greatest poet of Sindh, Shah Abdul Latif Bhittai. His most famous written work is the Shah jo Risalo which is the complete collection of his poetry. He traveled to many parts of Sindh but in order to create a spiritual environment he found a small town on sand dunes or 'bhit' which became known as Bhit Shah after his name.

Daraza Sharif is famous for the tomb of Sachal Sarmast who was better known to spread the message of divine love through his poetry. His real name was Abdul Wahab but he entitled as Sachal (truthful) because of his love for truth which he preached through out his life.

Sehwan is an old town of pre-Islamic period and a boundary between the two great divisions of the country. It is famous for the resting place of the great mystic poet and philosopher Shaikh Usman Marvandi (1117-1274) popularly known as Lal Shahbaz Qalandar. He is known as the first sufi saint in Sindh. Sehwan is situated about 300 km from Karachi. This town occupied a cardinal place at the time of invasion of Alexander the Great. The shrine gives an impressive look with its Sindhi kashi tiles, mirror work and two gold plated doors. This town is a hot place for those who want to learn and feel sufism.

1.6 Land use systems:

Sindh is one of the fastest growing regions of the country. Its rapid growth patterns and urbanization changes its land use system. Land in Sindh is under different uses such as human settlements, agriculture, industries, roads, rangelands, forests and wetlands. Although more than 50 percent of the total geographical area is cultivable, only 26 percent of it is actually located in the central plain. The land inside Indus embankments is almost equally employed by agriculture and forestry, while that outside the embankments is more extensively utilized for agriculture in the form of sparsely distributed irrigated plantations.

02 Ecological Profile:

Sindh is blessed with a variety of wildlife and different ecological zones. Mainly it has four ecological zones: Hill ranges of Khirthar and Kohistan in the west, sandy desert in the east, central alluvial plains along Indus River and Indus delta in the south.

2.1 Ecoregion:

As defined by scientists at the World Wide Fund (WWF), “an ecoregion (ecological region), sometimes also called a bioregion, is an ecologically relatively large unit of land that contains geographically distinct assemblage of species, natural communities and environmental conditions” (foreverindus.org). According to IUCN’s scientists “eco-regions share a large majority of their species and ecological dynamics; share similar environmental conditions, and; interact ecologically in ways that are critical for their long-term persistence”. There are over 238 ecoregions over the globe, popularly known as G 200, representing terrestrial, fresh water and, marine habitats. Eco-regions reflect the distribution of a broad range of fauna and flora across the entire planet. The biodiversity of flora, fauna and ecosystems that characterize an ecoregion tends to be distinct from that of other ecoregion.

2.2.1 Indus Ecoregion:

The Global 200 Analysis identified five eco-regions in Pakistan. The Indus Ecoregion is the only ecoregion that lies entirely within Pakistan’s boundaries particularly in Sindh province. Being located in a semi-arid environment, Indus ecoregion harbors Riverine forests along the Indus River, mangrove forests in the coastal areas while desert ecosystems occupy the periphery. Indus ecoregion is regarded as the 40th most biologically rich ecoregions in the Asia-pacific region; it covers approximately 65% Of the province of Sindh and partially or fully covers 18 districts of Sindh including



Map of Indus Ecoregion

Hyderabad, Dadu, Shaheed Benazirabad (formerly Nawabshah), Sanghar, Khairpur and Umer Kot. It includes the lower reaches of River Indus, the Riverine forests, freshwater Lakes, brackish water, salt Lakes and the Indus delta along with mangrove forests (foreverindus.org).

2.2.2 Importance of Ecoregion:

Sindh while situated in arid zone largely depends on the River Indus for its economic, ecological and social well being. Presence of mighty Indus in Sindh also somewhat ameliorates the otherwise hostile climate of the area in which biodiversity persists in healthier way. Indus ecoregion consists of many natural and semi-natural Lakes and water reservoirs thus giving rise to a mosaic of habitats such as aquatic, coastal, and riparian. Riparian habitats are often notably species rich places, with a variety of microhabitats within which numerous plants species coexist (Swanson *et al.* 1988, Gregory *et al.* 1991; Urban *et al.* 2006). It is a unique example of natural wetland type consisting of the main river, the irrigation canals, reservoirs, ponds, lakes, marshes, creeks, sand flats, mudflats and the mangrove swamps. It is rich in floral and faunal biodiversity.

a) Ecological importance:

Indus Delta is the most fertile land as it supports wide variety of vegetation such as sea weeds, mangroves, herbs, shrubs, different grasses etc. The Indus River has great ecological importance for the world as it is the main migration route of thousands of birds, which cross over the Himalayas to spend the winter either in Pakistan or further south in India. Out of seven recognized major flyways in the world the Indus Flyway Number 4 also known as Green Route is one of the most



A flock of Pelicans near Pai Forest

important flyovers for migratory birds from Siberia. The delta used to be an important area for resident and migratory waterfowl, crane, teals, pintails, mallard, etc. of a wide variety of species and few species of ducks, geese, eagle, Hobart bustard and falcons. Only a few places in the world have such plentiful variety of winged species as the wetlands of Pakistan.

b) Economic importance:

Water is considered as an economic asset, a strategic resource and security issue. This majestic River is the lifeline of Pakistan's economy especially agrarian economy. Sindh's coastline of approximately 350 km is also a very productive resource as 48 percent of fish export of Pakistan is from Sindh. Moreover, 71 percent of marine fish resources, 65 percent of fresh water fish resources, and 100 percent of brackish water fish resources are located in Sindh. About 97 percent of available freshwater is used for agriculture. Sindh is an agricultural province (producing good quality of wheat, rice and other grains) and agriculture serves as an engine of economic growth.

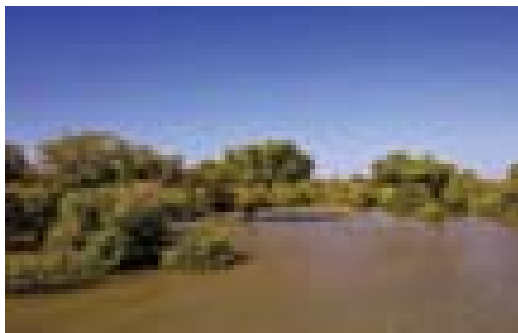
Proper water management and irrigation system enhance food grains productivity, employment and income, and thereby alleviate poverty and hunger.

03 Major Ecosystems:

Sindh has some distinct types of ecosystem; like coastal and marine ecosystem, inland freshwater ecosystem, forest ecosystem, Agroecosystems, Desert ecosystem etc.

3.3 Deltaic Ecosystem:

The fan-shaped or triangular Indus Delta is the fifth largest delta and unique by the fact that it experiences the highest wave energy among all river deltas in the world (Wells and Coleman 1984). The main features of Indus delta are seventeen major creeks and innumerable minor creeks and mud, sand and salt flats, marshes, lagoons and fringing mangroves (Meynell and Qureshi 1995). It covers an area of 600,000 ha out of which 160,000 ha is occupied by the mangrove vegetation (Hoekstra *et al.*, 1997; Anwar 2004).



Mangroves of Indus Ecoregion

These forests are unique in a sense that they are the largest arid mangrove forests in the world. Eight species of mangroves have historically been reported in the area, only four remain. These are *Avicennia marina*, *Aegiceras corniculata*, *Ceriops tagal* and *Rhizophora mucronata* (Meynell and Qureshi 1995, Hoekstra 1997; Anwar 2004; Ismail *et al.* 2006). In addition to floral diversity, the Indus Delta is also rich in faunal diversity, which includes fishes, reptiles, aves, and from small mammals to large sized mammals. Located southeast of Karachi, the large delta has been recognized by conservationists as one of the world's most important ecological regions. The Indus River Delta is a highly productive area at the juncture of both fresh water and marine systems. It falls under arid climatic condition with an average rainfall of about 220 cm and 76 % of relative humidity. It is characterized by moderate tide and high wave energy.

3.4 Agroecosystem:

The economy of Sindh is dominated by agriculture, making it the second largest province the area under agriculture. In this sense economic development of Sindh is largely dependant on the development and growth of the agriculture sector. The province contributes significantly to the overall national agriculture production in major crops: 32% in National Rice Production, 24% in National Sugarcane Production, 21.75% in National Cotton Production, 16% in National Wheat Production (Federal Govt. latest communication 2008).

Rice is considered a 'luxury crop' and is cultivated in areas with sandy soils, particularly in the deltas. Wheat is a staple food of the inhabitants of the province. It is grown throughout the left bank side. The main Kharif crops of the province are cotton, rice, sugar cane, millet, maize/corn and a few pulses. Cotton is mainly found in areas that are hot and dry and have sandy clay soils. Sugar cane grows only in irrigated areas throughout the province. The total cultivated area in Sindh is 5.88 million hectares and the net area sown is 2.39 million hectares. The total cropped area is 3.10 million hectares, of which 0.71 million hectares are sown more than once (Stewart 1982). Among valuable fruit trees mangoes, bananas, dates, papayas, chikus, citrus, guavas and wide range of vegetables are grown.

The lands now under agriculture were originally under the tropical thorn forest, comprising species like *Prosopis cineraria*, *Acacia senegal*, *Capparis decidua*, *Salvadora oleoides*, *Salvadora persica*, *Comiphora stocksii*, etc. The spread of agriculture has badly decimated these species, and thus the tropical thorn forest is regarded as the most threatened ecosystem in the subcontinent (Khan 1994).

3.1 Coastal Ecosystem:

The Sindh coastal region extends from the Sir Creek on the east, and the Hub River estuary along the Balochistan coast on the west. This coastal region is about 350 km long and can be divided into the Indus Delta and Karachi coast. Mangrove forests comprise the main coastal vegetation earlier extending over some 600,000 hectares in between Karachi and the border between Pakistan and India (Meynell and Qureshi 1995). These forests are now shrunk to less than 80,000 Ha. The Indus Delta mangroves are perhaps unique in being the largest area of arid climate mangroves in the world. It is estimated that 100,000 people belonging to different communities are taking benefits for themselves and their livestock.

These communities use the creek waters and coastal sea for fishing, and the mangroves for harvesting fuel wood and fodder and browsing areas for their animals. The grassy mudflats are also used for grazing buffaloes and cattle. During the monsoon season, herders from further away, graze their livestock on some parts of the system. It provides breeding ground for variety of fish, shrimps, crabs and other invertebrates. Mangroves are of great significance as a source of nutrients for fisheries. Since majority of the people residing near or around the coastal areas are engaged in fishing and related activities, mangroves make an important contribution to the local and national economy. *Avicenna marina* (Timar) is the main mangrove species that comprises 99% of the total mangrove vegetation.

The coastal wetlands attract a number of migratory birds, particularly waterfowl. Two species of turtles are also found in the shores of the Karachi coastline. These are the Green Turtle (*Chelonia mydas*) and Olive Ridley Turtles (*Lepidochelys olivacea*). Karachi coast is known for high diversity of birds and marine mammals.

3.2 Riverine Forest Ecosystem:

The importance of forests is expected to increase worldwide in the new millennium for preservation of environment, stabilizing of climate and conservation of all kinds of biodiversity. There is big diversity in the types of forests in Pakistan. These are from the temperate to the dry lands interspersed with Riverine forests along the Indus River. Ahmad (1953) described two types of forests in Sindh; "the forests growing inside the flood embankments along the Indus River are called Riverine forests and the other are situated outside embankments are called Inland forests". Riverine forest further subdivided in to *Pakko* and *Kacho* forests. *Pakko* forests are situated away from the river bank while *Kacho* forests are near the riverbank.

Riverine forests are one of the important ecosystems of Sindh which provide fuel wood, timber, fodder, honey and tannin as a source of livelihood for thousands of people. Moreover, they serve as carbon sinks and also protect the surrounding areas from the severity of floods. These forests are mainly characterized by trees and shrubs. The main tree species grown are Babul (*Acacia nilotica*), Kandi (*Prosopis cineraria*), Lai (*Tamarix spp*), and Bahn (*Populus Euphortica*). In many parts, the riverine forests are badly invaded by the alien species *Prosopis juliflora* (Devi) which has replaced many native species.

Total area of Riverine forests and irrigated plantations is 323,350 ha spread in 14 districts, which make 2.3% of Sindh province. According to Wani *et al.* (2004) Riverine forests occupy 0.332 million hectares area (m ha) in Pakistan that is about 7% of total forests in forestland. The Sindh province owns 0.272 m ha Riverine forests, which is about 82% of total Riverine forest area in the country. These figures depict that the Sindh province is rich in Riverine forests. (Natural Vegetation Assessment, 2008).

Depletion of Riverine forest resources reached such an alarming proportion that harvesting had to be banned in 1993 for two years. As a result of a declining trend in the annual inundation from the Indus, a nominal area is revived every year in the Riverine forests. Most of the Riverine forests are known as 'Reserved Forests' or 'Protected Forests' under the "Pakistan Forests Act, 1927".

3.5 Deserts:

The arid zones of Sindh represent 17 percent of the arid land of Pakistan and can be classified as subtropical deserts. These cover an area of over 68,000 km² of the province and can be roughly divided into three even-sized distinct regions: Thar, Nara and Kohistan, out of which a total area of 14.09 million hectares (MHA), 9.28 MHA form rangeland in these areas (IUCN, 2004).

Thar covers 23,000 km² and has a population of nearly one million people. This region is mainly in the Tharparkar, Mithi and Umer Kot districts and extends southwards along the Rann of Kutch. Its climate is arid in the north, and semi-arid in the south depending on the rainfall which varies from north to south.

Nara is located in Khairpur Mir District stretches over 22,000 km². Its upper portion lays in Sukkur (population 908,373,000), Khairpur (population 1,546,587,000), Shahid Benezirabad (Nawabshah) (population 1,071,533) and Sanghar (population 1,453,028) districts. Thar and Nara are located on the left side of the river and form the eastern boundary of the province (IUCN, 2004).

Kohistan region covers 23,000 km² and occupies four percent of the total landmass of the province, consisting of parts of Dadu (90 percent of the area with a population of 1,688,811), Larkana (6 percent of the area with a population of 1,927,066) and Thatta (4 percent of the area with a population of 1,113,194). Kohistan lies along the western boundary between Sindh and Balochistan and extends in the South along the Indus Delta (Qazi, 2003).

These three regions are distinctly marked with sandy hills steep slope and vast low lying flat areas locally known as patt. The vast sandy tracts are broken up by undulating sand dunes and/or barren mountains. Though the living condition is inhospitable but these are often characterized by ecosystem consisting of unique flora and fauna. Flora consists mostly of stunted scrub and bush although trees such as the *Prosopis cineraria* occasionally dot the landscape. The nutritive grasses provide fodder for the livestock that comprise of cattle, camels, goats, and sheep. The Ibex of Kohistan and the Gazelle deer and peacocks of Tharparkar are animal species unique to this region.

3.6 Rangelands:

The rangelands also known as protected forest are the areas which provide fodder for cattle species in desert and dry mountainous area and refuge for mammals, indigenous and migratory birds and reptiles. Rangelands are a critical component of the arid zones of Sindh covering an area of 0.457 million ha. The rangelands in Sindh are mostly state property and it is necessary that they are managed in an integrated manner to ensure productivity in a sustainable manner (IUCN 2007).

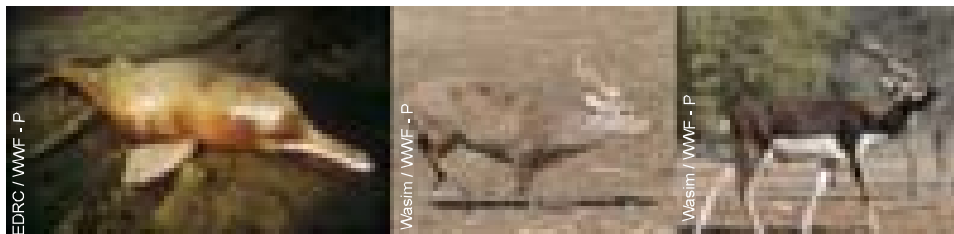
4.0 Biodiversity profile:

Biodiversity is a term used for all forms of life on earth and its variability among living organisms from all sources. Every part of the earth has distinct features of plant, animal and microorganisms depending on its climate and geology. It plays an important role in ecosystem functions that provide support, regulations and cultural services essential for human well-being. People rely on biodiversity for food, medicine and other raw materials of their needs (IUCN 2007). Sindh is rich with floral and faunal diversity and is a blend of elements from different origins.

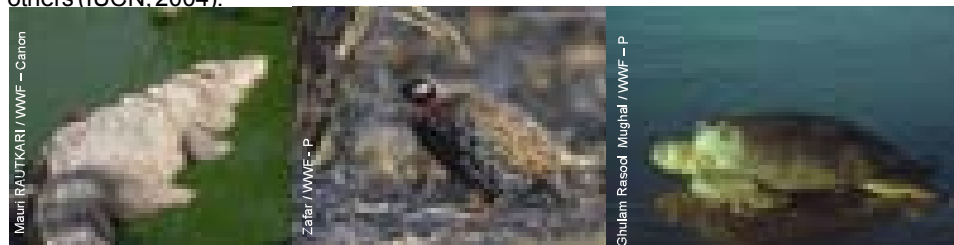
Sindh falls in the category of arid lands with scanty and unpredictable rainfall. The importance of the biodiversity of arid and semiarid lands is recently being increasingly recognized as these dry lands occupy more than 40 percent of Earth's land surface have to support more than one billion people (Hassan 2003, Donaldson *et al.* 2003). The natural flora and vegetation being the primary producers play the most pivotal role in every ecosystem by providing food and shelter to the natural fauna and livestock. In arid ecosystems, one of the most important ecological services of natural vegetation is the control or erosion. The process of desertification is known to be associated with decreasing species diversity and habitat degradation (Xueli and Halin 2003).

Plant species form an important component of the biodiversity of the province, are a source of fodder, and an important source of raw material. Sindh also has a variety of medicinal plants, which are used in healthcare products, traditional medications, dyeing, as culinary spices, and in natural cosmetics and perfumes.

Besides floral diversity it is also rich in faunal biodiversity that includes 80 species of large mammals, 42 species of small mammals, approximately 414 species of birds, about 65 species of reptiles, and an estimated 5 species of amphibians (foreverindus.org). Among mammals Sindh Ibex / Persian wild goat, Afghan Urial / Asian wild sheep, Indian desert Gazelle / Chinkara, Black buck, Hog deer, Blue bull, Striped hyena, Indian desert wolf, Indian desert fox, Red lynx, Jungle cat, Pangolin, Indus blind dolphin, Blue whale, Mouse-like hamster and many others are found in different areas of Sindh (IUCN, 2004).



Crocodiles are abundantly found in Manghopir area situated about 16 km north of Karachi and in Nara canal. Monitor Lizard and Finch Toed Lizard are the most common species of Lizards found throughout the Sindh. A wide variety of snakes can be seen here, like Indian cobra, Indian Python, Naja, Saw scaled and vipers etc. Some other amphibians and reptiles of Sindh includes Green turtles, Pacific Olive Ridley turtle, Spotted pond turtle, Starred tortoise, Sindh broad tailed, Orange tailed sand skink, Indian sand swimmer, Indian Chameleon, Oxus/Black cobra, Sindh river snake, Slender blind snake, Indus toad and many others (IUCN, 2004).



Birds from the South Asian subcontinent, east Africa, Europe and much of Asia are found in the Sindh, which serve as a caravanserai for Eurasian avifauna travelers. Some fly-in to stay here for feeding and breeding during the winter, while the rest fly through. Sindh has four resident species

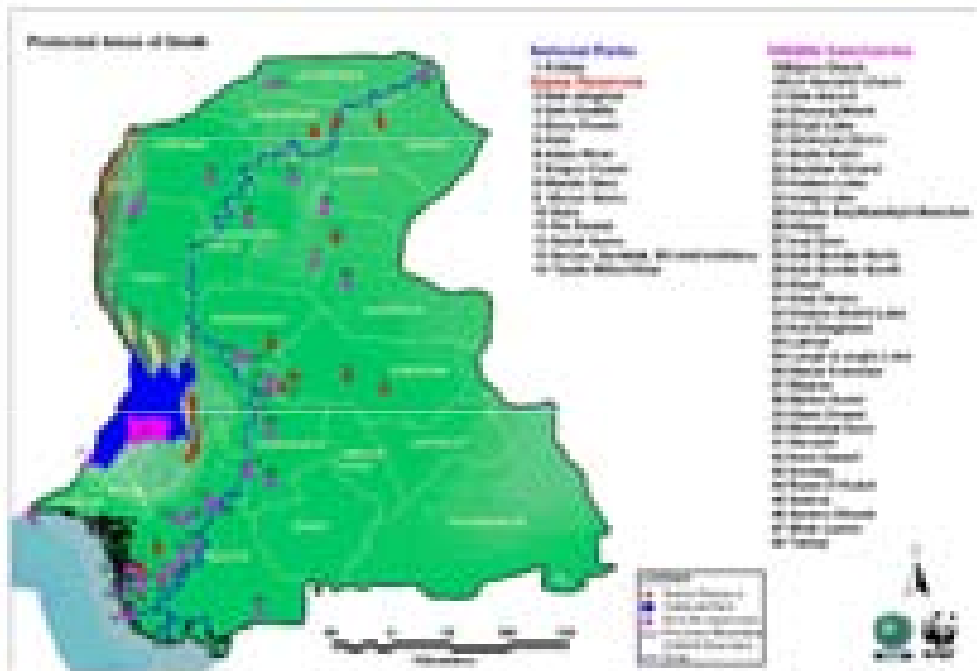
of ducks of which three are tree ducks like the lesser whistling teal, Cotton teal and Marbled teal; while the spot bill duck is a marsh duck.

The Eurasian Black Vulture or the Cinereous Vulture can also be found in Sindh. They breed in Balochistan and NWFP but migrate to Sindh during winters. Among the Sand grouse the spotted and chestnut bellied sand grouse outnumber other species and are fairly evenly distributed all over the arid areas of Sindh. There are various species of raptors abundant in Sindh. The Goshawk is a rare migrant visitor to Sindh, favoring wooded areas. Among the resident species are White Eyed buzzard, Shikra, Red-headed Merlin and Kestrel. The White Eyed buzzard is the most widespread raptor in the province since it is well adapted to irrigated cultivation and wooded areas as it is to fairly treeless scrub desert areas. Other important birds of Sindh includes Black Partridge, Grey Partridge, Yellow Legged Green Pigeon, Blue Peafowl, Red Turtle Dove, Lesser Flamingo, Crane, Imperial Eagle, Sindh Pied Woodpecker, Sindh Jungle Sparrow, Jordan's Babbler and many others are also observed in the Sindh province.

4.1 Protected Area Network:

Due to rapid growing human population there is a need to protect forests and forest resources. Outside the Indus basin, wildlife has maintained itself due to the remoteness and inaccessibility of the terrain, especially in the northern mountainous, tribal areas.

There are number of protected areas in Sindh. These protected areas contribute to the preservation and conservation of biodiversity.



In Sindh, out of 54 protected areas, there is one National park which is Khirthar National Park. It is accessible to the public for and facilities for recreation, education and research. There are 35 wildlife sanctuaries (a wildlife sanctuary is an area, which is set aside specifically as an undisturbed breeding ground for the protection of wildlife. It is a restricted area, the use of which is denied to public), 14 are game reserves (hunting and shooting of animals in these areas are regulated under a special permit), and remaining 4 are unclassified (wildlifeof Pakistan.com).

4.2 Ramsar Sites:

In Pakistan 19 wetlands have been declared as Ramsar sites out of which 10 are in Sindh province. These have been declared as Ramsar on the basis of regularly supporting congregation of 20,000 water birds. Ramsar sites are wetlands of international importance designated under the Ramsar Convention. Amjad and Qidwai (2002) referred wetlands as 'biological supermarkets' because of rich biodiversity, extensive and rich food webs and high productivity.

There are various types of wetlands such as wooded land, peat land, flood plains, and mangrove swamps, etc. Ten protected wetlands under the Ramsar Convention are located here – the Indus Dolphin Reserve, Kalri Lake, Drigh Lake, Haleji Lake, Jubho Lagoon, Nurruri Lagoon, Deh Akro, Rann of Kutch, Hub Dam and the Indus Delta.

Sindh's coastal and estuarine wetlands serve as critical breeding, rearing, staging, and wintering grounds for migrating birds and house a number of globally important fish and shellfish species.



Wetlands have significant economic importance for local communities, who harvest several wetland species of fauna and flora for food and for economic gain. Sindh's wetlands feed an ever-increasing human population and a substantial dependent population of wetland species, both plant and animal. (IUCN 2007).

4.3 Reserve Forests:

Approximately 2.29 percent of the total area of Sindh is covered with forests. The forests of Sindh are important for soil stabilization, particularly in the vast arid zone of the province as well as for the protection and productivity of neighboring agricultural lands. Forests are important sites that support a rich diversity of flora and fauna and meet fuel wood and fodder needs of local communities. Forests are also important as grazing grounds for livestock and provide important non-timber products such as medicinal plants, spices, and honey.

Many important forest species are disappearing owing to water deficiency, water logging, and salinity, all of which induce severe land degradation. This will have far-reaching implications for other sectors including agriculture, wildlife, and wetlands, to name only a few. Water is the lifeline of the forest sector and this is rapidly diminishing resource. Coupled with natural disasters related to climate change and drought, the sustainability of the forests of Sindh is being threatened.

05 Flora of Indus Ecoregion:

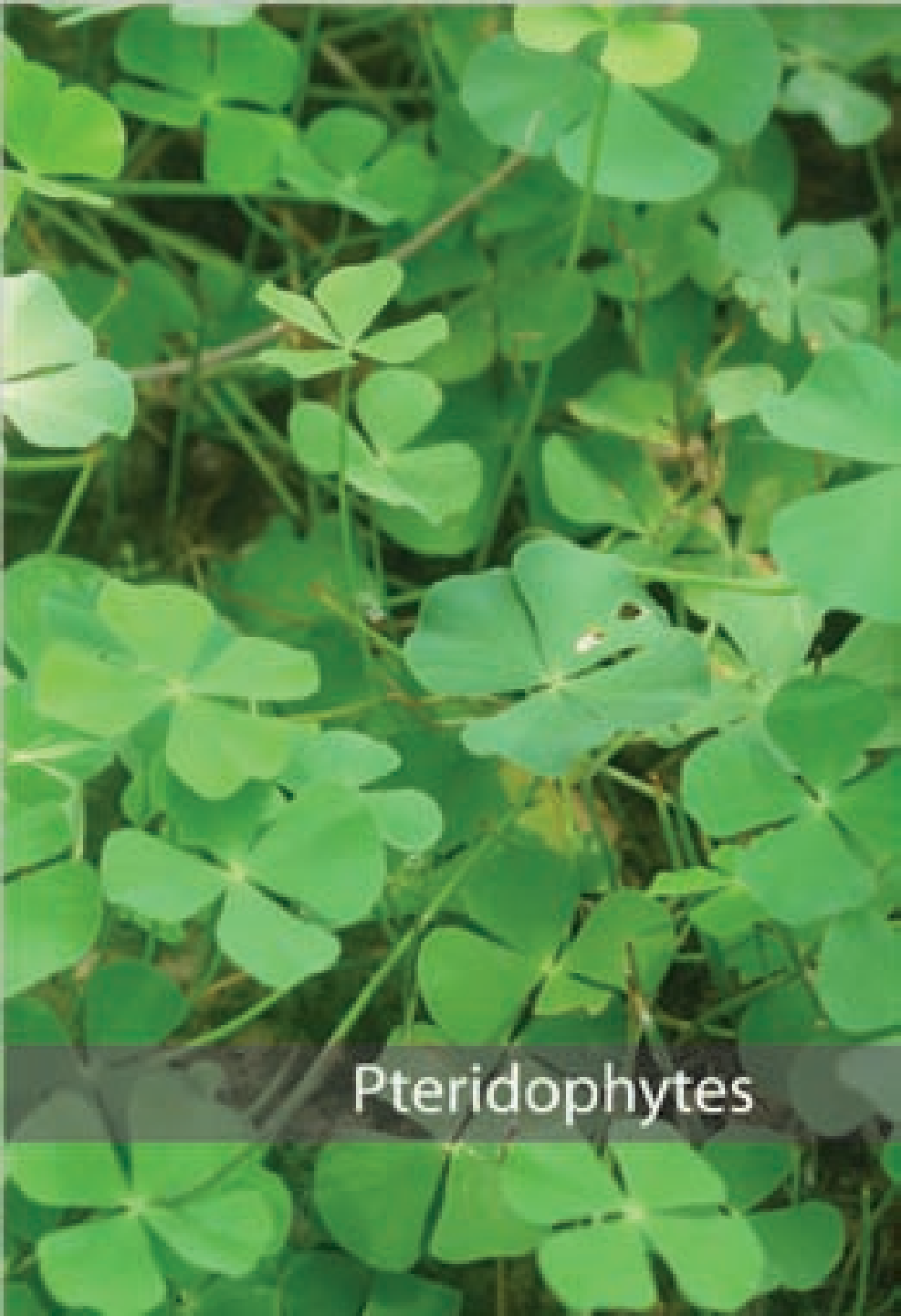
It is beyond the approach to give an account of the history of plant exploration, but we must pay tribute to R. R. Stewart (1890-1993) who had collected plants from all over Pakistan. From the older times Floras for various parts of Sindh are available such as "Flora of Indus Delta" (Blatter et al. 1929), "Plants of Karachi and Sindh" (Hasnain and Rahman 1957), "The Vegetation and Range Flora of Thar Desert" (Chaudhri and Chuttar 1966), "The Flora of Karachi" (Jafri 1966). Recently the "Flora of Pakistan" (Nasir & Ali 1969-1989, Ali & Nasir 1989-1991, Qureshi, S 1972, Ali & Qaiser 1992-1998, 2000-2009) has covered Sindh along with other parts of Pakistan. However, the plants of Sindh are scattered in the 217 fascicles of Flora of Pakistan and it is not an easy task to get the whole picture of Sindh's flora from these fascicles. Besides this, some families are yet to be published while the earlier published families are in fact in need of revision. As a matter of fact, Floras can never be definitive as new facts, information, and new records are always coming to light (Hedge 1991).

Chaudhari & Chuttar (1966) carried out a preliminary survey on Range Flora of Thar Desert and published a checklist of 122 species from this region. In addition, some other authors reported floristic and ethnobotanical observations from few parts of this region and also Nara desert (Bhatti et al., 1998, 2001, Qureshi 2004).

While mentioning the Sindh flora, Stewart (1982) mentioned that "Sindh is a continuation of the great desert belt, south of the Mediterranean, stretches clear across North Africa, Arabia and southern Iran to the foot of Himalayas along the Indus and its great tributaries. Sindh has four distinct vegetation zones viz., (i) Tropical Thorn Forest with small and sparsely scattered trees with little ground cover. (ii) Riverine forests (iii) Wetland vegetation (iv) Coastal vegetation". Stewart (1982) further mentioned that "flora of Sindh is poor compared with that of rest of the areas of Pakistan because of fewer habitats and less climatic and altitudinal variations. In spite of this limitation, flora of Sindh is of great interest and there are many different habitats with rich plant biodiversity".

The bulk of natural flora species belongs to Angiosperms, with a high diversity of grasses (Poaceae), typical for the arid lands like Sindh. Only one Gymnosperms species, i.e, *Ephedra ciliata* occurs naturally, while few Pteridophyte species thrive in wetlands. A very small number of Bryophyte species is found on moist soils of comparatively cool areas , such as river banks in Keti Shah (Sukkur Dist.) and wetlands of Khirthar Range. Few species of macroscopic algae belonging to the genera *Chara* and *Nitella* occur in the shallow water along the margins of water reservoirs and in slow moving rivers and streams.

This guide is aimed to explore and introduce the floral diversity of the Indus Ecoregion to anyone with the basic background in vegetation or who is taking interest in the wonderful natural world of flora. The plants included in this book are selected from the five main localities of Indus Ecoregion (Keti Shah (Sukkur), Keti Bunder (Indus Delta), Keenjhar (Fresh water ecosystem), Chotiari (desert and fresh water ecosystem) and Pai (a Forest ecosystem). Current scientific names, English and local names are used for all the species.



Pteridophytes

Adiantaceae



Adiantum capillus-veneris L.

English name: Maiden hair fern, venus-hair fern.

Local name:

Description:

A small rhizomatous herb of light green in color. The rachis of leaf is shining black and wiry, leaves are divided into much more pinnae each pinnae is about 5 to 10 mm long.

Habitat:

Semiaquatic. This fern is commonly found in moist and shady margins of freshwater canals and ponds.

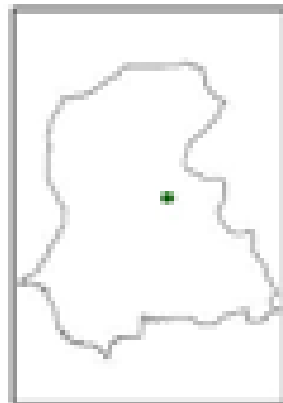
Uses:

Used as ornamental plant in houses, the plant extract is used for induce vomiting, treat liver, spleen and chest diseases.

Leaves are used as tonic for treatment of hair. Frequently Used in Tibb-e-Unani, by the name Per Siao Shan.

Distribution:

Sub-cosmopolitan in distribution.



Azollaceae



Azolla pinnata R.Br.

English name: water fern, mosquito fern.

Local name: Jaaru.

Description:

The plant is commonly known as mosquito fern, it is very tiny, free floating hydrophyte. The plant is variable in colour that is from green to reddish, depending upon weather conditions from cold to warmer respectively. Reproduction is by spores as well as vegetative propagation.

Habitat:

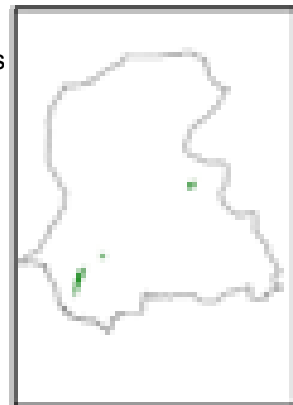
Hydrophytic. It is a floating hydrophyte, found in small fresh water canals and ponds.

Uses:

In Asian countries the plant is used as fertilizer in rice fields because it has symbiotic cyano- bacteria which perform nitrogen fixation thus increase the soil fertility.

Distribution:

Cosmopolitan in distribution.



Equisetaceae



Equisetum debile Roxb.

English name: Horsetails.

Local name:

Description:

Amphibious herb with jointed green stem and distinct nodes, leaves green, narrow and minute, in whorls around nodes. Spore bearing cones appear on terminal position of the green stem, propagation by rhizome as well as spores.

Habitat:

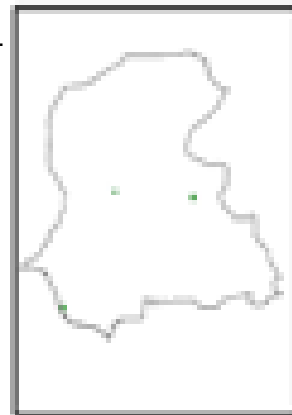
Aquatic or semiaquatic. Common in the moist soils of water courses.

Uses:

It possess cooling and diuretic properties and is used to treat gonorrhoea. The plant is used medicinally to relieve arthralgia.

Distribution:

The plant is distributed in Asian countries.



Marsiliaceae



Marsilea minuta L.

English name: clover fern, pepperwort.

Local name:

Description:

An extremely variable plant; cushion-like on dry land, spreading and creeping in water; perennial or sometimes annual, produces sporocarps in spring seasons, it tolerates considerable organic pollution, propagates by runners.

Habitat:

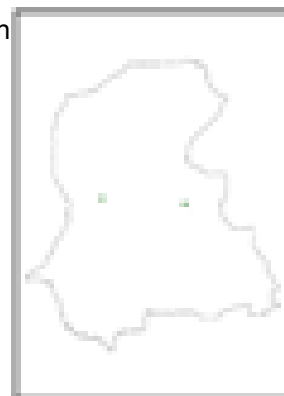
Hydrophytic. Commonly found in shallow pools, at the edge of the rivers, canals, ditches and in rice-fields.

Uses:

The decoction of leaves along with ginger is used in cough and bronchitis.

Distribution:

Asia, Africa and Madagascar.



Salviniaceae



Salvinia molesta Mitchell.

English name: Giant Salvinia, Kariba weed.

Local name: Be-phrh, Jaaru.

Description:

Annual to perennial; free-floating in wide variety of aquatic habitats, the main stem fragments easily, upper surface of leaf covered with typical water-repellent hair. It is one of the most dreaded aquatic invasive species of the world, which forms thick mats on the surface of water bodies, thus out-competing the native flora and asphyxiating the aquatic animals.

Habitat:

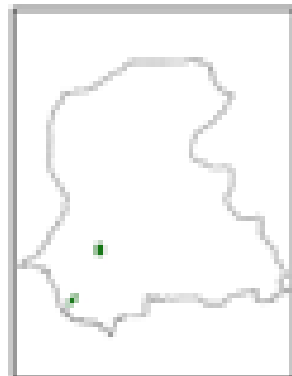
Hydrophytic. Grows best in high nutrient levels, in quiet water lakes and ponds, ditches, slow flowing streams and rivers and reservoirs of dams.

Uses:

The plant can be used as raw material for biogas Production; it is also used in aquarium.

Distribution:

Native to Southeastern Brazil, but now widespread in many Tropical and temperate countries.





Gymnosperms

Ephedraceae



Ephedra ciliata Fisch. & Mey ex C.A. Mey.

English name: Ephedra.

Local name: Wahri.

Description:

A straggling plant species, due to the weak stem it spreads over other plants like *Prosopis cineraria*, *Salvadora* and *Lycium* species, the plant has bunch of green branches arising from the same node, minute yellowish green strobili (unisexual, male or female) come up from each node. Propagated by seed.

Habitat:

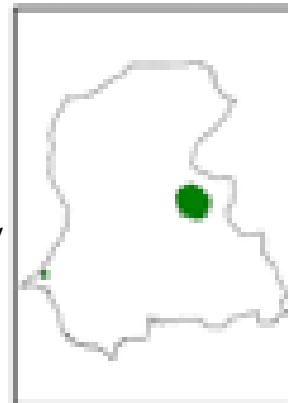
Xerophytic. Common in the warmer and sandy areas.

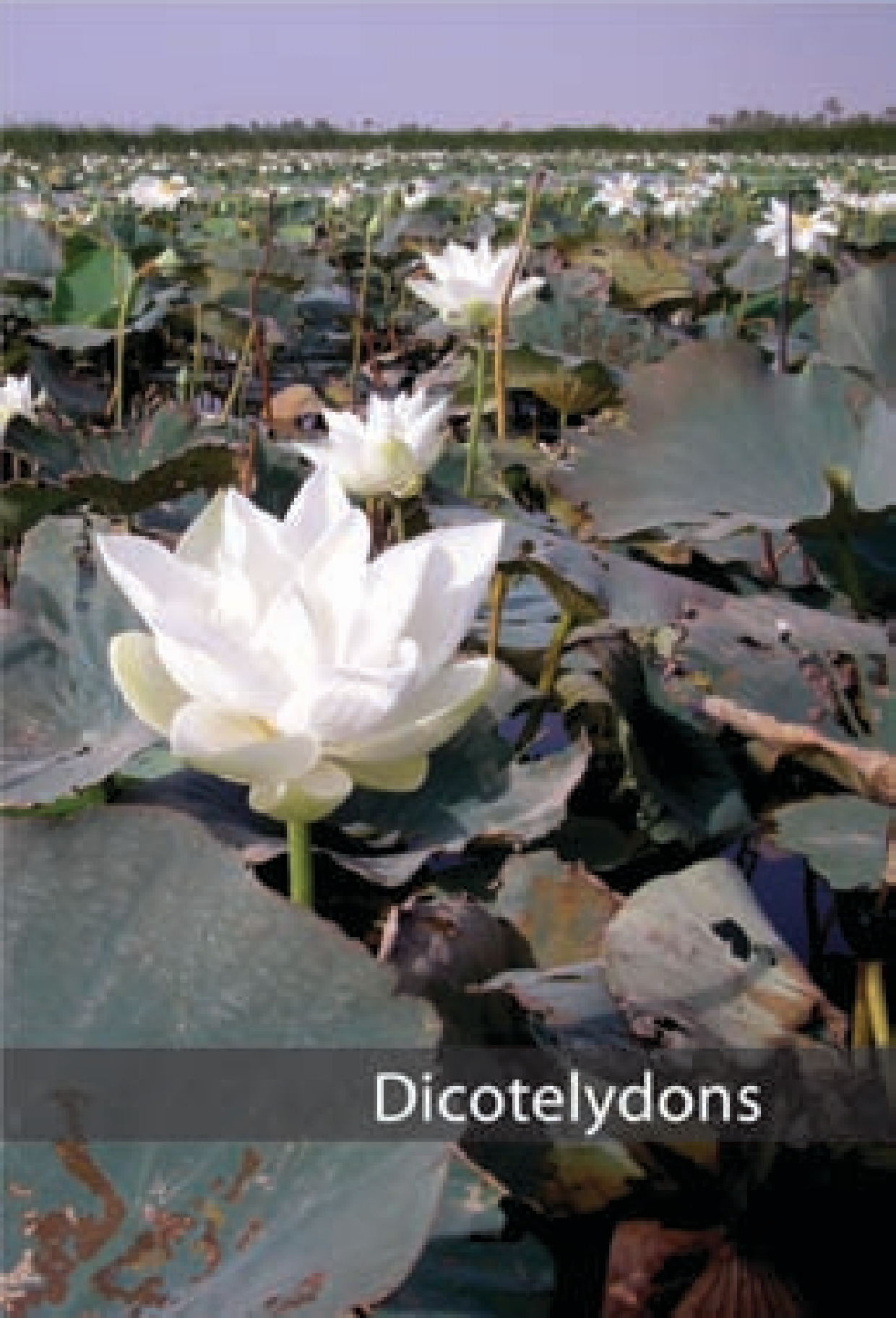
Uses:

Stem of the plant has ephedrine which is used in cure asthma and many other respiratory disorders. However, this species does not have enough contents for commercial exploitation.

Distribution:

Pakistan, Iran, Afghanistan, Central & South Asia and Africa. It is the only Gymnosperm species found naturally in Sindh.





Dicotelydons

Acanthaceae



***Barleria acanthoides* Vahl.**

(Syn: *Barleriacanthus acanthoides* Oerst.)

English name:

Local name: Kandar wari booti.

Description:

A small grayish pubescent low growing spiny shrub with many branches, 60 cm tall, stem base woody and hard. Flowers white with long narrow tube, opening in night and falling in the morning.

Flowering period:

September to February.

Habitat:

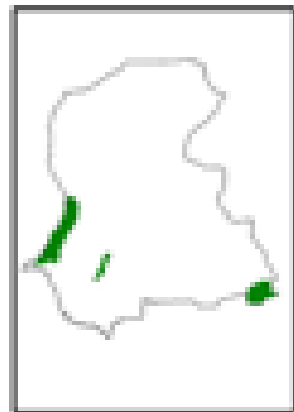
A tough xerophyte, mostly found in hot dry gravel, stony and rocky areas.

Uses:

The leaves used as alternative and in fever and catarrh. The plant is used as fodder for goats and camels.

Distribution:

Egypt, Sudan, Ethiopia, Somalia, Pakistan, Northwest India and Djibouti.



Acanthaceae



***Barleria hochstetteri* Nees.**

English name:

Local name: Kakoori booti, Ache phool wari booti.

Description:

A small, low growing shrub, woody at the base, with many branches generally up to 35 cm high, having purple or lilac pink flowers, spineless. Leaves broad oblong covered by soft white hairs at both surface.

Flowering period:

April to November.

Habitat:

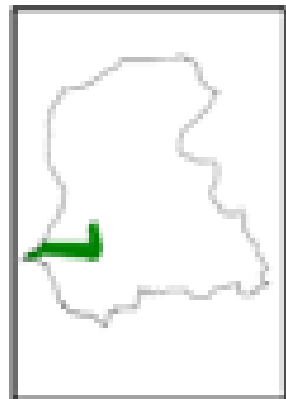
Commonly found on hills and rocks on stony and gravelly exposed slopes.

Uses:

The plant generally grazed by livestock.

Distribution:

East Tropical Africa, Arabia, Iran, Pakistan (Balochistan, Sindh) and Southwest. India. A rare species in Sindh.



Acanthaceae



***Barleria prionitis* L.**

English name: Porcupine flower.

Local name: *Sindhi*-Khussaro, *Urdu*- Kantajali, Kanthajathi, Katsareya, *Punjabi*- Kantaasherio.

Description:

An erect spiny tall shrub with many branches growing upto 1-2 m in height, having large orange to golden yellow flowers.

Flowering Period:

October to March and fruiting from March to June.

Habitat:

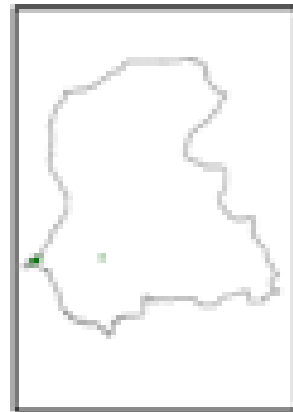
Mostly grows on stony grounds, but rarely found on sandy soils. Grow as a hedge.

Uses:

The plant extract is used in whooping cough and Tuberculosis. Useful for treating acute and chronic congestion of the liver, jaundice and urinary disorders. The leaf juice is also recommended for treatment of fever, nose and throat diseases, and also dropped into the ear in Otitis.

Distribution:

Pakistan eastwards to Indo-China and Malaysia. Not common in Pakistan.



Acanthaceae



Blepharis indica Stocks ex T. Anders.

English name: Blepharis.

Local name: Asad, Bhangari.

Description:

A dichotomously branched, prostrate under-shrub with greenish-hairy and woody stem. Leaves elongated and narrow and flowers purple with very short tube and three lobed corolla, arranged in strobilus-like spikes with spiny bracts.

Flowering Period:

July to November.

Habitat:

Usually found in rocky or sandy places.

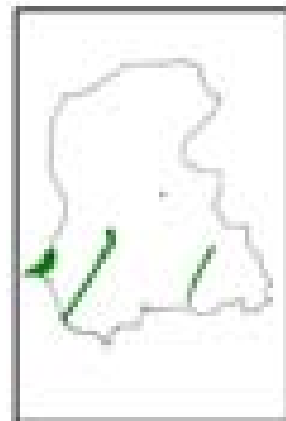
Uses:

The seeds are used as a tonic when boiled in milk, the plant or seeds are also used as a cure for earache.

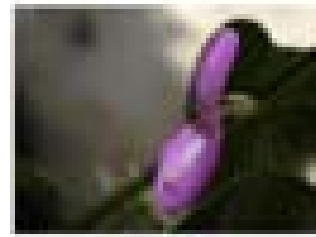
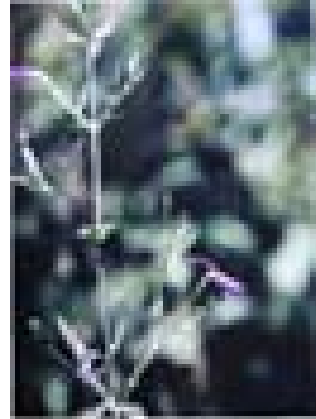
The plant is consider very good fodder, it increase milk quality and quantity in livestock.

Distribution:

Endemic to southern Pakistan (Sindh, Balochistan).



Acanthaceae



Peristrophe paniculata (Forsk.) Brummitt.
(Syn: *Dianthera paniculata* Forssk.)

English name:

Local name: Ubut, Kundri.

Description:

An annual, erect, much branched hairy herb, up to 1 m tall or purple flowers in trichotomously branched panicles. monsoon rains. Reproduces through Seeds.

Flowering Period:

August to October.

Habitat:

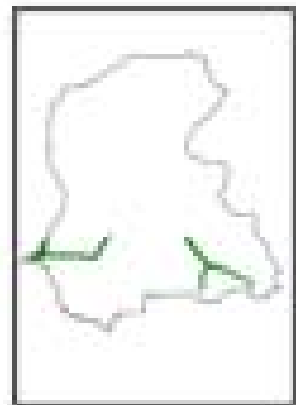
Found in moist and shady places near to tracks.

Uses:

Used as antidote for snake-poison, antinematode and pesticide. The plant is said to be commonly eaten by rats in the Tharparkar desert. The plant paste is used in surgeries in case of bone fractures.

Distribution:

Tropical Africa, Pakistan (Punjab, Sindh), India, Burma, Malaya and Indo-China.



Acanthaceae



Ruellia patula Jacq.

English name:

Local name: Kakoori Booti.

Description:

An erect, perennial, pubescent herb or under-shrub growing up to 50 cm with many branches and a woody base having white or off-white sessile short-lived flowers, opening in night and falling by 8:00 to 9:00 a.m.

Flowering Period:

September to March.

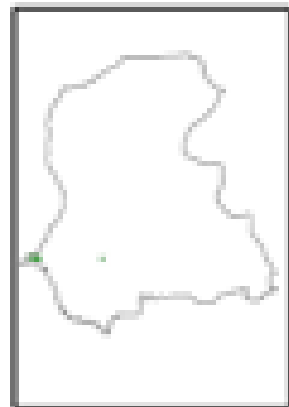
Habitat:

Tough xerophyte. Commonly found on sandy and stony places.

Uses:

Distribution:

Tropical Africa, Arabia, Pakistan, Southwest India and Sri Lanka.



Acanthaceae



Ruellia linearibracteolata Lindau.
(Syn: *Ruellia sindica* Df.)

English name:

Local name: Bukhar booti.

Description:

An erect, glandular, pubescent low growing subshrub reaching at the height of 40 cm, much branched woody at the base, leaves narrow elongated with soft hairs. Flowers purple or bluish purple.

Flowering Period:

August to October.

Habitat:

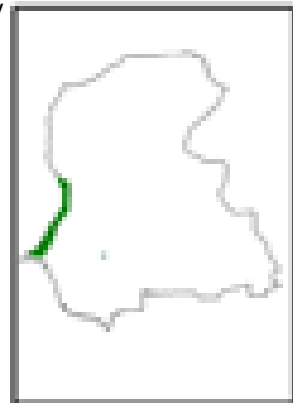
Tough xerophyte. Found in gravel, stony slopes especially on foothills.

Uses:

The plant is grazed by livestock.

Distribution:

Southern Pakistan (Karachi, Khirthar range, adjacent parts of Balochistan) and Somalia.



Aizoaceae



Corbichonia decumbens (Forssk.) Exell.
(Syn: *Orygia decumbens* Forssk.)

English name:

Local name: *Sindhi-* Baro-un-wal, *Urdu-* Patar-chatli.

Description:

An annual or short lived perennial herb, procumbent or prostrate with rigid branches. Leaves soft, somewhat succulent glabrous. Flowers pink, mauve or magenta, opening around 4:00 p.m.

Flowering Period:

October to January.

Habitat:

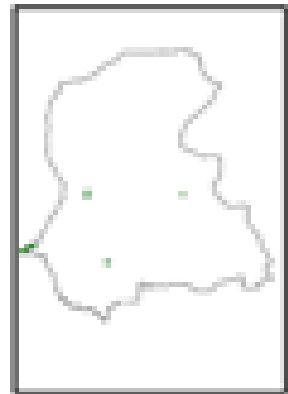
Usually found in rocky and stony places in dry hot areas.

Uses:

The plant has remarkable medicinal values.

Distribution:

Africa, West Asia, India and Pakistan.



Aizoaceae



Gisekia pharnaceoides L.

English name:

Local name: *Sindhi*- Kushta-gandhi, Kirtion, Chapra, *Urdu*- Morang, Balu-ka-sag, *Punjabi*- Aluka, Balu-ka-sag.

Description:

A small decumbent glabrous soft and fleshy herb of hot and sandy areas; 2.5-3.0 cm long, variable in form and size. Leaves elliptically elongated, flowers in clusters, minute variable in colour.

Flowering Period:

August to November.

Habitat:

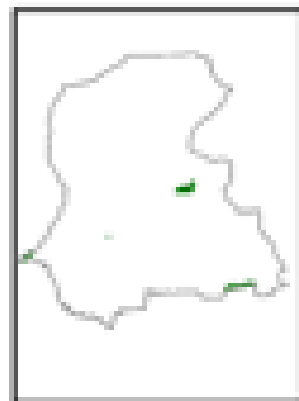
Found in dry sandy places, propagates by seeds.

Uses:

The plant is used as purgative by local inhabitants, used for the treatment of thirst, scabies, heart-trouble, urinary diseases and stomach troubles. It is used as pot herb in times of scarcity; fresh green leaves are useful for the expulsion of taenia or tapeworm.

Distribution:

India, Africa, Sri Lanka, Pakistan, Afghanistan and Arabia.



Aizoaceae



Limeum indicum Stocks. ex T. Anders.

English name:

Local name:

Description:

A small prostrate annual or short lived perennial herb of sandy and open habitats with glandular-pubescent stem and white flowers. Leaves pubescent, dark green small, lamina obovate in shape with pointed apex.

Flowering Period:

March to September.

Habitat:

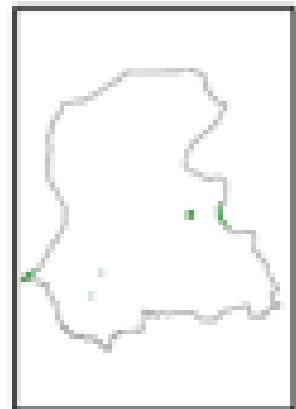
Usually found in sandy places and dry river beds.

Uses:

It is a useful wild source of food and fodder.

Distribution:

Warmer arid and semi-arid regions of the world.



Aizoaceae



Sesuvium sesuvioides (Fenzl.) Verdc.
(Syn: *Diplochonium sesuvioides* Fenzl.)

English name:

Local name: Bari ulwaiti, Kori Lonk.

Description:

A low creeping annual herb with diffuse, succulent thick reddish stem. Leaf shape varies with the soil condition, alternate or sub-opposite, spade shape. Flowers minute shiny pink, solitary or sometime in clusters about 1 cm of diameter.

Flowering Period:

Most part of the year.

Habitat:

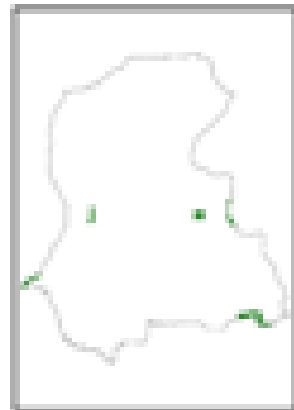
Found in moist sandy and slightly saline places.

Uses:

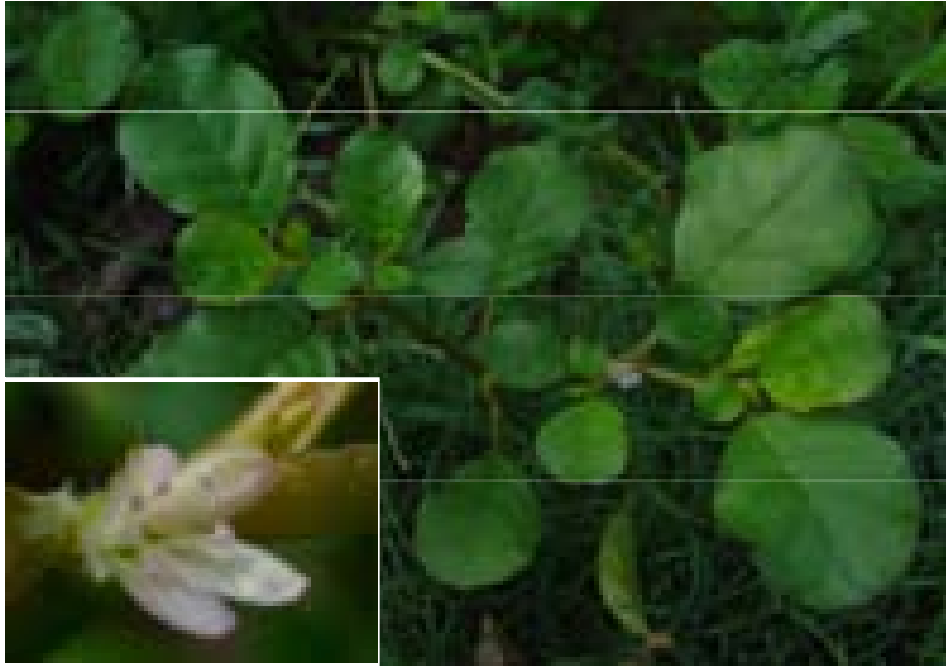
Used in cough, flu and cold. Provide fodder to livestock.

Distribution:

Africa, India and Pakistan, frequently found in Sindh.



Aizoaceae



Trianthema portulacastrum L.

English name: Carpet weed.

Local name: *Sindhi-* Wahoo, Wisakh, Khat khataee, *Urdu-* Et-sit, *Punjabi-* Biskhapra.

Description:

An annual or perennial herb with prostrate, succulent, glabrous appearance, grows up to 35 cm in length. Leaves soft fleshy and round with wavy margins, flowers small sessile (without stalk) whitish or pinkish, axillary-solitary, seeds black, propagates by Seeds.

Flowering Period:

June to December.

Habitat:

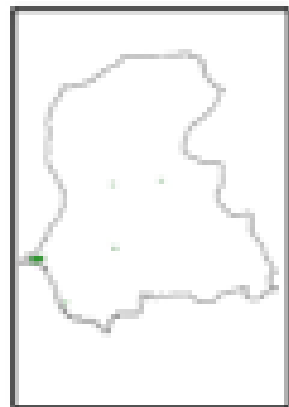
Grows gregariously after monsoon rains, common in moist and unused areas, also occurs as weed in cultivated fields.

Uses:

Tender shoots and leaves are cooked as a vegetable, sometimes used as fodder for cattle. The plant also has tremendous medicinal values used for cure Jaundice, Asthma, cough and for Fever.

Distribution:

Tropical America, Africa, West Asia, Sri Lanka, India, and Pakistan.



Aizoaceae



Trianthesma triquetra Rottl. & Willd.
(Syn: *Trianthesma crystallina* auct.)

English name: Ice plant.

Local name: Wahoo, Khat khataee.

Description:

An annual prostrate dense hairy and succulent papillose herb having small inconspicuous white flowers sessile axillary. Leaves minute oblong succulent, reproduces through seeds.

Flowering Period:

July to November.

Habitat:

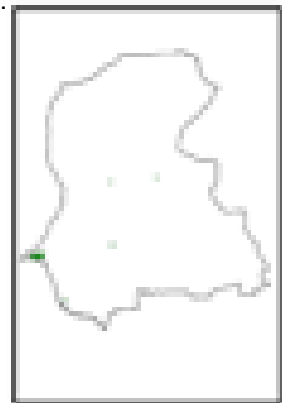
Commonly found on saline soil and near to cultivated areas.

Uses:

It can be used as a fodder for goats and Cattle; the plant has potential to cure cough, flu and cold.

Distribution:

Africa, Arabia, India and Pakistan.



Aizoaceae



Zaleya pentandra (L.) Jeffrey.
(Syn: *Trianthema pentandra* Linn.)

English name:

Local name: Bishkapra, Wahoo, Bishkapra, It-sit, Bishkapra, It-sit, Narwa.

Description:

A prostrate, perennial herb, somewhat succulent. Leaves fleshy opposite very variable in size and shape. Flowers minute, pale pink in small sessile clusters, axillary; fruit red. It reproduces through seeds.

Flowering Period:

October to December.

Habitat:

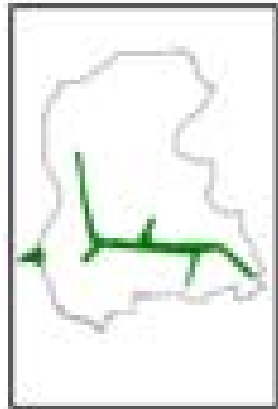
Commonly found on sandy-gravelly usually saline places.

Uses:

It can be used for stomach complaints, snake-bite and as a fodder for cattle. Seeds are included in sexual tonic preparation.

Distribution:

Africa, India, Iran, and Pakistan.



Amaranthaceae



Achyranthes aspera L.

English name: Prickly-Chaff-flower.

Local name: *Sindhi*- Ubat, Kandri, wan ghaa, *Urdu*- Putkhanda, Agara, *Punjabi*- Kulri.

Description:

A perennial, erect or geniculately much branched herb about 1 m high, leaves opposite ovate or ob-ovate to elliptic, greenish-white or purplish-pink flowers in long terminal spikes, fruits cylindrical round at the base, seeds brownish. Propagates by Seeds.

Flowering Period:

June to October and fruiting from July to December.

Habitat:

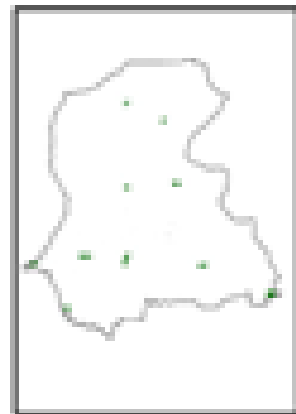
Common in open and moist places, roadsides and near to agricultural field.

Uses:

Parts of whole plant is used, root is used to treat diarrhea, dysentery, stomach troubles, cholera and skin diseases. Also used as fodder, Paste of leaves is applied on insect bite. The plant is used to reclamation of wastelands, the whole plant body used in religious ceremonies in India, seeds cooked and eaten rich in protein.

Distribution:

Apparently the commonest and most widespread from the species in Pakistan, as it occurs throughout the Indian sub-continent.



Amaranthaceae



Aerva javanica (Burm. f.) Juss. ex J. A. Shultes
(Syn: *Iresine javanica* Burm.f.)

English name: Kapok bush.

Local name: Booh.

Description:

An erect perennial much branched herb up to 70 cm tall. Leaves narrow elongated ash-grey in colour, flowers minute, off-white, greenish white or pink-tinged, in dense terminal inflorescence. Seeds minute black or brown. Reproduces through Seeds.

Flowering Period:

Almost throughout the year.

Habitat:

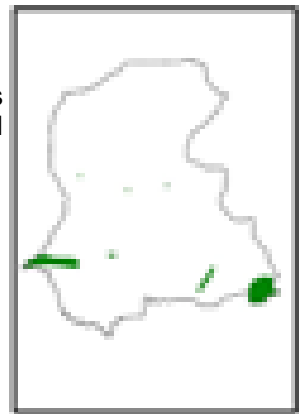
Found in sandy-gravelly places.

Uses:

Inflorescence and paste of leaves is externally applied to heal the wounds and inflammation of human being as well as livestock. The mature fluffy inflorescence is used for stuffing pillows in some areas.

Distribution:

Throughout the drier parts of the tropics and sub-tropics of the old world.



Amaranthaceae



***Alternanthera sessilis* (L.) DeCandolle**
(Syn: ***Gomphrena sessilis* L.**)

English name: Sessile joyweed, Dwarf copperleaf.

Local name: *Sindhi*- Koriyun kum, *Urdu*- Kanchari, *Punjabi*- Moku-nu-wana.

Description:

A semiaquatic to aquatic, annual or usually perennial prostrate herb up to 50 cm long with long narrow sessile leaves, opposite, lamina variable in shape, fleshy with very short petiole, rooting at the node. Flowers minute, off-white, in sessile clusters in the leaf axils. Propagated by seeds and division of underground stems or by nodal rooting.

Flowering Period:

May to October.

Habitat:

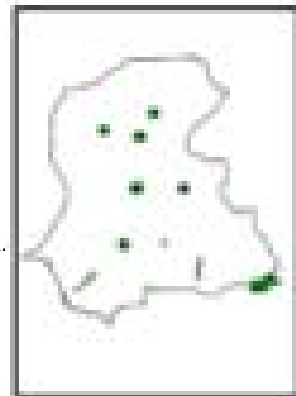
Commonly found in damp, moist and semi-aquatic habitats.

Uses:

Juice of plant is given to treat white discharge in urine; a paste of plant is applied to wounds and to treat venereal disease, also eaten by mothers to increase the flow of milk.

Distribution:

Tropics, sub-tropics of both Old and New Worlds.



Amaranthaceae



Amaranthu

English name:
Local name:

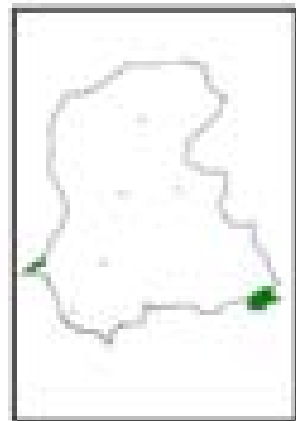
Description:
An annual, erect
45 cm (rarely 1
green flowers
in the same cl

Flowering Pe
March to May.

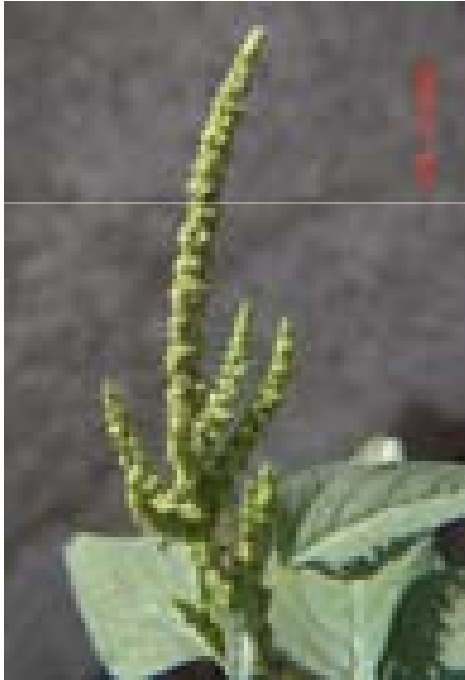
Habitat:
Grows gregar
found in open
Lands, reprod

Uses:
Used as leafy
purpose. Yellc
the whole par

Distribution:
A very comm
Iran, Afghanis



Amaranthaceae



Amaranthus viridis L.

English name: Slender amaranth, green amaranth, foxtail.

Local name: Lulur, Jangli chanali, Mariro

Description:

An annual, erect hairy herb rarely decumbent to ascending, 10-75(-100) cm having green sessile flowers in a condensed long inflorescence. Leaves broad with long petiole, petiole more or less as long as the leaf blade. Propagates by Seeds.

Flowering Period:

Almost all over the year.

Habitat:

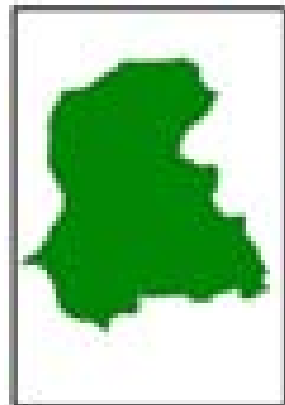
A common weed of waste and uncultivated lands.

Uses:

Mostly used to cure liver disorders, Juice of the root is used to treat inflammation during urination and constipation, also used as Spinach substitute. The plant have some significant medicinal values, leaves are emollient, used in scorpion and snake bite.

Distribution:

Throughout the tropical and sub-tropical regions of the World.



Amaranthaceae



Celosia argentea Linn.

English name:

Local name: Kukur-phul, Lular, Boobak.

Description:

An annual erect glabrous herb up to 0.4-2 meter in height, not much branched. Leaves narrow and linear. Inflorescence many-flowered terminal cone shaped spike, having plume like sessile flowers white or pale pink. Fruits minute enclosed in the sepals. Seeds shining black.

Flowering Period:

Mostly during monsoon season.

Habitat:

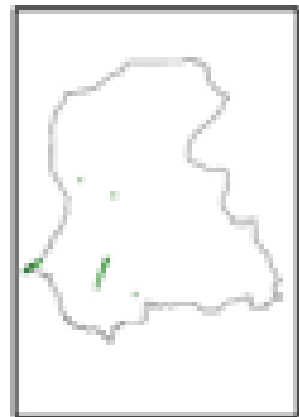
The plant is found near the cultivated fields in sandy areas, on hills slopes, dry stream beds.

Uses:

Seeds of the plant have tremendous medicinal values, used in eye diseases, also used in sore of mouth, used to cure diarrhea. Leaves and flowers are edible having good nutritional potential.

Distribution:

Pantropical in distribution.



Amaranthaceae



Digera muricata (L.) Mart.
(Syn: *Achyranthes muricata* L.)

English name: False amaranth.

Local name: *Sindhi*- Lulur, *Urdu*- Tandala, *Punjabi*- Leswa, Tandala.

Description:

A low creeping annual herb with diffuse, succulent thick reddish stem. Leaf shape varies with the soil condition, alternate or sub-opposite, spade shape. Flowers minute shiny pink, solitary or sometime in clusters about 1 cm of diameter.

Flowering Period:

August to September.

Habitat:

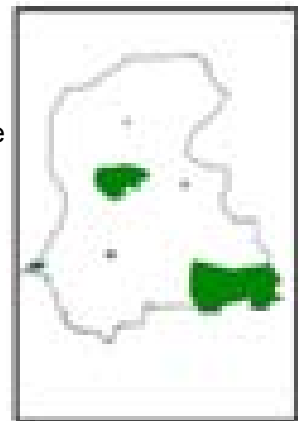
Growing gregariously after monsoon rains in sandy loam to sandy and gravelly habitats, also found along cultivated and fallow fields.

Uses:

Its tender twigs and inflorescence are used as a vegetable but have laxative properties in large doses. Flowers and seeds are recommended in urinary disorders. Its all parts are used both internally as well as externally in treatment of many common diseases.

Distribution:

Widespread in Southern Asia from tropical Arabia and the Yemen to Afghanistan, India, Sri Lanka, Malaysia and Indonesia.



Apocynaceae



Rhazya stricta Decne.

English name:

Local name: *Sindhi-* Verian, *Punjabi-* Wena, Gandra, Sihar, Hisawarg, Sanar.

Description:

An erect, stout, up to 80 cm tall, evergreen dwarf shrub, glabrous or puberulous on midrib beneath. Leaves leathery elongated variable in size and shape spirally arranged on the stem. Flowers small about 3 mm across, star-like white in colour arranged on terminal and axillary cymes.

Flowering Period:

December to March.

Habitat:

Grows on sandy and stony grounds.

Uses:

A good soil-binder. Medicinally leaves are used in the treatment of cancer. Juice is used for skin eruptions, sore throat, and fever, also very effective to remove debility. The juice of the leaves is given with milk to children for eruption and an infusion.

Distribution:

Arabia, India, Pakistan and Afghanistan.



Aristolochiaceae



***Aristolochia bracteolata* Lamk.**

English name: Worm-Killer, dutchman's pipe.

Local name: *Sindhi*-Kidamar, Gandhati, *Urdu*- Kiramar.

Description:

A perennial prostrate glabrous herb, with an unpleasant smell and dark purple, solitary, pitcher-like flowers, tube whitish or pale purple, tip elongated dark purple and hairy. Leaves petiolate bluish green broad, lamina heart shaped with wavy margins. Seeds triangular in shape. The plant can be propagated by seeds and by vegetative means.

Flowering Period:

Almost throughout the year.

Habitat:

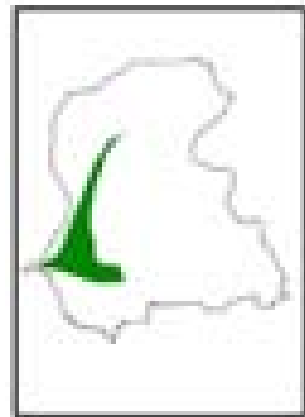
It is considered as a rare species found in sandy and fine silty as well as gravelly plains.

Uses:

It is used by local physicians as a purgative and for its anthelmintic properties. The root decoction is employed to expel round worms. The bruised leaves mixed with castor oil are applied externally in eczema. They are also applied to navels of children in colic. Extract juice of the plants used as nasal and eardrops, the plant showed a definite, positive effect on wound healing.

Distribution:

Arabia, Tropical Africa, Sri Lanka, India and Pakistan.



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Flowering Period:

Almost throughout the year.

Habitat:

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Distribution:

Arabia, Tropical Africa, Sri Lanka, India and Pakistan.



Asclepiadaceae



***Calotropis procera* (Aiton.) Aiton.f. Subsp. *hamiltonii* (Wight) Ali**

English name: Swallow wart, milk weed.

Local name: *Sindhi*- Akk, *Urdu*- Madar.

Description:

An erect large shrub or sometime small tree up to 3 m tall with white and purple flowers in large dense cluster, milky latex in all parts of the plant. Leaves are succulent leathery without petiole cover with waxy substances. Presence of this species is considered that it is indicator of overgrazing land. Reproduces through seeds.

Flowering Period:

Almost throughout the year.

Habitat:

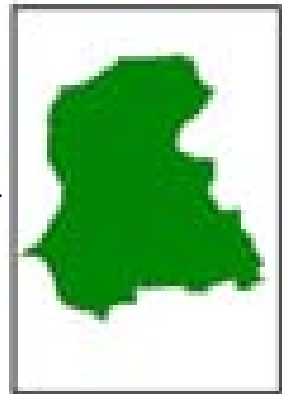
An extremely drought tolerant plant, also considerably salt tolerant found frequently in deserts, dry lands and full sunny areas.

Uses:

Considerably salt-tolerant. Used for the treatment of asthma, cough piles, fever, headache, wounds, tooth ache. Stem yields a fiber used for making ropes, its leaf buds are eaten by locals during snake bite. Ash of the species is used for making gun powder, parasitic skin problems in animals are cured by the plant.

Distribution:

Pakistan, India, Afghanistan, Iran and Iraq.



Asclepiadaceae



Caralluma edulis (Edgew.) Hook
(Syn: *Boucerosia edulis* Edgew.)

English name: Edible Caralluma.

Local name: Pippa, Pippu, Chaunga, Pat Khitali.

Description:

A small erect or prostrate, succulent herb, 15-45 cm tall, branched, stem sub-angular, leaves appear for very short duration, mostly found as leafless herb, flowers in pairs in axils of minute leaves, tube short, corolla lobes narrow and spreading, purple or greenish purple, glabrous inside. Seeds hairy.

Flowering Period:

September.

Habitat:

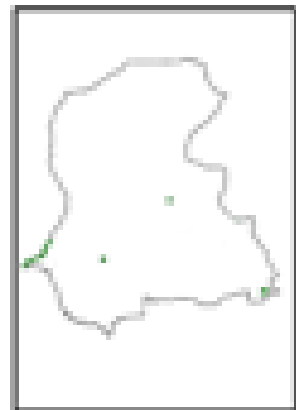
The plant is considered as a rare species found in the gravel plains and on slopes of low hills.

Uses:

The plant is eaten as a vegetable. The herb is cooling, alterative, anthelmintic; used in leprosy and diseases of blood and to cure diabetes and hypertension.

Distribution:

India (Punjab); Pakistan (Sindh, Punjab, Balochistan).



Asclepiadaceae



Glossonema varians (Stocks) Hook.f.
(Syn: *Mostostigma varians* Stocks.)

English name:

Local name: Munga, Balochi-Gullo, Khurram.

Description:

An annual erect branched herb with a height range of 8-20 cm tall. Branches pubescent, mostly arising from the base. Leaves fleshy lamina rounded petiolate. Flowers sessile yellow, about 6 to 8 mm across grouped into 4-8 flowers in the terminal and axile cyme. Seeds yellowish or reddish.

Flowering Period:

July to November.

Habitat:

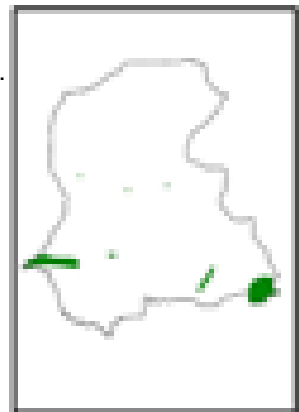
Grows on sandy and stony grounds and slopes of foothills.

Uses:

Its fruit is eaten-raw, the follicles are eaten and reported to possess cooling properties. The tubers are used as tonic and improve the digestive troubles. The tubers are relished by Shepherd-boys to quench their thirst.

Distribution:

Pakistan, Iran to North Africa.



Asclepiadaceae



Leptadenia pyrotechnica (Forssk.) Decne.
(Syn: *Cynanchum pyrotechnicum* Forssk.)

English name:

Local name: Kip, Kheep.

Description:

An ascending shrub to small tree usually 0.6 to 2.5 m tall with dark green, apparently leafless ascending stems having yellow flowers. Leaves appear for very short duration. Flowers minute star like formed a bunch of 5 to 8 flowers joint to the main stem with very short stalk. Fruits elongated mostly appear in pair, seeds much hairy.

Flowering Period:

Most parts of the year.

Habitat:

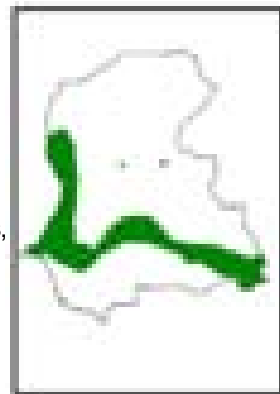
A common species of arid and semi-arid zone, very commonly found in desert areas.

Uses:

Decoction of whole plant is considered useful in rheumatic complaints. The plant is stimulative and tonic. Seeds of the plant used for eye treatment. The whole plant extract use for kidneys disorders. Local people use the plant in the construction of their houses, branches are used in thatching roofs, for making ropes, used for fire fuel, provide fodder to camels.

Distribution:

Pakistan, India, Iran, Somalia, Libya, Algeria, Egypt and Saudi Arabia.



Asclepiadaceae



***Oxystelma esculentum* (L.f.) R. Br.**

English name: Rosy-milkweed.

Local name: *Sindhi*-Ak phulri, *Anae*e, *Ewni*, *Wanverhi*, *Urdu*- Dudhi, *Dudhia* latar, *Punjabi*- Gani.

Description:

A perennial, slender, lacticiferous climber with milky juice. Leaves linear narrow, arise in pair at each node. Flowers with a white or rose corolla marked with purple veins.

Flowering Period:

July-September.

Habitat:

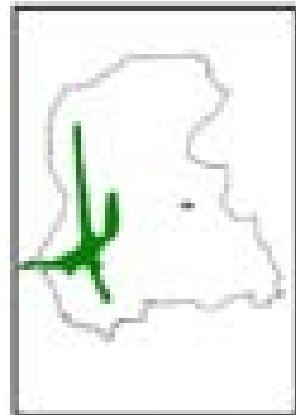
Found throughout plains and lower hills, also common in "Kacha" forest climbed over *Tamarix* (Lai) species.

Uses:

Flowers are eaten (as fruit). Decoctions of all parts are used against cancer; fresh roots are prescribed in jaundice. Decoction of herb is used as gargle in infections of throat and mouth. Roots are used in Hepatitis.

Distribution:

Pakistan, India, Burma, Indonesia, Sri Lanka, Iraq and Egypt.



Asclepiadaceae



Pentatropis nivalis (J.F.Gmel.) Field & Wood.

English name:

Local name: Vino-mal, Pinjolo wal, Sangraal, Wan wari.

Description:

A slender twining herb. Leaves in pair fleshy glabrous covered with waxy substances, attached to the main stem with a short stalk, variable in shape. Flowers greenish yellow in lateral umbellate cymes. Fruits elongated curved mostly appear in pair taper to the tip.

Flowering Period:

June to September.

Habitat:

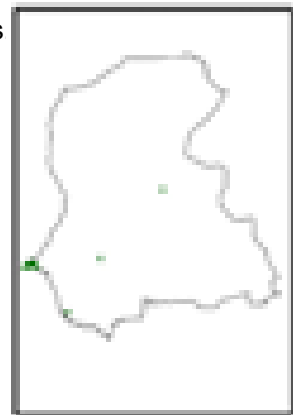
The species is common in sand and gravel, low mountains

Uses:

Dry roots are used in gonorrhoea; the plant is used in indigenous system of medicine as a purgative, used generally for healing and venereal diseases. Fruits are edible eaten raw.

Distribution:

Tropical Africa, Iran, Afghanistan, Pakistan, Arabia and India.



Asclepiadaceae



Sarcostemma viminale subsp. ***stocksii*** (Hook.f.) Ali
(Syn: *Sarcostemma stocksii* Hook.f.)

English name: Sacred soma.

Local name: Phok, Soma, Karial.

Description:

Straggling weak stemmed sub-shrub with fleshy cylindrical green smooth branches, without leaves. Flowers in terminal clusters, sweet scented, white to pale yellow or pale green.

Flowering Period:

July to September.

Habitat:

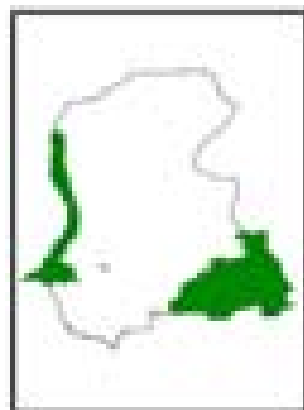
The plant grows in stony habitat, frequently associated with *Euphorbia caducifolia*.

Uses:

The milky juice of the plant is drinkable. The stem has emetic, alterative and cooling effects.

Distribution:

India, Tropical Africa, Burma and Pakistan.



Asteraceae / Compositae



***Conyza aegyptiaca* Ait.**

English name:

Local name: Sonsali, Bhatar, Gidar gaah.

Description:

An erect, medium-sized, pubescent or villous, sticky and aromatic annual herb about 30-60 cm tall. Leaves narrow, petiolate toothed. Flowers arranged in terminal head about 6-12 mm across, white or creamy in colour. Achene (seeds) very minute dispersed by white silky hairs.

Flowering Period:

September to November.

Habitat:

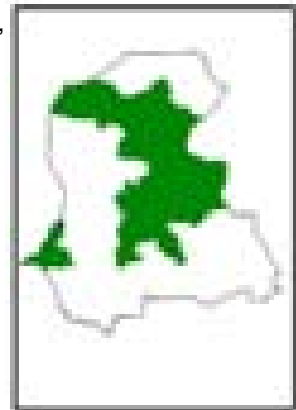
Coastal regions and waste grounds, in sunny situations, near to tracks and cultivated lands.

Uses:

The herb is stimulant, diuretic in febrile conditions; the plant is also homeostatic, stimulant, diuretic, and astringent. It is also used in diarrhea and dysentery.

Distribution:

Tropical and subtropical Africa, Asia, Australia and Taiwan.



Asteraceae / Compositae



***Echinops echinatus* Roxb.**

English name: Camel's thistle.

Local name: *Sindhi*- Uthkattar, Unt Katara, Bhattar, Luth, *Urdu*- Unthkattar.

Description:

An annual erect branched herb up to 70 cm tall. Leaves up to 7 cm long, spiny, pinnately divided. Flowers pale blue to pale purple in terminal globose heads about 3-4 cm across, spines are also present in the flowering head.

Flowering Period:

February to April.

Habitat:

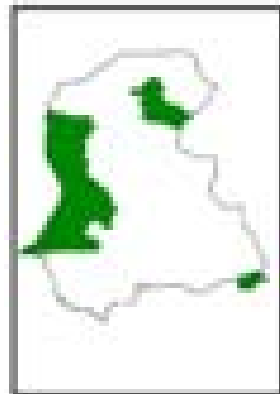
Silt among rocks, on hill sides and sandy places.

Uses:

The plant is bitter, tonic and diuretic. It is used in hoarse cough, hysteria, dyspepsia, scrofula and ophthalmia. Mixed with *Acacia* gum it is applied to the hair to destroy lice.

Distribution:

Afghanistan, Pakistan and Myanmar.



Asteraceae / Compositae



Eclipta prostrata (L.) L.
(Syn: *Eclipta alba* (L.) Hassk.)

English name: False daisy.

Local name: *Sindhi*- Tik, Daryai Buti, Naaro, *Urdu*- Bhangra, *Punjabi*- Bhangra.

Description:

A prostrate or sub-erect to decumbent hairy herb. Leaves opposite lanceolate without petiole dark green, often rooting at the nodes. Flowers in terminally or axillary solitary head about 6 to 8 mm across. Fruits triangular without hair but winged. Propagates by seeds or root off shoots.

Flowering Period:

Almost through the year.

Habitat:

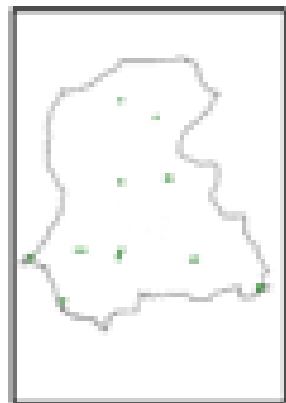
Common on moist, neglected grounds, water courses, and water-margins.

Uses:

Plant juice is given to treat fever, and also helps in coagulation of blood; plant paste is applied to wounds and skin diseases. Used in the treatment of dropsy and liver complaints, and is also applied to athlete's foot, eczema, dermatitis. Tender shoots and leaves are eaten as vegetable. The leaves are used in the treatment of scorpion stings and as antidote for snake bites. The roots are emetic and purgative, applied externally as an antiseptic to ulcers especially in cattle. It also improves the color and growth of hairs, externally it is used as an oil treat hair loss.

Distribution:

India, Brazil, Thailand, China and Pakistan



Asteraceae / Compositae



Gnaphalium polycaulon Pers.

English name: Many stem cudweed.

Local name: Kolmur.

Description:

An erect to decumbent woolly annual herbs generally 15-20 cm tall, branched from the base, leaves elongated narrow wavy at the margins, with brownish and white heads in clusters in the upper part of the plant.

Flowering Period:

Almost throughout the year.

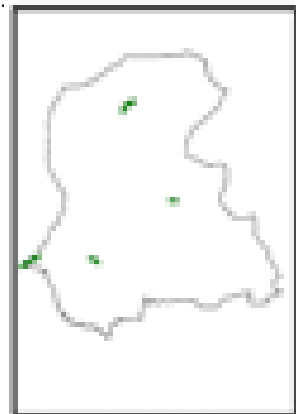
Habitat:

Usually found along water margins and in inundated plains.

Uses:

Distribution:

Widespread species throughout the tropical and sub-tropical regions.



Asteraceae / Compositae



***Grangea maderaspatana* (L.) Poir.**

English name: Madras carpet.

Local name: Afsantin, Mustaru, Mundi.

Description:

A small annual, prostrate to sub-erect herb generally grows 10-30 cm high. Leaves pinnately divided, dense hairy, with a short stalk. Heads yellow, terminal and axillary.

Flowering Period:

August to February.

Habitat:

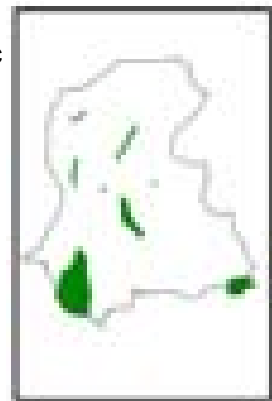
Found in agricultural fields, in moist fertile soil.

Uses:

The leaves are regarded as stomachic and antispasmodic and prescribed in infusion and electuary. They are considered good for irregular menses. They are used in antiseptic and anodyne fomentations. The juice of the leaves is employed as an instillation for earache. Leaves of this plant are used in ear treatment, generally healing, pain-killer, sedatives and stomach problems.

Distribution:

Pakistan and India.



Asteraceae / Compositae



Iphiona grantioides (Boiss.) Anderb.
(Syn: *Inula grantioides* Boiss.)

English name:

Local name: Kolmur, Naro, Gandraf.

Description:

A perennial ascending aromatic herb to small shrub, 20 to 30 cm tall. Hair branches usually arise from the base, the base succulent apically lobed (variably lobed), flowers yellow in

Flowering Period:

December to April.

Habitat:

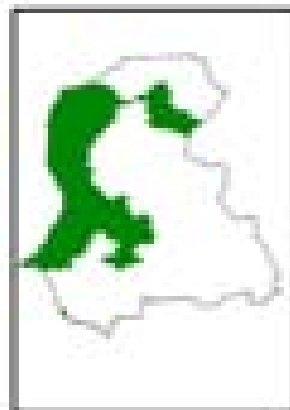
Grows on hilly slopes, dry river beds and arid plains.

Uses:

Used as fodder for camels.

Distribution:

Pakistan, India and South East Arabia.



Asteraceae / Compositae



Launaea procumbens (Roxb.) Rammaya & Rajagopal.

English name:

Local name: *Sindhi*- Bhattar, Bhatar, *Urdu*- Bhattal, *Punjabi*- Pili-dodak.

Description:

An annual or perennial 15-50 cm long herb with milky juice, branches prostrate and yellow heads, about 1.5 to 2.5 cm across. Basal leaves radically arranged toothed at the margins and without petiole while the upper leaves comparatively small in size. Achenes (seeds) very minute about 2-3 mm attached with long soft white hairs (pappus).

Flowering Period:

March to May and October to December.

Habitat:

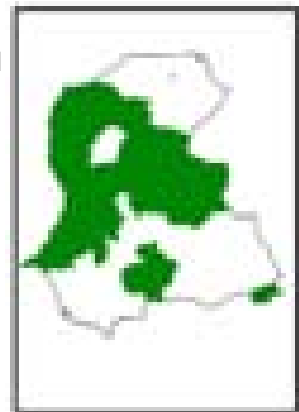
Widespread weed of the plains, open grassy slopes, and lower hills, near irrigated parts of lands, mostly grows in moist soil.

Uses:

Leaves applied to the head of children in fever. Used for painful urination and gonorrhoea. The plant has very beautiful yellow flowers hence can be used as ornamental plant in lawns and gardens.

Distribution:

All over India and Pakistan.



Asteraceae / Compositae



Launaea remotiflora (DC.)

English name:

Local name: Urdu- Undira, Cha-kan, Punjabi- Pathandi.

Description:

An annual or biennial erect paniculately branched herb, 60-80 cm tall. Leaves in basal rosettes, lower leaves broadly obovate, frequently pinnately divided with dentate margins, upper leaves lanceolate. Heads pale yellow. Achenes with soft white hairy pappus.

Flowering Period:

September to April.

Habitat:

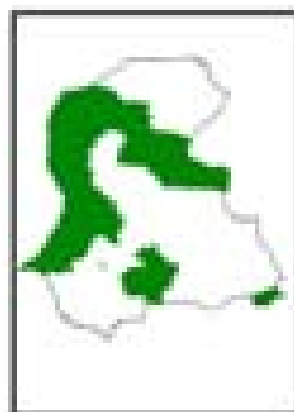
Usually found on sandy, stony open grounds.

Uses:

It is reported to be used for chronic obstructions of liver and bowels and as diuretic in calculous affections.

Distribution:

Tropical to subtropical regions.



Asteraceae / Compositae



Pluchea arguta Boiss.

English name:

Local name: Zika.

Description:

An erect branched perennial aromatic shrub, leaves somewhat fleshy soft toothed. Heads pink or purplish, about 8 to 12 mm across. Achenes with stiff pappus.

Flowering Period:

Almost all the year round.

Habitat:

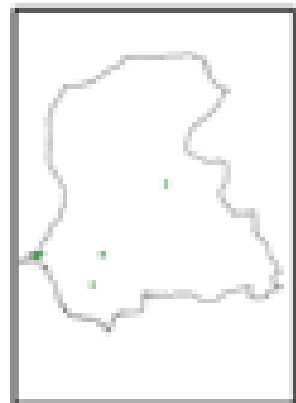
Usually found at the base of hills and rocky places, also in dry Stream beds.

Uses:

The species has some medicinal properties.

Distribution:

Pakistan, Iran and India.



Asteraceae / Compositae



Pluchea lanceolata (DC.) C.B. Clarke
(Syn: *Berthelotia lanceolata* DC.)

English name: Indian camphorweed, Fleabane.

Local name: Phaar buti, Reshami.

Description:

An erect shrub, 40-80 cm tall. Leaves lanceolate, leathery with narrow base, without petiole and entire margin, heads pink, about 7-10 mm across, arranged in compound umbellate manner.

Flowering Period:

March-August.

Habitat:

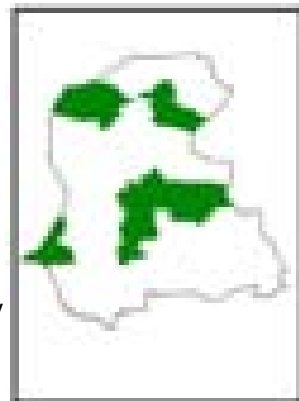
The plant is commonly found in semi-desert habitat near the water bodies in sandy soil, near cultivated areas, often gregarious.

Uses:

Plant extract has cooling effect and is used for the inflammations and bronchitis, psoriasis, cough and piles. It is also used as antipyretic, analgesic, laxative and nervine tonic. The decoction of plant is used to prevent the swellings of joint in arthritis, rheumatism and neurological diseases. The roots are antipyretic bitter, laxative and thermogenic and are used for allaying the pain caused by the sting of scorpions.

Distribution:

Pakistan, India, Afghanistan and Northern Africa.



Asteraceae / Compositae



***Pluchea wallichiana* DC.**

English name:

Local name: Phaar.

Description:

A much branched hairy, tall herb, up to 2 m high, woody at base. Leaves leathery, fleshy, lamina larger as compare to the other species of this genus, broadly obovate. Heads pale pink, clustered.

Flowering Period:

November to April.

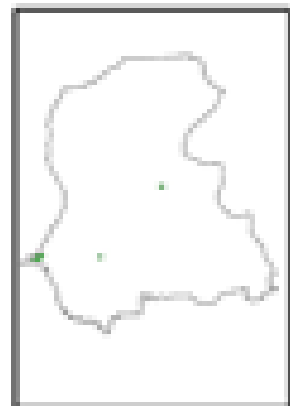
Habitat:

Mostly found near the water bodies or moist habitat.

Uses:

Distribution:

Pakistan and India.



Asteraceae / Compositae



***Pulicaria angustifolia* DC.**

English name:

Local name:

Description:

A branched annual to perennial aromatic herb up to 35 cm high. Leaves narrow lanceolate, sessile. Lower leaves with somewhat serrate margins, upper usually entire. Heads yellow, showy, ray-florets 3-toothed at apex.

Flowering Period:

March to October, depending upon moisture availability.

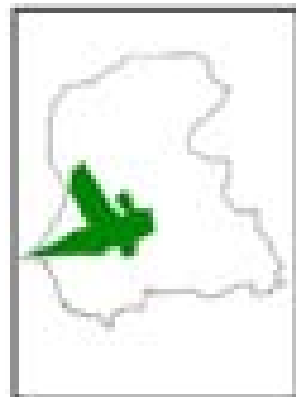
Habitat:

Commonly found in sandy and gravelly areas.

Uses:

Distribution:

Throughout North-West India and Pakistan.



Asteraceae / Compositae



Pulicaria boissieri Hook. f.

English name:

Local name: Narro, Kolmir.

Description:

A branched hairy dwarf perennial shrub up to 50 cm tall, the plant is densely hairy in early stages. Leaves narrowly obovate, soft. Heads bright yellow.

Flowering Period:

Almost throughout the year.

Habitat:

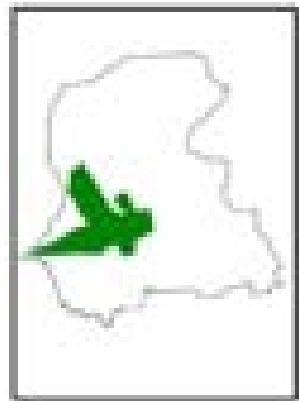
Grows on rocks, crevices and among stones.

Uses:

It can be used as an ornamental plant in gardens. Oil of aerial parts of the plant has a strong odor.

Distribution:

Endemic to Pakistan.



Asteraceae / Compositae



Pulicaria undulata (L.) C.A. Mey.

English name:

Local name: Ranbo.

Description:

An annual or perennial herb with many branches, woody base about 32-80 cm high. A fairly common and highly variable species, often split into a number of infraspecific categories on the basis of leaf breadth and margin. Heads yellow, arranged in somewhat corymbose manner.

Flowering Period:

Almost throughout the year.

Habitat:

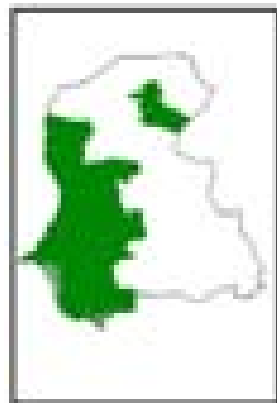
Commonly found in stony plains and hilly slopes, also along river beds.

Uses:

The herb is used as a tonic and a tea substitute, antispasmodic and hypoglycaemic. The essential oil exhibited insecticidal and antibacterial properties.

Distribution:

Pakistan, Iran and India.



Asteraceae / Compositae



***Sonchus asper* (L.) Hill.**

English name:

Local name: *Sindhi-* Dodak, Bhatther kandi waari, Bhattar, Gule furfun, Phastt, *Urdu-* Pili dodak, *Balochi-* Garwa.

Description:

A small erect, glabrous, annual herb with milky juice. Stem hollow, cylindrical. Basal leaves in rosettes, obovate, pinnatifid, dentate with spiny teeth; upper leaves alternate, smaller, with amplexicaul or semi-amplexicaul base, margins with spinous teeth. Heads yellow, on elongated stem, arranged in corymbose manner, 2 to 3 cm across. Achenes flattened with silvery white pappus.

Flowering Period:

December to April.

Habitat:

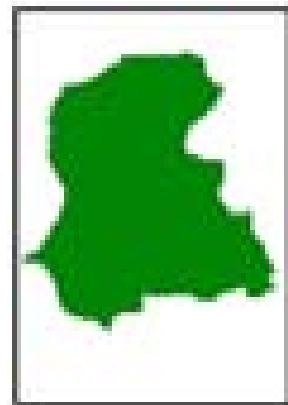
A weedy species found around villages and cultivated fields.

Uses:

The plant is commonly used as an emollient; it is pounded and applied to wounds and boils.

Distribution:

Widely spread in tropical countries.



Asteraceae / Compositae



***Sonchus oleraceus* DC.**

English name: Smooth Sow Thistle.

Local name: Gule furfun, Phastt, Bhather kandi waari, Bhattar.

Description:

An annual or perennial erect herb, up to 90 cm tall, heads homogamous, yellow, arranged in corymbose manner. The species can be differentiated from *S. asper* by the leaf base auricles of cauline leaves, which are rounded in *S. asper* and acute in *S. oleraceus*.

Flowering Period:

October to February.

Habitat:

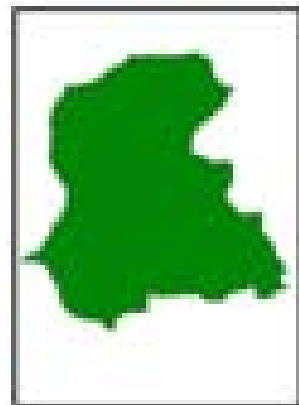
Most commonly found near villages, orchards and cultivated land in moist soil.

Uses:

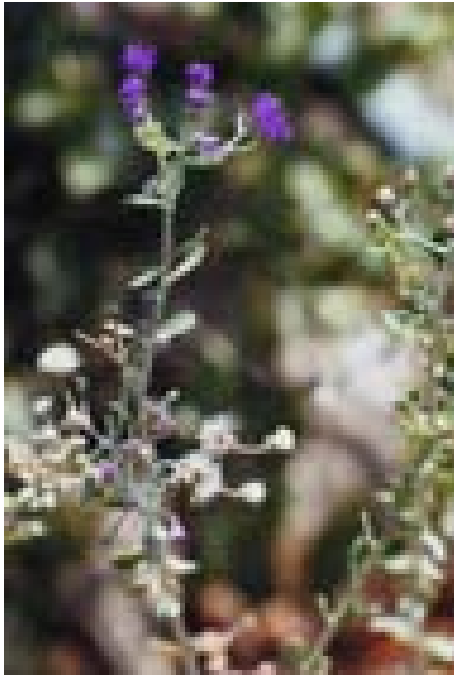
It was once highly valued as a galactagogue and in the treatment of diseases of the liver. Its leaves and roots are used in indigestion and as febrifuge. Stems are prescribed as a sedative and tonic. Roots are used as a vermifuge. ointment made from the decoction is used to dress wounds and ulcers. The brownish gum formed by evaporation of the latex of milk thistle is a powerful cathartic and is used in the treatment of ascites and hydrothora.

Distribution:

Tropical countries of the World.



Asteraceae / Compositae



Vernonia cinerascens Schultz.Bip

English name: Little ironwood.

Local name: Lanski.

Description:

An erect perennial much branched shrub about 30-85 cm tall with grayish white, pubescent stem. Leaves narrowly obovate, without petiole. Heads bright purple, arranged in corymbose manner.

Flowering Period:

Mostly depends upon moisture availability. Most profuse flowering occurs after monsoon rains, but also after winter/spring rains in February-March.

Habitat:

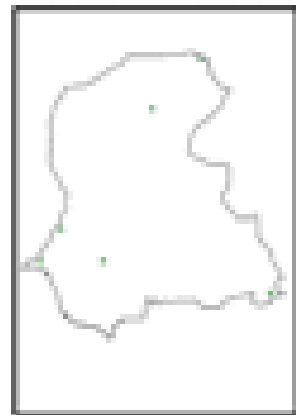
Commonly found in dry stony places.

Uses:

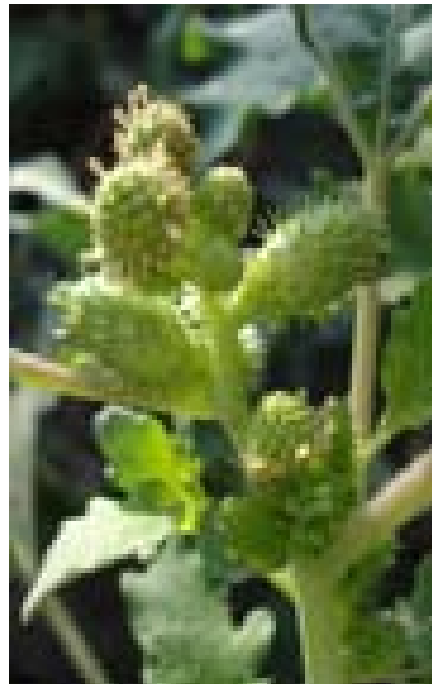
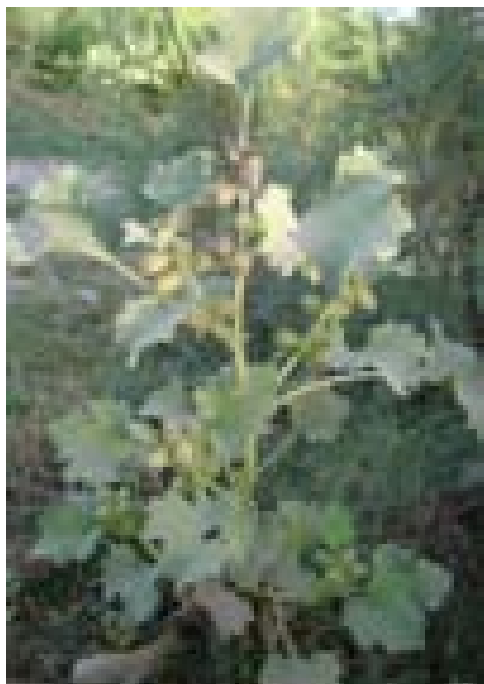
Some products obtained from the stem of the plant e.g. inks, dyes, stains etc.

Distribution:

Pakistan and Tropical Africa.



Asteraceae / Compositae



***Xanthium strumarium* L.**

English name: Heart-leaf, Cocklebur.

Local name: Leedhoro, Kandhiri, Dangaii, Muhabat-buti, Chhota gokhru.

Description:

An annual, erect, coarse, unarmed, tall herb up to 1.5 m. Leaves with long petiole, lamina broad, palmate with dentate margin. Heads unisexual, arranged in racemose manner terminally. Propagates by seeds.

Flowering Period:

April to September.

Habitat:

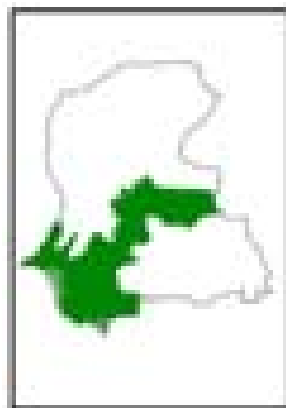
Commonly found in moist places.

Uses:

The aerial parts contain a mixture of alkaloids; which is useful in chronic malaria and urinary diseases, also used in otitis mouth ulcers and toothache.

Distribution:

Native of Tropical America, now widespread in most of the Tropical and subtropical countries.



Avicenniaceae



Avicennia marina (Forssk.) Vierh.
(Syn: ***Sceura marina*** (Forssk.))

English name: White Mangrove.

Local name: Timer.

Description:

Evergreen small tree up to 10 m in height. Trunk often with masses of small aerial roots but no prop or stilt roots. Bark whitish to grayish or yellow-green, smooth, Flowers tiny yellow to orange in color.

Flowering Period:

June-August.

Habitat:

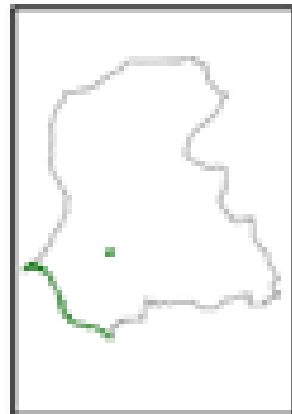
Commonly found in intertidal zone in deltas and estuaries.

Uses:

Wood of the plant used for poles and ribs of boats. Bark yields a brown dye. Leaves are used as camel fodder. The tree possesses a bitter aromatic juice, used as an abortive in tropical Africa and Asia. Root and bark are used as aphrodisiac, the wood for snakebite, the aqueous extract of the seed for sores. Unripe fruits are poultice onto wounds and leaves onto skin ailments.

Distribution:

Coasts of East and South Africa, southern Asia, Australia, and Oceania. From Egypt and Arabia along shores of Red Sea and western Indian Ocean, eastward along shores of Arabian Sea, Bay of Bengal, southeastern and eastern Indian Ocean, South China Sea north to Hong Kong and Taiwan, and islands of the Philippine Sea, Coral Sea, and South Pacific to Western Australia and New Zealand. In Pakistan it is found around the coastal belt Sindh and Balochistan.



Bignoniaceae



Tecomella undulata (Roxb.) Seeman
(Syn: *Bignonia undulata* Roxb.)

English name: Iron wood of hill.

Local name: Luhiro, Lohara, Ruhero.

Description:

A medium sized evergreen tree, 2.5-5 m tall. Leaves, entire; lamina elliptic-oblong to elliptic-lanceolate or linear-oblong. It produces beautiful showy flowers in yellow, orange and red colors.

Flowering Period:

December - February.

Habitat:

Found in dry, gravelly and stony areas, also along stream banks and dry stream beds.

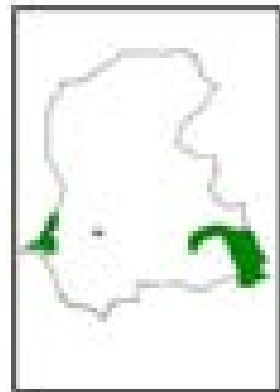
Uses:

The tree produces quality timber and is the main source of timber amongst the indigenous tree species of desert and arid or semi- arid regions. Its wood is strong, tough and durable, excellent for firewood and charcoal. Leaves are good fodder for cattle and goats. Camels, goats and sheep consume flowers and pods. It acts as a windbreak and helps in stabilizing shifting sand dunes. It is considered as the home of birds and provides shelter for other desert wildlife.

The bark obtained from the stem is used as a remedy for syphilis. It is also used in curing urinary disorders enlargement of spleen, gonorrhoea, Leucoderma and liver diseases. Seeds are used against abscesses.

Distribution:

Tecomella undulata is restricted to the drier parts of the Arabia, Southern Pakistan (Sindh and Balochistan) and North-West India up to an elevation of 1100 meters.



Bignoniaceae



***Millingtonia hortensis* L.**
(Syn: *Bignonia suberosa* Roxb.)

English name: Tree Jasmine, Indian Cork Tree.

Local name: Akash Neem, Neem chambeli

Description:

A fast growing, favourite garden tree with straight trunk and few branches bearing ornamental leaves. Flowers white, waxy, with long narrow tube and fragrant. It blooms in night and sheds flowers early in the morning.

Flowering Period:

November -February.

Habitat:

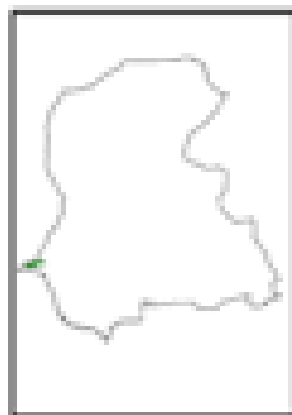
Cultivated in gardens as an ornamental tree.

Uses:

Leaf extract contains antimicrobial activities. Dried flowers are bronchodilator and root is used as a lung tonic.

Distribution:

China, Cambodia, Vietnam, Indonesia, Malaysia, India and Pakistan



Bombacaceae



***Bombax ceiba* L.**

(Syn: *Salmalia malabarica* (DC.) Schott & Endl.)

English name: Red silk Cotton tree, Kapok tree.

Local name: Simbal, Simal.

Description:

A tropical tree with a tall straight trunk and grey bark with hard small conical prickles. Usually disappearing with age. Flowers large, red (occasionally yellow or white). It is an impressive giant size tree up to 30 m tall. It produces capsule that contains white fiber like cotton.

Flowering Period:

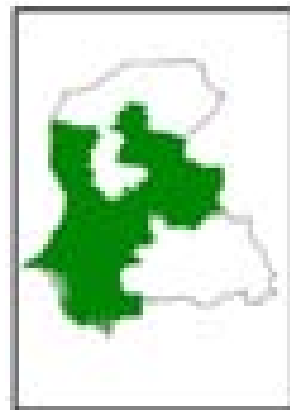
December-February.

Habitat:

Cultivated in between agricultural lands and roadsides as a shade tree.

Distribution:

Pakistan, India, Sri Lanka, South- East Asia, China and Australia. In Pakistan it is cultivated as roadside and garden trees.



Bombacaceae



Ceiba pentandra (L.) Gaertn
(Syn: *Bimbax pentandrum* L.)

English name: Kapok, Java Cotton, Cotton tree.

Local name: Simal.

Description:

A giant size tree up to 30 m high with spectacular, immense plank buttresses. Its trunk is straight and cylindrical having grey bark with or without prickles. Flowers yellow or white and usually appear before the flush of leaves.

Flowering Period:

September-November.

Habitat:

Cultivated in agricultural fields, shade plant at roadsides.

Uses:

Seeds have oils and are eaten ground or roasted. It is used in stuffing life jackets and pillows. Leaves, barks and seeds are used in dysentery, fevers, venereal disease, and menstruation bleeding, asthma and kidney diseases.

Distribution:

Throughout the tropics of World.



Boraginaceae



Coldenia procumbens L.

English name:

Local name: Tripukshi.

Description:

A procumbent branched annual herb, leaves crisp with deeply dentate margin, lamina hairy at both surface, rounded at the apex, tapered toward base, flowers white, small, in few flowered clusters.

Flowering Period:

April to May

Habitat:

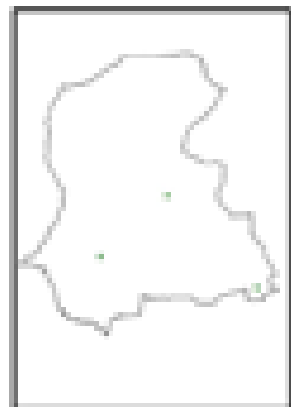
Found in moist places, particularly on wet soil exposed by receding water along margins of lakes.

Uses:

The fresh poultice of leaves is applied to mature abscesses. The decoction of leaves is given in rheumatism and for digestion. The plant juice is active against gram-positive bacteria.

Distribution:

Tropical India, Pakistan (Sindh), Sri Lanka, Africa, Australia and America.



Boraginaceae



***Heliotropium bacciferum* Forssk.**

English name:

Local name:

Description:

A perennial, stiff hairy, decumbent subshrub woody at the base. Leaves 5 to 25 mm long, variable in shape, quite fleshy 2 to 10 mm broad, lanceolate to linear-lanceolate with revolute margin. Inflorescence short up to 20 mm long, minute white flowers arranged in one sided cyme, anthers attached with corolla. Fruit globose. Consisting of 4 nutlets usually winged at back.

Flowering Period:

Almost round the year.

Habitat:

Sandy and gravelly plains, dry and semi-dry areas. More frequent near sea shore.

Uses:

All Parts of the plant have medicinal properties.

Distribution:

Pakistan, Saudi Arabia and North Africa.



Boraginaceae



Heliotropium calcareum Stocks.

English name:

Local name: Kharsun.

Description:

An annual or perennial hairy under-shrub with ascending branches and woody base. Stem narrow. Leaves petiolate, rounded at the apex, leathery. Flowers minute, white arranged on long spike.

Flowering Period:

April.

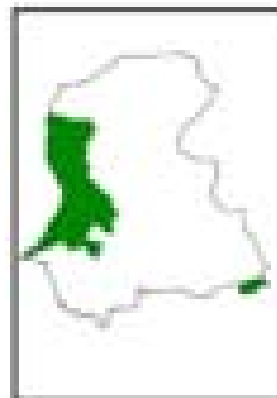
Habitat:

A common plant of stony, rocky, gravelly soil and on slopes of foothills.

Uses:

Distribution:

Pakistan and Iran.



Boraginaceae



Heliotropium crispum Desf.

English name:

Local name: *Sindhi*- Pipat-buti, Lulur ghaa, Kharsan, Lanro, *Urdu*- Jati-misak, *Punjabi*- Jati-misak, Pipat-buti.

Description:

A branched perennial erect shrub, stiff hairy all over, leaves lanceolate or narrow lanceolate, variable in size, leaf margin undulate, crisp. Flowers white minute in terminal branched one sided cyme.

Flowering Period:

Almost round the year.

Habitat:

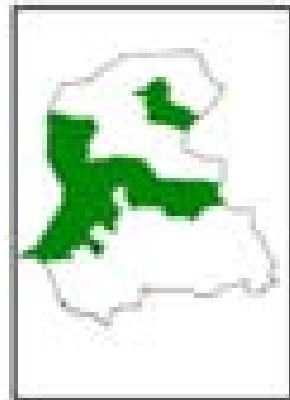
Found in waste or sandy and gravelly places.

Uses:

The plant is lactagogue, it increases the lactation. The leaves are used to relieve the pain of scorpion stings, and also for cleaning and healing ulcers. The plant is given in gonorrhoea and headache; also used in snake-bite.

Distribution:

North Africa, Arabia, Iraq and South Asia.



Boraginaceae



Heliotropium curassavicum L.

English name: Salt heliotrope.

Local name: Lonak, Kharsun.

Description:

A branched glabrous, perennial herb. Stem and branches spreading over the ground to form mat like appearance, salt-loving, succulent. Leaves smooth without any indumentum. Flowers minute white, arranged in almost double row in one sided cyme.

Flowering Period:

March to April.

Habitat:

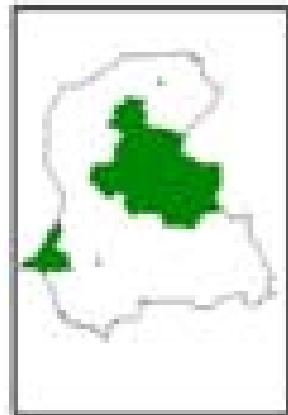
Found in saline fine silty to clayey moist soil, sometimes semi-aquatic.

Uses:

The roots of the plant are ground to powder and applied to sores and wounds, The plant is mostly used in south-western desert of America as drug plant.

Distribution:

Native of tropical America, now widespread in many parts of the world.



Boraginaceae



Heliotropium ophioglossum Stocks ex Boiss.

English name:

Local name: Hathi-sura, Uth Charo.

Description:

A perennial densely branched stiff hairy ascending sub-shrub 40 to 50 cm tall. Leaves hairy on both surfaces. Flowers white arranged in two rows on same coiled one sided cyme. The plant is considered as infrequent species, not very common.

Flowering Period:

Almost round the year.

Habitat:

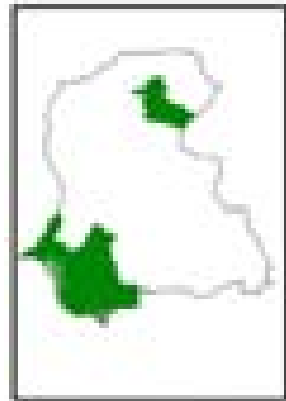
Found in stony and sandy places in lower Sindh and southern Balochistan.

Uses:

The plant is used against scorpion sting, leaves are used to cure ulcer.

Distribution:

Very limited in distribution only found in Pakistan, Iran and Tropical Africa.



Boraginaceae



Heliotropium ovalifolium Forssk.

English name: Heliotropio.

Local name: Uth Charo.

Description:

An annual dwarf branched prostrate or decumbent herb. Leaves with dense grayish white hairs. Midrib very clear, lamina oval shaped entire margins. Flowers minute, white.

Flowering Period:

February to August.

Habitat:

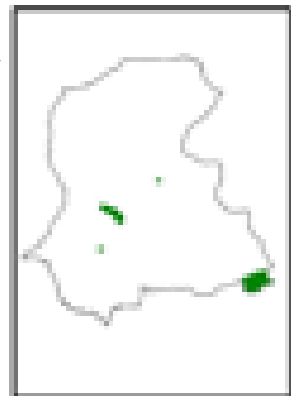
A wetland species, found near the water bodies.

Uses:

The plant is used in homeopathic medicine for pain-killer and venereal diseases.

Distribution:

Africa, Saudi Arabia, Pakistan, India, Indo-China and Australia.



Boraginaceae



Heliotropium strigosum Willd.

English name: Heliotropio.

Local name: Chitiphul, Safed bhanga, Kharsun, Gorakh Paan.

Description:

A delicate annual prostrate or procumbent branched herb with stiff hairs, usually branched from the base. Leaves linear small without petiole, margins entire. Flowers white in cymes, minute, deeply five lobed, star shaped.

Flowering Period:

April to September.

Habitat:

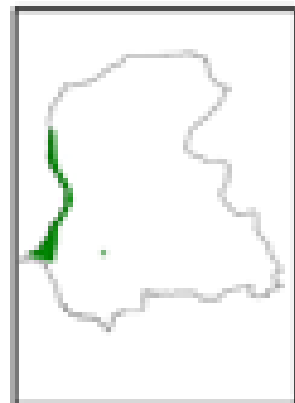
The plant grows on sandy places.

Uses:

The plant is reported to possess laxative and diuretic properties. It is used sometimes for pains in the limbs. The juice of the plant is applied to sore eyes. It is also used for boils, wounds and ulcers. It is used in snake-bite. Also used as a pain-killer.

Distribution:

Pakistan, India, Northern and Western Africa.



Boraginaceae



Heliotropium supinum L.

English name: Dwarf heliotrope.

Local name:

Description:

A prostrate branched annual herb usually <5cm high. Leaves somewhat fleshy, lamina almost round in shape with prominent venation. Flowers white in terminal curved spike. Fruiting calyx typically enlarged and inflated. It is considered a very rare species.

Flowering Period:

July to August.

Habitat:

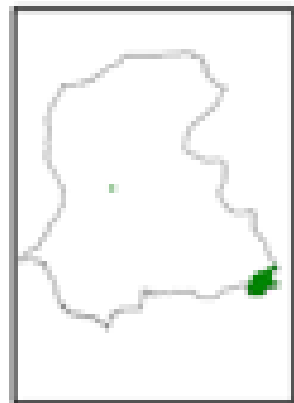
Found in fine silty soil near water margins.

Uses:

The plant is used to cure tumors and cancers.

Distribution:

Southern Europe, Northern Africa, Syria, Iraq, Pakistan and India.



Boraginaceae



Sericostoma pauciflorum Stocks ex Wight.

English name:

Local name: Khirson.

Description:

A much branched, erect ascending shrub more than 50 cm tall. Leaves narrow lanceolate small alternate without petiole with white minute star like flowers.

Flowering Period:

Most part of the year.

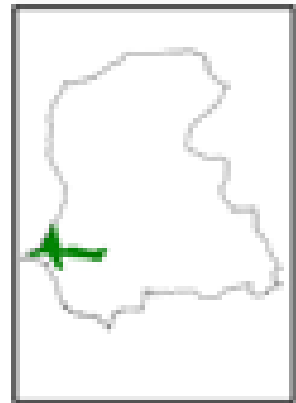
Habitat:

Usually found in sandy areas.

Uses:

Distribution:

The species has very limited in distribution only found near costal regions of Pakistan and India.



Boraginaceae



***Trichodesma indicum* (L.) R. Brown**
(Syn: *Borago indicum* L.)

English name:

Local name: Chota fulfa, Nila Karai.

Description:

An erect, annual herb, stems densely hispid with stinging hairs. Leaves alternate, sessile, margin entire, base amplexicaul. Flowers in blue, turning pale pinkish purple with age, in many-flowered cymes. Propagates by seeds.

Flowering Period:

May to October.

Habitat:

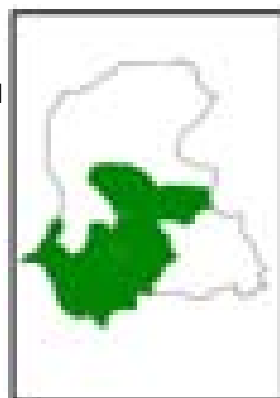
Generally found near villages, sandy and gravelly places, along tracks and moist areas.

Uses:

Juice of the leaves is applied to boils, against snake bit, and also massaged on muscular swellings. The plant is considered as a cure for fever. The plant is beneficial in diseases of the eye, also considered as diuretic. A cold infusion of the leaves is considered depurative pounded with water and it is given as a drink to children for dysentery.

Distribution:

Pakistan, India, Iran, Afghanistan, Philippines, and Mauritius.



Brassicaceae/ Cruciferae



***Farsetia hamiltonii* Royle.**

English name:

Local name: *Sindhi-Lathi, Punjabi-Farid booti, Urdu-Lathia.*

Description:

A perennial erect herb, often woody at the base, 10-40 (-60) cm long, branches erect or sub-spreading. Leaves narrow and linear. Flowers light pink to whitish pink with 4 petals arrange in cross shape.

Flowering Period:

March to September.

Habitat:

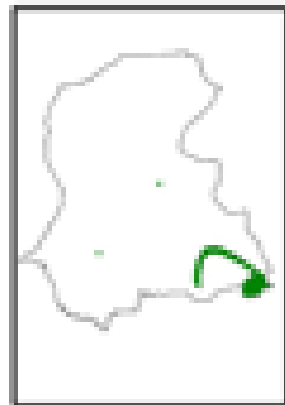
Found in arid and semi-arid areas, sandy and stony habitats.

Uses:

The plant used for cooling effects.

Distribution:

Endemic to arid area of Pakistan and India.



Burseraceae



Commiphora stocksiana (Engl.) Engl.
(Syn: *Balsamea stocksiana* Engl.)

English name: Gum Gugal.

Local name: Bayisa gugal, Bhayi.

Description:

Common large shrub to small tree of arid zone up to 4 m tall. Leaves margin entire on dentate. Flowers minute, pale yellow and red flowers on same plant. Cut surfaces of twigs emit a pleasant smell, branches covered with papery bark.

Flowering Period:

March to July.

Habitat:

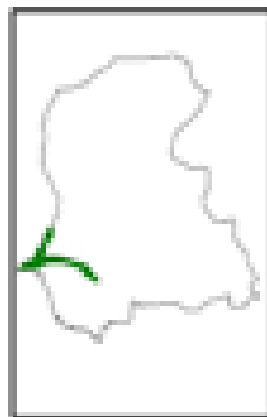
A tough xerophyte, found on calcareous rocks and stony plateaux.

Uses:

During the cold season the plant yields a tasteless and odorless gum which is collected by locals (source of income), the gum has tremendous medicinal values, used in different medicines e.g. to cure ulcer, sores.

Distribution:

Only restricted to lower elevated areas of Pakistan and neighboring Afghanistan. Not common.



Burseraceae



Commiphora wightii (Arn.) Bhandari
(Syn: *Balsamodendron wightii* Arn.)

English name: Indian Bdellium tree.

Local name: Guggal, Gugal, Gugar.

Description:

A large shrub or small tree of arid areas, up to 4 m tall, thorny and knotty with papery bark. Leafless in dry season, bright green and shiny leaves appear after rains, leaflets obovate with serrate margins, flowers tiny, dark red, sessile. Cut surfaces of leaves and twigs emit a pleasant smell.

Flowering Period:

February to April and again August-September.

Habitat:

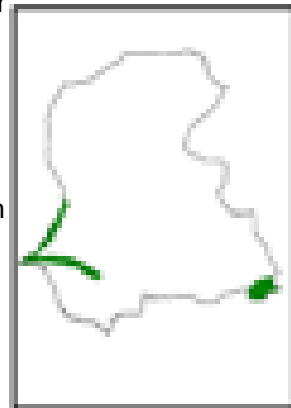
Tough xerophyte. Found on stony plateaux, gravelly, slopes of hills.

Uses:

It is the source of Guggul or Indian Bdellium, a gum-resin that exudes from the branches. It is largely used as incense, in medicine and perfumery. Gum is demulcent, carminative, antiseptic, alternative expectorant aphrodisiac. Used in ulcer, Syphilis and skin diseases. Internally used as uterine stimulant and emmenagogue. It is also said to regulate menstrual Disorder. Gum is more valuable and expensive than the gum obtain from *C. stocksiana*.

Distribution:

The plant is very limited in distribution found only in Pakistan, India and some parts of Saudi Arabia and adjacent areas of Afghanistan.



Caesalpinaceae



Bauhinia retusa Roxb.
(Syn: *Phanera retusa* (Roxb.) Benth.)

English name: Semla gum.

Local name: Kural, Kandla.

Description:

A medium sized deciduous tree with dark brown bark bearing bright yellow flowers. Leaves slightly broader than long, divided from the apex, margins entire, venation palmate. Flowers showy about 2 cm across. Pod flat, curved, many seeded.

Flowering Period:

September-November.

Habitat:

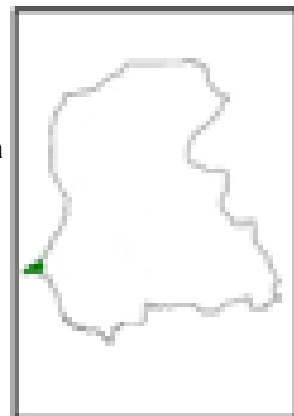
Cultivated at gardens and road sides.

Uses:

All parts are used medicinally. Gum is used for sores. Decoction of leaf is used in headache and malaria. Decoction of root and bark is useful in liver inflammation and as a vermifuge. Dried leaves bark and root is also used in diarrhea and dysentery. Seeds are used as tonic and made into paste with vinegar and apply on wounds inflicted by snake bite, scorpion and poisonous animals.

Distribution:

Iran, Afghanistan and Pakistan.



Caesalpiniaceae



Bauhinia variegata L.

English name: Orchid tree, Mountain-ebony.

Local name: Kachnar.

Description:

A medium sized deciduous tree about 10-12 m high. The bark is nearly smooth and dark brown bearing bright pink or white flowers. Leaves petiolate. It is a very popular ornamental tree in subtropical and tropical climates.

Flowering Period:

February-April.

Habitat:

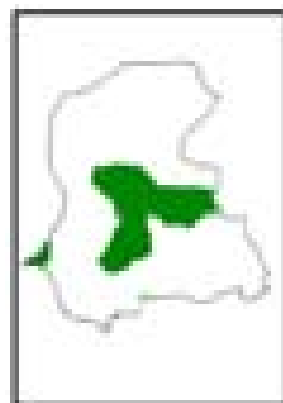
Mostly found in orchards and gardens.

Uses:

The leaves are given to cattle as fodder. Bark is alterative anthelmintic tonic, astringent, useful in skin diseases and ulcers. Buds cooked as vegetable. Wood is used in building and for agricultural implements. Root is an antidote to snake bite. The tree yields gum, bark is used for tanning and dyeing.

Distribution:

Pakistan, India, Kashmir, Nepal, Burma and China.



Caesalpiniaceae



Senna holosericea (Fresen) Greuter.

English name: Senna.

Local name: *Sindhi*-Ghora wal, *Urdu*-Jangli sana.

Description:

A perennial suffruticose 20-70 cm tall herb, branches sub-terete, pubescent. Leaves compound consisting of small leaflets arranged opposite on rachis. Flowers yellow, 1-1.5 cm across in axillary racemes. Fruit smooth, about 3-4 cm many seeded.

Flowering Period:

Most part of the year.

Habitat:

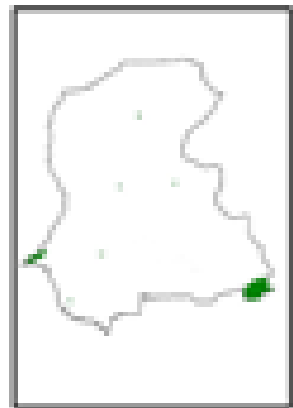
A common species of disturbed areas, grows in dry gravelly soil, near villages, roadsides.

Uses:

Leaves and fruits are used for the adulteration of *Cassia senna*.

Distribution:

Somalia, Sudan, Yemen, Oman, Arabia, Iran, India and Pakistan.



Caesalpiniaceae



***Senna italica* Mill.**

English name: Italian Senna, Dog senna, Country senna, Alexandria senna.

Local name: *Sindhi*- Koori sana, Ghorawal, Dadhwal. *Urdu*- Chota taroda, Desi sana.

Description:

An erect perennial branched herb 40-80 cm tall. Leaves compound, oblong. Flower pale yellow about 2 cm across in terminal racemes. Fruit flattened with median crest.

Flowering Period:

Most part of the year.

Habitat:

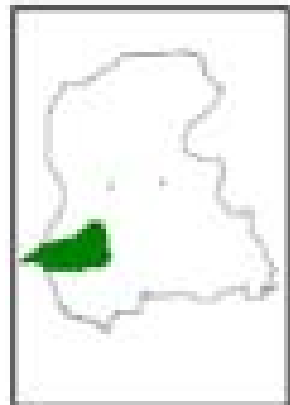
Plant grows on disturbed, stony and sandy open grounds.

Uses:

Given to cattle for promotion of milk, crushed leaves are used for ophthalmic diseases; leaves are also used as dressing on wounds and furuncles; milk infusion of the root is used in influenza.

Distribution:

Egypt, Western Sahara, Somalia, Sudan, Uganda, Cameroon, Senegal, Angola, Oman, Arabia, Yemen, India, Sri Lanka and Pakistan.



Caesalpinaceae



Tamarindus indica L.

English name: Tamarind, Indian date.

Local name: Gadamri, Imli.

Description:

A large evergreen and slow growing tree, 20-50 m in height. Leaves paripinnate, oblong and obtuse. Flowers generally pale orange and produced in racemes.

Flowering Period:

May - June.

Habitat:

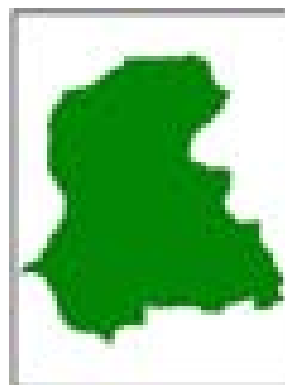
Commonly cultivated in variety of soil type and habitats.

Uses:

Almost all parts of the plant are used especially fruit which is carminative, laxative, refrigerant, digestive and useful in diseases of bile, infusion is used as a drink in febrile diseases. It is also regarded as an important ingredient of many tasty dishes.

Distribution:

Probably native of tropical Africa cultivated in Pakistan and India. It is cultivated and self sown in plains of Punjab, Sindh and Balochistan.



Capparidaceae



Cadaba fruticosa (L.) Druce

English name: Indian Cadaba.

Local name: *Sindhi*- Kodhab, *Urdu*- Kodhab.

Description:

Unarmed straggling much branched large shrub to small tree, up to 3 m tall. Leaves with short petiole, about 3-6 cm, elongated. Flowers off-white. Fruit an elongated capsule, seeds embodied in red pulp which is exposed after bursting of fruit.

Flowering Period:

Most part of the year except winter.

Habitat:

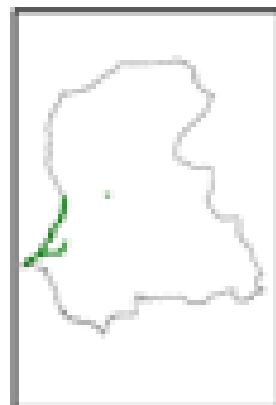
The plant is found in dry, gravelly, slopes of foothills and stony habitat.

Uses:

A decoction of the roots and leaves is reputed as deobstruent and emmenagogue and is recommended for uterine obstructions. It is also used as anthelmintic and aperient. The pulverised leaves mixed with coffee, are taken as an iron tonic. In Tanzania, the ash is rubbed into skin to relieve general body pains. An infusion or decoction of plant is employed in Senegal for pulmonary affections in the children and for dysentery.

Distribution:

Arabia, Egypt, Tropical Africa, Pakistan and India.



Capparidaceae



Capparis cartilaginea Decne.

English name:

Local name: Kabar, Khawarg, Panetero, Kaluari, Gola

Description:

A glabrous, branched, prostrate or scrambling fleshy shrub with elliptic, 2-6 cm broad with entire margin. Flower showy, pair of petals somewhat hooded and enclosed in the hood. Fruit ovoid or ellipsoid, 3-5 cm long, 2-3 cm long, flesh reddish.

Flowering Period:

Post monsoon to March.

Habitat:

Found on stony, rocky slopes and mountain ridges.

Uses:

The plant is used to cure earache, headache, snakebite and paralysis.

Distribution:

Pakistan, Southern Iran, Iraq, Israel, Saudi Arabia, Egypt and Tropical East Africa.



Capparidaceae



Capparis decidua (Forssk.) Edgew.

(Syn: ***Capparis aphylla*** Roth.)

English name: Caper Berry.

Local name: *Sindhi*- Pussi, Kirrir. *Urdu*- Tatali, kareel, *Punjabi*- Karil, karia, kirra, karrir.

Description:

Drought tolerant leafless shrub to small tree, up to 5 m (rarely more) high, branches dark green crooked, spiny. Leaves appear for very short period in the young plant or in young shoots, very narrow and minute. Flowers orange to almost red, long-stalked in dense clusters, fruits bright red at maturation.

Flowering Period:

January to September.

Habitat:

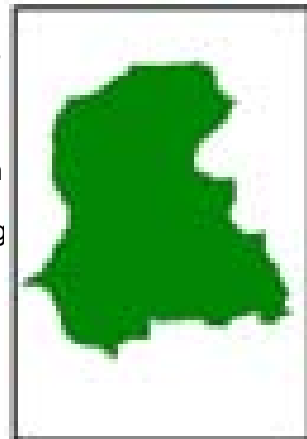
Found very commonly in the sandy plains of desert areas and slopes and tops of foothills.

Uses:

Its wood is used for fuel, the wood is hard and resistant to attacks of termites; it is used for making knees of boats in Sindh. Ripe fruit is sweet and edible consumed by locals, unripe fruit is used as vegetable and also used for making pickle. Ripe fruit is relished by many bird species particularly Houbara Bustard.

Distribution:

One of the common shrubs of arid plains of Sindh, Balochistan and Punjab. Distributed in Northern and Tropical Africa, Arabia, eastward to India.



Capparidaceae



Cleome brachycarpa Vahl ex DC.

English name:

Local name: *Sindhi*- Kasturi, Dhanar, Khathoori *Urdu*- Panwar, Madhio, Khirmar, *Punjabi*- Noli, Nodi.

Description:

A small perennial glandular aromatic herb up to 50 cm tall. Leaves palmately compound, leaflets obovate. Flowers yellow, minute with four bright yellow petals. Fruit capsule, narrow elongated with many seeds.

Flowering Period:

Most of the year.

Habitat:

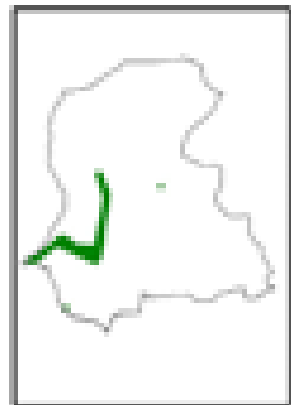
Grows in open, sandy-gravelly, rocky grounds.

Uses:

Used as fodder for Camels, sheep and goats, the plant is used in rheumatic pains, inflammations, scabies, leucoderma and is considered as a useful medicine for a person suffering from heat.

Distribution:

Tropical and North Africa, Egypt, Arabia, Iran, Afghanistan, Pakistan and India.



Capparidaceae



Cleome scaposa DC.

English name: Beeplant.

Local name: Kano ghaa.

Description:

An erect branched annual herb generally 10-30 cm tall with slender. Leaves simple small almost rounded with deeply inserted midrib. Stem erect and sparsely branched having minute terminal flowers, white turning yellowish, rarely pinkish. Fruit capsule, very narrow with tiny seeds.

Flowering Period:

February to April.

Habitat:

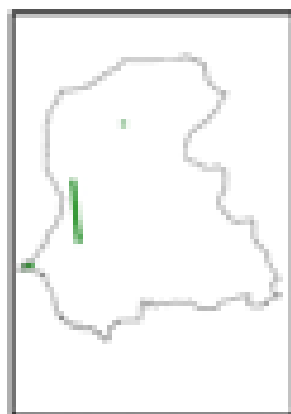
Common in stony, gravelly soil and hilly slopes.

Uses:

Mostly grazed by livestock.

Distribution:

North and Tropical Africa, Egypt, Arabia, Pakistan and India.



Capparidaceae



***Cleome viscosa* L.**

English name: Asian Spider flower, wild mustard.

Local name: *Sindhi*- Dhanar, Khathoori. *Urdu*- Jhangli hurhul, *Punjabi*- Hurhul bugra.

Description:

A viscid, sticky annual herb up to 1 m high. Upper leaves usually tri-foliate, lower pentafoliate. Flowers yellow in elongated terminal raceme, bracts tri-foliate. Fruit elongated erect capsule, many seeded, seeds minute. Propagates by seeds.

Flowering Period:

June to August. Fruiting from September to November.

Habitat:

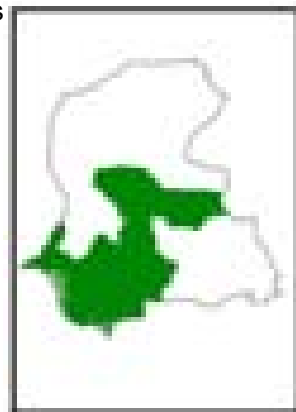
Commonly found in open areas; and on uncultivated lands

Uses:

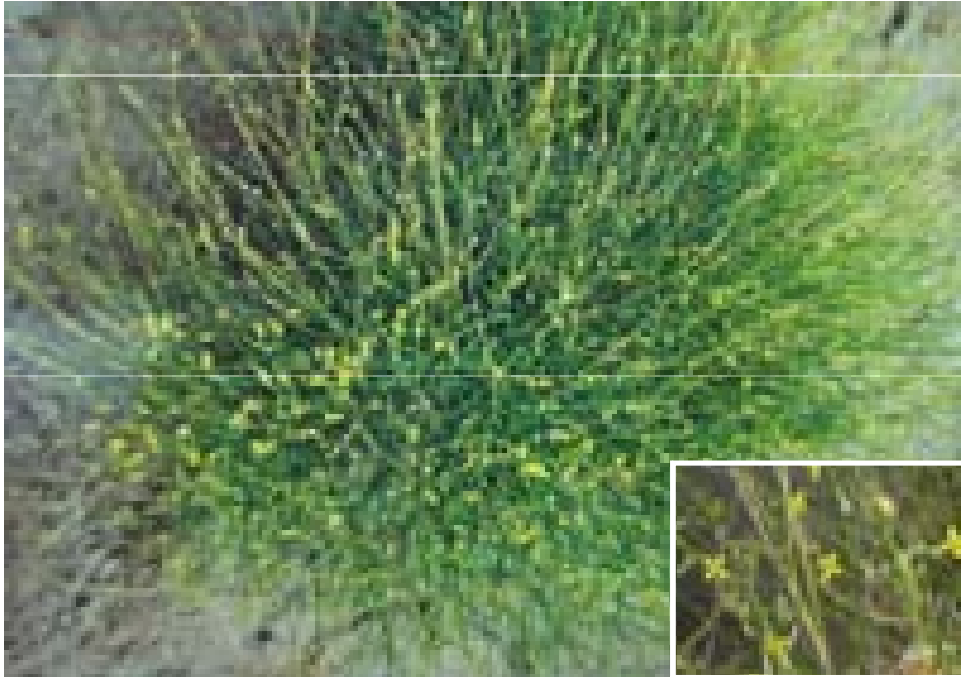
Whole plant paste used as an externally for different skin diseases. Seeds contain viscosic acid and viscosin. Tender shoots and leaves are cooked as vegetable, roasted seeds are used in curries or are pickled. A paste of the plant is applied externally to treat earache and for deafness (diseases of middle ear).

Distribution:

Almost throughout tropical countries.



Capparidaceae



Dipterygium glaucum Decne.

English name:

Local name: Pheer.

Description:

It is about 60 cm tall under shrub with many slender glabrous branches, rarely glandular, woody at the base. Leaves minute light green, attached with short petiole. Flowers minute, having four minute bright yellow petals. Fruit rough one seeded. Reproduces through seeds.

Flowering Period:

February to October.

Habitat:

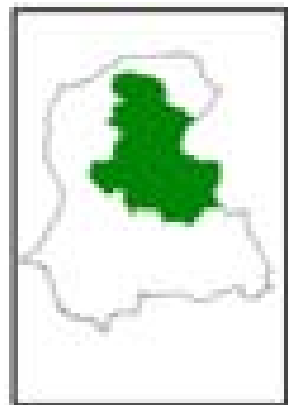
Found in dry, sandy-gravelly habitats.

Uses:

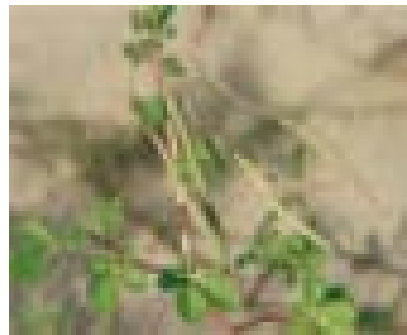
The plant grows in desert areas provides service to stabilize sand dunes, used for treatment of respiratory disorders.

Distribution:

Arabia, Egypt, Sudan and Pakistan.



Capparidaceae



Gynandropsis gynandra (L.) Briq.
(Syn: *Cleome gynandra* L.)

English name: African spiderflower.

Local name: Bugra booti.

Description:

A summer annual, erect or sub-erect herb up to 10-50 (-90) cm tall, often glandular, hairy. Leaves palmately divided into 3 to 5 leaflets. Flowers white or pale pink in terminal racemes with long curved stamens. Fruit capsule with many seeds.

Flowering Period:

August-October.

Habitat:

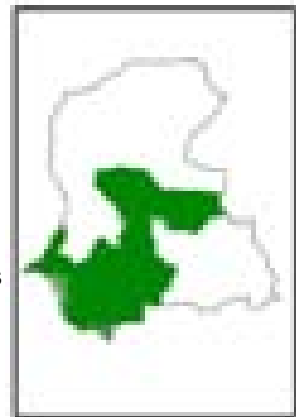
The plant is commonly found in moist cultivated fields, sandy open areas. Often very common after rainfall.

Uses:

The leaves are rubbed on the skin as a cure for chibayo pneumonia. The decoction of root is used to treat fever. The whole plant is used in the treatment of scorpion stings and snake bites.

Distribution:

Widely distributed in the tropical and subtropical regions of the world.



Capparidaceae



Maerua arenaria (DC.) Hook.f. & Thoms.
(Syn: *Niebuhria arenaria* DC.)

English name:

Local name: Korar.

Description:

A straggling shrub with weak stem, initially requires support from other plants, growing up to 3 m high, becoming a small tree with age. The plant usually grows in association with other plant (mostly straggling over *Salvadora oleoides* and *Euphorbia caducifolia*). Branches glabrous to scabrous. Leaves fleshy dark green. Flowers usually in dense, corymbose racemes, white, pedicellate. It is a very variable species with regards to hairiness and size and shape of leaves.

Flowering Period:

Summer season.

Habitat:

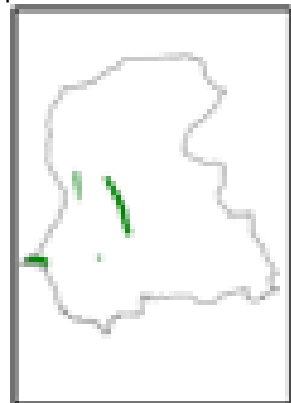
Mostly found in dry stony and gravelly areas.

Uses:

Roots are used as tonic and stimulant.

Distribution:

Pakistan, India and Sri Lanka.



Caryophyllaceae



Polycarpaea spicata Wight. & Arn.

English name:

Local name:

Description:

An annual small erect herb 5-10 cm high with woody tap-root, slender stem, soft fleshy leaves formed rosette at the base. Flowers in terminal spike like dense cymes, combination of bright white and pinkish colours, individual flower has no stalk. Seeds angular.

Flowering Period:

Throughout the year depending upon availability of moisture/rain fall.

Habitat:

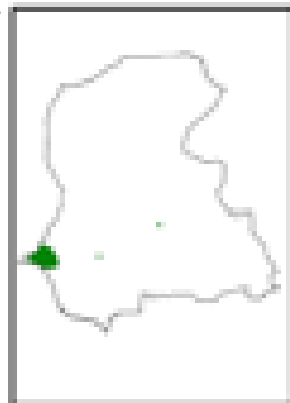
Commonly found in dry river beds and other sandy places.

Uses:

The plant leaves are extensively used against poisonous bites from animals.

Distribution:

North-west India, Arabia, Egypt, Northern Australia, and Pakistan (Sindh, Balochistan).



Caryophyllaceae



Spargularia marina (L.) Griseb.
(Syn: *Arenaria rubra* var. *marina* L.)

English name:

Local name: Naaro thulho.

Description:

A delicate annual or biennial herb. Stem branching from the base, 10-30 cm, ascending to erect, glabrescent, glandular. Leaves fleshy cylindrical without any stalk, bright green. Flowers terminal, pink or mauve.

Flowering Period:

February to March.

Habitat:

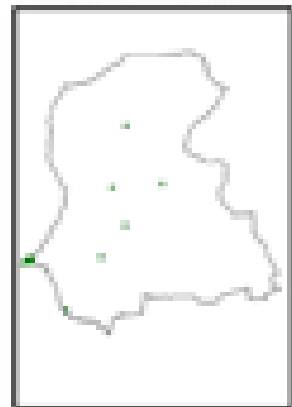
Common in fields and waste lands during winter season.

Uses:

Grazed by livestock.

Distribution:

Mediterranean Europe, South West & East Asia, Egypt, Iran, Turcomania, Afghanistan, and Pakistan.



Chenopodiaceae



Arthrocnemum indicum (Willd.) Moq.

English name: Coral plant.

Local name: Kal.

Description:

A perennial halophytic fleshy herb usually 70 cm high, with prostrate stem giving numerous ascending leafless branches. Male and female flowers separate but on same spike (flowering stem). Flowers minute yellow or light green, in terminal spikes, branchlets succulent.

Flowering Period:

September to February.

Habitat:

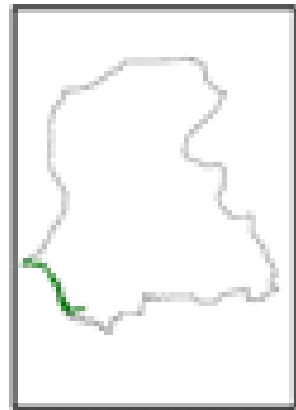
A highly salt tolerant species, mostly found in highly saline wet plains near to coast and in creeks.

Uses:

The plant is Alexipharmic. The Ashes of the plant is used in scorpion sting.

Distribution:

Australia, Malaysia, Sri Lanka, India, Pakistan and tropical East Africa.



Chenopodiaceae



Arthrocnemum macrostachyum (Moric.) C. Koch
(Syn: *Salicornia macrostachya* Moric.)

English name: Glaucous glasswort.

Local name: Laaran.

Description:

A robust monoecious perennial more or less erect salt tolerant succulent shrub growing up to 90 cm tall with diffuse, glaucous-green segmented stem. Flowers very minute, in terminal spikes.

Flowering Period:

October to December.

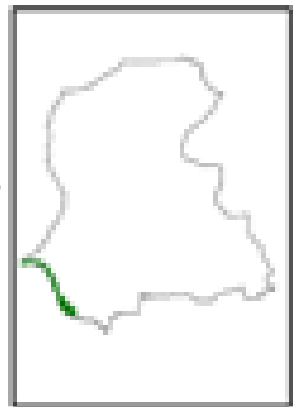
Habitat:

Saline and clayey soils of coastal areas, extending to intertidal zone frequently associated with sparse population of *Avicennia marina*.

Uses:

Distribution:

Mediterranean coast of South Europe, North Africa, Egypt, Saudi Arabia, Middle-east, Iran and Pakistan.



Chenopodiaceae



Atriplex stocksii Boiss.

English name:

Local name:

Description:

Perennial salt tolerant halophytic species, 20-60 cm high sub-shrub of pale green colour, shining, sub-erect, much branched. Leaves slightly fleshy with wavy margin. Flowers, unisexual, minute green, in terminal spikes, male and female flowers usually on the same spike.

Flowering Period:

Most part of the year.

Habitat:

Usually found in coastal and inland salt deserts.

Uses:

Distribution:

Distributed range is considered only restricted to Pakistan.



Chenopodiaceae



***Chenopodium album* L.**

English name: Bacon Weed, white goose foot.

Local name: *Sindhi-* Jhil ghaa, Chil ghaa, *Urdu-* Bathu, *Punjabi-* Bathua.

Description:

An erect annual salt tolerant succulent species up to 10-150 cm high herb covered with mealy, glandular substances. Leaves fleshy almost triangular, venation not very clearly visible. Flowers minute greenish in compact terminal panicles. Seeds minute roughly rounded black.

Flowering Period:

January to March.

Habitat:

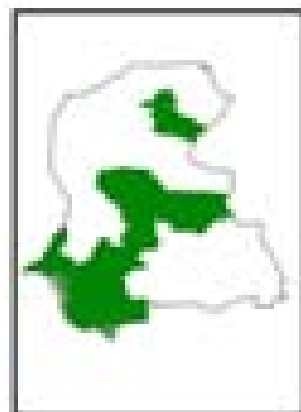
Mainly a winter annual found in the fields of wheat and other winter crops and moist, open places near plantations. Rarely found as summer annual in July-August.

Uses:

Tender shoots and leaves are cooked as a vegetable, the juice of the plant relieves eye-troubles; juice of the root is given to treat bloody dysentery. Seeds are chewed in cases of urinary troubles.

Distribution:

Almost cosmopolitan, common in subtropical to temperate zones.



Chenopodiaceae



Chenopodium atripliciforme Murr.
(Syn: *Chenopodium opulifolium* Auct.)

English name: Grey goose foot.

Local name: Nandro jhil ghaa, Chhoti Jhil.

Description:

An annual erect succulent halophytic herb, usually sparsely mealy, sometimes glabrous stems reaching to the height of 70 (-120) cm. Leaves angular lamina broad triangular thinner than the leaves of *C. murale*, margin toothed only at the base, entire to serrate towards apex, acute to rounded or sometime with small beak. Flowers pale green.

Flowering Period:

August to September.

Habitat:

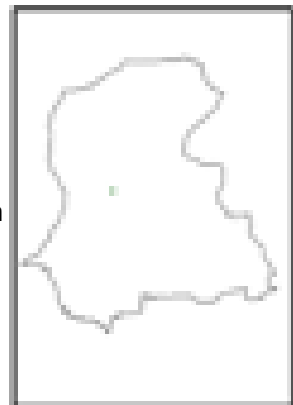
Usually found in forests, grasslands and river-sides.

Uses:

Usually grazed by livestock.

Distribution:

North-east Afghanistan, Northern Pakistan and Northern India.



Chenopodiaceae



***Chenopodium murale* L.**

English name: Nettle-leaf, Goose-foot grass.

Local name: *Sindhi*-Jhaloro, Chil ghaa, *Balochi*- Kurand, Khartua, *Urdu*-Batho, Bathua, Kharatua.

Description:

An erect annual halophytic herb; reaching to the height of 70 cm. Leaves triangular in shape with toothed margins. Flowers yellowish in clusters of cymes arise from the terminal portion of the erect plant. Seeds tiny. Propagates by seeds.

Flowering Period:

January to April.

Habitat:

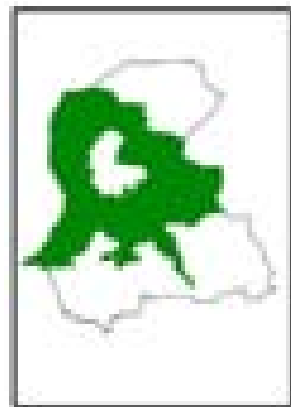
Commonly found in moist, neglected places.

Uses:

The plant is used a pot herb by locals; and is also a good fodder, probably the most common species of *Chenopodium* in low land parts of the area.

Distribution:

Pakistan, India, Arabia, Iran and Afghanistan.



Chenopodiaceae



Halostachys belangerana (Moq.) Botsch.
(Syn: *Arthrocnemum belangeranum* Moq.)

English name: Salt bush.

Local name: Jhil ghaa.

Description:

A large perennial halophytic, succulent shrub to small tree, up to 3.5 m high with many leafless branches. Highly salt tolerant species. Flowers minute in terminal spikes on lateral branches, flowering spikes green, fruiting spikes purplish.

Flowering Period:

November to February.

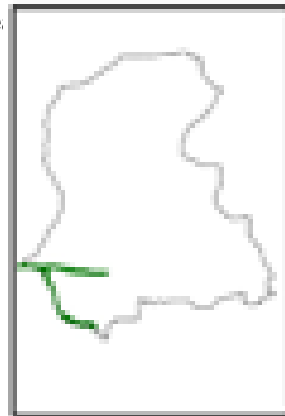
Habitat:

It is found in saline soils and salt-marshes in coastal areas. The plant frequently grows in association with *Arthrocnemum machyrostychem*.

Uses:

Distribution:

South-west and Central Asia, Northern Iran, Turkestan, Armenia, Pakistan and China.



Chenopodiaceae



Haloxylon salicornicum (Moq.) Bunge ex Bioss.

English name:

Local name: Lana, Lani.

Description:

A xerophytic erect ascending twiggy shrub up to 80 cm tall, branches green, jointed, leafless. Flowers minute arranged in terminal spike. Fruit winged, off-white.

Flowering Period:

November to December.

Habitat:

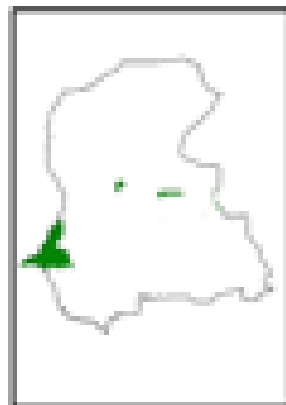
The plant is very common in sandy deserts and gravelly soils.

Uses:

It is considered as poisonous plant.

Distribution:

Egypt, Palestine, Jordan, Iraq, Kuwait, Central & Eastern Arabian Peninsula, Iran, Afghanistan and Pakistan.



Chenopodiaceae



Haloxylon stocksii (Boiss.) Benth. & Hook.
(Syn: *Salsola stocksii* Boiss.)

English name:

Local name: Khar, Barilla, Sajji, Lani.

Description:

A glabrous shrub 30-60 cm tall. Leaves short, opposite, angular fleshy without stalk. Flowers minute, in terminal spikes. Fruit winged, off-white to bright pink.

Flowering Period:

September to October.

Habitat:

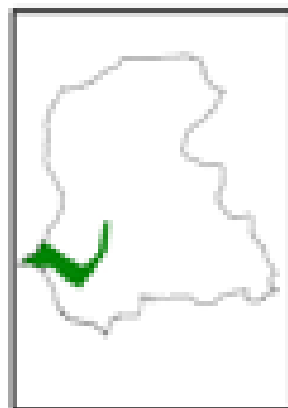
Grows in saline sodic soil, and rocky ridges and slopes.

Uses:

Local people burn the plant in a pit to get carbonate of soda which used as alternative of soap for cloth washing. The plant is supposed to be very poisonous. The ash of the plant with water is used to cure ulcer.

Distribution:

Pakistan, Afghanistan and India (Punjab, Rajasthan).



Chenopodiaceae



Salsola imbricata Forssk.

English name: Foetid saltwart.

Local name: *Sindhi*- Kari Lani, Gora lana, Hashok.

Description:

A perennial spreading much branched halophytic sub-shrub or shrub, 0.3-1.2(2) m high, forming dome shaped bush. Leaves minute fleshy lush green. Flowers minute, green in dense spike. Fruits winged, silvery white.

Flowering Period:

August to October.

Habitat:

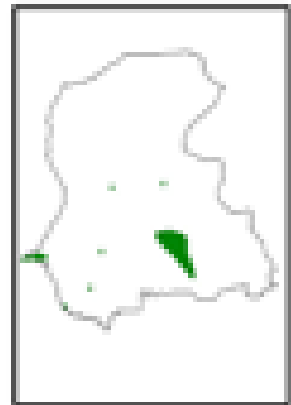
Common on many soil types, usually on sandy or gravelly soils.

Uses:

Eaten by camels only and also used for making alkali. The plant ash is very useful for itches. The plant frequently used as a vermifuge, laxative and used for different skin diseases.

Distribution:

The species is distributed in Northern Africa, Pakistan, India, Iran, Afghanistan and Arabia.



Chenopodiaceae



Suaeda fruticosa Forssk. ex J. F. Gmelin
(Syn: *Salsola lana* Edgew.)

English name: Seablite.

Local name: *Sindhi-* Lani, *Urdu-* Ushoon, *Punjabi-* Sajji lana.

Description:

A perennial evergreen shrub with glabrous branches growing 50-70 cm high. Leaves fleshy quite variable in shape, ranging from broadly oblong to linear, sessile. Flowers minute, green or reddish, in sessile clusters forming dense spikes.

Flowering Period:

April to October.

Habitat:

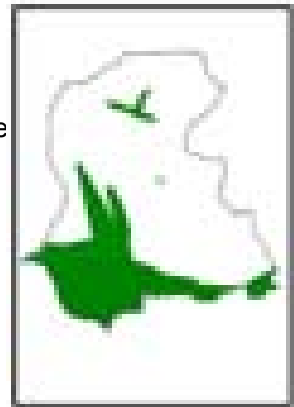
Grows in saline, loamy clayey habitats.

Uses:

Used as fodder for camels, used for the treatment of wounds, leaves are used in ophthalmia and the ash of the plant is use for washing clothes. Plant is laxative, diuretic and emetic. The plant extract is known to possess antibacterial property against micro-organisms.

Distribution:

Originally it is a European species extending from Asia to North-Eastern Africa.



Chenopodiaceae



Suaeda monoica Forssk. ex J. F. Gmelin.

English name: Lana.

Local name: *Sindhi*-Trat, Balochi-Righat.

Description:

A large shrub growing up to three meter high with annual fruiting branches usually drooping, erect or ascending stem. Leaves fleshy, alternate on main stem, sessile. Flowers green, clustered in upper axils, male and female flowers separate.

Flowering Period:

August to December.

Habitat:

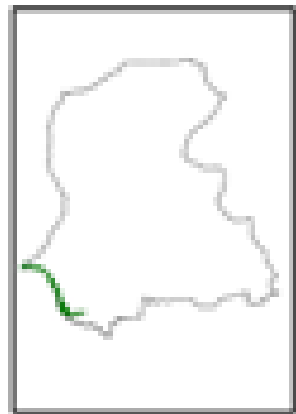
Commonly grow on moist soils, mostly in the coastal areas.

Uses:

It is used as fodder for camels and goats. Medicinally used as ointment on wounds and decoction of root is used for sore-throat in Kenya.

Distribution:

Distributed from the coasts of tropical Africa through the southern part of the Arabian Peninsula along the shores of the Indian Ocean eastwards at least up to Madras, northwards up to the Dead Sea area in Palestine and Jordan.



Combretaceae



***Terminalia catappa* L.**
(Syn: *Myrobalanus catappa* (L.) Kuntze)

English name: Tropical Almonds.

Local name: Jangli Badam.

Description:

A large tree up to height of 35 m with brownish dotted bark. Branches arise usually in whorls. Leaves petiolate with broad lamina. Flowers minute arrange in spike. Fruit edible.

Flowering Period:

June-September.

Habitat:

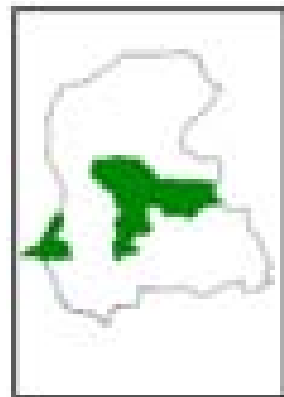
Cultivated in orchards, roadside, gardens and in houses.

Uses:

Fruit is edible. It is planted as a shade tree; bark contains tannin which is used as astringent and coloring leather. Wood is red, solid and highly water resistance and used in making small boats. Juice of young leaves is used in the treatment of leprosy, scabies and other skin diseases.

Distribution:

Tropical Asia, North Australia and Polynesia, cultivated in Pakistan.



Convolvulaceae



***Convolvulus arvensis* L.**

English name: Bindweed, Corn bine.

Local name: *Sindhi*- Narro, Naaro, *Urdu*- Hiran khuri, *Punjabi*- Harin padi, Lehli.

Description:

A perennial prostrate or twining herb, found as a weed in agriculture fields. Flowers pale purple or lilac, bell shaped, arranged in cymes. Leaves alternate with laminal basal wings, elongated taper towards apex.

Flowering Period:

October to March.

Habitat:

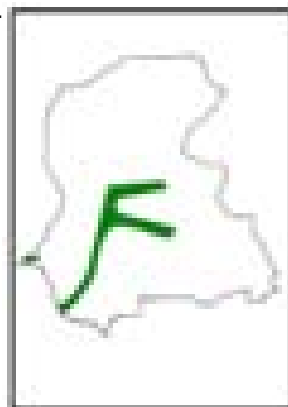
Commonly found in agroecosystems, along water courses.

Uses:

Juice of the root is given in case of fever. The plant roots has substances full of vitamin K, the plant also contain convolvuline and tannin, the plant is purgative, it is also used in skin diseases.

Distribution:

The plant is cosmopolitan in distribution.



Convolvulaceae



Convolvulus glomeratus Choisy

English name:

Local name: Sankavli, Paddi, Ondavali.

Description:

Biennial to perennial prostrate or twining branched herb. Leaves attached with very short stalk. Flowers white, in dense hairy globose cymes.

Flowering Period:

Most part of the year.

Habitat:

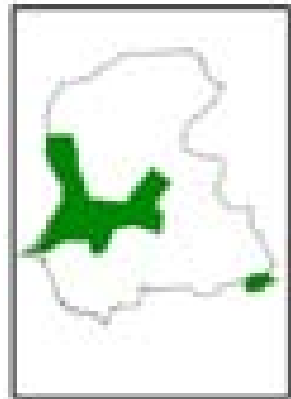
Grows on open, stony and sandy places.

Uses:

It is used as purgative and given in the form of powder prepared from the whole plant.

Distribution:

Tropical Africa, Pakistan, India, Afghanistan, Iran and Arabia.



Convolvulaceae



Convolvulus prostratus Forssk.

English name:

Local name: Urdu- Baphali, Dodak, Punjabi- Proprang, Dodak, Dinho.

Description:

A prostrate perennial hairy herb with woody base, 10-30 cm long, wavy branches. Flowers small, pale pink or white, sessile to sub-sessile in axillary heads. Reproduces through seeds.

Flowering Period:

January to April and fruiting from April to May.

Habitat:

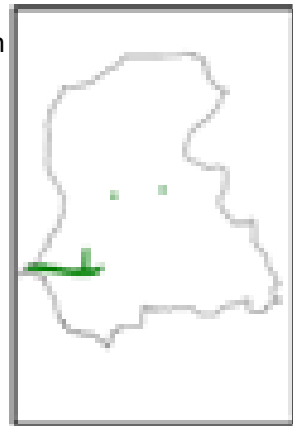
Common in open, waste or sandy places from plains.

Uses:

The plant is used in liver diseases, also eaten by cattle, can be used as a vegetable and a coolant in hot weather.

Distribution:

Northern Africa to Pakistan and India.



Convolvulaceae



Convolvulus rhyniospermus Hochst. ex Choisy

English name:

Local name: Phesura wal.

Description:

An annual dwarf herb, 15-40 cm, with erect or procumbent branched stem. Leaves oblong hairy, 1.2-2.5 cm long, attached with short petiole. Flowers in dense axillary clusters, whitish pink, corolla tubular, 1.5 cm long.

Flowering Period:

September.

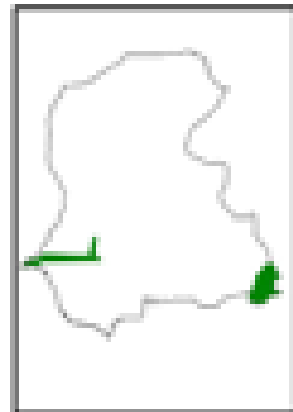
Habitat:

Common in dry river beds, sandy, gravelly and arid areas, found mostly after rainfall.

Uses:

Distribution:

Limited in distribution, in Pakistan and Central Sudan.



Convolvulaceae



Convolvulus scindicus Boiss.

English name:

Local name:

Description:

A branched, perennial stiff shrub or under-shrub, 30-60 cm tall. Flowers pale pink or creamy white. Leaves leathery pale green, lamina with prominent venation almost round.

Flowering Period:

March to December.

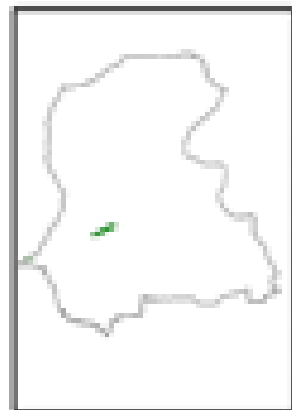
Habitat:

Xerophytic plant, grows on dry sandy, calcareous or lime soils.

Uses:

Distribution:

Endemic to Pakistan (Sindh and neighboring Balochistan).



Convolvulaceae



***Cressa cretica* L.**

English name:

Local name: *Sindhi-* Oin, Gen, Unnh, *Urdu-* Rudani.

Description:

An erect, small, dwarf halophyte, branched hairy herb up to 30 cm in height. Leaves very minute with salt glands, sessile, triangular. Flowers small white, in the axils of upper leaves.

Flowering Period:

Almost throughout the year.

Habitat:

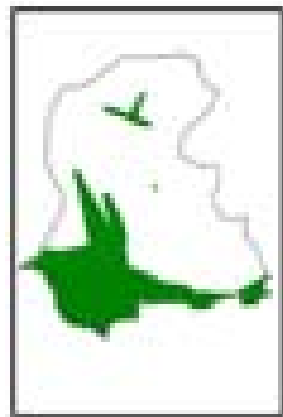
Common species of saline and silty soil and water logged areas.

Uses:

The plant is used to cure chronic fever and jaundice; paste of the leaves applied on sores, good fodder for camels, and regarded as a neutralizer of acidity of saline soils.

Distribution:

Widely distributed in the xeric tropical zones of both the Hemisphere.



Convolvulaceae



Ipomoea aquatica Forssk.

English name: Water bindweed.

Local name: *Sindhi-* Thulho, Naro, *Urdu-* Nari-kakal, *Punjabi-* Nari.

Description:

An annual creeper, hydrophytic herb with hollow trailing or twining stems. Leaves smooth, glabrous and angular lamina. Rooting at the nodes, flowers stalked, axillary, and purple gradually darken toward the center of flower, open after 9 am.

Flowering Period:

October to February.

Habitat:

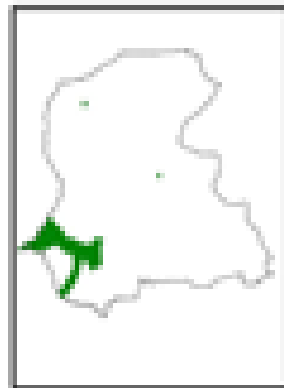
Common in ponds, lakes, ditches and muddy places.

Uses:

Young shoots and leaves are eaten as vegetable, young leaves also used by diabetic patients, a paste of buds is applied for ringworms. It can be a serious weed if left to grow unchecked.

Distribution:

Throughout tropical and sub tropical regions of the world.



Convolvulaceae



Ipomoea carnea Jacquin.

English name: Bush Morning Glory.

Local name: Kanor, Phanphat, Thulho, Naaro.

Description:

A large branched shrub, about 2 m high with woody hollow stem, branches mostly arise from the base. Leaves large, dark green with prominent venation. Flowers pink or whitish pink. It propagates by seeds or by cuttings.

Flowering Period:

May to June.

Habitat:

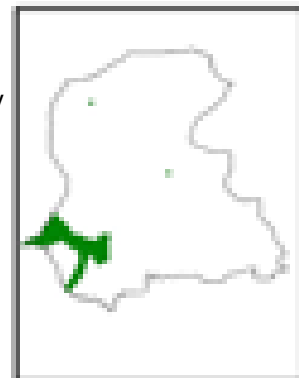
The species is commonly found near water bodies.

Uses:

Plant is cultivated as a hedge; juice of the plant is applied to wounds between the toes caused by prolonged walking barefooted in muddy water. The milky latex is applied to cuts and wounds.

Distribution:

Native of Tropical America, now widely distributed in Australia, America, Pakistan and India.



Convolvulaceae



Ipomoea indica Stapf

English name:

Local name: Sankavli, Paddi, Ondavali.

Description:

A prostrate or twining annual, branched, about 60 cm long herb. Leaves simple petiolate oblong, lamina much longer than broad with ciliate margins. Flowers white, arise from the axile of leaves.

Flowering Period:

During summer season.

Habitat:

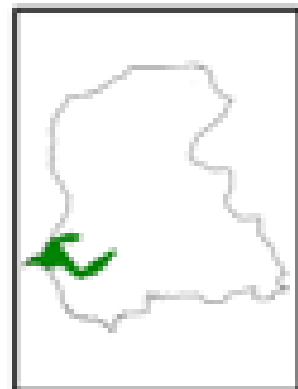
Usually found in sandy or gravelly habitat.

Uses:

Leaves are externally applied in rheumatism and colic.

Distribution:

Endemic to Sindh.



Convolvulaceae



Merremia aegyptia (L.) Urban
(Syn: *Ipomoea aegyptia* L.)

English name: Hairy wood rose/ morning glory.

Local name:

Description:

An annual or perennial herbaceous climber, covered with dense whitish hairs, mostly hirsute with long erect to sub-erect bearing white bell shaped flowers, lobed part usually at 90° to the tube. Leaves palmately divided into many digits.

Flowering Period:

September to January.

Habitat:

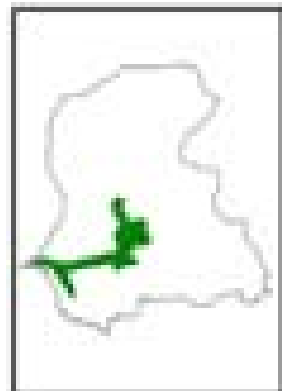
Usually found in riparian habitat in moist and shady areas and near agricultural fields.

Uses:

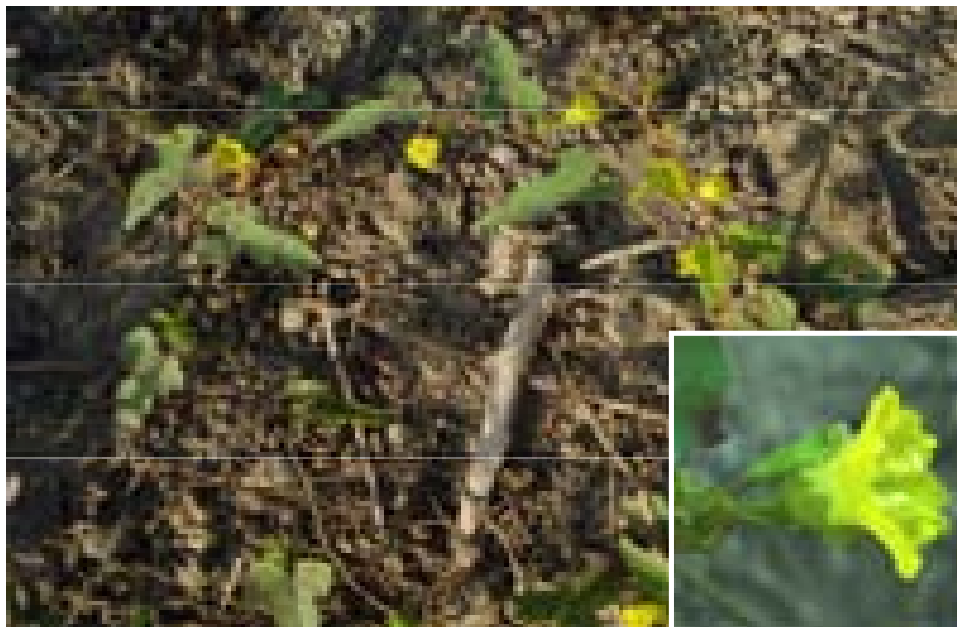
Usually grazed by livestock.

Distribution:

The species is distributed in Northern Africa, Tropical America, West Peninsula, India and Pakistan.



Convolvulaceae



Merremia hederacea (Burm.f.) Hall.f.
(Syn: *Evolvulus hederaceus* Brum.f.)

English name:

Local name: Phasura wal.

Description:

Climber with twining or prostrate stems, mostly spread over *Phragmites* reeds, smooth or minutely tuberculate, glabrous or sparsely pubescent. Leaves petiolate, heart shaped. Flowers solitary or cymose, yellow bell shaped.

Flowering Period:

February to March.

Habitat:

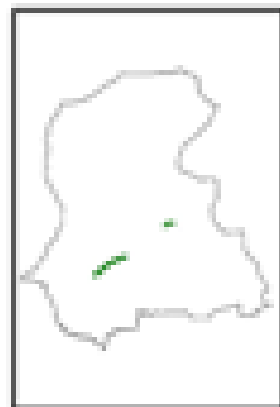
Commonly found near water bodies or moist soil, spread over *Phragmites* or *Acacia* plant.

Uses:

Used for herpes zoster.

Distribution:

Tropical Africa, tropical Asia to China, Malaysia, Queensland and some Pacific islands.



Convolvulaceae



Seddera latifolia (Hochst.) & Steud.

English name:

Local name: Gorago.

Description:

A small stiff shrub with stems arising from a woody base. Young stems and leaves having silky-grey pubescence. Flowers solitary, minute, white.

Flowering Period:

August to October.

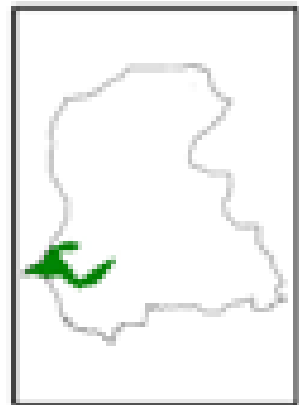
Habitat:

The plants are adapted to xeric conditions, found in rocky, gravelly habitats usually on hill slopes.

Uses:

Distribution:

East Africa, Arabia, Pakistan and India.



Cucurbitaceae



Citrullus colocynthis Schred.

English name: Colocynth.

Local name: *Sindhi-* Tooh, *Tumba*, *Urdu-* Indrayan, *Punjabi-* Tuma.

Description:

An annual prostrate herb, 1-2 m long. Leaves deeply dissected almost in three parts attached with thick cylindrical stalk. Flowers arise from the axil of leaves usually solitary, greenish. Fruits globose about 5 to 9 cm across, yellow when ripe, unripe with green and white stripes.

Flowering Period:

November to January.

Habitat:

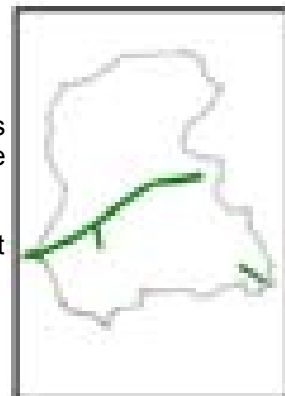
Commonly found at the top of sand dunes and inter-dunal areas also around agricultural fields.

Uses:

The fruit and seeds are used as purgative and root in jaundice, urinary disorders. The plant is very bitter, pungent, refrigerant, purgative, antirheumatic, antipyretic, anthelmintic and anti-inflammatory. It is used in enlargement of spleen, tuberculous glands of neck, ulcer, bronchitis, abdominal enlargement in the children. It is used in cure of pimples, dropsy, menstrual diseases and preserving hairs from turning grey. Oil of the seeds is used as a gastrointestinal restorative. Fruit and root are considered as antidote to snake poison.

Distribution:

The species is spread in warmer parts of Pakistan, India, Africa and Arabia to Spain.



Cucurbitaceae



Coccinia grandis (L.) Voigt.

(Syn: ***Bryonia grandis*** Linn.)

English name: IVY gourd kawai fruit

Local name: *Sindhi*- Gholaru, Kanduri. *Urdu*- Bhimb, Kanduri, Kundaru, *Punjabi*-Kanduri.

Description:

A pretty twining or spreading herb; extensively spreading vine. Leaves usually broader than the length, heart shaped. Flowers bright white, male and female flowers on separate plants; ripe red fruit is conspicuous with many seeds.

Flowering Period:

November to February.

Habitat:

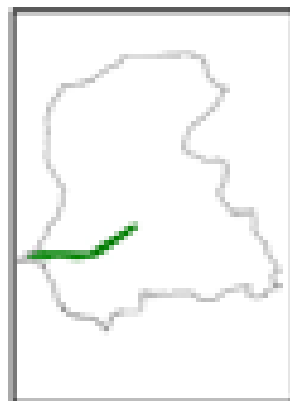
It is commonly found on fences and thickets.

Uses:

It is used for vomiting; burning of hands and feet in uterine discharges; leaves and stems are used for diabetes and as insulin. Tender fruit is sold as vegetable; used as a meat tenderizer, fruits are used in curries and said to be useful for diabetes; and also used for the diseases of blood and inflammations. Leaves are applied externally in skin eruption. The dry bark is a good cathartic.

Distribution:

Pakistan, India, Africa and Malaya.



Cucurbitaceae



Cucumis melo var. *agrestis* Naudin

English name: Wild melon.

Local name: Chibbar, Gidra wal.

Description:

An annual prostrate stiff hairy herb with tendrils. Leaves heart shaped covered with stiff hairs at both surface, petiolate, petiole usually as longer as lamina. Flowers bright yellow attached with hairy stalk. It propagates by seeds.

Flowering Period:

July to October and fruiting from August to October.

Habitat:

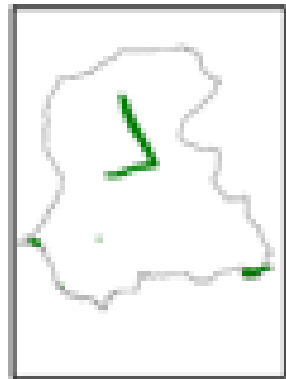
It is commonly found on uncultivated lands and in sandy places.

Uses:

Ripe fruit is edible, and an immature fruit is cooked as a vegetable, fodder for cattle. A paste of the plant is applied around the navel in case of difficulty in urination. It is also used as cooling agent and first aid treatment for burns and abrasions. A chatni is also made from the ripened fruit.

Distribution:

Throughout the old world tropics.



Cucurbitaceae



***Cucumis prophetarum* L.**

English name: Wild Cucumber.

Local name: *Sindhi*- Kharchvit, Kharindroyan, Mitero.

Description:

A trailing prostrate climbing and creeping perennial herb with slender stem and long tendrils. Leaves deeply dissected in three parts, margins wavy. Flowers minute about 1 cm in diameter. Fruit spiny, yellow when ripe.

Flowering Period:

June to July.

Habitat:

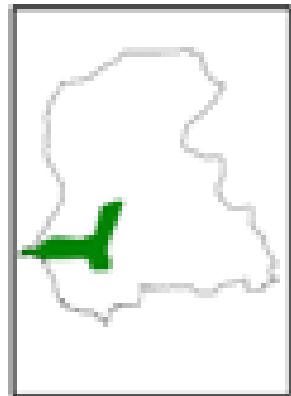
Common in stony, gravelly plains and dry slopes of foothills.

Uses:

The plant is emetic and purgative. A bitter resinous body myriocarpin, which produces nausea and is slightly purgative, is present in the fruit pulp.

Distribution:

Pakistan, India, Afghanistan, Iran, Arabia and Tropical Africa.



Cucurbitaceae



Mukia maderaspatana (L.) M. J. Roemer.
(Syn: *Cucumis maderaspatanus* Linn.)

English name: Madras pea pumpkin.

Local name: *Sindhi-* Bellari, Chirtati, *Urdu-* Agumak, *Punjabi-* Gawala, Kakri.

Description:

A climbing, scandent or prostrate, annual stiff hairy herb with tendrils, scabrous, much branched. Flowers minute, yellow and unisexual, male and female flowers are on same plant. Fruit berry, rounded, bright red when ripe.

Flowering Period:

August to April.

Habitat:

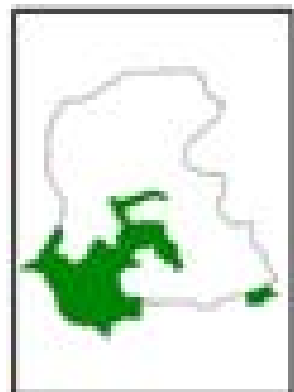
Common in partly shady and moist places.

Uses:

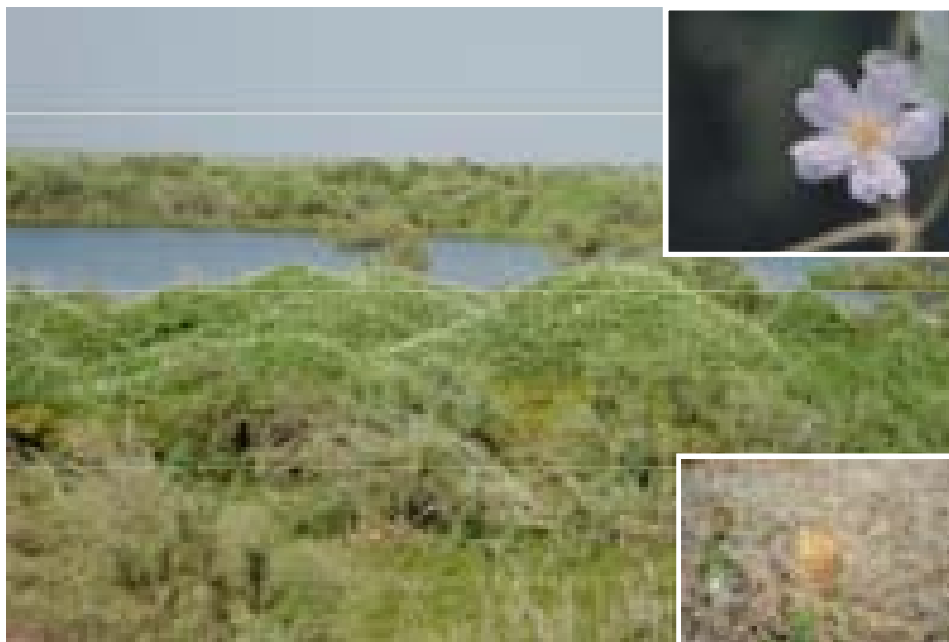
The root is chewed to relieve toothache; squeezed plant is applied to treat scabies of animals. The seeds are febrifuges. The fruit has poisonous, laxative and vermifuge properties, leaves are used for different skin diseases.

Distribution:

Pakistan, India, China, Malaya, Africa and Australia.



Cucurbitaceae



Luffa echinata Roxb.

English name:

Local name: Bindal.

Description:

A tendril bearing climber with furrowed stem. Flowers white and unisexual; male flowers in racemes; female flowers solitary. Fruit ovate spiny brown after maturation open by operculum.

Flowering Period:

August to September.

Habitat:

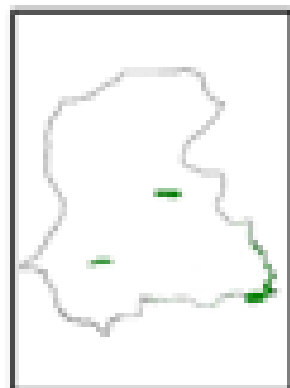
Found near water bodies, mostly climbing on trees or reeds.

Uses:

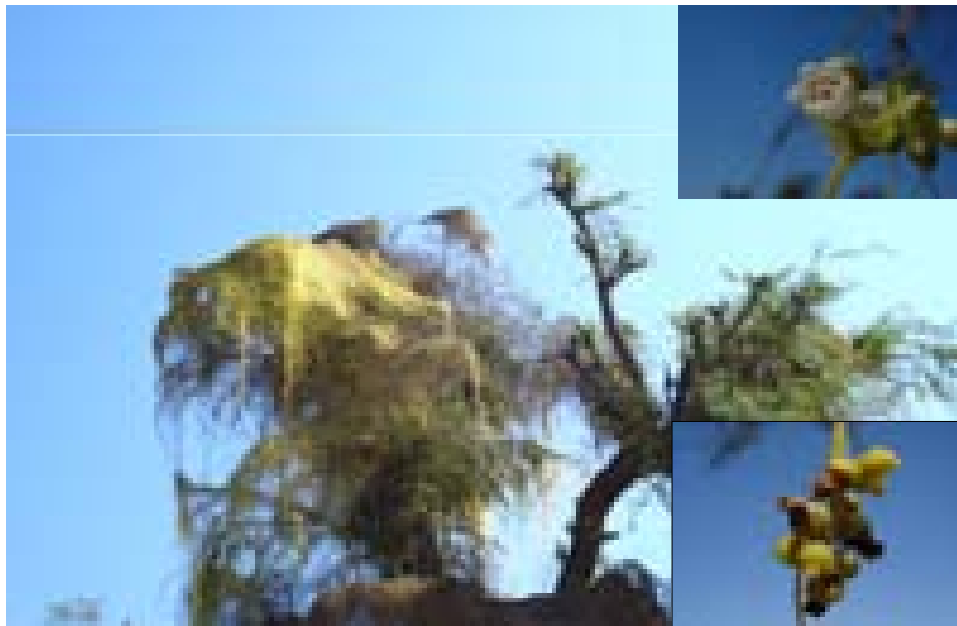
It is reported to be used for the dropsy, nephritis, chronic bronchitis and lung complaints. It is applied to the body in putrid fevers and jaundice.

Distribution:

Pakistan, Bangladesh, India and Northern Tropical Africa.



Cuscutaceae



Cuscuta hyalina Roth.

English name: Dodder.

Local name: *Sindhi*- Amer wal, Be-phari, *Urdu*- Akash-bel, Niradhari, Amer-bel.

Description:

A parasitic annual climber with thin stem, intermingled, yellow to brown. Flowers tender, whitish-hyaline. Mostly spread over *Acacia nilotica*. This species can easily be separated from all other species of *Cuscuta* by its long and sharply acute petals and obsolete scale.

Flowering Period:

January to February.

Habitat:

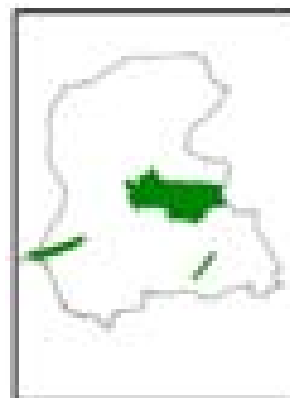
Found as parasite on various plant species.

Uses:

The extract of plant is boiled in water and given to patient for relieve of chest pain.

Distribution:

Pakistan, India, Abyssinia and Southern Tropical Africa.



Elatinaceae



Bergia aestvosa Wight & Arnott

English name:

Local name: Panika-Phog.

Description:

An erect, 20-30 cm tall somewhat glabrous undershrub, non-aromatic, woody at the base. Leaves small elongated, dark green, wavy at the margins. Flowers minute, white to pinkish.

Flowering Period:

December.

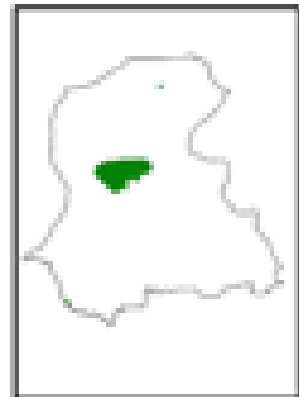
Habitat:

Common species in cultivated fields.

Uses:

Distribution:

Pakistan and India.



Elatinaceae



Bergia suffruticosa (Delile) Fenzl.
(Syn: *Lancretia suffruticosa* Delile.)

English name:

Local name: Rohwan, Kharbuja, Chota phog.

Description:

A perennial, decumbent or spreading under shrub with woody base. Leaves opposite, sessile or sub sessile, oblanceolate or elliptic, margins crenate or minutely serrate. Stem glandular-pubescent with small white to pinkish flowers, 4 to 5 mm across.

Flowering Period:

August to April.

Habitat:

Grow on saline and rocky soils rarely found on sandy soils.

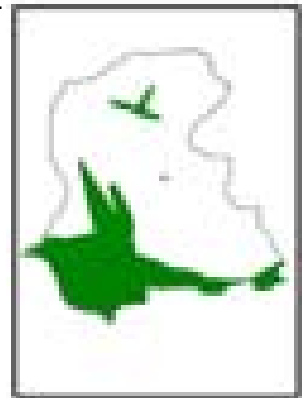
Uses:

The leaves are used as poultice on sores and broken bones.

Powdered leaves are rubbed over teeth and gums to clean them. Stem is used as tooth brush.

Distribution:

Pakistan, India, Egypt and Tropical Africa.



Euphorbiaceae



Euphorbia caducifolia Haines

English name: Euphorbia.

Local name: *Sindhi*- Minaguta, Danda thohar, *Urdu*- Zaqum, Thor.

Description:

A cactus like succulent and leafless ascending and much branched spiny shrub growing up to 3.5 m high. Leaves appear for a very short period during rainy season. Flowers minute, greenish to red arise in clusters. Fruits tri-lobed.

Flowering Period:

February to March.

Habitat:

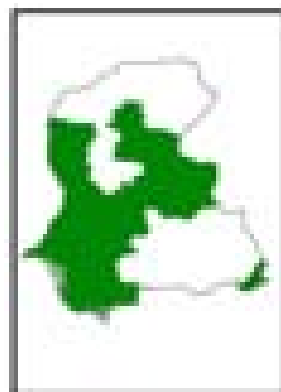
Found commonly on hill slopes and deserts, sand dunes etc.

Uses:

It is used medicinally as its root is antiseptic, used in snake-bites and scorpion bites and milky juice is used in skin eruptions.

Distribution:

Pakistan and India.



Euphorbiaceae



Euphorbia clarkeana Hook.f

English name: Euphorbia.

Local name: Khmer wal, Dudheli.

Description:

A small, annual prostrate branched herb. Leaves narrow oblong opposite to each other, mostly toothed at the apex, sessile or attached with very minute petiole. Cyathia minute, in leaf axils.

Flowering Period:

Commonly after monsoon rains but also in other parts of the year depending upon moisture availability.

Habitat:

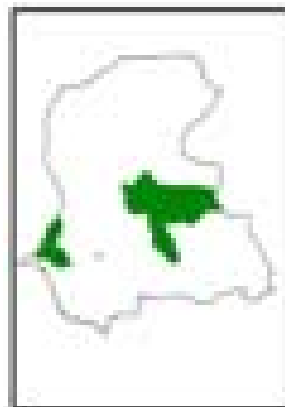
It is found on sandy and clay soils, pebbly ground in fields and open waste places.

Uses:

Usually grazed by livestock.

Distribution:

Very limited in distribution only reported from Pakistan and India.



Euphorbiaceae



Euphorbia granulata Forssk.

English name: Euphorbia.

Local name: *Sindhi*- Khirwal. *Urdu*- Kantha-arak, Maamecho.

Description:

An annual or perennial herb having prostrate branches, that are variable from densely pubescent to almost glabrous. Leaves opposite sub-rounded usually sub-cordate at the base attached with minute petiole. Cyathia axillary on small branchlets.

Flowering Period:

More or less continuously throughout the year.

Habitat:

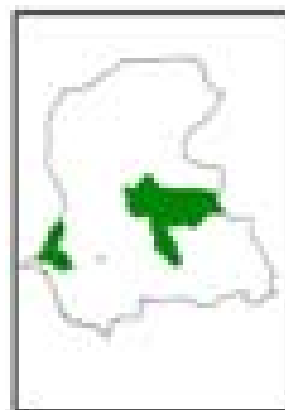
Common in deserts and semi-deserts also found by roadsides.

Uses:

Medicinally it is used as blood purifier.

Distribution:

The plant is distributed in Arabia, Egypt, Afghanistan, India and Pakistan.



Euphorbiaceae



Euphorbia helioscopia L.

English name: Sun-spurge.

Local name: *Sindhi*-Dohoduk, *Urdu*- Gandi-buti, *Punjabi*- Chatriwal.

Description:

An annual green fleshy herb sparsely pilose to glabrescent more commonly it grows 10 -30 cm tall but sometimes goes up to 50 cm. Leaves spade shaped, lamina ciliate at the margins tapered towards the base. Cyathia in terminal clusters. Fruits three lobed.

Flowering Period:

December to April.

Habitat:

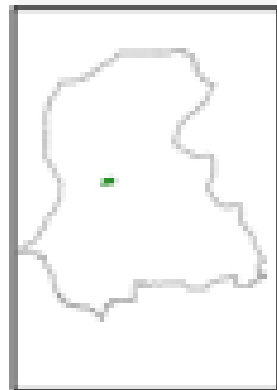
Common in sandy fields or on wet sandy clay by irrigation canals and also on rocky slopes.

Uses:

The herb is cathartic. Latex is applied to eruptions. Root is anthelmintic. Seeds with roasted pepper are given in cholera. Oil from seed is said to be purgative. Stem is used for constipation.

Distribution:

More or less throughout Europe, Northern Africa and Asia; introduced into North America.



Euphorbiaceae



Euphorbia hirta L.

English name: Hairy spurge, asthma plant.

Local name: *Sindhi*-Dhubi, Dhedi, *Urdu*-Lal dhulli, Dudhi.

Description:

An annual, prostrate, ascending, or erect hispid hairy herb, up to 30 cm tall. Leaves opposite elliptic and hairy, usually red-tinged in drought conditions. Cyathia in axillary clusters. The plant becomes more hairy and prostrate during drought conditions.

Flowering Period:

Throughout the year.

Habitat:

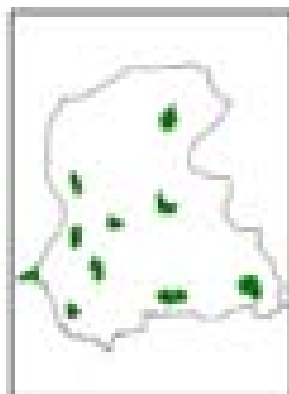
A common weed found on many places, along roadsides, wastelands and cultivated fields, frequent in lawns and flower beds.

Uses:

E. hirta causes relaxation of bronchitis and has a depressant action on heart and respiration. It is useful in removing worms in children, in bowel complaints, asthma and cough. It promotes formation and flow of milk in women; it is also useful in gonorrhoea and other urinogenitary complaints. The roots of the plant are used to stop vomiting.

Distribution:

Distributed in tropical and sub-tropical countries of the world.



Euphorbiaceae



Euphorbia indica Lam.

English name: Spurge, milkweed.

Local name: *Sindhi*-Khirool, *Urdu*-Dudhi, Hakshardana, *Punjabi*-Hazardana.

Description:

An annual herb, height range from 15 to 30 cm, erect or semi erects to prostrate. Leaves and other physical appearance variable according to environmental conditions. The plant resembles with *E. hirta*, but leaf margin not as deeply serrate and overall hairiness less than *E. hirta*. Cyathia are pinkish to purple.

Flowering Period:

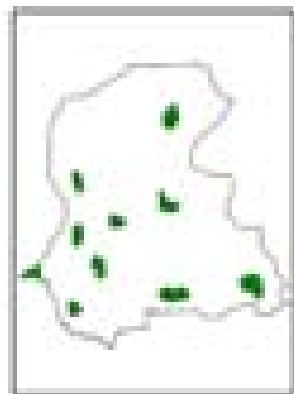
Almost throughout the year.

Habitat:

Mostly found in cultivated fields and gardens along irrigation channels.

Distribution:

A wide spread species, common throughout tropical countries.



Euphorbiaceae



Euphorbia prostrata Aiton

English name: Prostrate Spurge.

Local name: Kheer wal, Dudhi.

Description:

A delicate prostrate annual much branched herb. Cyathia reddish in colour, solitary or paired. Leaves opposite, dark green attached with very short stalk. Fruits minute three lobed.

Flowering Period:

Between June to August and fruiting between August to September.

Habitat:

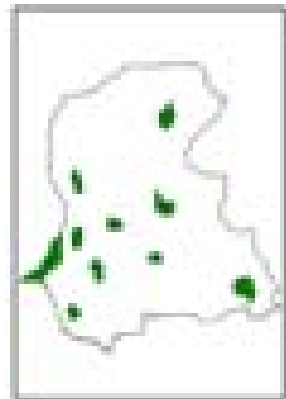
Mostly found in moist and open places and margins of lawns.

Uses:

A paste of the plant is applied to snake bite.

Distribution:

Wide spread throughout warmer part of the world.



Euphorbiaceae



Euphorbia serpens Kunth.

English name: Serpent Spurge.

Local name: Kheer wal, Maamecho.

Description:

A prostrate and completely glabrous annual, much branched spreading herb generally rooting at nodes. Leaves smooth opposite, lamina rounded typically with shallow notch at apex and sub-cordate base, attached with sort petiole, margin entire. Cyathia arise form the node.

Flowering Period:

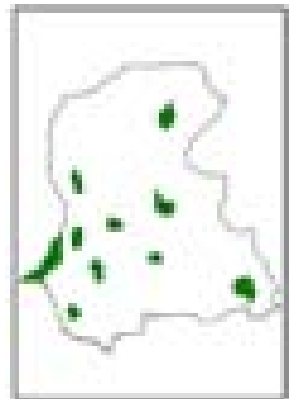
September to May.

Habitat:

Most frequently on moist soil in cultivated fields.

Distribution:

Native to South America, but now widespread in tropical and subtropical parts of the world.



Euphorbiaceae



Phyllanthus fraternus Webster

English name: Serpent Spurge.

Local name: Niruri, Gulf leaf flower.

Description:

An erect herb upto 30 cm tall, branches arising from the axils of scaly leaves on main stem, look like compound leaves, unisexual flowers in leaf axils of branches, nodding, fruit a small schizocarp of 3 valves.

Flowering Period:

July to October.

Habitat:

Common herb seen growing in gardens and fields.

Distribution:

Common in the arid and semi- arid countries of the world.



Euphorbiaceae



***Phyllanthus maderaspatensis* L.**

English name:

Local name: *Sindhi-* Konodcha, *Urdu-* Konodcha, Hazarmani, Ranavali.

Description:

A perennial erect herb up to 60 cm tall with slender angular branches. Leaves spoon shaped glabrous taper toward the base attached with short petiole, arranged alternately on stem. Flowers unisexual, minute white or creamy. Fruit tri-lobed.

Flowering Period:

October to January.

Habitat:

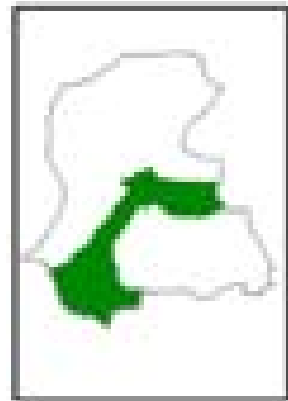
Frequent on wet soils in fields or near water margins.

Uses:

Infusion of the leaf is given for headache. The seeds possess laxative, carminative and diuretic properties. The seeds are useful in bronchitis, earache, ophthalmia, griping and ascites.

Distribution:

Iran, Afghanistan, Arabia to Egypt, East Africa, India and Pakistan.



Euphorbiaceae



Phyllanthus reticulatus Poir.

English name:

Local name: Kamohi.

Description:

A large sub-scandent much branched shrub or small tree. Flowers small, reddish orange, and unisexual in clusters. Fruit berry like, become blackish when ripe.

Flowering Period:

July to March.

Habitat:

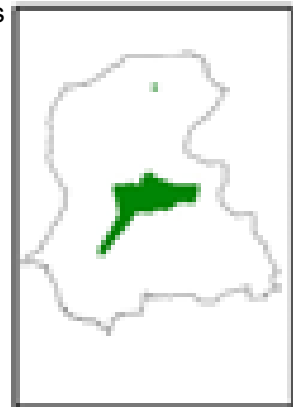
Usually found along streams, ponds reservoirs and lakes.

Uses:

Leaves and roots are used medicinally for the fractures and traumatic injury. Leaves also used for bleeding gums, also for diarrhea in infants; in Indo-China the whole plant is used in the treatment of smallpox and syphilis; fruit is useful in the inflammations and in diseases of blood.

Distribution:

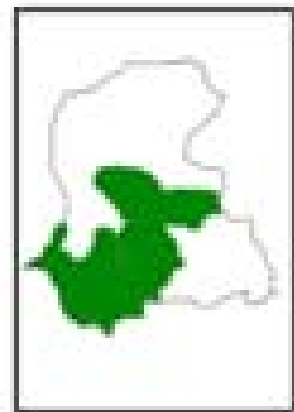
Western Africa, Cambodia, Thailand, Malaysia, Sri Lanka, India, Pakistan, Indonesia, Taiwan, Philippines, Hong Kong and Vietnam.



Fabaceae / Papilionaceae



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Fabaceae / Papilionaceae



Alysicarpus longifolius (Rottl. ex Spreng.) Wight & Arnott.
(Syn: *Hedysarum longifolium* Rottl. ex Spreng.)

English name:

Local name:

Description:

An annual erect herb about 30 to 70 cm tall with spreading weak branches. Leaves oblong tapered toward the apex with entire margins. Flowers in terminal long raceme, dark pink to reddish, attached with minute stalk. Fruits moniliform, resembling beads.

Flowering Period:

September to October.

Habitat:

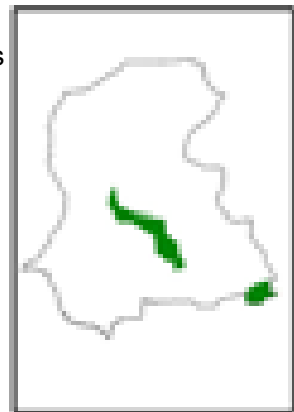
Found in moist soil around plantation and agricultural areas

Uses:

Mostly grazed by livestock.

Distribution:

Java, Tropical Africa, Arabia, China, Madagascar, India and Pakistan.



Fabaceae / Papilionaceae



Argyrolobium roseum (Camb.) Jaub. & Spach.
(Syn: *Cytisus roseum* Camb.)

English name:

Local name: Makhan Booti.

Description:

A delicate annual prostrate herb with slender and smooth hairy stem. Leaves trifoliate, sub-rounded. Flowers in pairs on the tip of axillary peduncles, pale pink with red streaks on vexillum.

Flowering Period:

April to October.

Habitat:

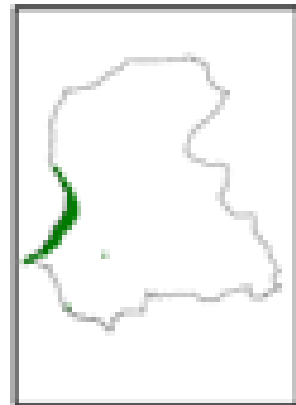
Frequently on gravelly soil on hill slopes.

Uses:

It is used medicinally to treat diabetes mellitus.

Distribution:

Pakistan, India, Punjab, Iran, Afghanistan and Arabia.



Fabaceae / Papilionaceae



Astragalus fatmensis Hochst. ex Blatter.

English name:

Local name: Makhan Booti.

Description:

An annual erect or semi-erect herb with pubescent hairy stem. Flowers white, in axillary clusters (6-8 flowers) on short peduncles. Fruit about 6-10 mm long, oblong many seeded, covered with creamy white hairs.

Flowering Period:

April to October.

Habitat:

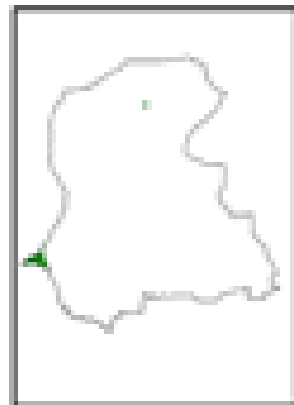
The species is found mostly near the sea sides.

Uses:

The plant has laxative effects.

Distribution:

Pakistan, India, Arabia and Ethiopia.



Fabaceae / Papilionaceae



Butea monosperma (Lain.) Taubert
(Syn: *Erythrina monosperma* Lain.)

English name: Parrot tree, Flame of Forest.

Local name: Dhak, Chichra.

Description:

It is a medium sized deciduous tree growing up to 15 m of height with a crooked trunk and irregular branches. Leaves broadly trifoliate, Flowers orange-red, in racemes.

Flowering Period:

March-April.

Habitat:

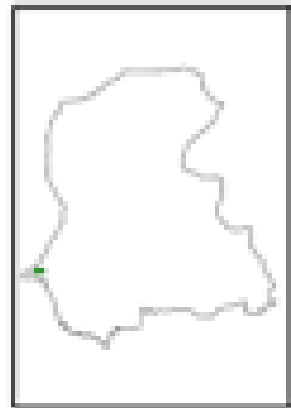
A rare species grown as ornamental plant in gardens.

Uses:

It is used for timber, resin, fodder, medicines and dyes. Its gum is known as "Kamarkas" and used in certain food dishes and medicines.

Distribution:

Pakistan, India, Sri Lanka and Burma, Bangladesh, Nepal, Myanmar, Thailand, Cambodia, Vietnam, Malaysia and Indonesia.



Fabaceae / Papilionaceae



Crotalaria burhia Buch-Ham. ex Benth.

English name: Crotalaria.

Local name: Makhan Booti.

Description:

A 30-60 cm tall, much branched shrub. Leaves few, simple, mostly sessile, lamina very minute, elongated narrow. Inflorescence a 6-12 flowered, elongated raceme, flowers yellow attached with very short stalk.

Flowering Period:

Most part of the year.

Habitat:

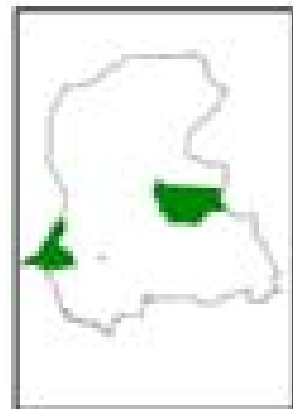
A common species of sandy habitat.

Uses:

Used as cooling herbal medicines.

Distribution:

Pakistan (Sindh, Punjab, and Balochistan), India and Afghanistan.



Fabaceae / Papilionaceae



Crotalaria medicaginea Lamk.

English name:

Local name: Urdu- Gulabi, Gulali, Punjabi- Gulabi.

Description:

An annual herb, 30 cm or less tall. Leaves tri-foliolate. Flowers minute, yellow in color, arranged in axillary raceme. Fruit globose mostly two seeded.

Flowering Period:

March to August.

Habitat:

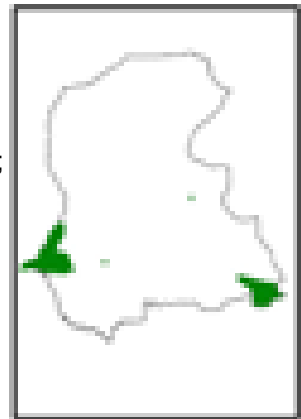
Found in variety of soils as loamy, sandy and stony soils.

Uses:

The plant is sold in the local bazaar as a medicinal herb. The plant is officinal in Punjab (Baden Powell). The leaves and branches are taken in mucilage as cooling medicine.

Distribution:

Pakistan (Punjab, Sindh); India, Malay Isles; Afghanistan; China and Australia.



Fabaceae / Papilionaceae



Cyamopsis tetragonoloba (L.) Taubert
(Syn: *Psoralea tetragonoloba* Linn.)

English name: Cluster bean, Guar.

Local name: *Sindhi*-Gwar, *Punjabi*-Guwara.

Description:

An annual, erect range from 60-100 cm tall with pubescent branches. Leaves trifoliate, foliage attached with short stalk. Inflorescence a raceme, 6-30 flowered. Flowers small, purplish. Pod 3 to 7 cm long many seeded (about 10).

Flowering Period:

Almost throughout the year.

Habitat:

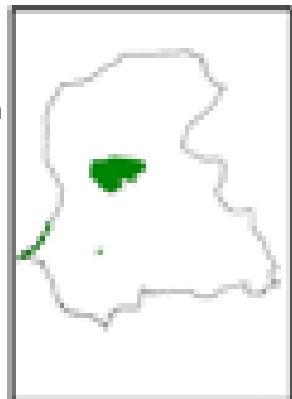
On sandy-loamy soils usually after monsoon rains, also cultivated as crop for edible beans and Guar Gum.

Uses:

It is cultivated as a vegetable for human consumption and is also used as a fodder. A gum is also obtained from the seed flour. It is used in food, paper and textile industries. Gum is used as a binder in tablets. Guar gum is also used for curing night blindness, dyspeptic complaints, anorexia, constipation and agalactia.

Distribution:

Pakistan (Punjab, Sindh); India, Malay Isles; Afghanistan; China and Australia.



Fabaceae / Papilionaceae



***Dalbergia sissoo* Roxb.**

English name: Sissoo tree.

Local name: Shisham, Tahli.

Description:

Dalbergia sissoo, best known internationally as a premier timber species. It is a deciduous tree with light crown. The tree reaches up to 30 m in height and 80 cm in diameter. Flowers whitish about 1 cm long and in dense clusters. Bark rough with longitudinal furrows, young branch pubescent. Leaf imparipinnate.

Flowering Period:

March - May.

Habitat:

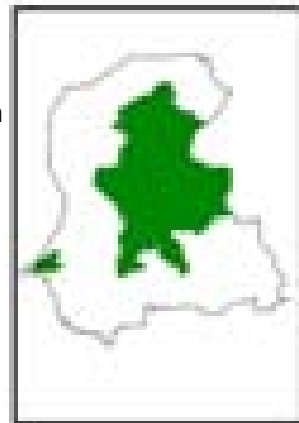
The tree is common on canal banks, roadsides, fields and in forests.

Uses:

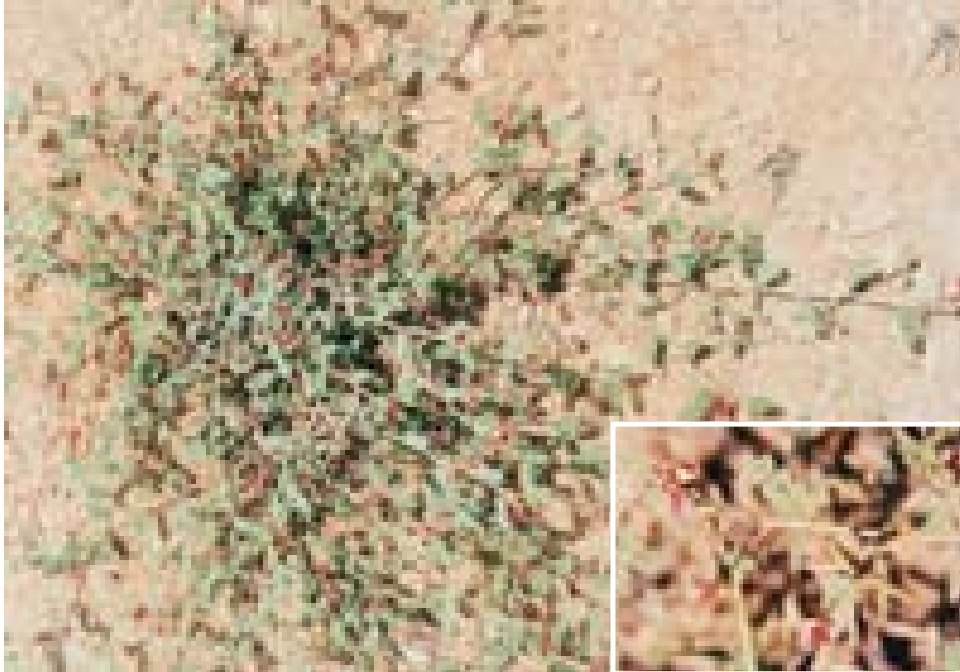
It is very important tree. The wood which is hard, heavy and durable, is very important. Mostly used in furniture making, carts, boats, wheels etc. Sissoo tree is also an important fuelwood, shade, shelter and fodder tree.

Distribution:

Sissoo is native to the foothills of the Himalayas of India, Pakistan and Nepal while it is also found in Sikkim, Afghanistan, Iran and Iraq. In Sindh it is widely planted in the plains along the roadsides, canals and fields and in the forest plantations.



Fabaceae / Papilionaceae



Indigofera argentea Burm. F.

English name: Wild-indigo, Arabian-indigo, Egyptian-indigo.

Local name: *Sindhi*- Neer, Se-han, Surmai-Neer, Gokro, *Urdu*- Neel, Surmai-Neel, *Punjabi*- Neel.

Description:

A pubescent prostrate diffusely branched herb to sub-shrub. Leaves compound mostly 7 to 9 foliate, always in odd number. Inflorescence a pedunculate raceme, flowers dark pink to red. Pod cylindrical, 4-6 seeded.

Flowering Period:

Almost throughout the year.

Habitat:

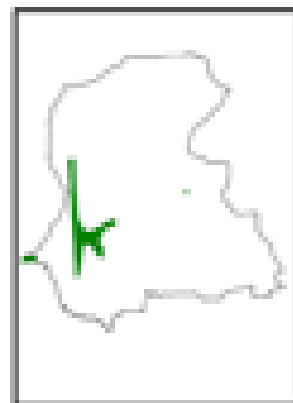
Found in dry sandy areas.

Uses:

The roots and leaves are bitter and used as tonic, the seeds are taken internally to act as vermifuge.

Distribution:

Pakistan, Iran, Arabia, Egypt, Sudan, Somalia, Ethiopia, Libya, and Sudan.



Fabaceae / Papilionaceae



Indigofera caerulea Roxb.

English name:

Local name:

Description:

A much branched sub-shrub 50-70 cm tall. Leaf surface smooth above and silky hairy below, compound about 7 to 9 foliate odd in number. Flowers minute pinkish in colour. Pod curved.

Flowering Period:

August to November.

Habitat:

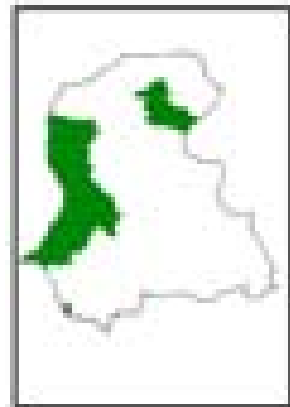
Mostly found in stony gravelly areas and dry river beds.

Uses:

Leaf paste is used in the treatment of jaundice.

Distribution:

Pakistan, India, Arabia, Somali Republic and Sudan.



Fabaceae / Papilionaceae



Indigofera cordifolia Heyne. ex Roth.

English name:

Local name: Basri, Neer, Vakar, Mahori.

Description:

A prostrate annual branched herb with pubescent stem. Leaves small ovate with short stalk. Inflorescence sub-sessile, 4-8 flowered head. Flowers minute bright pink to red. Pod usually two seeded.

Flowering Period:

August to October.

Habitat:

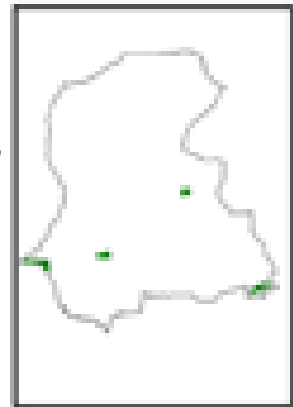
Common in sandy, gravelly open plains and disturbed areas.

Uses:

Grazed by livestock.

Distribution:

Pakistan (Sindh, Punjab, Balochistan), Afghanistan, India, Indonesia, Australia (Northern Australia), Ethiopia, Sudan and West Tropical Africa.



Fabaceae / Papilionaceae



Indigofera hochstetteri Baker

English name:

Local name: Fooli booti.

Description:

An annual branched usually prostrate spreading herb, with many branches. Leaves usually 3 to 5 foliate in odd number. Inflorescence a short peduncled raceme. Flowers orange, pods flat, curved, many seeded.

Flowering Period:

Summer season.

Habitat:

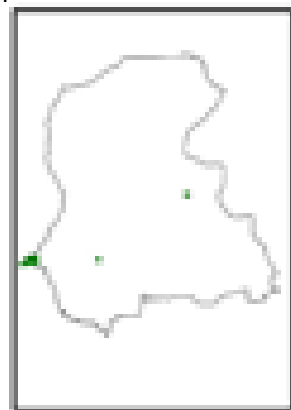
Grows on sandy to clayey soils, frequent in the vicinity of cultivated areas.

Uses:

A palatable species for livestock.

Distribution:

Pakistan (Sindh, Punjab), Afghanistan, India, Arabia, Somali Republic Ethiopia, Eritrea, Sudan, Nigeria, Kenya, Uganda, Tanganyika, and Congo.



Fabaceae / Papilionaceae



Indigofera linifolia (Linn.f.) Retz.

English name:

Local name: *Punjabi-Torki*.

Description:

A prostrate, annual herb, much branched and pubescent, found mostly in the plains and lower hills. Leaves simple, linear, Inflorescence a sessile or shortly peduncled raceme. Flowers bright red, pod (fruit) minute, rounded usually one seeded.

Flowering Period:

July to October.

Habitat:

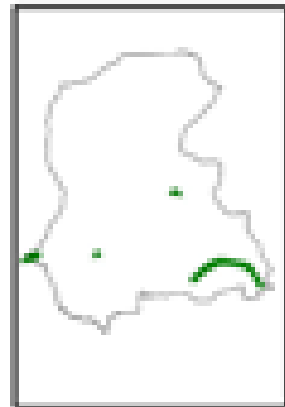
Common in open sandy areas, gravelly slopes and plains, after monsoon rains.

Uses:

The plant is used in febrile eruption and in amenorrhoea.

Distribution:

Pakistan (Sindh, Punjab), Azad Kashmir, Bangladesh, India, Afghanistan, Sri Lanka, Burma, Indo-China, Siam, Indonesia, New Guinea, Australia, China, Eritrea, Ethiopia, and Sudan.



Fabaceae / Papilionaceae



***Indigofera oblongifolia* Forsk.**

English name: Nilam.

Local name: *Sindhi*-Jhil, *Urdu*-Kainthi.

Description:

A medium-sized erect woody shrub, pubescent much branched, 70-150 cm tall. Leaves compound, leaflet alternate, narrow linear. Inflorescence a raceme up to 10 cm long, bearing red flowers. Pods curved, many seeded (usually 6 to 8).

Flowering Period:

Generally during spring and summer months.

Habitat:

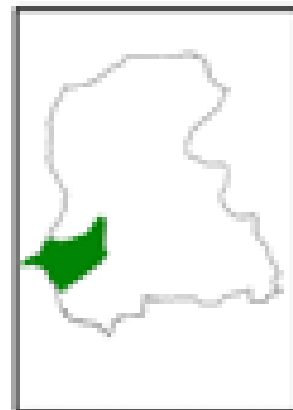
Common in sandy plains, quite salt tolerant.

Uses:

The plant is antisyphilitic, the root is cooling, improves appetite, removes rheumatism, all parts of the plant are useful in the enlargement of liver and spleen, the stems are used as a gargle in mercurial salivations and for washing teeth.

Distribution:

In Pakistan it is distributed in Sindh, Punjab and Balochistan.



Fabaceae / Papilionaceae



***Indigofera sessiliflora* DC.**

English name:

Local name: Dhakri.

Description:

A trailing annual, branches canescent white herb. Leaves mostly 5-7 foliate, leaflets sub-orbicular (rounded). Inflorescence a sessile head, flowers sessile, minute red. Pod linear and cylindrical usually 3 to 6 seeded.

Flowering Period:

February to April.

Habitat:

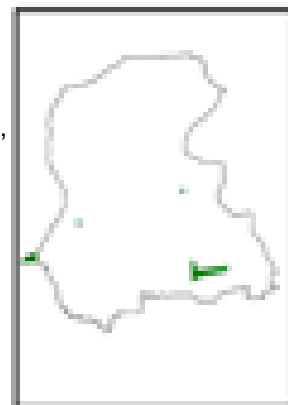
Found in sand occupying dunes and gravelly areas.

Uses:

Apalatable species, generally grazed by cattle.

Distribution:

Pakistan (Sindh, Punjab), Arabia, Eritrea, Sudan, Nigeria, and Senegal.



Fabaceae / Papilionaceae



Lathyrus aphaca L.

English name: Yellow Vetchling.

Local name: Jangli matar, Rewari.

Description:

A prostrate trailing or scrambling annual herb. Stipules large heart shaped, leaf modified into tendril. Stem, glabrous. Flowers pale yellow, 1 to 2 on long axillary peduncles.

Flowering Period:

February to April.

Habitat:

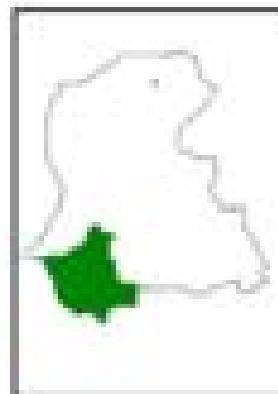
Commonly found in plains, low hills and near agricultural fields.

Uses:

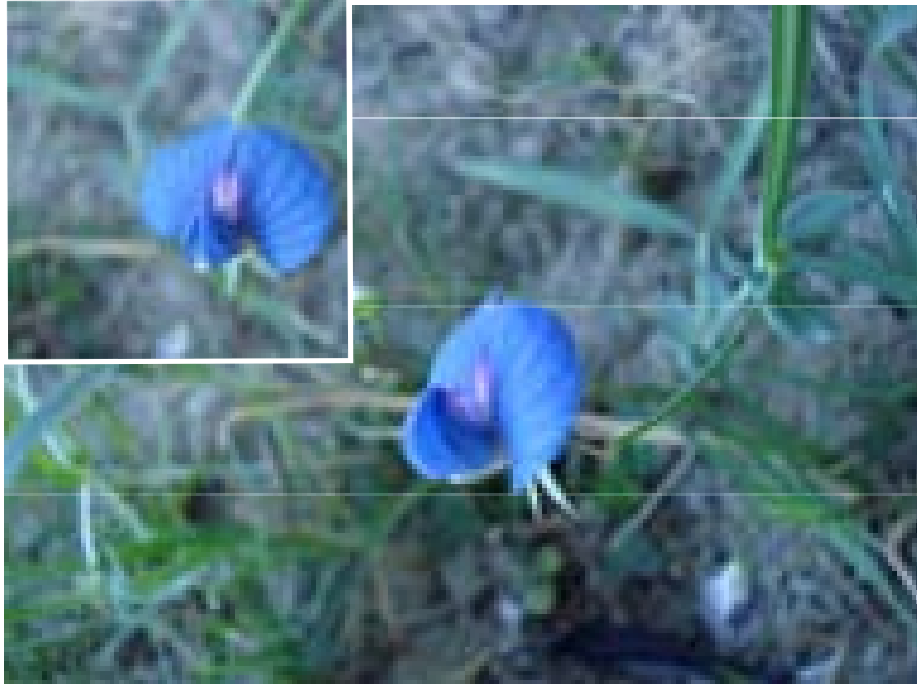
Ripe seeds are used as narcotic and flowers are resolvent. Fruit is edible, a palatable species, grazed by livestock.

Distribution:

Pakistan, Kashmir; India; Europe; Northern Africa; South-west and Central Asia, often cultivated.



Fabaceae / Papilionaceae



Lathyrus sativus L.

English name:

Local name: Jhang Matar, Kisari.

Description:

A glabrous to sub-glabrous, smooth, much branched trailing annual herb; Stem winged. Leaves compound, leaflets narrow, linear. Flowers solitary, axillary, reddish-purple, blue or white.

Flowering Period:

March to August.

Habitat:

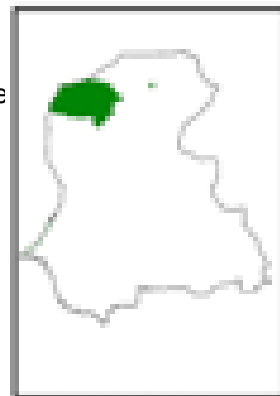
Found near cultivation, the plant also cultivated as a fodder plant.

Uses:

People in scarcity areas consuming it as the principle article of diet for months, are known to be affected by a paralytic disease, known as Lathyrism. Cooked leaves are used as a vegetable medicine, to cure eye diseases. Fresh leaf juice is also put in sore eyes, blepharitis and also cultivated as fodder crop, fruits are edible.

Distribution:

Pakistan, Kashmir, India, Europe, Northern Africa, South-west Asia and Russia.



Fabaceae / Papilionaceae



Lotus krylovii Schischk. & Serg
(Syn: *Lotus corniculatus* Linn.)

English name:

Local name:

Description:

A small annual herb. Leaves pinnately compound, leaflets 5, two of five at the base resembling stipules, entire. Flowers 1 to 2 on long peduncle, subtended by 1-3 leafy bracts, corolla pinkish to red, free from stamens. Fruit many seeded.

Flowering Period:

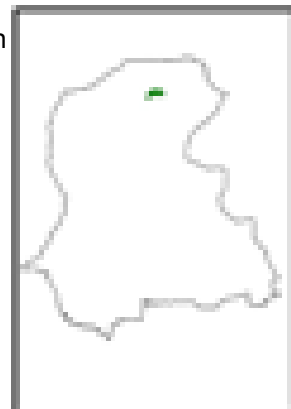
February to April.

Habitat:

Usually found in open grasslands and meadows in association with *Cynodon dactylon*.

Distribution:

Pakistan (Chitral, Sukkur), Afghanistan and Iran.



Fabaceae / Papilionaceae



Medicago laciniata (L.) Mill. var. ***laciniata*** Linn.
(Syn: ***Medicago polymorpha*** var. ***laciniata*** Linn.)

English name: cutleaf medick.

Local name:

Description:

A spreading annual herb with glabrous stem, the plant is much branched from the base. Leaves small compound tri-foliate with dentate margins. inflorescence a 1-2-flowered peduncle raceme, minute yellow. Fruit coiled covered with stiff spines.

Flowering Period:

February to April.

Habitat:

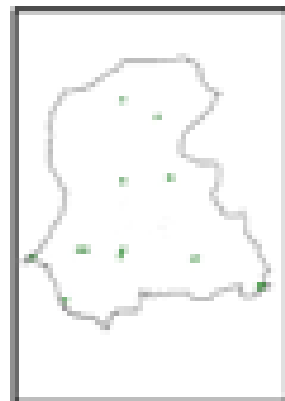
Amongst grass land, in desert areas, in sand, loam, growing in cropland, on wasteland.

Uses:

A precious palatable species.

Distribution:

Pakistan, Morocco, Algeria, Tunisia, Kenya, Somali Republic, and Southern Europe.



Fabaceae / Papilionaceae



***Medicago lupulina* L.**

English name: Hop-Clover, Black medick.

Local name:

Description:

A prostrate or semi-erect, annual to perennial herb. Leaves hairy compound three foliate leaflets usually obovate, cuneate, retuse to obcordate. Flowers yellow minute, in dense head like inflorescence on long axillary peduncles; calyx pubescent 1-1.5 mm long, corolla 2.5-3 mm long. Fruit curved one seeded, 2-3 mm.

Flowering Period:

February to April.

Habitat:

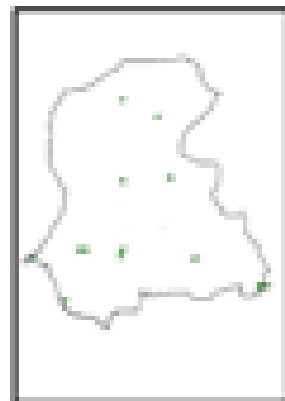
Found in moist meadows in association with *Cynodon*, frequent in lawns.

Uses:

The plant is reported to possess limitive properties. Aqueous extract of the plant show anti-bacterial activity against mycobacteria, also grazed by livestock

Distribution:

Pakistan; Kashmir; India; Russia, Afghanistan, Iran, Syria, Turkey, Europe, Eritrea, Ethiopia, Somali Republic, Tanganyika and Kenya.



Fabaceae / Papilionaceae



Melilotus alba Desr.

English name: White sweet clover.

Local name: Sinji.

Description:

An erect annual herb with herbaceous, glabrous and sparsely hairy stem bearing white sweet scented flowers. The height ranges from 15-50 cm.

Flowering Period:

February to April.

Habitat:

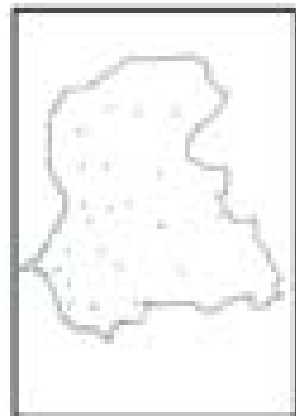
It is commonly found in open places especially waste areas, roadside, railroads, cultivated fields, lawn margins, etc.

Uses:

It is used as hay and pasture. Its young leaves are used for tea, salads and flavoring agent.

Distribution:

Pakistan, India, Kashmir, Tibet, Iran, Afghanistan, Arabia, Europe, Central Asia, Turkey introduced in America and Australia.



Fabaceae / Papilionaceae



Melilotus indica (L.) All.

(Syn: *Trifolium indica* Linn.)

English name:

Local name: *Sindhi-* Sinji, *Urdu-* Ban methi, *Punjabi-* Sinjee.

Description:

An erect annual herb, 20-40 cm tall. Leaves tri-foliolate, leaflet spade shaped, margin dentate. Flowers minute yellow, in axillary raceme. Pubescent stem, pod without hairs usually one seeded.

Flowering Period:

February to April.

Habitat:

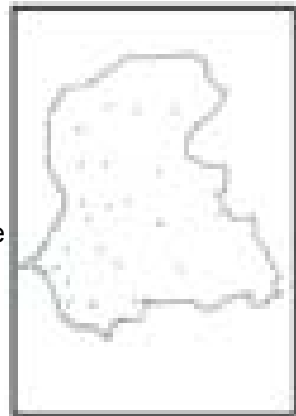
The plant is commonly found in moist places, frequent on lawn margins and cultivated fields.

Uses:

It is used as fodder and medicinally used in the treatment of tumours and cancers, seeds are very useful in bowel complaints, it is also very strong laxative plant.

Distribution:

Pakistan, India, Orient, Europe, introduced in warm temperate regions.



Fabaceae / Papilionaceae



Rhynchosia capitata (Heyne ex Roth.) DC.
(Syn: *Trifolium indica* Linn.)

English name:

Local name: Mattar wal.

Description:

An annual or perennial, prostrate or climbing herb with pilose stem and many branches. Leaves pinnately tri-foliolate, lamina as long as wide. Inflorescence 4-6-flowered, flowers yellow, in axillary peduncled heads, pods hairy.

Flowering Period:

September to October.

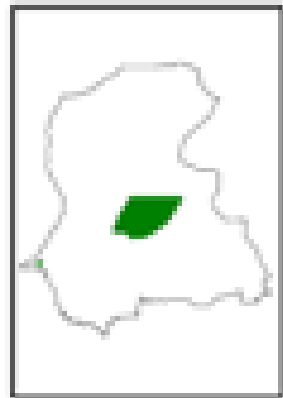
Habitat:

Normally found near agricultural fields.

Uses:

Distribution:

Pakistan, India and Sri Lanka.



Fabaceae / Papilionaceae



***Rhynchosia minima* (L.) DC.**

English name: Least snout bean.

Local name: Wanverhi, Matar wal, Jungli moath.

Description:

A perennial twinning or prostrate herb. Stem glabrous to pubescent and sparsely glandular. Leaves pinnately tri-foliolate, smooth, apparently glabrous but dotted with minute orange or black glands. Flowers yellow in axillary long raceme. Pods glabrous, few seeded.

Flowering Period:

In summer months.

Habitat:

It grows in a variety of habitats mostly on heavy textured soils in the grass lands.

Uses:

The leaves are used as abortifacient.

Distribution:

Pakistan, India, Sri Lanka, Lower Burma, Arabia, Tropical Africa, West Indies, America and Australia.



Fabaceae / Papilionaceae



Rhynchosia schimperi Hochst. ex Boiss.

English name:

Local name:

Description:

A perennial erect herb or sub-shrub having woody base. Leaves greyish green, hairy, leathery, pinnately tri-foliate. Flowers yellowish to creamy white. Pods few seeded.

Flowering Period:

September to March.

Habitat:

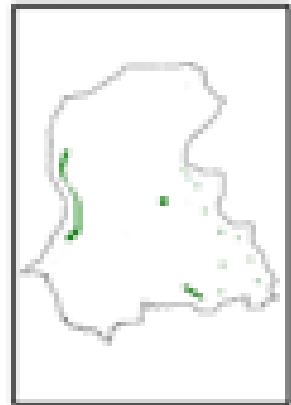
Commonly found in dry and hot semi-desert and hot open sandy places.

Uses:

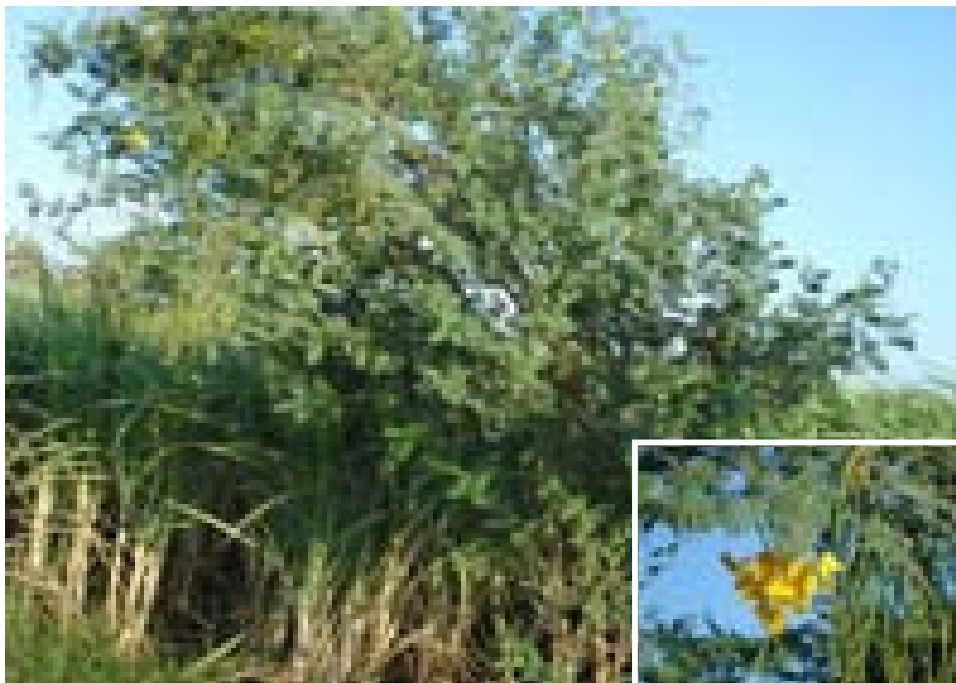
Grazed by livestock.

Distribution:

Pakistan, India, (Rajashtan), Arabia and Egypt.



Fabaceae / Papilionaceae



Sesbania sesban (L.) Merr.
(Syn: *Aeschynomene sesban* L.)

English name: Sesbania.

Local name: Manjili.

Description:

A short lived and soft wooded tree up to 8 meter tall. Leaves even-pinnate, with linear oblong leaflets, branches not prickly, flowers yellow, sometimes dark colored.

Flowering Period:

August - February.

Habitat:

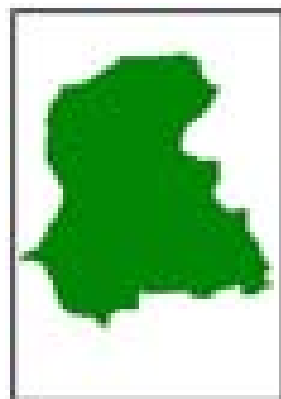
Cultivated in semi arid regions, generally in sandy soil.

Uses:

The plant is mostly used for forage, as green manure, the plant is also used as fuel wood. Its leaves are a good source of protein for cattle and sheep.

Distribution:

It is found almost everywhere except Europe and U.S. In Pakistan it is mostly cultivated in different areas of Sindh.



Fabaceae / Papilionaceae



Taverniera cuneifolia (Roth.) Arnott.
(Syn: *Hedysarum cuneifolium* Roth.)

English name: East Indian-moneywort.

Local name: Jetimad.

Description:

A perennial shrub woody at the base. Branches arise usually from the base, ranging from 60-100 cm with pubescent branches. Leaves uni-foliolate to tri-foliolate. Inflorescence an axillary raceme, up to 10 cm long, flowers purple to pink.

Flowering Period:

Spring-Summer months.

Habitat:

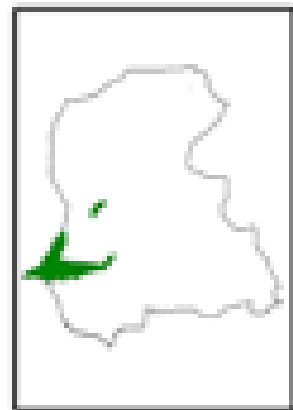
Common in gravelly plains, hill slopes, dry stream beds.

Uses:

Its roots are sweet in taste and act as anti-inflammatory, anti-viral, anti-bacterial, anti-ulcer and anti-diabetic agent.

Distribution:

Pakistan, India, Africa and Iran.



Fabaceae / Papilionaceae



Tephrosia purpurea (L.) Pers.
(Syn: *Cracca purpurea* Linn.)

English name: Wild Indigo.

Local name: Sarphonka, Phar wal.

Description:

A much branched annual or short-lived perennial erect herb up to 1 m tall, base woody. Leaves compound, usually 9 to 11 foliate odd in number. Flowers purplish red. Pod flat, curved. Appreciable variation is noticed within the number of hairs on stigma. Propagates by seeds.

Flowering Period:

Almost round the year.

Habitat:

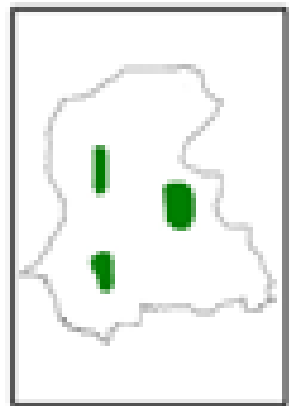
Common in dry sandy areas, especially between sand dunes.

Uses:

It is given in the treatment of bronchitis and bilious febrile attacks, and also for treatment of boils, pimples and bleeding piles, it is reported to be useful in cough and in kidney disorders, the leaves are reported to be useful in jaundice.

Distribution:

Southern Asia, Australia, Tropical Africa, southwards to Natal. Introduced in Tropical America.



Fabaceae / Papilionaceae



Tephrosia strigosa (Dalz.) Sant. & Maheshw.
(Syn: *Macronyx strigosus* Dalz.)

English name:

Local name: Haranchapri.

Description:

A delicate, annual prostrate more or less erect, slender herb. Leaves simple narrow and linear. Stem pubescent, hairy with many branches. Flowers 1-2 on long axillary peduncles, bluish or bluish purple in colour. Pods flat 5 to 7 seeded.

Flowering Period:

August to September.

Habitat:

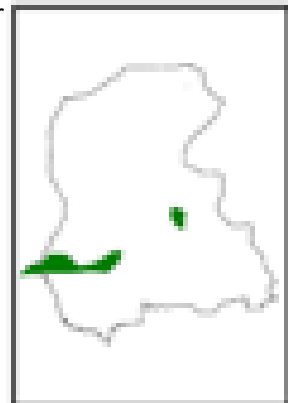
On sandy loam to clayey loam soils, usually gregarious after monsoon rains, also in cultivated fields.

Uses:

The roots are used as remedy of toothache.

Distribution:

Pakistan, India, Burma and Laccadive Islands.



Fabaceae / Papilionaceae



***Tephrosia uniflora* Pers.**
(Syn: *Tephrosia petrosa* Blatter & Hallberg)

English name:

Local name: *Sindhi*- Vishoni, Urdu - Bhaker Biyani.

Description:

A perennial erect or semi-erect subshrub having branches from the woody base, grey pubescent. Leaves 5 to 7 foliate, odd in number. Flowers axillary solitary or in pair, bright pinkish - purple in colour.

Flowering Period:

September to November.

Habitat:

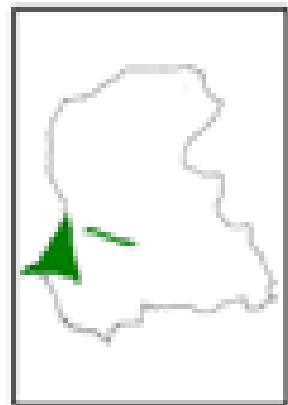
Mostly found on sandy and gravelly areas.

Uses:

The boiled leaves are eaten for the treatment of syphilis.

Distribution:

Pakistan, India, Cape Verde Island, Kenya, Tanganyika, Somali-republic, Mozambique, Rhodesia and Angola.



Fabaceae / Papilionaceae



Trifolium alexandrianum L.

English name: Berseem, Clover.

Local name: Berseem, Shaftel.

Description:

An annual sparingly hairy, about 30-60 cm in height. Stem erect or ascending having branches from the base or above. Leave pinnately tri-foliolate, leaflets lanceolate soft. Flowers creamy colour, arranged in terminal head. Propagated by seeds.

Flowering Period:

February to March.

Habitat:

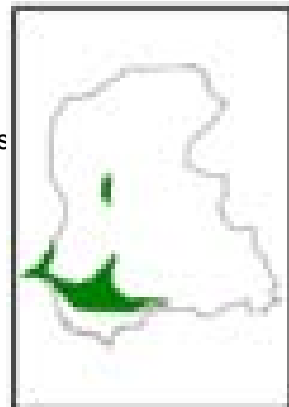
Grows on wide range of soils preferring loamy soils.

Uses:

It is cultivated as fodder crop in Sindh, Balochistan, and Punjab etc.

Distribution:

Turkey, Iraq, Syria; Lebanon; Palestine; Egypt and Caucas



Fabaceae / Papilionaceae



***Trifolium fragiferum* L.**

English name: Strawberry Clover.

Local name:

Description:

A low growing herb with prostrate or semierect stem. Leaves pinnately 3-foliolate, leaflets obovate. The flower heads are round, pink to white.

Flowering Period:

February to April.

Habitat:

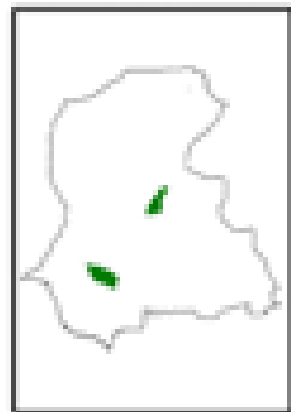
Frequent near agricultural fields.

Uses:

Cultivated as fodder plant, a very variable species.

Distribution:

Pakistan, Kashmir, Afghanistan, Iran, Syria, Iraq, Turkey, Ethiopia, Northern Africa, Arabia, Egypt and Europe.



Fabaceae / Papilionaceae



***Vicia sativa* L.**

English name: Tare, Vetch.

Local name: *Sindhi-Matri, Urdu-Ankra.*

Description:

An annual narrow soft herb with prostrate and glabrous stem. Leaves 7 to 9 foliate, narrow and elongated. Flowers as purplish pink at the apex and whitish at the base, 1-2 from leaf axils.

Flowering Period:

March to April.

Habitat:

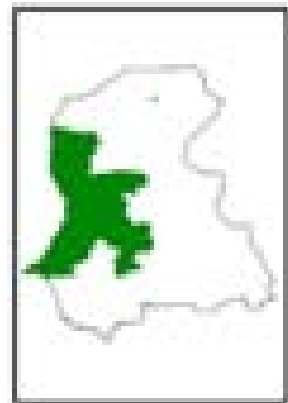
Mostly found in waste areas, cultivated fields.

Uses:

The plant is used as a fodder.

Distribution:

Europe, Pakistan, Kashmir, India, Russia and Far East.



Fabaceae / Papilionaceae



Vigna trilobata (L.) Verdc.
(Syn: *Dolichos trilobatus* L.)

English name: Wild bean.

Local name: Mukni, Jangli moth, Kheerol wal.

Description:

An annual herb with reddish glabrous, prostrate pubescent stem. Leaves pinnately tri-foliolate, leaflet broadly ovate, trilobed. Inflorescence a few-flowered cluster on long peduncles, predominately yellow. Pod slightly curved, cylindrical.

Flowering Period:

During October.

Habitat:

Usually found in irrigated lands, drain edges and on road verges.

Uses:

It is sown as a short term pasture and green manure crop.

Distribution:

Pakistan (Sindh, Punjab), India, Sri Lanka, Burma, Afghanistan and Malay Isles.



Fumariaceae



Fumaria indica (Hausskn.) Pugsley
(Syn: *Fumaria vaillantii* var. *indica* Hausskn.)

English name:

Local name: Pitpapra.

Description:

A small glabrous much branched annual delicate erect herb. Leaves much dissected, resembling to the family *Apiaceae*. Flowers in terminal raceme, tube like usually white to pale pinkish in colour.

Flowering Period:

February to April.

Habitat:

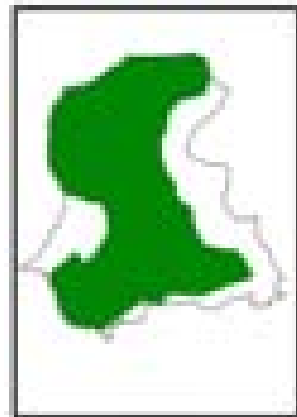
Agricultural fields, common with wheat crop.

Uses:

The plant has laxative properties, used for blood purification, the plant extract used in different diseases of liver, stomach and skin.

Distribution:

Central Asia, Pakistan, India and Afghanistan.



Gentianaceae



Enicostemma hyssopifolium (Willd.) Verdoon

English name:

Local name: Chota-Chirayata.

Description:

An erect glabrous perennial herb, height range from 2-25 cm tall. Stem solitary, having white flowers usually three in each leaf-axil. Propagates by seeds.

Flowering Period:

Most part of the year.

Habitat:

Grows usually in moist slightly saline sandy to clayey soils.

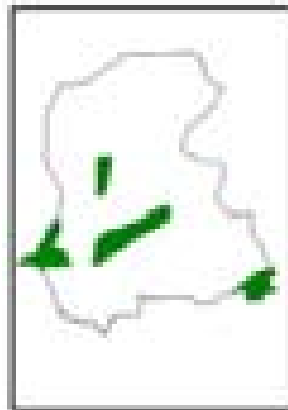
Uses:

The whole plant is bitter, tonic, stomachic and laxative.

The whole plant is dried, powdered and given with honey as a blood purifier, and in dropsy, rheumatism, abdominal ulcers, hernia, swellings, itches and insect poisoning. It is acrid, anti-inflammatory, antipyretic and a liver tonic. Aqueous extract showed glucose lowering effect.

Distribution:

Tropical Africa, West Indies, Malaya, India and Pakistan.



Illecebraceae



Cometes surattensis L.

English name:

Local name: Tap wari booti.

Description:

An annual herb, 10-25 cm tall much branched from the base. Leaves glabrous leathery with entire margins. Younger branches glabrous bearing white flowers, bracts barbed, turning reddish brown in fruiting.

Flowering Period:

February to May.

Habitat:

Common on gravelly, stony hill-slopes after winter/spring rains, also along stream beds.

Distribution:

Pakistan, Iran, Iraq and Southern Arabia.



Lamiaceae / Labiatae



***Salvia santolinifolia* Boiss.**

English name:

Local name: Shwanko.

Description:

A suffruticose, much branched small erect or semi-prostrate herb to subshrub. Leaves small leathery, sessile, opposite, margin wavy. Flowers small, purple usually in pairs, attached with very short stalk along an elongated axis, calyx typically with long hairs.

Flowering Period:

Almost round the year.

Habitat:

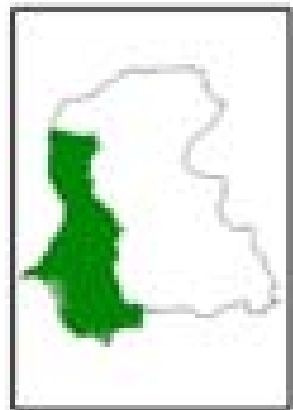
Frequent in many parts of Pakistan, growing in a wide variety of habitats such as sandy plains, rocky slopes, wadis, shale slopes and roadsides.

Uses:

The leaves and roots are used as demulcent in diarrhea and haemorrhoids.

Distribution:

Iran, Afghanistan and Pakistan.



Malvaceae



Abutilon bidentatum A. Rich.

English name: Abutilon.

Local name: Jangli Khip, Kapaas wal, Pataka.

Description:

An erect perennial spreading herb to subshrub with greenish stems, a very variable species in leaf size. Leaves broad heart shaped, attached with long stalk. Flower pale yellow, fruit having more than 12 segments (carpels).

Flowering Period:

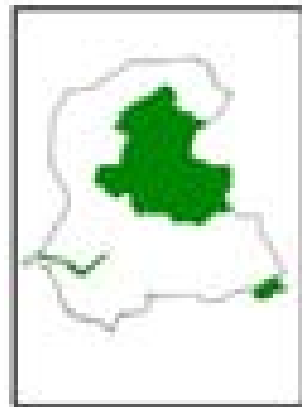
Almost throughout the year.

Habitat:

Usually found in arid and dry plains of Sindh.

Distribution:

Pakistan, India, tropical Africa and Arabia.



Malvaceae



Abutilon fruticosum Guill. & Pers.

English name: Indian mellow.

Local name:

Description:

A perennial herb or under shrub up to 1 m tall. Leaves soft, lamina heart shaped oblong, greyish green with toothed margins attached with long stalk. Flowers dark yellow. Fruit having 8 to 12 carpels.

Flowering Period:

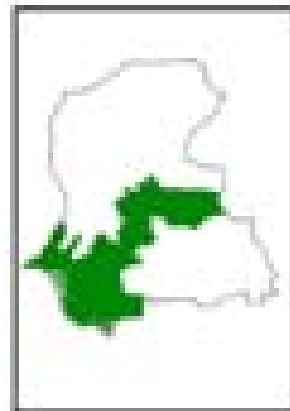
In Spring and Summer.

Habitat:

Fairly common in lower Sindh in sandy soils.

Distribution:

Tropical Africa, Arabia and India and Pakistan.



Malvaceae



***Abutilon indicum* (L.) Sweet**
(Syn: *Sida indica* Linn.)

English name: Country- mallow.

Local name: *Sindhi*- Jhangli-panir, Kapato, Pat-teer, Jangli teer, *Urdu*- Pili-booti, *Punjabi*- Petari.

Description:

A 1.5 m tall perennial shrub having pubescent stem. Leaves broadly ovate with cordate base, usually slightly trilobed towards apex. Flowers orange-yellow, solitary-axillary. Fruit have more than 12 segments. The plant propagates by seeds.

Flowering Period:

May to December.

Habitat:

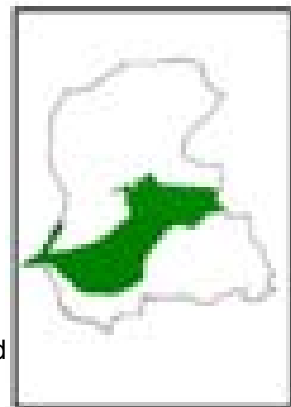
Commonly grows in open, waste lands, near cultivated fields.

Uses:

The root is used to treat cough and fever, a paste of seeds or leaves is applied to wounds and is also used for boils. Roasted seeds are eaten, bark of the stem yields fiber that is suitable for cordage, twine and rope.

Distribution:

In Pakistan it is common in Sindh & Punjab, rare in N.W.F.P. Distributed in tropics and sub-tropics of new and old worlds.



Malvaceae



Abutilon muticum (Del. ex DC.) Sweet
(Syn: *Sida mutica* Del. ex DC.)

English name:

Local name: Kapohi, Akarri.

Description:

A perennial ever green shrub about 0.5-2 m tall. Leaves are hairy ovate or almost round attached with long stalk. Stem stellate pubescent, flowers axillary, solitary or fascicled; orange yellow. Fruit globose more than 25 segmented.

Flowering Period:

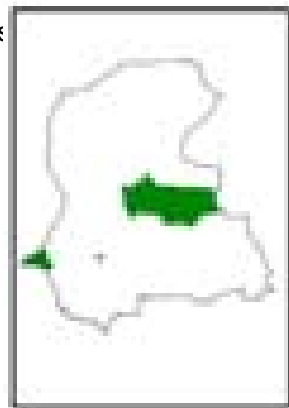
March to October.

Habitat:

Common in plains and hills in sandy soils, it occurs in plains throughout Pakistan, very common in Sindh.

Distribution:

The plant is distributed in Tropical Africa, Arabia, Pakistan and India.



Malvaceae



Hibiscus lobatus (J.A. Murray) O. Ktze.
(Syn: *Solandra lobata* J. A. Murray)

English name: Hibiscus.

Local name:

Description:

An erect annual herb height ranges from 25 to 60 cm tall with pubescent stem. Leaves very variable in shape and size. Flowers white to pale yellow, axillary solitary or in terminal racemes. Fruit slightly globose. Seeds minute black in colour.

Flowering Period:

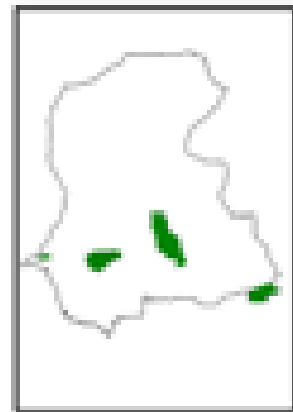
March to June.

Habitat:

Found in stony, gravelly soils and slopes of foothills.

Distribution:

Tropical Africa, Pakistan, Madagascar and central Asia.



Malvaceae



***Hibiscus micranthus* L.f.**

English name:

Local name: Gangati, Jangsopari.

Description:

An erect less branched shrub up to 70 cm tall, with scab sub-sessile to petiolate with dentate margins. Flowers var pale pink, arise from the axil of leaves. Fruit globose, see

Flowering Period:

January to May.

Habitat:

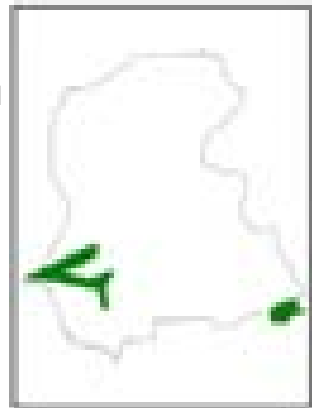
The species is commonly found on slopes of hills, and gravelly plains.

Uses:

The plant is considered as febrifuge. Leaf juice is used for renal remedy.

Distribution:

In Pakistan common in Sindh and occasionally found in Balochistan and N.W.F.P, also distributed in tropical Africa, South-Africa, Arabia, India, Sri Lanka and Madagascar.



Malvaceae



Hibiscus scindicus Stocks.

English name:

Local name:

Description:

A 20 to 25 cm tall under-shrub with many branches. Leaves very variable in shape and size, attached with very short stalk, margins dentate. Flowers white to pale pink, axillary, solitary, pedicel short 2-7 mm. Fruit globose, seeds covered with soft long white hairs.

Flowering Period:

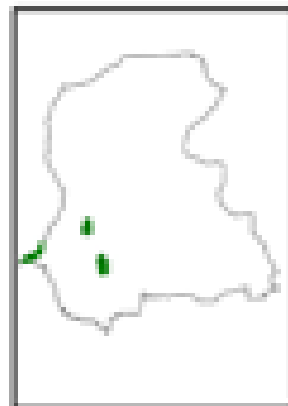
February to May.

Habitat:

Usually found in stony and gravelly areas.

Distribution:

Endemic to Balochistan and Sindh.



Malvaceae



Pavonia arabica Hochst. & Steud.

English name:

Local name: Kapaas wal, Hanjo.

Description:

An under-shrub growing up to 30 cm tall with pubescent stem. Leaves hairy at both side usually broadly oblong. Flowers light pink, axillary solitary. Fruit subglobose, dark brown in colour.

Flowering Period:

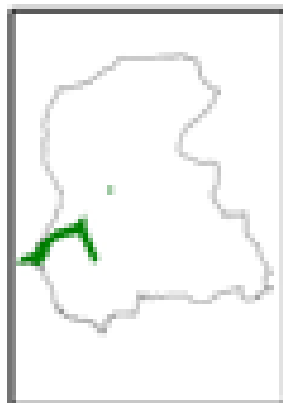
Most part of the year.

Habitat:

Commonly found in gravelly hill slopes, also in dry river beds.

Distribution:

The plant is distributed in Pakistan (Sindh and Balochistan), India, Arabia and Ethiopia.



Malvaceae



Senra incana Cav.

English name:

Local name: Jhang teer.

Description:

An erect or spreading, velvety shrub with many branches and soft hairy. Leaves slightly tri-lobed, sub-rounded attached with long stalk. Flowers pale purple to purple while dark purple in center. Fruit covered with three large cordate bracts, five chambered, seeds almost black, kidney-shaped.

Flowering Period:

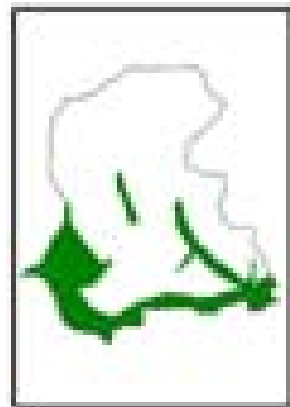
In most part of the year.

Habitat:

Common near sea coasts in moist sandy-loamy soil.
Considerably salt tolerant

Distribution:

Pakistan, Arabia, Ethiopia, and Nubia. In Pakistan it is found in Sindh and Balochistan.



Malvaceae



Sida ovata Forssk.

English name:

Local name: Ball, Jangli methi.

Description:

An erect, perennial medium sized herb or under-shrub, up to 90 cm tall. All parts stellate pubescent. Leaves alternate, petiolate, and hairy with toothed margins. Flowers white, axillary, solitary or paired. Fruit globose, partially covered in sepals, mericarps more than five, each with a very short mucro.

Flowering Period:

Most part of the year.

Habitat:

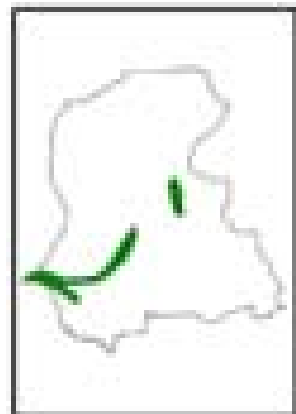
Common in dry, gravelly and open plains.

Uses:

Seeds are used as a remedy for lumbago.

Distribution:

In Pakistan it is common in Sindh and Punjab. Distributed in drier parts of Africa, Arabia, India, Pakistan and Iran.



Malvaceae



Sida spinosa L.

English name: Prickly sida, Mallow.

Local name:

Description:

An annual or perennial herb or under shrub 25-50 cm tall having prickly or spiny structure at the base of the leaf. Flowers small and pale yellow, fruit partially enclosed in calyx, mericarps 5, each with an awn.

Flowering Period:

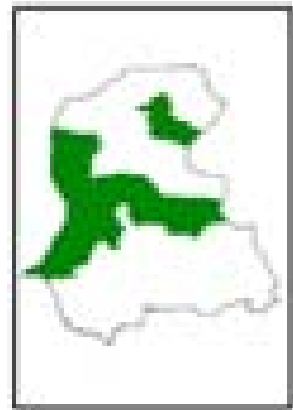
June to October.

Habitat:

Comm only found in waste grounds, cultivated fields and roadside.

Distribution:

Tropical and sub-tropical regions of the world. In Pakistan the species only reported for Sindh.



Menispermaceae



Cocculus hirsutus (L.)Diels
(Syn: *Menispermum hirsutum* Linn.)

English name: Ink berry.

Local name: *Sindhi-* Kursan, Vasanvel. *Urdu-* Jamti-ki-bel. *Punjabi-* Faridbuti.

Description:

A climbing or straggling shrub, often densely pubescent-tomentose with cylindrical branches. Leaves very variable in shape and size. Flowers minute, unisexual, greenish, and inconspicuous. Male and female flowers on separate plants, *i.e.* dioecious. Fruits globose.

Flowering Period:

February to March.

Habitat:

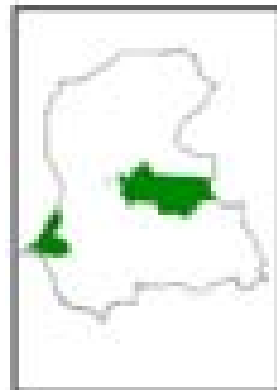
Usually found in calcareous rocks.

Uses:

The plant is useful in fractures, urethral discharge, cures chronic rheumatism and venereal diseases. The juice is used for skin diseases. Stem is used for making basket-work, chairs and settees.

Distribution:

India, Pakistan, and tropical Africa.



Menyanthaceae



Nymphoides cristata (Roxb.) O.Ktze.
(Syn: *Menyanthes cristata* Roxb.)

English name: Crested floating heart, white snow flake.

Local name:

Description:

An annual hydrophytic herb with large floating stem and heart-shaped smooth and rounded broad leaves, rooting at the nodes. Flowers white. Reproduces by seeds and by vegetative means.

Flowering Period:

March to June.

Habitat:

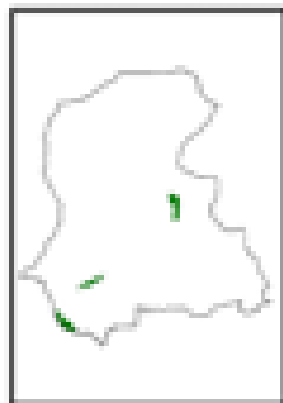
Found in lakes, stagnant water, ponds and marshy areas.

Uses:

The plant is used as a substitute for Chiretta in fevers and jaundice. Stalks and leaves are pounded with oil and applied to ulcers and insect bites and a decoction is used as a wash for parasitic skin affections. Seeds are considered anthelmintic.

Distribution:

Pakistan, India, Malaya and China.



Mimosaceae



Acacia jacquemontii Benth.

English name: Desert Acacia.

Local name: *Sindhi*-Bhawar, *Urdu*-Kikar.

Description:

A common gregarious species erect, 1.5-3 m tall, spiny, bushy shrub with profuse branching bearing yellow globose flowers-heads. The tiny corollas are red, but the exerted stamens are yellow. Pod papery and dehiscent, few-seeded. Propagates by seeds.

Flowering Period:

January to March.

Habitat:

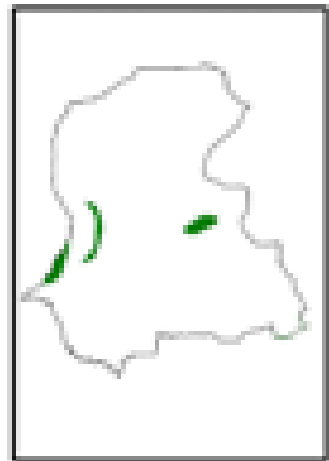
Found commonly in sandy deserts and rocky areas.

Uses:

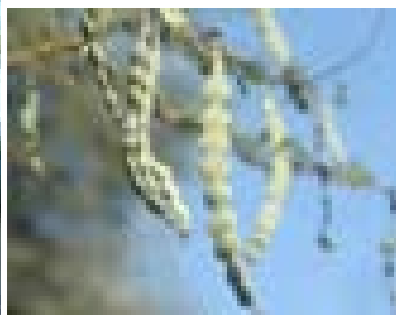
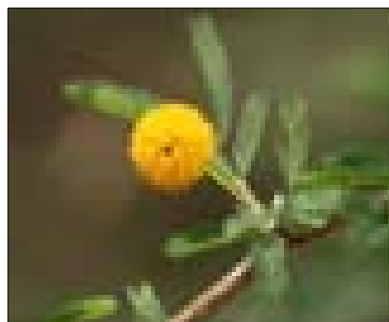
The wood is of high calorific value. Leaves are used as fodder. Gum has medicinal values.

Distribution:

Pakistan and India.



Mimosaceae



Acacia nilotica (L.) Delile Subsp. ***indica*** (Benth.) Brenan

English name:

Local name: Kikar, Babool, Babar

Description:

A medium sized tree but some time reaches up to 18 m in height, bark variable in color grayish or sometime brownish. Crown flattish or umbrella shaped. It can easily be identified by its bright yellow, sweet scented flower heads.

Flowering Period:

March - November

Habitat:

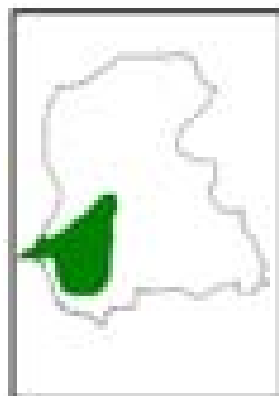
Found in agricultural lands, road sides and along canal banks.

Uses:

A good timber tree, Wood is sometimes also used as a fuelwood, charcoal, good for carving and turnery, widely used for furniture. The leaves and young pods are used as fodder. The bark and pods are used in leather Industry for tanning the leather. Gum is used as a substitute for the Gum Arabic, but inferior in quality than the leather.

Distribution:

Pakistan and India. In Pakistan the plant is commonly found in entire Sindh province.



Mimosaceae



***Acacia senegal* (L.) Willd.**

(Syn: *Mimosa senegal* Linn.)

English name: Gum Arabic Tree.

Local name: Khor, Kumbat, Khair.

Description:

A small tree up to 6 m high, branches with typical 3 short spines per node, two straight and the middle one hooked, bark grey to brown or blackish. Florets in dense, cylindrical spikes, white, pods papery, dehiscent, usually 4-seeded. Seeds thin, flattened, dispersal mostly through wind along with pod valves.

Flowering Period:

June to August or September, depending upon rainfall.

Habitat:

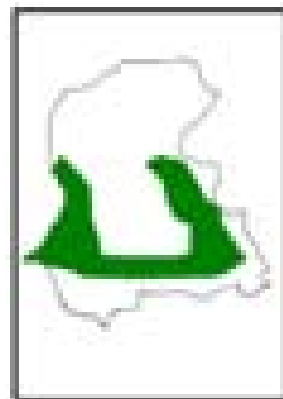
Hilly and rocky slopes, sandy deserts.

Uses:

The precious res in "Gum Arabic" is widely used in pharmaceutical and food industries; also used in many other industries. The gum is also used in indigenous medicine. A good soil binder that could be planted to control erosion. However not properly utilized in Pakistan except for fuel wood.

Distribution:

Pakistan (Sind, Balochistan); India, Arabia, widely distributed in Tropical Africa, Ethiopia, Kenya and Tanzania.



Meliaceae



Azadirachta indica Adr. Juss.

(Syn: *Melia azadirachta* L.)

English name: Neem tree.

Local name: Neem, Nim.

Description:

A fast growing evergreen tree with very dense crown. The tree height is about 15-20 meters. Bark whitish-grey to reddish-brown. Branches glabrous. Leaves imparipinnate, leaflets alternate to opposite. Flowers white sweet scented.

Flowering Period:

April- May.

Habitat:

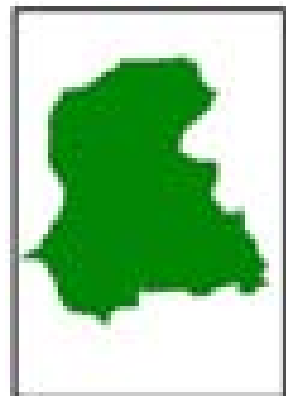
Commonly cultivated in almost every type of habitats.

Uses:

The fruits are edible, all parts are medicinally valuable, the neem oil used in preparation of cosmetics. Leaves are used as pesticide; Neem gum is used as a bulking agent and for the preparation of special purpose food for diabetics. It is also a source of good timber.

Distribution:

Native of Burma, An old introduction to Pakistan, China and Malaysia. The plant is widely cultivated in Sindh province and other parts of the country.



Meliaceae



***Melia azedarach* L.**

(Syn: *Melia orientalis* M. Roem.)

English name: Persian lilac, Bead tree.

Local name: Bakain, Drek.

Description:

A moderate size deciduous tree growing up to 12 m tall with long shallow vertical fissures. Flowers small, fragrant arising in clusters. Fruit drupe, yellow and plump when ripe. It is a fast growing tree of the plains and foot hills.

Flowering Period:

March - April.

Habitat:

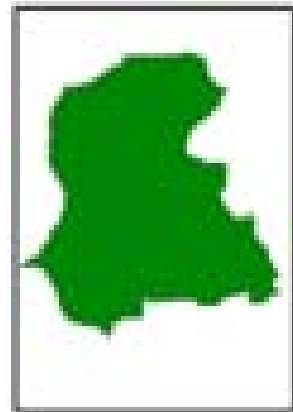
Commonly cultivated as a shade tree within the houses, gardens and at roadsides.

Uses:

Leaves, barks and fruits are used internally and externally in leprosy and scrofula. Flowers and leaves are applied as poultice in headache. Juice of leaf is diuretic and anthelmintic. Seeds are used in rheumatism. Fruit contains a poisonous constituent, resin, tannin, meliotannic acid, benzoic acid and a bitter margosine and bakayanin. It is eaten by goats and sheep and the stony endocarps are used as beads.

Distribution:

Wild in West Himalaya, up to 1700m. Cultivated and naturalized in parts of Iran, China, Burma, Turkey, India and Pakistan.



Molluginaceae



Glinus lotoides (L.) O. Kuntze
(Syn: ***Mollugo lotoides*** (Linn.) O. Kuntze)

English name: Damascisa.

Local name: *Sindhi*-Kotak, Katok phatoukar, Kottruk, *Punjabi*-Gandi buti.

Description:

An annual procumbent herb, branches up to 40 cm long, branched from base, with woolly dense hairs. Leaves small sub-rounded attached with short stalk. Flowers greenish to off-white in axillary clusters.

Flowering Period:

Spring and Summer months.

Habitat:

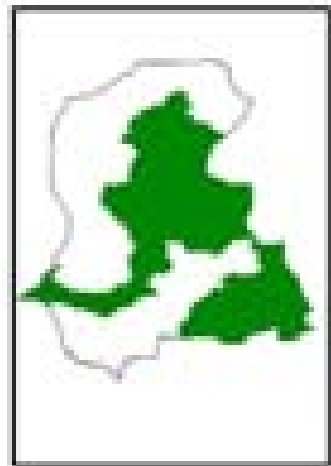
A common species of river banks and dry stream beds, somewhat salt tolerant.

Uses:

Medicinally it is used in the treatment of diabetes and skin ailments as well as weakness in children. The species is also used as effective for tapeworm expulsion.

Distribution:

In most tropical parts of the world; Sri Lanka, Africa, India and Pakistan.



Molluginaceae



Mollugo cerviana (L.) Seringe
(Syn: *Pharnaceum cerviana* Linn.)

English name:

Local name: *Sindhi*- Hazar dani, Padu, Iran-ro.

Description:

An annual up to 15 cm tall erect or prostrate delicate herb with ascending stem and glabrous wiry branches. Leaves linear. Flowers minute about 2 mm. across usually arise from the axils of upper leaves, greenish or creamy white.

Flowering Period:

Spring season.

Habitat:

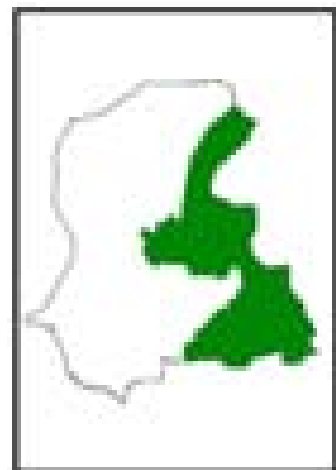
The species is commonly found in hot sandy and semi-desert areas, after Winter/Spring rains.

Uses:

The herb is considered stomachic, aperient and antiseptic. Flowers and tender shoots are diaphoretic and given in fevers. An infusion of the plant is given to promote lochial discharge. Oil in which roots are boiled is used as an application for gout and rheumatism. An alcoholic extract of the plant shows antibacterial activity against *Escherichia coli*.

Distribution:

Tropical Africa, Australia, Sri Lanka, India and Pakistan.



Moraceae



***Ficus benghalensis* L.**

(Syn: *Ficus indica* L.)

English name: Banyan tree.

Local name: Bargad, Bar.

Description:

A very large evergreen and fast growing tree, 20 (-25) m tall. It has many spreading branches with massive stilt roots giving support to the main plant. Trunk massive, fluted, bark grey, smooth, young softly white puberulous. It is often planted throughout the forest tract and commonly grown in gardens and as a roadside shade tree.

Flowering Period:

April - July.

Habitat:

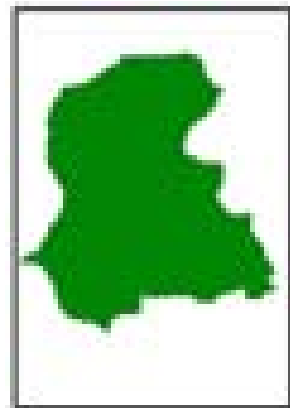
Cultivated as a shade tree in gardens and roadsides.

Uses:

All parts of plants are effectively used in medicines. Leaf bud is astringent; infusion is given in diarrhea and dysentery. Poultice of hot leaves is applied on abscesses. The bark is astringent and tonic used in diabetes and leucorrhoea. Seed is cooling and tonic. Root fibre is used in gonorrhoea.

Distribution:

Pakistan, India, Bangladesh introduced and widely cultivated in tropics and elsewhere.



Moraceae



***Ficus religiosa* L.**

(Syn: *Urostigma religiosum* (L.) Gasp.)

English name: Bo-tree Ficus.

Local name: Pipal, Pipli.

Description:

A tall spreading much branched, deciduous or ever green tree, without aerial roots, about 12-20 meters tall. Leaves shiny, leathery with long gradually narrow apex. Bark grey, young twigs mostly with new pink leaves.

Flowering Period:

February - March.

Habitat:

It is planted as an avenue or roadside tree.

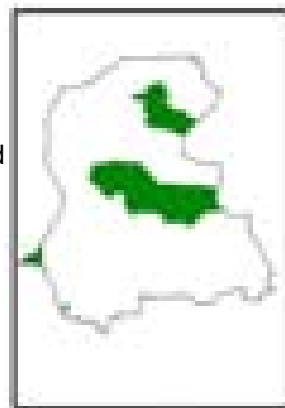
Uses:

The fruits are commonly eaten by birds as food and in times of famine by human beings. The leaves and twigs are lopped for cattle and goats. The wood is used for packing cases and in sacrificial fires by Hindus.

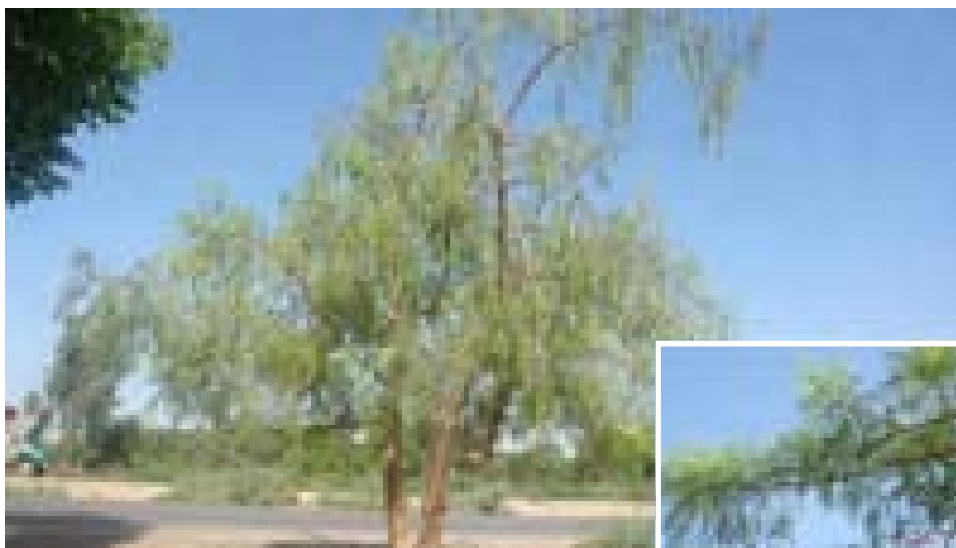
Leaves and tender shoots are used as purgative and in skin diseases. The fruit is laxative, alterative and cooling.

Distribution:

Native to Tropical Asia, introduced elsewhere. Drier parts of Africa, Arabia, India, Pakistan and Iran.



Moringaceae



***Moringa oleifera* Lam.**

(Syn: *Moringa edulis* Medic.)

English name: Horse-radish tree, Drum-Stick.

Local name: Sohanjna, Sohanjro.

Description:

A large tree, with gummy bark, younger parts pubescent. Leaves alternate, tripinnately imparipinnate, up to 60 cm long, deciduous, rachis pubescent, slender, pulvinate and jointed at base. Flowers white with long pedicel, honey scented. It is a fast growing perennial softwood tree with timber of low quality. All parts of the Moringa tree are edible and have long been consumed by humans.

Flowering Period:

January - April.

Habitat:

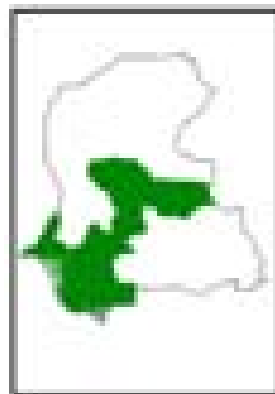
Cultivated in the fields, gardens, roadsides.

Uses:

Young fruits cooked as vegetable. According to Fuglie Many uses for Moringa include: alley cropping (biomass production), animal forage (leaves and treated seed-cake), biogas (from leaves), domestic cleaning agent (crushed leaves), blue dye (wood), fencing (living trees), fertilizer (seed-cake), foliar nutrient (juice expressed from the leaves), green manure (from leaves), gum (from tree trunks), honey- and sugarcane juice-clarifier (powdered seeds), honey flower nectar), medicine (all plant parts), ornamental plantings, biopesticide (soil incorporation of leaves to prevent seedling damping off), pulp (wood), rope (bark), tannin for tanning hides (Bark and gum), water purification (powdered seeds).

Distribution:

The tree is indigenous of the sub-Himalayan tracts, it is commonly cultivated in the Punjab plains, Sindh, Baluchistan and N.W.F.P. as well as throughout India and many other tropical countries. In Sindh it is rarely found only on the embankment of canals.



Myrsinaceae



***Aegiceras corniculatus* (L.) Blanco**

English name: Dwarf Mangrove.

Local name: Karri.

Description:

A low evergreen tree or shrub growing 1.5-3.5 m high usually gregarious, glabrous. Leaves smooth shiny green attached with small reddish stalk. Flowers generally white, pentamerous, perfect and fragrant. Fruit cylindrical, slightly curved, pointed at the apex, arise in clusters. Seeds germinate in side the fruit.

Flowering Period:

February and March.

Habitat:

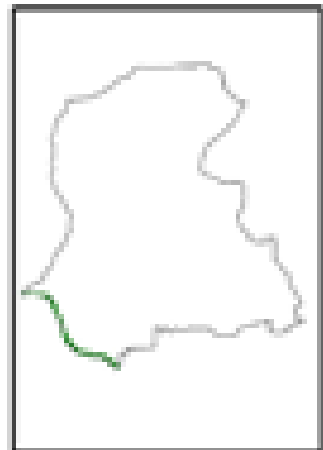
A mangrove species, grows in creeks in the inter-tidal zone.

Uses:

Most of the mangrove species are rich in tannin.

Distribution:

Seashore of Pakistan, India, Africa, Australia and eastward.



Myrtaceae



Syzygium cumini (L.) Skeel
(Syn: *Eugenia jambolina* Lam.)

English name: Black berry, Jambal.

Local name: Jaman, Jammo.

Description:

A large evergreen tropical tree usually 15-30 meters tall with light grey and slightly smooth bark. It has fragrant white flowers in branched clusters at stem tips and purplish black oval edible berries.

Flowering Period:

March - May.

Habitat:

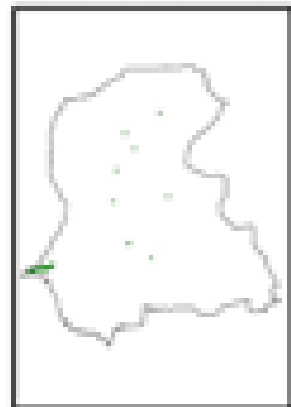
It is a fruit tree mostly cultivated in the edges of Mango orchards.

Uses:

All parts of the tree can be used medicinally. Its fruit and seed are used in bilious diarrhea and diabetes. Juice of ripe fruit made into vinegar is used as stomachic, carminative and diuretic. Bark is astringent; decoction is used as gargle and washes.

Distribution:

Pakistan, India, Indonesia, Philippines, Afghanistan, Brazil and USA. It is found along the Sub-Himalayan tracts, often planted and self sown in plains of Punjab and Balochistan.



Neuradaceae



***Neurada procumbens* L.**
(Syn: *Figaraea aegyptiaca* Viv.)

English name:

Local name: *Sindhi*- Kua dhal, Chattari, Mekhwal, *Urdu*- Chapari.

Description:

A 10-20 cm long, prostrate annual herb. Branches spreading from the base, stem covered with whitish hairs. Leaves fleshy hairy at both sides, margin wavy. Flowers white, small arise from the axil of the leaves. Fruit flat disc shaped, covered with small spines.

Flowering Period:

February to March.

Habitat:

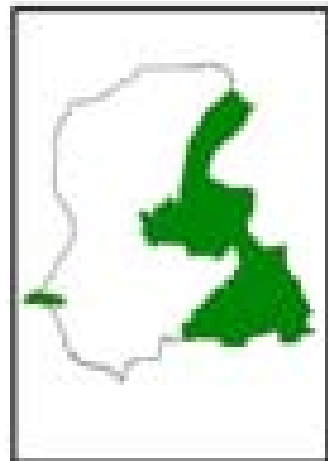
Usually found on compact sand-dunes covered with pebbles.

Uses:

Local people use leaves as tonic, extract increase blood pressure, those people who have cardiovascular disease, should be careful to use this plant species.

Distribution:

Northern Africa, Westward to Arabia and Pakistan.



Nelumbonaceae



Nelumbo nucifera Gaertn.

English name: Lotus.

Local name: *Sindhi*-Babban, *Urdu*-Kanwal.

Description:

An aquatic, perennial freshwater herb growing in shallow water with rhizomes in mud. Leaves very broad and rounded usually wavy at the edges, floating or somewhat raised above the surface of water. Flower color varying from snow white to light pink to almost red. Fruit shower-head shaped, many seeded, seeds dark brown when ripe. Propagates by seeds or rhizomes. The species usually disappear during the winter season.

Flowering Period:

June to September.

Habitat:

Common species of freshwater lakes and pond.

Uses:

The flowers, seeds, young leaves, and rhizomes (locally known as "Beh") are all edible, various parts of it are also used in traditional Asian herbal medicine, flower is used for cholera, diarrhea, vomiting and intermittent fevers and the plant is also used for intra-uterine growth retardation, diarrhea, dysentery, and skin darkening. Cultivated as a crop in Sindh.

Distribution:

North Africa to Pakistan, India and Australia.



Nyctaginaceae



***Boerhavia diandra* L.**

(Syn: *Boerhavia repens* var. *glabra* Choisy)

English name:

Local name: *Sindhi*-Bhakro, *Urdu*- Bishkhopra, Bashkhira Et-sit, *Punjabi*- Att-sat.

Description:

A slender, prostrate, herb with up to 1 m long branches, glabrous to sparsely puberulous and fleshy, stem woody at the base. Leaves narrow lanceolate with wavy margins. Flowers on axillary peduncle in a group of 1 to 3.

Flowering Period:

Mostly after monsoon rains.

Habitat:

Found mostly in sandy areas with associated of other shrubby Plants.

Uses:

A palatable species for livestock.

Distribution:

Pakistan and India.



Nyctaginaceae



Boerhavia procumbens Banks ex Roxb.

English name:

Local name: *Sindhi*- Nakbel, Bhakro, *Urdu*- Bashkhira.

Description:

A perennial diffuse prostrate, puberulous herb. Stem usually red, cylindrical. Leaves lanceolate, to ovate variable, Flowers minute in axillary peduncled clusters. Reproduces through seeds. Fruits slightly globose. A variable species by shape and size.

Flowering Period:

Most part of the year.

Habitat:

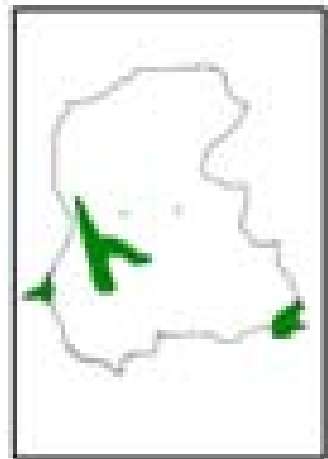
Grows on sandy and sand loam soils in deserts.

Uses:

Juice of the plant is used as a diuretic, the leaves can also be used as a pot herb, favorite fodder for livestock, also browsed by sheep, used for the treatment of anemia, asthma, muscular pains, jaundice and scabies.

Distribution:

North Africa to South Asia, India, and Pakistan.



Nyctaginaceae



Commicarpus boissieri (Heimerl) Cufod.
(Syn: *Boerhavia boissieri* Heimerl apud Vierhapper)

English name:

Local name: Ruper, Sentori, Banwal.

Description:

A straggling or decumbent branched perennial herb. Leaves broadly ovate, smooth and fleshy. Inflorescence umbel shaped flowers 5 to 7 in each cluster, pink to purple trumpet shaped.

Flowering Period:

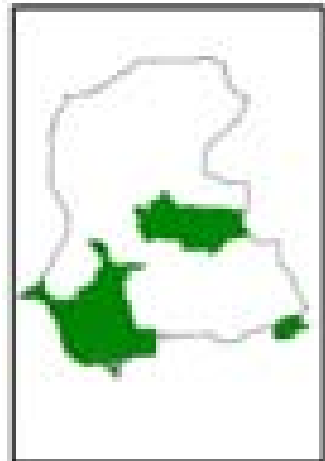
September to October.

Habitat:

Found in sandy open places and low-hills, usually associated with other shrubby plants like *Euphorbia caducifolia*.

Distribution:

Africa, Pakistan, South Iran and India.



Nymphaeaceae



Nymphaea nouchalli Willd.

English name : Water Lily

Local name : Nilofer, Kuum.

Description :

A perennial aquatic herb with rhizomatous stems. Leaves broad rounded, floating on the surface of water. Flowers white to lavender (5-) 8-15 (-20) cm across. A fairly common flowering species.

Flowering Period :

July to October.

Habitat :

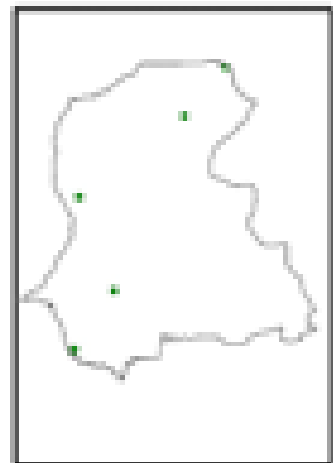
Commonly found in brackish lakes, ponds, marshy areas and rice-fields

Uses :

The powdered root is prescribed for piles as a demulcent, also for dysentery and dyspepsia, the flowers are astringent and cardiotonic. Fruits are edible.

Distribution :

Throughout the warmer parts of Indian subcontinent, extending to Malaysia, South-East Asia to the Philippines and New Guinea.



Orobanchaceae



Cistanche tubulosa (Schrenk) Hook. f.
(Syn: *Phelypaea tubulosa* Schrenk)

English name : Desert hyacinth.

Local name : Kawar booti, kasi.

Description :

A stout fleshy perennial, parasitic herb with underground tubers, only the inflorescence comes above the ground surface, ranges from 20-80 cm high, main axis fleshy, purplish with dense spirally arranged, trumpet like flowers in variable colours, from bright yellow to yellowish white, yellow and violet.

Flowering Period :

January to April.

Habitat :

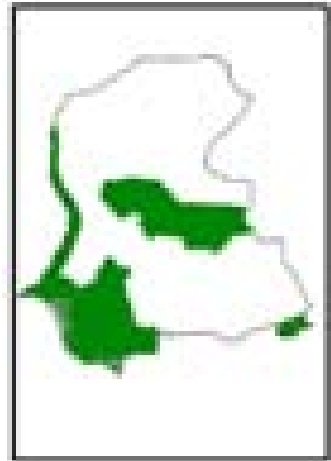
Parasite on roots of a number of plant species. Mostly on *Suaeda* and *Atriplex* in coastal areas, more frequently on *Calotropis* in deserts.

Uses :

Medicinally used to stop diarrhoea.

Distribution :

North Africa, West and Central Asia, Pakistan and India.



Plumbaginaceae



Limonium stocksii (Boiss.) O. Kuntze
(Syn: ***Statice stocksii*** Boiss.)

English name :

Local name :

Description:

A perennial dwarf branched shrub. Stem more or less woody, long and strong straggling branched, older branches without leaves. Leaves fleshy spade shaped. Flowers minute, funnel shaped, light pink to purple, in apical branched cymes.

Flowering Period :

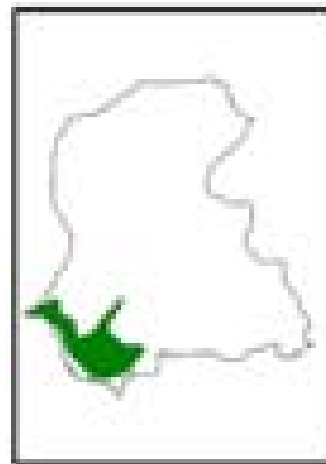
Most part of the year.

Habitat :

Sandy to clayey-sandy moist saline soils of sea shores and inland areas.

Distribution:

Pakistan, Afghanistan and Iran.



Polygalaceae



Polygala erioptera DC.

English name:

Local name: Visoni, Mondheer.

Description:

An annual or perennial herb with woody base, pubescent, 5-32 cm tall, very variable species in habit. Leaves narrow linear, sessile or with very short stalk. Flowers purple, yellowish-violet, in axillary racemes. Bracts without a prominent reticulate venation.

Flowering Period:

Throughout the year.

Habitat:

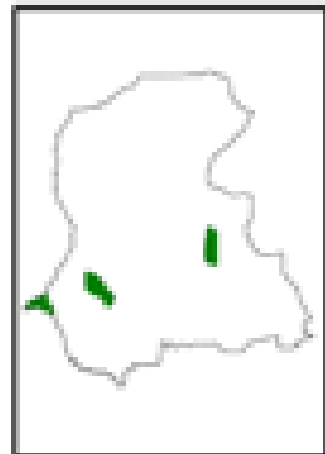
Mostly found in open sandy and stony, gravelly areas.

Uses:

Polygala species are used in the treatment of snake-bite, the plant is reportedly used as an expectorant and cough remedy.

Distribution:

Pakistan, Arabia, Tropical Asia and Africa.



Polygalaceae



Polygala irregularis Boiss.

English name:

Local name: Visoni, Mondheer.

Description:

An annual or short lived perennial, pubescent 17-40 cm tall with many branches arising from the base. Leaves variable in shape linear to lanceolate, pale green. Inflorescence terminal raceme. Bracts with prominent reticulate venation. Flowers mauve to purplish pink.. Fruit flat, sub-ovate.

Flowering Period:

Most part of the year.

Habitat:

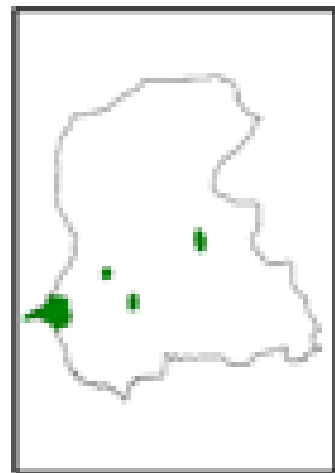
Found in stable sand between low dunes.

Uses:

Used as a fodder, grazed by cattle.

Distribution:

Arabia, Pakistan (Sindh and Balochistan) Iran and India.



Polygonaceae



***Calligonum polygonoides* L.**

English name: Calligonum.

Local name: *Sindhi- Phog, Punjabi- Phog, Phogalli.*

Description :

A perennial, rigid, much branched, and leafless shrub growing 1.5-2.5 m in height. Leaves rudimentary giving a xerophytic character to the plant. Flowers minute white with red to pink anthers. Wings of fruit divided into extensive five branches.

Flowering Period:

February to June.

Habitat:

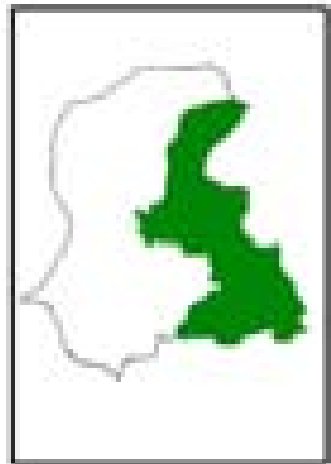
Atypical species of sandy deserts.

Uses:

Fresh floral buds used as vegetable; the decoction of the plant is used as gargle for sore throat, leaf juice is used for washing eyes, also serve as a fodder.

Distribution:

Syria, Palestine, Arabia, Iraq, Iran, Afghanistan, Turkey, India and Pakistan.



Polygonaceae



***Persicaria barbata* (L.) Hara**
(Syn: ***Polygonum barbatum*** Linn.)

English name:

Local name: Naar.

Description:

An erect, 30-60 (-75) cm tall, sometimes decumbent or prostrate, branched annual herb. Leaves narrow linear usually sub-sessile stipules (ochreae) with long awns. Flowers white arranged in terminal spike.

Flowering Period:

March to May.

Habitat:

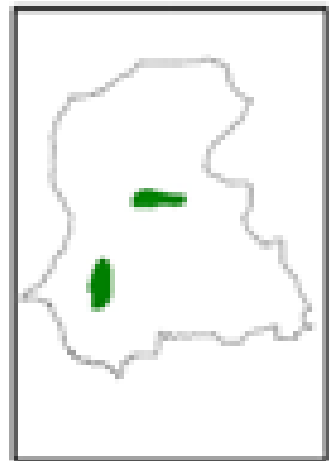
Found in moist soil near lakes, reservoirs and water courses.

Uses:

Apoisonous herb used as fish poison.

Distribution:

Africa, Western Asia, Himalayas, India, Pakistan, China extending to Japan and Australia.



Polygonaceae



Persicaria glabra (Willdenow) M. Gomez de la Maza.
(Syn: *Polygonum glabrum* Willd.)

English name:

Local name: Naar.

Description:

A perennial tall erect, semiaquatic to aquatic herb, about 70 cm high, entirely glabrous except the leaves, which are often red-gland dotted. Stem usually red at the base. Leaves narrow linear. Flowers pinkish in dense spikes. Propagates by seeds.

Flowering Period:

October to March.

Habitat:

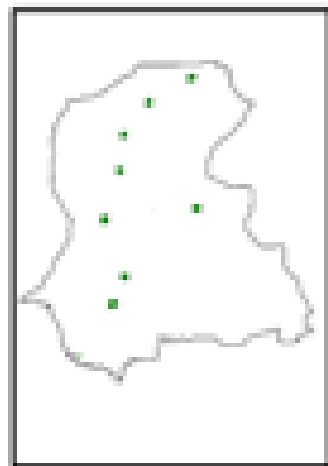
Grows in ditches, river-banks and lakes.

Uses:

The plant is used to poison fish.

Distribution:

Tropical Asia, Pakistan, India extending up to Malaysia and Philippine; Africa.



Polygonaceae



Polygonum effusum Meisn.

English name:

Local name:

Description:

A profusely branched, prostrate annual herb with channeled or ribbed stem. Leaves linear to narrow oblong, sessile, glabrous, Inflorescence an axillary clusters of 1-3 flowers per clusters; flowers with short stalk, pink in colour.

Flowering Period:

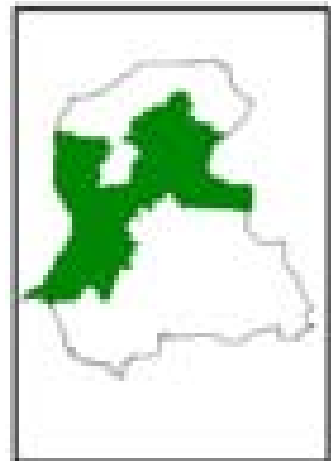
March to October.

Habitat:

Common on wet soils around lakes, cultivated fields.

Distribution:

Bangladesh, India, Pakistan, and Afghanistan.



Polygonaceae



Polygonum plebejum R. Br.

English name:

Local name: *Sindhi-Kheer wal, Punjabi-Raniphal.*

Description:

A prostrate, densely branched, annual herb, often with woody root stock. Flowers sunken between ochreae or hardly exerted, minute. The species is more or less same as *P. effusum* but can be distinguished by number of stemens (5) and flowers without stalk (sessile).

Flowering Period:

February to June.

Habitat:

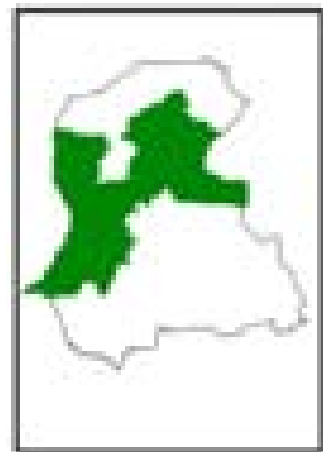
Found usually in gravelly, stony and moist soil near water bodies.

Uses:

Dried and powdered plant is used in the treatment of pneumonia. Root is used in bowel complaints.

Distribution:

Pakistan, India, Bangladesh, Nepal, Tropical East Africa, Madagascar Bhutan extending to Australia through Indonesia and Malaysia.



Polygonaceae



Rumex dentatus L. subsp. ***klotzschianus*** (Meisen.) Rech.f.

English name:

Local name: Maleero, Jangli Palak.

Description:

An erect, annual or biennial herb, up to 60 cm tall. Leaves fleshy soft and glabrous with wavy margins, lower leaves form rosette (larger than the upper leaves). Flowers green in verticillate clusters subtended by small leaves.

Flowering Period:

February and March.

Habitat:

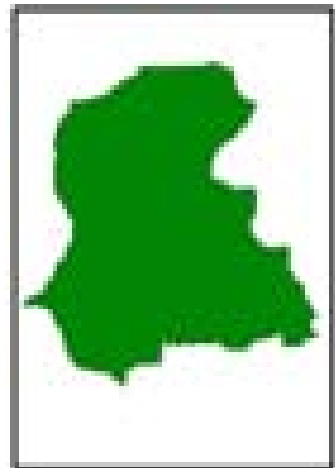
Grows mostly in moist areas and as a weed in agricultural fields.

Uses:

Leaves are consumed as cooked vegetable and are rich source of calcium, Beta-carotene and vitamin.

Distribution:

Afghanistan, Pakistan, India, and East Asia. It is a highly polymorphic species; in Pakistan it is only represented by Subsp. *klotzschianus*.



Portulacaceae



***Portulaca oleracea* L.**

English name: Common/edible purslane.

Local name: *Sindhi*- Lunak, Khat khatani, *Urdu*- Kulfa, *Punjabi*- Lunak.

Description:

An annual or perennial, prostrate or erect, 25 cm tall, succulent, glabrous green or purplish green herb. It becomes reddish in dry condition. Leaves shiny green, smooth, spoon shaped. Flowers small, sessile, yellow, terminal, solitary or in small cluster. Flowers remain open till mid-day.

Flowering Period:

January to December.

Habitat:

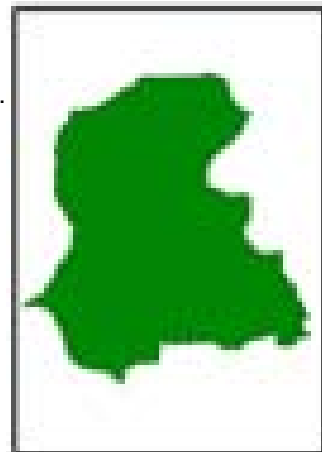
Common roadside plant, in gardens on damp and disturbed soils. Spontaneous as well as cultivated as a leafy vegetable.

Uses:

Used as a vegetable in diseases of liver, kidney and lungs, leaves used in salad and stems pickled; stem and leaves used in traditional medicine. Caterpillars of Great & Danaid Egg fly butterflies feed on this plant.

Distribution:

Found in all warmer parts of the world.



Primulaceae



***Anagallis arvensis* L. var. *coerulea* (L.) Gouan.**

English name: Blue pimpernel.

Local name: Didir barseeng, Jonk mari, Billi booti.

Description:

An annual erect or sometime prostrate herb growing up to 20 cm tall. Leaves opposite, sessile. Stem quadrangular and much branched from the base. Flowers axillary solitary, deep blue with red centre.

Flowering Period:

January to April.

Habitat:

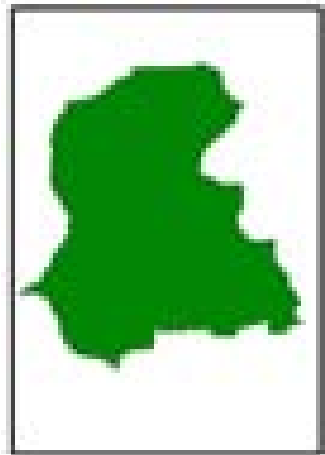
Mostly found as a weed in agricultural fields, plantations and moist areas.

Uses:

In Vitro and animal tests showed the herb to have fungitoxic, antiviral, spermicidal, estrogenic, oxytocic and hemolytic effects. In Indian medicine it is employed as a treatment for menstruation disorders. In Chinese medicine the herb is used for snake bites, dog bites, joints ailments and edema. In Homeopathic medicine it is used in the treatment of skin rashes, warts and urinary tract infections.

Distribution:

Almost cosmopolitan.



Ranunculaceae



***Ranunculus sceleratus* L.**

English name: Cursed buttercup.

Local name: Kabikaj.

Description:

An annual (or biennial), stout, erect and fast growing soft and succulent herb up to 80 cm tall. Leaves with long hollow stalk, lamina segmented multi-lobed. Flowers yellow with green sub-rounded or cylindrical extended torus, terminal on short branches in upper part of plant.

Flowering Period:

February to April.

Habitat:

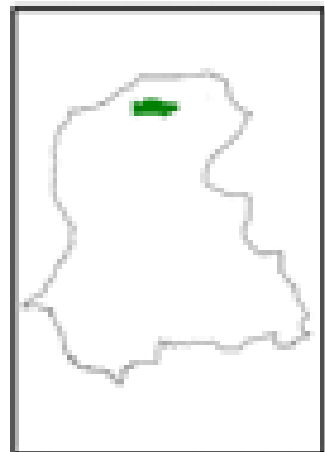
Found in marshes and wet places. Rare in Sindh.

Uses:

The plant is poisonous. Leaves are vesicant and applied to the skin to raise blisters.

Distribution:

Nearly in all parts of Europe, Asia and Northern Africa.



Resedaceae



Ochradenus baccatus Delile

English name:

Local name: *Balochi-kirmkush*.

Description:

A straggling shrub to small tree about 2.5 to 3 m tall sometimes polygamous. A desert species with pretty greenish-yellow branches. Leaves very narrow and linear, without stalk. Flowers minute, yellow in dense terminal raceme. Fruit small about 5 mm. globose, white.

Flowering Period:

During Spring and Summer months.

Habitat:

Grows in hot dry, rocky and sandy places.

Uses:

The fruit is sweet and edible. The whole plant decoction is applied to wounds and sores to kill maggots. The plant is browsed by cattle

Distribution:

Libya to Egypt, Ethiopia, Somali land, Middle East to South Iran and Pakistan.



Rhamnaceae



***Ziziphus mauritiana* Lam.**

(Syn: *Ziziphus jujuba* Lam.)

English name: Indian plum.

Local name: Beri, Ber.

Description:

A medium sized evergreen much branched tree or large shrub about 9-15 m high with spreading and drooping branches. Young branches are softly tomentose having greenish yellow, flowers. Leaves ovate, oblong, elliptic-ovate, glabrous and dark green above, greyish pale-coloured and densely tomentose beneath.

Flowering Period:

September - December.

Habitat:

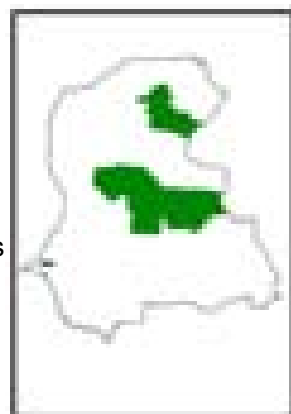
Commonly found throughout the plains of Sindh.

Uses:

Its fruit is fleshy and juicy, sweet in taste and useful for the purification of blood and for digestion. Bark is used in diarrhea. Powdered root is applied on wounds and ulcers as poultice and also in fever. The wood is used for building purposes, railway sleepers, furniture, lacquered toys etc.

Distribution:

India, Pakistan, Afghanistan, Sri Lanka, China, Australia and Tropical Africa.



Rhamnaceae



Ziziphus nummularia (Burm.f.) Wt. & Arn.
(Syn: *Rhamnus nummularia* Burm.f.)

English name: Ziziphus.

Local name: Jangli beri, Mallah, Ber, Karkana.

Description:

A bushy large, much branched shrub with small spines. Leaves hairy, rounded, small, dark green above, greyish on undersurface. Flowers small, green, inconspicuous, 3-4 mm in diameter. Fruit rounded. Propagates naturally by root suckers as well as by seeds.

Flowering Period:

August to October.

Habitat:

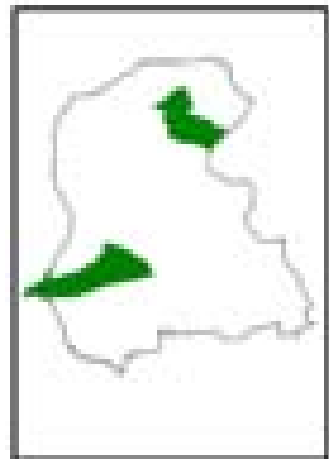
Commonly found in slopes of hills, dry, stony and gravelly areas.

Uses:

Leaves are used in scabies and other skin diseases and as fodder for cattle preferred by goats. Stem is used for hedge purpose and as fuel wood species. Its fruit is used as a wild fruit.

Distribution:

The plant is distributed in Asian countries, Pakistan, India, Iran, Iraq, Afghanistan and Palestine.



Rosaceae



Potentilla heynii Roth.

English name:

Local name:

Description:

Decumbent much hairy herb. Leaves compound leaflets deeply divided, soft, hairy. Stem is soft herbaceous covered with dense whitish hairs. Flowers minute, yellow.

Flowering Period:

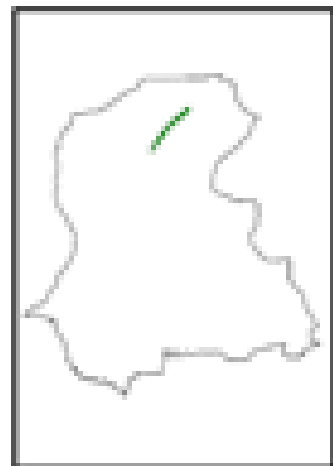
February to April.

Habitat:

On wet soils near water bodies. Rare in Sindh.

Distribution:

Pakistan, India, Sri Lanka, Nepal and Bangladesh.



Rubiaceae



Kohautia retrorsa (Boiss.) Bremek
(Syn: *Oldeniandia retrorsa* Boiss.)

English name:

Local name:

Description:

A perennial much branched greyish-green erect herb, woody at the base, di-trichotomously branched. Leaves mostly found only at the base of plant. Flowers greenish white to brownish with long narrow basal tube. Fruit globose.

Flowering Period:

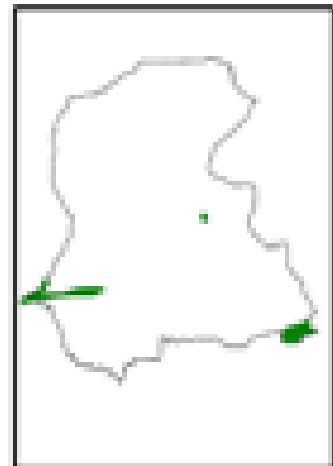
Almost throughout the year.

Habitat:

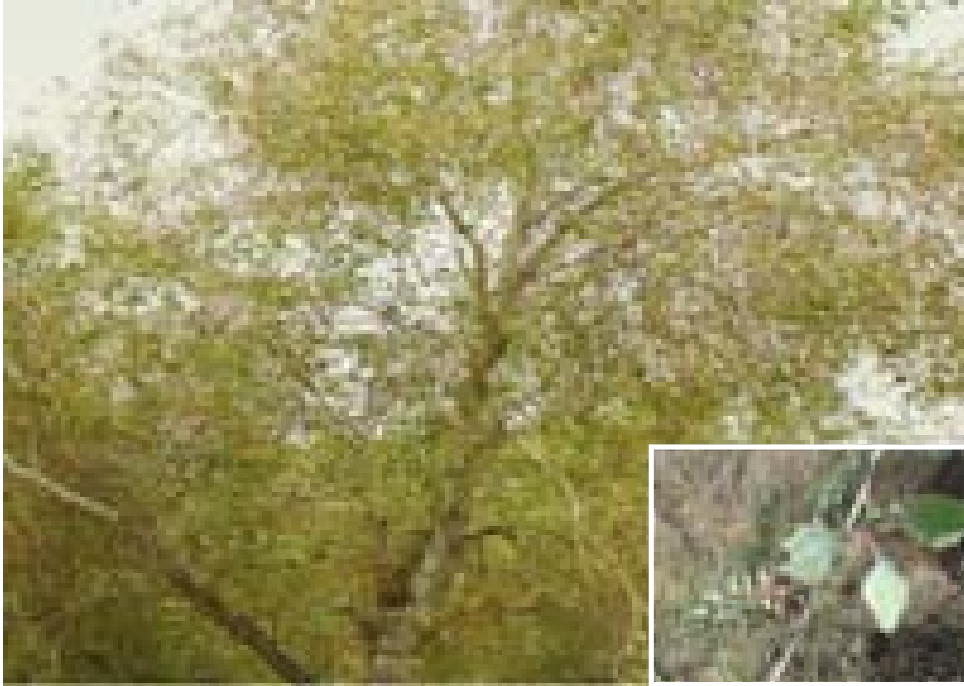
Common species of sandy areas and dry river beds.

Distribution:

Found in all dry part of the world.



Salicaceae



Populus euphratica Olivier

English name: Indian poplar, Euphrates poplar

Local name: Bhan, Bahan.

Description:

A deciduous tree up to 15 meter tall, sucker formation common, bark grayish. Young branches yellowish brown, glabrous. Leaves leathery, glabrous, variable in size and shapes. The trees are dioecious *i.e.* male and female flowers are on separate trees and are pollinated by wind.

Flowering Period:

February-March.

Habitat:

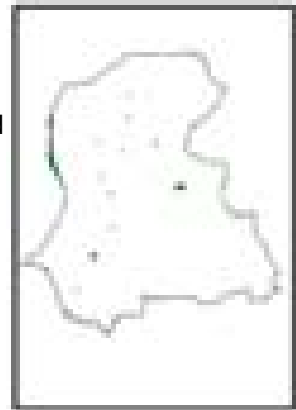
Along river banks and margins of lakes.

Uses:

Timber of the tree used for construction purposes. Leaves of the plant used as fodder for goats. It is also used for fuel wood in Sindh. While in Punjab, it is used for well curbs and for ternery. The gum of bark has medicinal properties.

Distribution:

Globally the plant is distributed in Afghanistan; Iran; Iraq; Kazakstan, Turkmenistan, Tajikistan, Uzbekistan, China, North Africa and Spain. In Pakistan along Indus River in Sindh, Keenjhar lake and Chotiari reservoir.



Salvadoraceae



Salvadora oleoides Decne.
(Syn: *Salvadora stocksii* Wight)

English name: Salvadoria.

Local name: Khabbar, Jhal, peelu.

Description:

A dwarf tree with drooping, stiff, rough, whitish branches, not exceeding a height of 20 feet and a girth of 3 feet. Flowers greenish white, with round lobes and wavy margins. Fruit a drupe, orange to dull red on maturation. It produces new leaves during April, which on maturity become thick and leathery. The growth rate is very slow.

Flowering Period:

March- June.

Habitat:

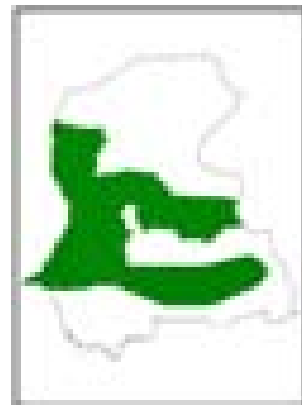
Common in the dry, arid, semi-arid areas of Sindh.

Uses:

The plant provides a dense shade. It is often lopped for camel and goat fodder. The fruits are edible. It forms one of the main grazing sources for livestock owned by locals. Wood is used as fuelwood and construction material. The seeds have medicinal value in the shape of green oil obtained from the seeds.

Distribution:

Pakistan (especially in Sindh), India (Gujrat, Junagarh, Rajputana).



Salvadoraceae



***Salvadora persica* L.**

(Syn: *Salvadora wightiana* Planch ex Thwaites)

English name: Tooth brush tree.

Local name: Khabbar, Pilu, Darakht-i-miswak

Description:

A small evergreen shrub to tree reaching a height of 2-6 m. Its trunk is erect, profusely branched, glabrous with drooping branches. Young branches green in color and bark slightly rough whitish yellow to almost white but on stem somewhat grey and rugose. Ripe fruits bright red.

Flowering Period:

November - March.

Habitat:

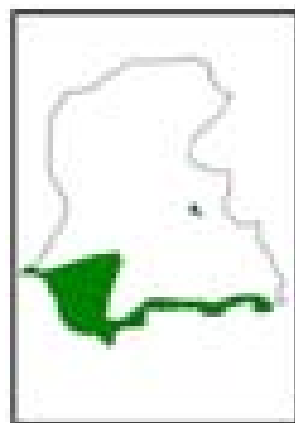
Mostly found in saline areas.

Uses:

Its roots and branches are commonly used as tooth brush. Its fruit is sweet but slightly pungent and peppery in taste, eaten as raw, cooked, or dried and stored. Young branches are favorite fodder for camels. Decoction of leaves is used for mouth wash and masticated leaves for tooth and gum problems. Seeds are used as tonic and seed oil is used on the skin for rheumatism.

Distribution:

Widely distributed in drier parts of Pakistan, Arabia, Palestine, Syria and Africa.



Scrophulariaceae



Anticharis linearis (Bth.) Hochst. ex Aschers

English name:

Local name:

Description:

Small much branched erect densely glandular hairy herb, up to 20 cm tall. Leaves sessile, narrow, linear. Flowers small, pale pink to pale bluish. Fruit about 6 mm hairy having many minute oblong seeds.

Flowering Period:

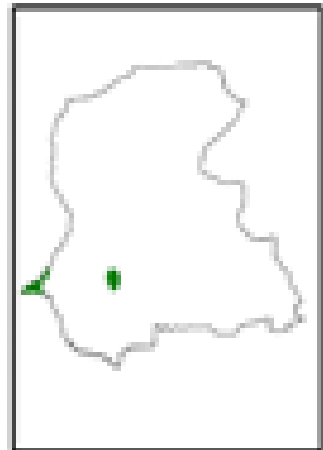
March to October.

Habitat:

Found in stony and sandy grounds.

Distribution:

Tropical Africa, Arabia and Pakistan.



Scrophulariaceae



***Bacopa monnieri* (L.) Wettstein**
(Syn: *Lysimachia monnieri* L.)

English name:

Local name: Lonri, Beypitee wal, Bokhani.

Description:

A creeping perennial, prostrate branched fleshy herb reaching at the height of 30 cm. Rooting at the nodes. Leaves fleshy spade shaped, sessile. Flowers solitary, axillary lavender to bluish. Fruit oblong with minute many seeds.

Flowering Period:

Almost throughout the year.

Habitat:

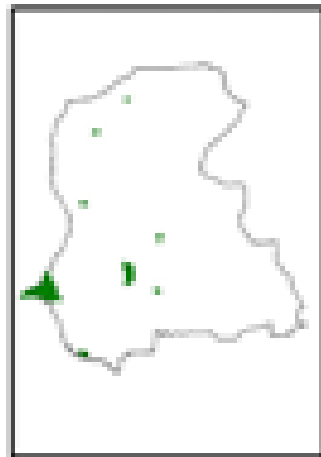
Usually found in wet edges of ponds, lakes and marshy place, in brackish habitats.

Uses:

The plant is bitter, pungent, heating, emetic, laxative and useful in bad ulcers, tumours, ascites, enlargement of spleen, indigestion, inflammations, leprosy, anaemia, biliousness. It is also used for blood purification, diarrhea and fevers. The plant is also grazed by livestock but problematic. Considered as brain tonic.

Distribution:

A widely spread species, almost found in all warmer countries.



Scrophulariaceae



***Lindenbergia indica* (L.) Vatke.**

English name:

Local name: Urdu- Bhinta-chatti.

Description:

An annual, erect herb, often villous and woody at the base, reaches at a height of 8-30 cm. Leaves soft hairy sub-rounded (very variable in shape and size). Flowers small, bright yellow in terminal spikes. Fruit many seeded.

Flowering Period:

February to October.

Habitat:

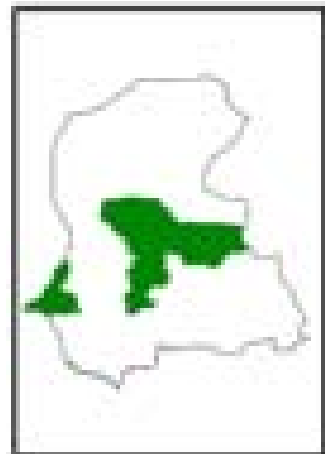
Prefers stony soil, hill slopes, also in dry stream beds.

Uses:

The juice of the plant is administered in chronic bronchitis, and mixed with coriander applied to skin eruptions.

Distribution:

The plant is distributed from Abyssinia to Afghanistan, India and Pakistan.



Scrophulariaceae



***Schweinfurthia papilionacea* (Burm.f.) Boiss.**

English name:

Local name: *Sindhi-* Sonpat, *Urdu-* Sanipat.

Description:

A decumbent, glabrous somewhat fleshy herb, branched from the base, erect or spreading about 30 cm long. Stem densely leafy. Leaves smooth. Flowers bi-labiate, light purple with yellow palate axillary sub-sessile. Fruit spherical capsule with typically unequal chambers.

Flowering Period:

Most part of the year.

Habitat:

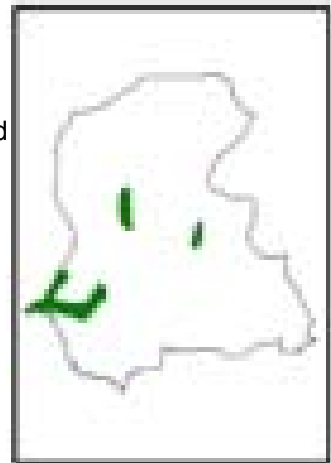
Grows on stony and sandy grounds.

Uses:

Powdered herb is snuffed in nose bleeding. Fruit, leaves and stem are prescribed in typhoid fever. The leaves are useful for the cure of diabetes.

Distribution:

Pakistan, India and Afghanistan.



Scrophulariaceae



Verbascum thapsus L.

English name: Great mullein.

Local name: Gider tambaku, Jangli Tambaku.

Description:

A hairy annual or perennial erect herb can grow to 2 m or more. Leaves and stem covered with dense tomentum. Leaves large arranged radically. Flowers yellow in terminal spike. Fruit globose, many seeded.

Flowering Period:

February to August.

Habitat:

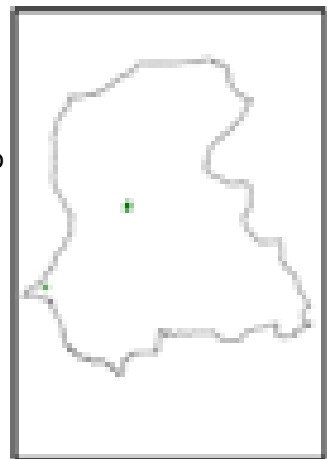
It is usually found on slopes and rocky places.

Uses:

Seeds are narcotic. It has emollient and astringent properties and used in herbal remedies for cough and other related problems, topically applied for skin diseases. It is also used to make dyes and torches.

Distribution:

North Africa, Europe, Asia, and Pakistan.



Solanaceae



***Datura fastuosa* L.**

(Syn: *Datura alba* Rumphius ex Nees)

English name: Thorn apple/double purple.

Local name: Dator, Dhatura.

Description:

Large herb to subshrub, about 40-100 cm or more tall with glabrous branches. Leaves angular, dark green margin wavy or dentate. Flowers trumpet shaped, usually white or sometime pale violaceous, or purplish. Fruit globose covered with rigid prickles, many seeded.

Flowering Period:

September to April.

Habitat:

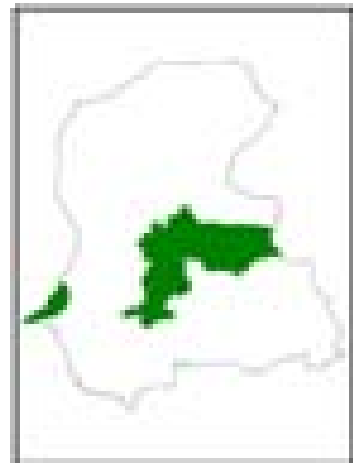
Mostly found near human settlements in sandy and gravelly somewhat moist soil.

Uses:

It is a highly poisonous species; seeds are used in different skin diseases and in the whooping cough asthma. Juice of leaves are used in body pain e.g. toothache, earache, gout pain.

Distribution:

Native to Tropical America, now widespread in Tropical and Subtropical countries all over the World.



Solanaceae



***Datura stramonium* L.**
(Syn: *Datura tatula* L.)

English name: Thorn apple.

Local name: Dator.

Description:

A tall pubescent, much branched, herbaceous plant of 60 to 200 cm or more in height. Leaves ovate to broadly cordate, sinuately dentate, margin dentate, 8 - 17 cm long, 4 - 13 cm broad. Flower white, pentamerous, corolla tubular, 7-10 cm long. Fruit erect, 3- 4 cm long, ovoid, spiny but spine length shorter than the spines of *D. fastuosa*. Seeds black, 3 mm long.

Flowering Period:

June to July.

Habitat:

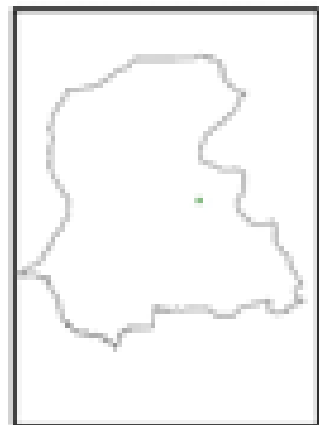
Found in waste lands, roadsides.

Uses:

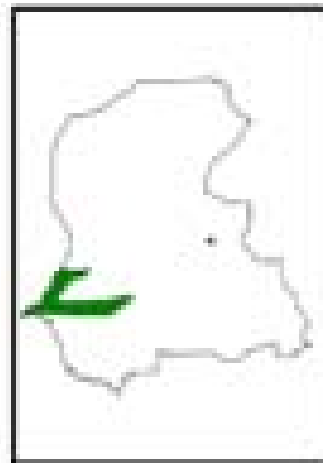
Whole plant is highly poisonous, particularly the seeds. The plant has high medicinal value, used in fevers, for worms, skin diseases, boils and indigestion. All part of the plant contain alkaloids as Hyoscyamine, which have a powerful narcotic effect.

Distribution:

Temperate and subtropical regions of the world. A native of tropical America, naturalized in most of the warm countries world over.



Solanaceae



Solanaceae



Lycium ruthenicum Murray.

English name:

Local name: *Sindhi-Khandheri, Garai, Marari, Balochi-Jarak.*

Description:

A thorny, glabrous shrub up to 180 cm tall. Leaves linear and fleshy. The species can readily be distinguished by the narrow leaves. Flowers white. Fruit black.

Flowering period:

July to September.

Habitat:

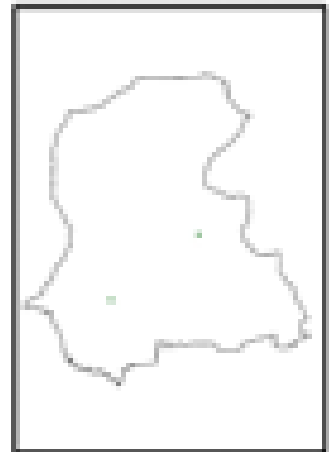
It grows on a variety of soils, sandy, loamy and clayey soil.

Uses:

Fruit can be eaten as raw or cooked. It is a rich source of vitamins and minerals (Vit A,C and E). Medicinally used to reduce the incidence of cancer and ophthalmic diseases. The juice is used as an ointment for camel.

Distribution:

South-East Russia, Mongolia, Pakistan, Turkey, Iran and Afghanistan.



Solanaceae



***Nicotiana plumbaginifolia* Viv.**

English name: Tex-mex tobacco/sweet scented tobacco.

Local name: Jhang tambaku.

Description:

An erect-viscid-pubescent annual to perennial herb usually 40-60 cm tall with white or pale pink, nocturnal, fragrant flowers. Leaves variable lower large and upper linear and small without stalk.

Flowering Period:

March to August.

Habitat:

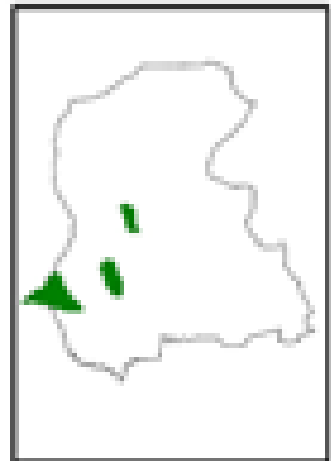
Found in moist places usually near cultivated areas.

Uses:

All parts of plants are poisonous.

Distribution:

Native to Mexico and the West Indies. Distributed in Tropical America, widely naturalized elsewhere.



Solanaceae



Physalis divaricata D. Don.
(Syn: *Physalis minima* Auctt.)

English name: Cape-gooseberry, Lesser ground-cherry.

Local name: *Sindhi*-Khar tot, *Urdu*-Aknaj, *Punjabi*-Tulati-pati, Kaknaj.

Description:

An erect or sub-erect, herbaceous, annual plant grows 15-40 cm tall. Leaves angular, dentate at the margins. Flowers pale yellow funnel shaped about 6 mm across, solitary. Fruit globose, yellowish orange when ripe, many seeded, enclosed in enlarged calyx.

Flowering Period:

August to October.

Habitat:

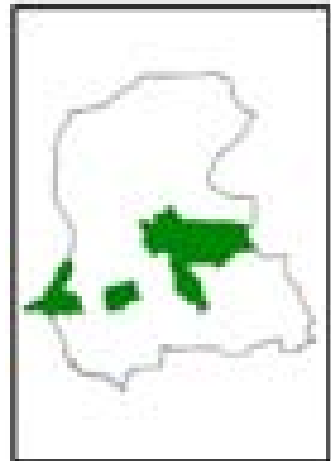
A common field weed; found in moist soil near water bodies.

Uses:

The plant is recommended in cases of inflammations, urinary disorders, fever, earache, headache and diabetes. Decoction of the root is taken to cure diabetes; the plant is made in to a paste with rice water and applied to restore flaccid breasts, fruit is edible and also used for gonorrhea.

Distribution:

Pakistan, Afghanistan and eastward to Nepal.



Solanaceae



Physalis peruviana L.

English name: cape- gooseberry.

Local name: Khar tot, Rasbhary.

Description:

A pubescent-villous herb with the height ranges from 30-60 cm. The plant resembles with *P. divaricata* but more hairy. Leaves sub-rounded, margin dentate. Flowers yellow axillary solitary. Fruit globose, many seeded, enclosed in enlarged calyx.

Flowering Period:

May to October.

Habitat:

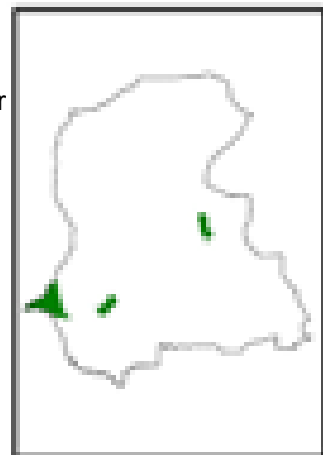
It is both cultivated and found as an escape.

Uses:

It has bright yellow berries sweet when ripe, edible and used for making jams, pies and snacks.

Distribution:

Tropical America, cultivated or naturalized everywhere.



Solanaceae



Solanum cordatum Forssk.
(Syn: *Solanum gracilipes* Decne)

English name:

Local name: Urdu- Halum.

Description:

A woody, prickly-scrambling under-shrub, with slender branches and sub-cordate to round leaves growing up to 1 m tall. Flowers purple with yellow erect central showy anthers. Fruits globose, orange, many seeded.

Flowering Period:

Starts after monsoon rains sometime also after Spring rain.

Habitat:

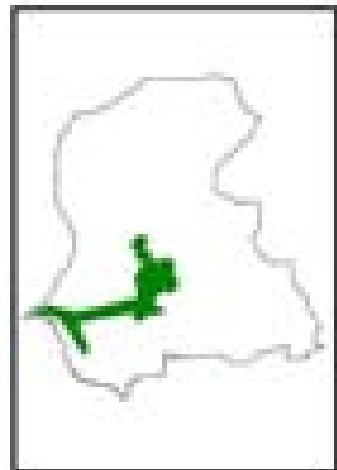
It is found in dry rocky and gravelly soils.

Uses:

Juice from the fruit and leaves are used in ostitis.

Distribution:

Distributed in Arabia, Pakistan and India.



Solanaceae



Solanum nigrum L.

English name: Black night shade

Local name: Paat-peron, Kach mach, makoh, Kaabherun,

Description:

An annual, erect herb about 30 to 60 cm tall branched herb. Leaves petiolate, ovate to lanceolate, generally sinuate-toothed. Inflorescence extra-axillary, subumbellate cyme, 3 to 8 flowered. Flowers white 6 to 10 mm across. Fruit berry, 6 mm across. Variable in colour, generally black when ripe.

Flowering Period;

Occurs almost all the year round.

Habitat:

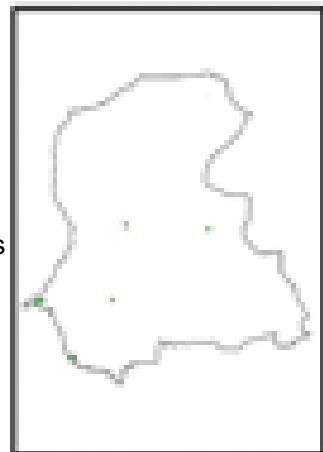
A common plant found in moist and shady areas around agricultural fields, gardens and near settlements.

Uses:

Leaves are cooked as vegetable as used during the pregnancy and as an herbal treatment for dizziness and morning sickness; juice of the leaves is used for jaundice and inflammation of the liver; decoction of berries and flowers is used in cough. Ripened fruits are effective for treating heart, eye, piles and asthma diseases. Fruit widely used in Unani Tibb. Unripe fruit is poisonous.

Distribution:

Cosmopolitan in distribution.



Solanaceae



Solanum surattense Burm.F.

English name:

Local name: *Sindhi-* Aderi, Kori, Kanderi, *Urdu-* Bhakka-tiya, *Punjabi-* Kandiyari.

Description:

A prostrate much branched spreading herb with dark green spiny leaves. Flowers 2-4, purple; on pedunculate cymes. Stem and branches glabrous to stellate pubescent, spiny. Fruit berry, rounded about 2 cm across, yellow when ripe.

Flowering Period:

Almost throughout the year.

Habitat:

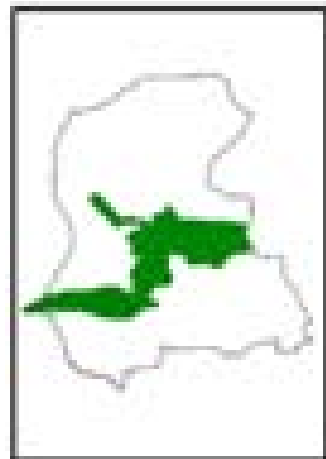
Commonly found near settlements, waste places, near agricultural field, dry river beds.

Uses:

The herb can be used to treat constipation, and flatulence, especially useful in throat disorders. Fruit is also considered medicinally important, used in cough, asthma, fever and different pains.

Distribution:

Northern Africa, South and South-East Asia, Australia, and Polynesia.



Solanaceae



Withania coagulans (Stocks) Dunal
(Syn: *Puneeria coagulans* Stocks, J. Roy)

English name:

Local name: *Sindhi*- Panirband, Panir, *Urdu*- Habbul.

Description:

A rigid grayish green, much branched ascending shrub up to 1 m tall, stellate-tomentose with greenish yellow unisexual flowers. Leaves usually elongated attached with very short petiole. Fruit globose, dark yellow when ripe, many seeded. Male and female flower separate but on same plant.

Flowering Period:

January to April.

Habitat:

It is fairly common in dry hot and stony places.

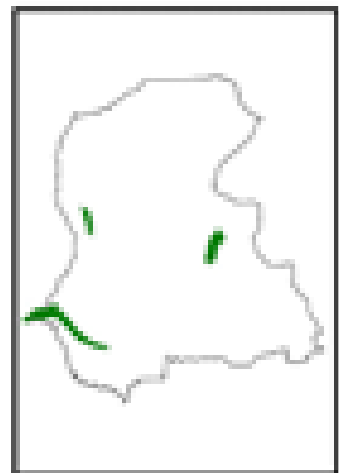
Uses:

The fruit is emetic and diuretic and also has milk coagulating properties. They are useful in chronic complaints of liver.

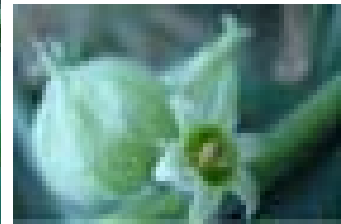
In the dried form they are employed in dyspepsia, flatulent colic and other intestinal affections. The fruits are also used for the treatment of asthma, biliousness and strangury. Powdered dry fruits used for coagulating milk.

Distribution:

Iran, Afghanistan, Pakistan and India.



Solanaceae



***Withania somnifera* (L.) Dunal**
(Syn: *Physalis somnifera* L.)

English name:

Local name: Sindhi-Aksan, Jangli Iyaar, Asgand

Description:

A suffruticose evergreen low shrub with the height range of 60-75 cm tall. Leaves thin ovate, usually two at each node. Flowers sub-sessile, greenish-yellow, in clusters in leaf axils. Fruit globose, red when ripe, enclosed in enlarged calyx.

Flowering Period:

Mostly throughout the year.

Habitat:

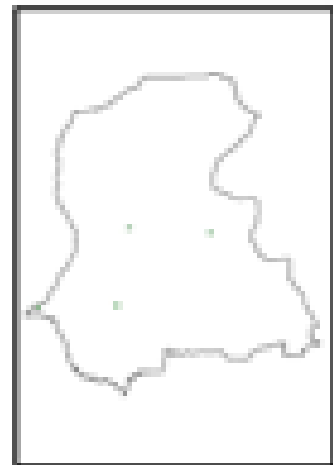
Common throughout in waste places.

Uses:

The plant parts have alkaloids with sedative properties; the root is used in rheumatism and debility. The leaves are used in fevers; a concoction of roots is useful for ulcers, boils. The fruit's poisonous, may be lethal for children. Roots are reported to be effective in treating leucoderma, constipation, tissue building, and nervous breakdown. The herb helps to cure female sterility. Powder of the root in 6 gm doses can be taken with milk for 5-6 successive nights after menstruation. The leaves of the plant are beneficial in treating several skin diseases.

Distribution:

Canary Islands, Mediterranean, Africa, Iraq, Southern Iran, Syria, Turkey, Palestine, Arabia, Pakistan and India.



Sphenocleaceae



Sphenoclea zeylanica Gaertn

English name: Chickenspike, Gooseweed.

Local name: Aiker.

Description:

A semi-aquatic annual erect glabrous herb. Branches somewhat succulent with more or less hollow stem. Flowers minute white or greenish yellow, arranged in compact terminal spikes, only a few opening at a time.

Flowering Period:

September to October.

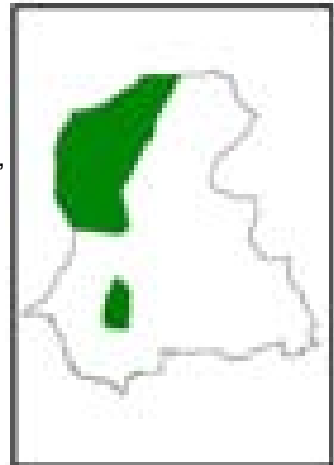
Habitat:

Found near water bodies or in moist soil of cultivated fields.

Frequent in rice fields.

Description:

Trop. Africa, Asia and America, Bangladesh, Cambodia, India, Indonesia, Malaysia Myanmar, Nepal, Pakistan, Philippines, Sri Lanka, Thailand, and Vietnam.



Sterculiaceae



Melhania denhamii R. Br.

English name:

Local name:

Description:

A small hairy under-shrub, up to 60 cm tall. Leaves oblong, hairy, pale green with dentate margins. Inflorescence 2-5 flowered, pseudoumbellate cyme. Flowers pale yellow, solitary, peduncle up to 1 cm long. Fruit enclosed in persisting bracts.

Flowering Period:

Throughout the year.

Habitat:

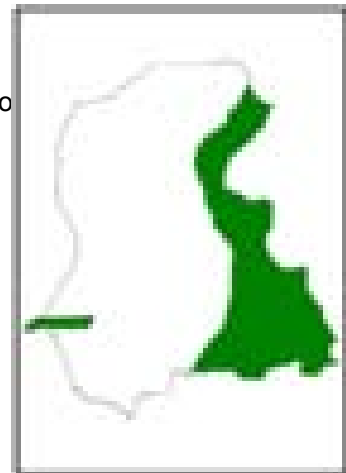
The species is found in rocky, hilly and hot sandy deserts.

Uses:

The leaves and flowers are used as cooling agents and as blood purifiers.

Distribution:

Tropical Africa, Arabia, Pakistan (Balochistan, Sindh).



Tamaricaceae



Tamarix aphylla (L.) Karst
(Syn: *Thuja aphylla* L.)

English name: Desert Palm, Salt Ceder, Tamarisk.

Local name: Lawa.

Description:

Tree up to 12 meters tall. It is a salt tolerant plant usually grows in saline soil. The bark of young branches is smooth and reddish-brown. As the plants age, the bark becomes brownish-purple, ridged and furrowed. Leaves vaginate. Tiny seeds dispersed by wind.

Flowering Period:

June- October.

Habitat:

Generally grows in sandy soil in hot open places or between sand-dunes.

Uses:

The plant is used as ornamental and shade plant, wood is used as fuel wood, the bark and irregularly rounded galls (Sakun hi Sindhi) are used for tanning.

Distribution:

Africa (Morocco, Algeria, Tunisia, Libya, Egypt, Senegal, Sudan, Abyssinia, Somaliland, Kenya), Middle East (Israel, Jordan, Saudi Arabia, Yemen, Iraq, Kuwait, Iran) Pakistan, India and Afghanistan.



Tamaricaceae



Tamarix alii Qaiser

English name: Tamarisk.

Local name: Lai.

Description:

A large woody shrub, 1-2.5(-3) m tall, with reddish brown bark. Leaves minute, vaginate with pointed tips. Flowers pale pink with usually reflexed petals, arranged in spikes usually in large terminal, inflorescence.

Flowering Period:

August to October.

Habitat:

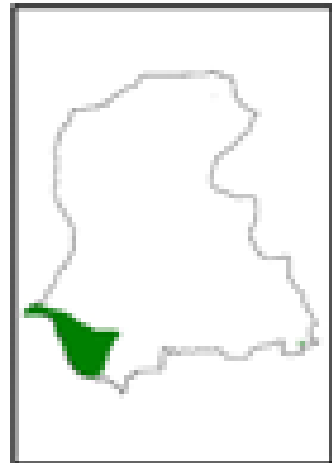
Found around water bodies in slightly saline soil.

Uses:

The plant is used in basket making, cages preparation, as a fuel wood and in construction purposes.

Distribution:

Endemic to Pakistan (Sindh and Southern Balochistan).



Tamaricaceae



Tamarix dioica Roxb. ex Roth.

English name: Tamarisk.

Local name: Farash, Lai, Lawi.

Description:

A large branched shrub or under-sized tree with entirely glabrous, reddish bark. Leaves vaginate. Flowers purple or dark pink, sub-sessile. The only species of genus *Tamarix* having unisexual flowers, both the sexes on separate trees.

Flowering Period:

May to November.

Habitat:

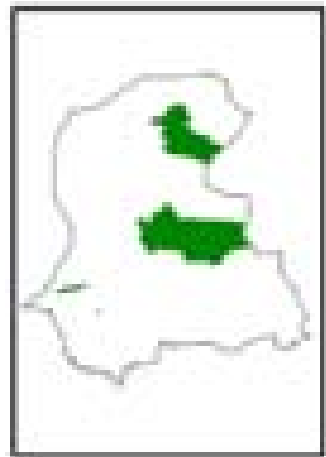
Found around water bodies or in marshy areas.

Uses:

Galls and twigs are used as an astringent, in Pakistan, the leaves form an ingredient of an herbal drug, used against jaundice, the drug found to be effective, safe and well tolerated by patients.

Distribution:

Pakistan, Iran, and Afghanistan to Burma.



Tamaricaceae



Tamarix indica Willd.

English name: Tamarisk

Local name: Lai.

Description:

A tall shrub or small sized tree, 2-6(-8) m high with reddish brown glabrous bark. Leaves psuedo-vaginate. Flowers small and pale or dark pink in color, petals deciduous. Fruit about 6 mm long.

Flowering Period:

August to October.

Habitat:

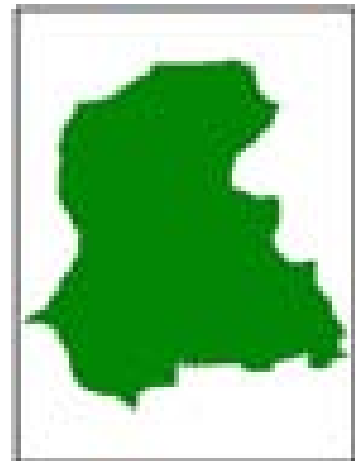
It is found in sandy, saline areas ; abundant on river banks;also found in water logged areas, usually growing in association with *Salvadora persica*.

Uses:

Wood is used as a fuel, used for making baskets, young shoots are grazed by goats.

Distribution:

Bangladesh, Sri Lanka, India, Pakistan and Afghanistan.



Tamaricaceae



Tamarix kermanensis Baum.

English name: Tamarix.

Local name: Lawa, Lai.

Description:

Up to 10m tall tree with somewhat brownish black glabrous bark. Racemes aestival, flowers bracteates, pentamerous, pink to purplish pink.

Flowering Period:

July-September.

Habitat:

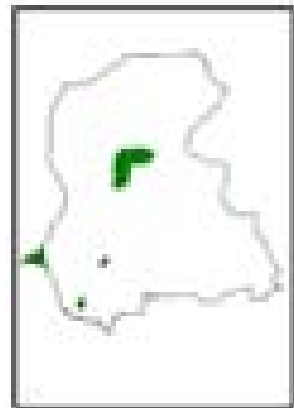
Generally found in gravelly and dry areas.

Uses:

Used in basket making, wood is used for fuel and construction purposes.

Distribution:

Distributed in South Western Iran and Pakistan.



Tamaricaceae



Tamarix pakistanica Qaiser

English name:

Local name: Lai.

Description:

An erect tall shrub, growing 2-3 m in height. Branches sub-glabrous to hairy bearing pale or dark pink flowers, stamens 5, flowers always pentamerous. Fruits pyramidal in shape.

Flowering Period:

August to October.

Habitat:

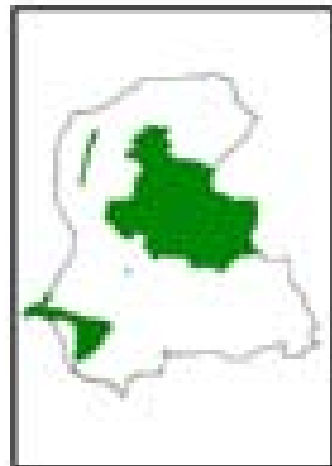
The species is very common in saline sandy grounds and edges of slightly saline water bodies.

Uses:

Used for fuel wood, basket making and as a fodder for goats.

Distribution:

Pakistan and adjacent part of India (Rajasthan).



Tamaricaceae



Tamarix passerinoides var. *macrocarpa* Del. ex Desv.

English name:

Local name:

Description:

A medium size shrub about 1-3 m tall, with dense amplexicaul leaves, younger parts pubescent, with grayish brown to blackish brown bark. Flowers pentamerous, with 7 to 10 stamens larger than all other species of *Tamarix*, pinkish to purplish pink. Fruit pyramid shaped.

Flowering Period:

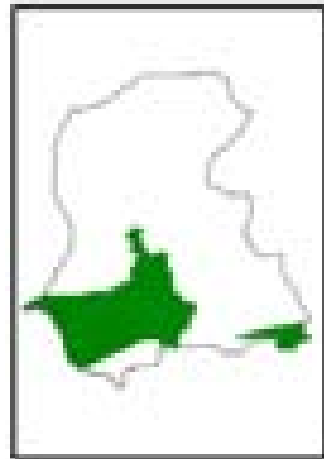
February to March and again in August to October.

Habitat:

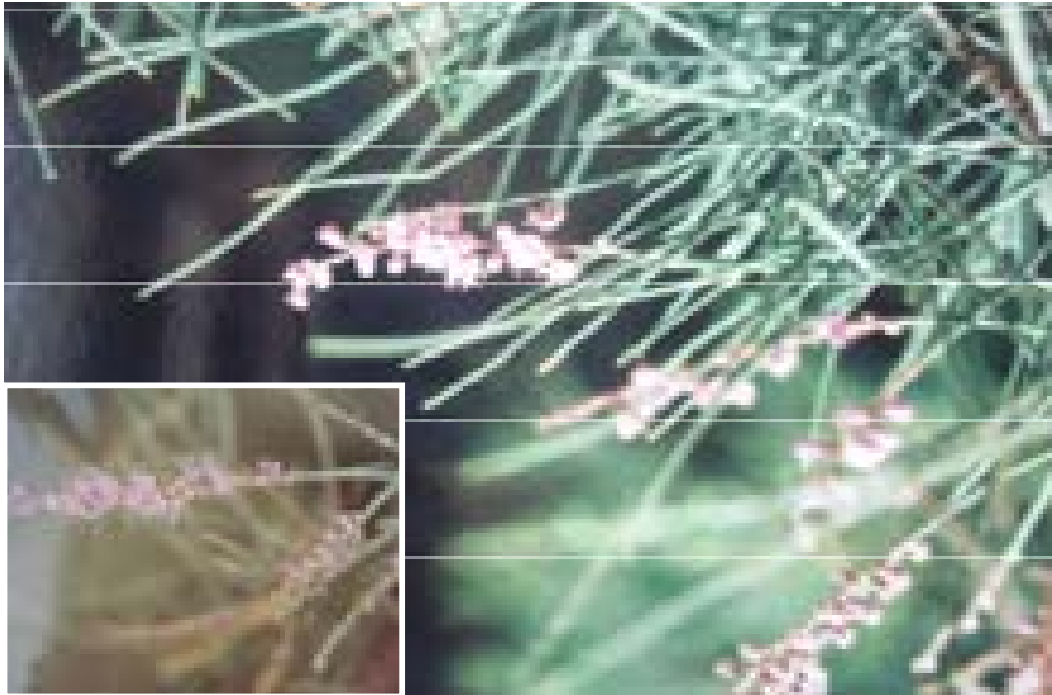
Sandy-clayey saline moist soils in water logged areas, brackish lakes margins, coastal areas near intertidal zones.

Distribution:

Egypt, Israel, Jordan, Kuwait, Iran, Iraq, Morocco, Algeria and Pakistan.



Tamaricaceae



Tamarix sarenensis Qaiser

English name: Tamarisk.

Local name: Lawa, Lai.

Description:

A branched shrub, 1-1.5 m tall, entirely glabrous with reddish brown bark. Leaves very minute, vaginate. Flowers pinkish, stamens more than 5.

Flowering Period:

January to October.

Habitat:

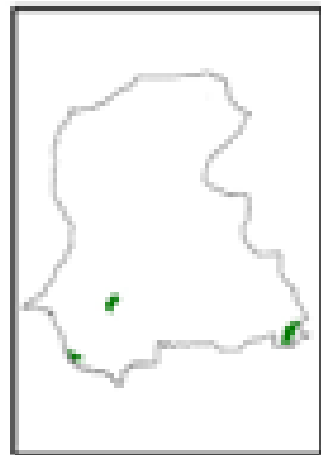
Found around the edges of water bodies and marshy areas.

Uses:

Used as a fuel wood.

Distribution:

Found only in Sindh (Pakistan).



Tamaricaceae



Tamarix sultanii Qaiser.

English name: Tamarisk.

Local name: Lai.

Description:

A shrub or small tree, 1.5-3 m in height with brownish glabrous bark. Leaves vaginate ending abruptly in a short spine, flowers pink, Stamens 5.

Flowering Period:

August to September.

Habitat:

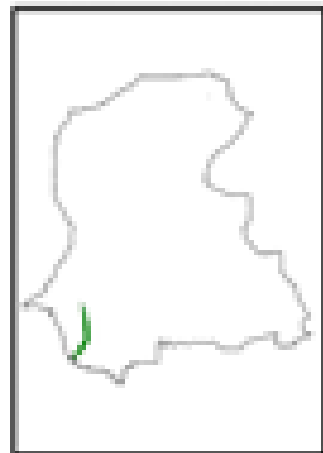
Found in saline and fine soil.

Uses:

Used as a fuel-wood, in construction by locals, basket making.

Distribution:

Only known from lower Sindh.



Tamaricaceae



Tamarix szovitsiana Bunge.

English name: Tamarisk.

Local name: Lai.

Description:

An entirely glabrous shrub with grayish brown bark. Leaves with narrow base. Flowers tetramerous, pink or pale pink. Spike dense and comparatively broader. Stamens 4, style 4.

Flowering Period:

February to March.

Habitat:

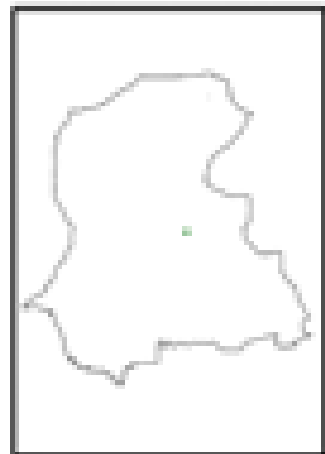
Found in slightly saline and moist habitat.

Uses:

The plant is used as fuel wood and grazed by goats when young.

Distribution:

Russia, Iran and Pakistan.



Tiliaceae



Corchorus aestuans L.

English name: White Jute.

Local name: Mandhiri, Chonch.

Description:

An erect or spreading, annual much branch herb, 20-60 cm tall. Stem and branches purple with golden yellow flowers. Fruit elongated, three chambered, angular three winged. Propagates by seeds.

Flowering Period:

August to October.

Habitat:

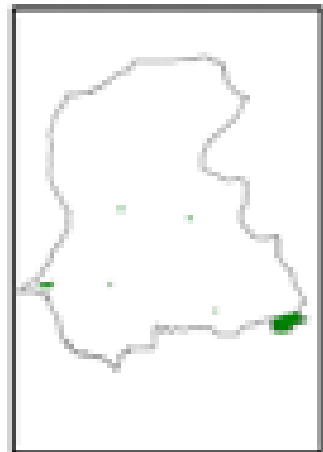
Commonly found on uncultivated lands and on moist soils.

Uses:

Tender shoots and leaves are cooked as vegetable. The roots and the leaves are said to cure gonorrhoea and used in making an injection for urethral discharge. The juice of the root is valued in treating malarial fever. Seeds are stomachic and used in pneumonia.

Distribution:

Throughout Pakistan, also distributed in India, Sri Lanka, Bangladesh, Burma, Malaya, Indo-China, Australia, Tropical Africa, West Indies, and Central America.



Tiliaceae



Corchorus depressus (L.) Stocks
(Syn: *Antichorus depressus* Linn.)

English name: Wild-jute.

Local name: *Sindhi-* Mundheri, *Urdu-* Bahu-phali, *Punjabi-* Babuna.

Description:

A mat-forming, prostrate, much branched woody perennial herb. Branches up to 40 cm long bearing minute, yellow flowers.

Flowering period:

July to November.

Habitat:

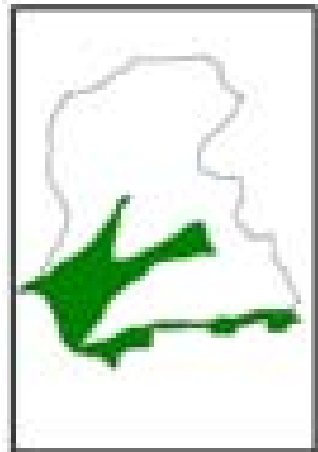
Common in sandy clay or gravelly areas in arid and semi regions.

Uses:

The decoction of seed is used as tonic; mucilage is used as tonic; also used in gonorrhoea. Decoction of seeds and leaves with milk and sugar is a good tonic, seeds are boiled to use for cooling effects.

Distribution:

Central and north west India and Pakistan to north and tropical Africa, and Cape Verde Islands.



Tiliaceae



Corchorus olitorius L.

English name: Tossa jute.

Local name:

Description:

A thick, erect annual or biennial and sub-glabrous herb. Stem is basally woody and branched. Flowers yellow, peduncles 2-3 flowered.

Flowering Period:

August to October.

Habitat:

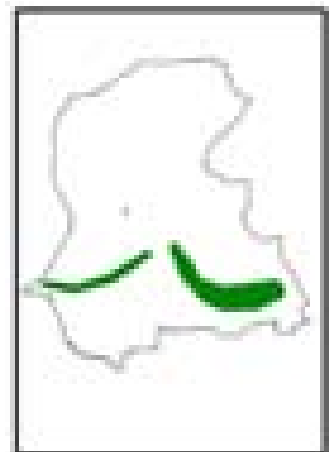
Found in moist shady places and edges of agricultural lands in Banana orchards.

Uses:

In India and Bangladesh it is cultivated as commercial jute fiber, up to 3 m. High in cultivation. Seeds are used as a purgative and infusion of leaves is used as tonics, its fruit contains ascorbic acid (vitamin C). Also used as leafy vegetable.

Distribution:

Tropics, India and Pakistan.



Tiliaceae



Corchorus tridens L.

English name: Wild jute.

Local name: Datro.

Description:

An erect or sub-erect annual herb about 30-60 cm tall. Stem and branches glabrous with sub-sessile yellow flowers. Fruit elongated capsule, apex divided into three projections.

Flowering Period:

July to November.

Habitat:

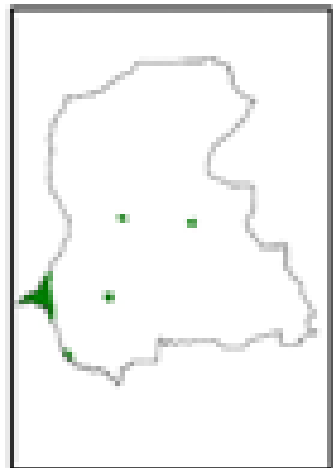
Common in cultivated fields and waste lands on sandy alluvial moist soils, particularly after rains.

Uses:

The younger leaves and shoots are used as pot herb; used as fodder for camels and goats. Stem yields a good fiber which is used in north Nigeria and elsewhere for fishing lines.

Distribution:

widespread in tropical and sub-tropical countries of Africa, Asia, and in north Australia.



Tiliaceae



***Corchorus trilocularis* L.**

English name: Malta/Wild jute.

Local name: *Sindhi-* Datro, *Urud-* Kadu-kast, *Punjabi-* Kaunti, *Balochi-*Diatra.

Description:

An erect or sub-erect annual or rarely perennial under shrub with the height range from 30-60 cm tall, having bright yellow flowers. Stem profusely branched from the base. Fruit elongated capsule, apex undivided.

Flowering Period:

June to October.

Habitat:

Commonly found in plains and low hills in moist shady places and sandy to silty clay loam soils of barren land.

Uses:

Seeds are used in fever and obstruction of the abdominal viscera, mucilage demulcent. The coarse fiber is employed in manufacturing cordage.

Distribution:

Pakistan, India, Afghanistan, Sri Lanka, Bhutan, Australia, tropical and north Africa.



Tiliaceae



Grewia erythraea Schweinf.

English name:

Local name:

Description:

A perennial, woody dense shrub with the height up to 150 cm. Leaves ovate to rounded with dentate margins attached with small stalk. Flowers usually single, white about 2 cm across. Fruit 2-4 lobed drupe, dark yellow to red, glabrous.

Flowering Period:

August to February.

Habitat:

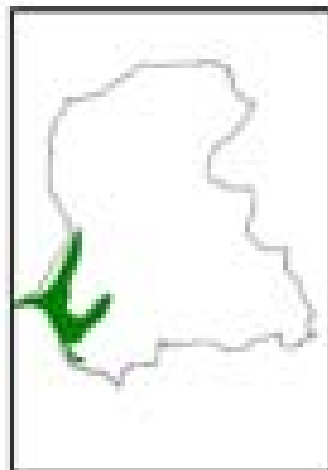
Found in gravelly and hilly slopes.

Uses:

Fruit is edible and medicinally used as tranquilizer to treat headache.

Distribution:

Arabia and tropical Asia.



Tiliaceae



Grewia tenax (Forssk.) Fiori.
(Syn: *Chadara tenax* Forssk.)

English name:

Local name: *Sindhi*- Gango, Gangi. *Urdu*- Gondri, Chabeni, *Punjabi*- Khircha, Gangu, Kanger.

Description:

An erect to sub-erect woody shrub about 3 m tall. Stem is ash-grey and young twigs stellate hairy. Highly variable species. Flowers white, solitary or rarely paired. Ripe fruit yellowish orange, 2-4 lobed, hairy.

Flowering Period:

February to August.

Habitat:

A xerophytic shrub, common in arid and semi-arid plains and hills

Uses:

Browsed by camels, goats and sheep, fruit is edible; decoction of wood is given to cure cough and pains in the sides. Local people use mucilage of bark for the treatment of tuberculosis.

Distribution:

Tropical & Northern Africa to Iran, Pakistan, India, and Sri Lanka.



Tiliaceae



***Grewia villosa* Willd.**

English name: Mallow-raisin, Mallow-leaved ross berry.

Local name: *Sindhi*-Lanski, *Urdu*- Tamthar, Dhohan, Gangeti, Lonkes, *Punjabi*- Jalidar.

Description:

A dome shaped much branched shrub, 1-1.5 m tall with pale-yellow or brownish yellow flowers. Stem with ash-grey bark and young twigs are covered with dense fine stellate tomentum.

Flowering Period:

March to September.

Habitat:

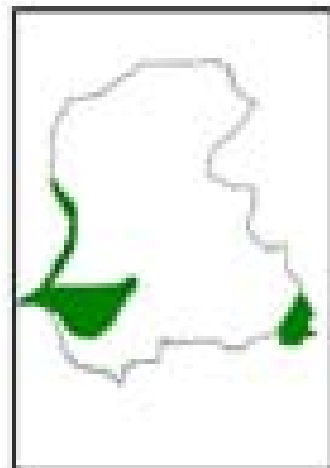
Usually found in dry hot plains and low-hills.

Uses:

The fruit is delicious and is eaten in Punjab and Sindh. The root is used as remedy for diarrhea, the juice of bark is used in urinary troubles, irritation in the bladder and gonorrhoea.

Distribution:

Pakistan, West and South India, Trop Africa, Arabia, Egypt, Cape Verde Isles and East Indies.



Verbenaceae



***Clerodendrum phlomidis* L.**

English name:

Local name: *Sindhi-* Imni, Arni, Tankaro, Gharayat, *Urdu-* Arni, Aran.

Description:

A 1.5-3 (-4) m tall Shrub to small tree with ashy grey stem and pubescent branches. Leaves usually tri-angular, dark green with wavy or dentate margins. Flowers creamy white, 1.5 cm across, frequently attacked by insects inducing malformations. Fruit 8 to 12 mm broad, 4-lobed.

Flowering Period:

July to October.

Habitat:

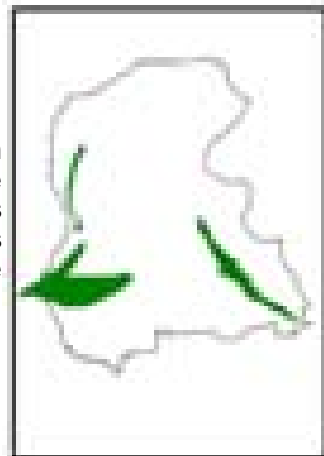
Commonly found in arid plains, low hills, and deserts of Sindh, Punjab and Balochistan.

Uses:

The root is given as a demulcent in gonorrhoea, and decoction of the plant is considered as an alterative. It helps cure stomach troubles and swellings in cattle. The stem bark is given in dysentery and with other plants for unconsciousness after child birth. The leaves are also used in fever due sunstroke and malaria.

Distribution:

Pakistan, India, Sri Lanka and Burma.



Verbenaceae



Phyla nodiflora (L.) Greene
(Syn: *Verbena nodiflora* Linn.)

English name: Frog fruit, Turkey tangle.

Local name: Mukan, Wakan, Jal-nim, Bukkan.

Description:

A semi-aquatic to aquatic, perennial, creeping, much branched herb with somewhat woody root stalk. Leaves dark green attached with very short stalk, lamina toothed, spade shaped. Flowers small white, rarely pinkish in globose or oblong head like inflorescence. Propagates by seeds or by nodal rooting of the stems.

Flowering Period:

Throughout the year.

Habitat:

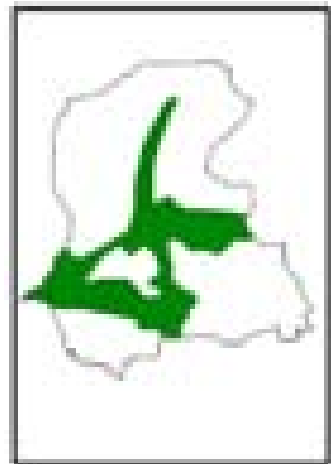
Commonly found on moist places, often in gregarious patches.

Uses:

The plant is used as a cooling drug. Juice of the plant is given to treat fever. Juice of the root is given for gastric troubles, the species also grazed by livestock.

Distribution:

Throughout tropical region.



Violaceae



***Viola stocksii* Boiss.**

English name:

Local name:

Description:

A perennial, much branched, densely leafy herb to under-shrub. Leaves ovate to ovate-elliptic with entire margin. Flowers bluish white with blue stripes, about 5 mm across. Fruit 3 to 6 mm long opening by 3 valves, 12 seeded.

Flowering Period:

August to September.

Habitat:

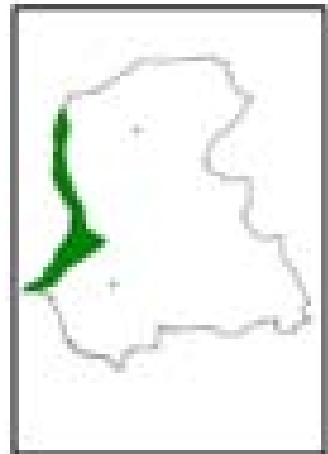
Found in calcareous, stony and rocky moist and shady area.

Uses:

Flowers are used medicinally; Syrup made from flowers is useful in fever, an infusion of the flowers acts as mild purgative in cases of fever and hepatic disturbances. An infusion of the plant is an excellent diaphoretic and diuretic.

Distribution:

Pakistan, India, Afghanistan and Iran.



Zygophyllaceae



Fagonia indica Burm.f.

English name:

Local name: *Sindhi*- Dhumia, Damahw, Kris barseeng, Kandira.

Description:

An annual to perennial prickly branched prostrate spiny herb or sub-shrub. Flowers solitary axillary, purple to pale pink. Fruit segmented (usually 5). Leaves linear, opposite. The variety *indica* has all unifoliate leaves, while variety *schweinfurthii* has trifoliate leaves in lower part of plant or sometimes all leaves trifoliate.

Flowering Period:

Almost all the year round.

Habitat:

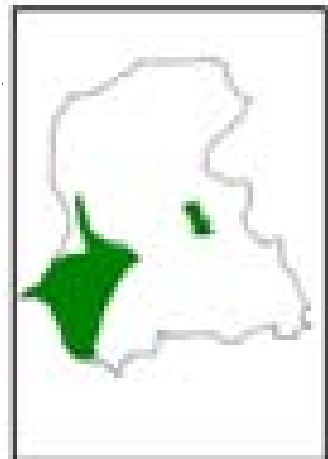
A much branched spiny desert plant, widespread in dry places

Uses:

Used as a remedy for tumors at early stages.

Distribution:

Indo-Pakistan sub-continent westwards to North and East tropical africa in arid and semi-arid regions.



Zygophyllaceae



***Tribulus longipetalus* Viv.**

English name:

Local name: *Sindhi*- Latak, Khori kandi, Gokhru, Borar, *Urdu*- Gokhru desi, Bakda, Hasak, Bakhra, *Punjabi*- Kurkundai, Hasak, Bakhra.

Description:

An annual or biennial much branched herb, prostrate, green to grayish-green, with 5-20 cm long branches, pilose to densely villous. Leaves pinnately compound, Flowers yellow in colour. Fruit discoid and segmented, segments winged. Propagates by seeds.

Flowering Period:

August to December.

Habitat:

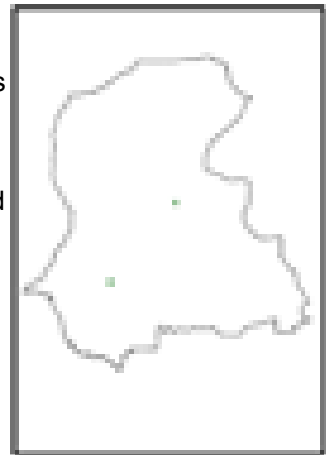
Frequently found on stabilized sand-dunes and inter-dunal flats

Uses:

Leaves are used as vegetable, used for the treatment of spermatorrhoea, dysuria, gonorrhoea, cough, kidney and heart-troubles. The fruit is diuretic and tonic and is prescribed in geneito-urinary disorders, impotence, cough, heart diseases and micturition.

Distribution:

Afghanistan, South-West Asia, Arabia, Sudan, Somalia and North Africa.



Zygophyllaceae



***Tribulus terrestris* L.**

English name: Puncture vine.

Local name: *Sindhi-* Bhurt, Khori kandi, *Urdu-* Gokhru, *Punjabi-* Bakhra.

Distribution:

A prostrate to sub-erect hairy annual or biennial branched herb growing to 5-20 cm long. Leaves pinnately compound leaflets in even number (paired), with yellow flowers. Fruit discoid, segmented, spiny and hairy. An extremely variable species in flower and leaf size and fruit characters.

Flowering Period:

August to December.

Habitat:

Usually found on stabilized sand dunes, sandy and gravelly soils, along roadsides, along cultivated areas.

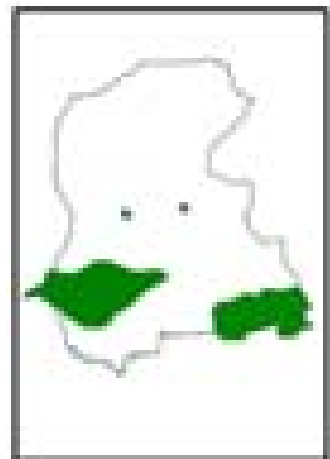
Uses:

The decoction of the seed is given in sexual weaknesses.

The plant is used in headache, tuberculosis and weak nervous system; also used for the treatment of anemia, asthma, cough, scabies, bleeding from the nose and urinary disorders.

Distribution:

Cosmopolitan in distribution.



Zygophyllaceae



Zygophyllum propinquum Decne.

English name:

Local name: Aaderi.

Description:

A perennial much branched erect dull green or pinkish purple herb. Leaves fleshy rounded and elongated, sub-cylindrical, usually bi-foliate. Stem much branched bearing pale yellow flowers. Fruit narrow and oblong.

Flowering Period:

June to September.

Habitat:

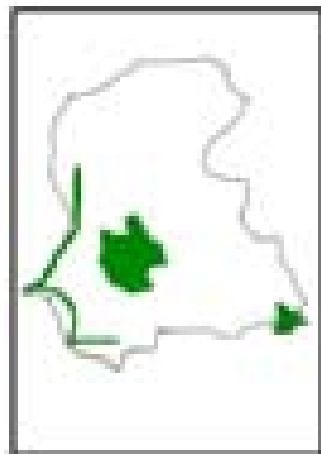
Most commonly found on sandy and gravelly soils.

Uses:

The seeds are said to be anthelmintic used as diuretic, antipyretic and local anesthetic.

Distribution:

Pakistan, Iran, Iraq, Afghanistan, Syria, Palestine, Egypt, Jordan and Saudi Arabia.



Zygophyllaceae



***Zygophyllum simplex* L.**

(Syn: *Zygophyllum portulacoides* Forssk.)

English name:

Local name: Sindhi- Patlani, Punjabi- Alethi, Urdu- Iani, Aaderi.

Description:

A delicate annual prostrate herb with many branches and succulent bright green leaves. Leaves are simple, fleshy, cylindrical and oblong. Flowers 4 to 5 mm minute, bright yellow to greenish yellow, solitary axillary, stamens 10. Fruit globose and segmented.

Flowering Period:

August to May.

Habitat:

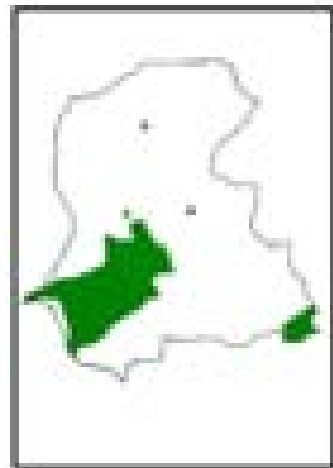
Common in sandy or rocky and saline habitats.

Uses:

In leukemia and ophthalmia, the infusion of the seeds and leaves is prescribed.

Distribution:

Pakistan, India, Iran, tropical & North Africa, Cape Verde Islands and West Asia.





Monocotyledons

Araceae



Pistia stratiotes L.

English name: Water Lettuce.

Local name: Jaaru.

Description:

A floating perennial, stoloniferous, aquatic herb. Leaves in rosettes. Flowering during the hot season, the species has appearance of half-grown lettuce plants.

Flowering Period:

Summer.

Habitat:

Hydrophytic. Found floating in the tanks, ponds, water courses etc.

Uses:

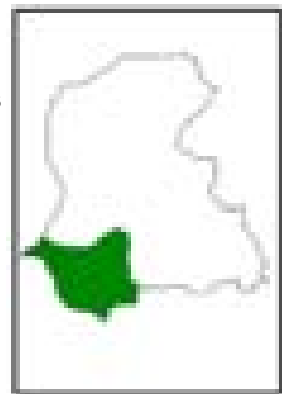
The leaves are demulcent and anthelmintic while the roots are used as a laxative and diuretic. The plant is considered antiseptic, antitubercular and antidysenteric. The leaves are also used in eczema, leprosy, ulcers, piles, syphilis and haemorrhoids. The juice of the leaves boiled in coconut oil is used externally in skin diseases.

Special remarks:

It totally covers the surface of water bodies due to its extensive growth, thus out-competing native plant species.

Distribution:

Native home exactly not known, but now widespread in tropical and subtropical countries.



Areaceae / Palmae



***Cocos nucifera* L.**

English name: Coconut tree.

Local name: Naryal, Narel.

Description:

A large palm tree growing up to 30 m tall with pinnate leaves and smooth grayish unbranched, bark thick at the base, prominent with rings. Old leaves remain on the top of stem.

Flowering Period:

Throughout the year.

Habitat:

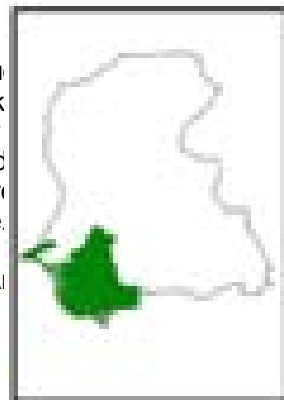
It preferably grows in areas with abundant sunlight and regular rainfall, generally found near sea sides.

Uses:

Almost all parts are useful and have significant economic value. Its fruit is sweet and eaten as raw and used fresh or dried in cooking. It is filled with water which contains vitamins, minerals, sugar and proteins. It yields oil, milk, fiber and toddy. The outer wood of the stem is used as an astringent gargle in cases of sore throat. The oil is used in preparing ointments to cure cough and as a vermifuge.

Distribution:

Pakistan (cultivated), India, Bangladesh, Thailand, Saudi Arabia and throughout the tropical world. In Pakistan it is scattered near sea shore.



Areaceae / Palmae



Nannorrhops ritchiana (Griff.) Aitchison

English name: Mazali Palm, Dwarf Palm.

Local name: *Sindhi*- Patha, Mazri, Pish.

Description:

Gregarious, usually small tufted palm, with fan shaped leaves from a much branched underground rhizome, inflorescence erect, flowers white, it is confined to hilly place.

Flowering Period:

July to November, fruiting in summer.

Habitat:

Xerophyte, found in gravel and rocky areas, also in dry stream beds.

Uses:

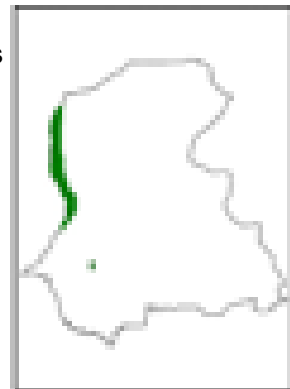
Leaves are used for making various kinds of mats, baskets fans and brushes; also used medicinally as a cure of dysentery and diarrhoea. Inflorescence and fruits are used as food.

Special remarks:

Fruits relished by the Black bear of Balochistan.

Distribution:

West Punjab and Balochistan, Khirthar range, Peshawar valley, Kohat trans Indus territory, Afghanistan and Iran.



Arecaceae / Palmae



Phoenix dactylifera L.

English name: Date Palm.

Local name: Khajoor, Aseel, Khurma, Khajji.

Description:

A tall palm solitary tree reaching a height of 30 m or more. It is usually surrounded at the base by root suckers and covered at a considerable distance by bases of fallen leaves. Inflorescence covered by a hard, boat-like bract. Flowers rounded, green, distant. Male flower white, sessile, sweet scented, much larger than the female flower..

Flowering Period:

March-April.

Habitat:

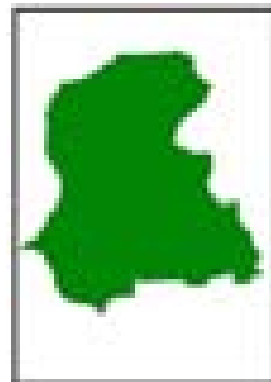
Common in open hot dry plains.

Uses:

Fruit is edible and contains vitamin A, B and C. It has demulcent, nutrient, aphrodisiac, expectorant and laxative properties and used in cough, chest complaints, asthma, fever and gonorrhoea. It produces gum, effective in diarrhoea and diseases of urino-genital system. Fresh juice is laxative and cooling. Seeds are soaked and ground up for animal feed.

Distribution:

Probably native to West Asia and North Africa. Widely domesticated in Punjab and Sindh and also cultivated for their valuable fruits



Areaceae / Palmae



***Phoenix sylvestris* L.**

(Syn: *Elate sylvestris* L.)

English name: Wild date palm.

Local name: Khajji, Kathal.

Description:

The tree with moderate growth rate without root suckers, having long green or blue green leaves reached 8 to 12 meter in height. Leaves smaller than *Phoenix dactylifera* grayish green, quite glabrous, pinnately divided into numerous leaflets. The plant is found in the warmer region of the province.

Flowering Period:

March-April and August- October.

Habitat:

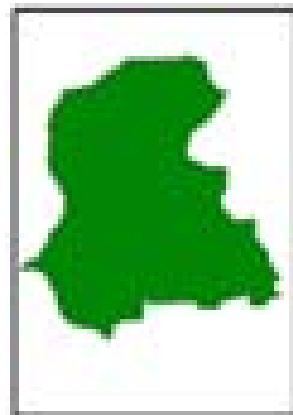
The tree occurs in wild as well as cultivated throughout Sindh.

Uses:

It is a good source of sugar that is obtained by refining the "gur" or treacle and toddy or "tari". This raw fluid is extracted from the cuts made in the trunk from which the juice exudes. The leaves are used for making bags, brooms and mats. The fruit is eaten as a food and also having medicinal values.

Distribution:

According to Aitchison this wild date palm is indigenous in the Indus basin. It is also cultivated in Sindh and Punjab.



Asparagaceae



Asparagus dumosus Baker

English name: Asparagus.

Local name: *Sindhi*- Achhi Musli, *Urdu*- Safed Musli.

Description:

An erect, intricately branched, spiny shrub up to 1m high. Leaves very small, scaly, bearing short, needle-like ternate cladodes in their axils. Flowers 5-6 mm in diameter. Ripe berries red in color, 1-3 seeded. The plant reproduces both by seeds and rhizomes.

Flowering Period:

April to September depending upon moisture availability.

Habitat:

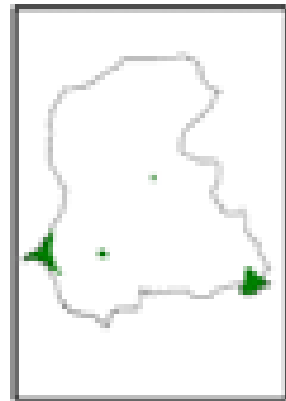
Xerophytic, found in sandy and rocky places.

Uses:

Roots are used as alterative, antidiarrhoeatic, antispasmodic, antidysyntric, diuretic, demulcent and refrigerant. Root is used chiefly as a demulcent in veterinary medicine.

Distribution:

Endemic to Pakistan.



Asphodelaceae



***Asphodelus tenuifolius* Cav.**
(Syn: *Asphodelus fistulosus* Linn. Var. *tenuifolius*)

English name: Narrow-leaved Asphodel

Local name: Piazi, Pimaluk, Busri ghaa.

Description:

An annual non-bulbous herb, 15-50 cm tall with basal long and narrow leaves, flowers white to pale pink.

Flowering Period:

November to April.

Habitat:

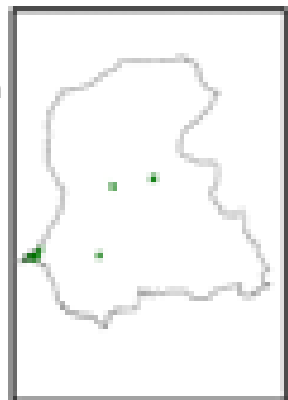
Mesophytic. During winter season common in moist agricultural fields.

Uses:

The seeds are considered to be diuretic. The plant is eaten raw as well as in cooked form, particularly during famine. They are applied externally to ulcers and inflamed parts.

Distribution:

North Africa, South West Europe, South West Asia, Pakistan and India.



Cyperaceae



Bolboschoenus affinis (Roth.) Drobov.
(Syn: *Scripus affinis* Roth.)

English name: Tuberous bulrushes, Saltmarsh bulrushes.

Local name: Cheho.

Description:

A perennial hydrophyte 60-70 cm in height; rhizome creeping or with stolons ending in a tuber, inflorescence mostly a group of sessile spikes often yellow in colour.

Flowering Period:

Almost round the year.

Habitat:

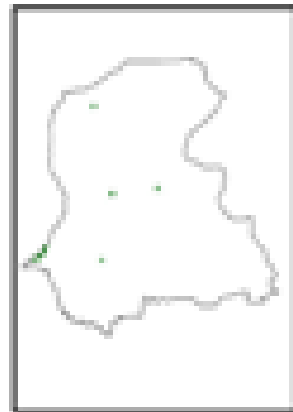
Hydrophytic. Found in shallow water, rivers, lack-shores, irrigation channels, waste land pools and rice-fields.

Uses:

Use as fodder for livestock.

Distribution:

Europe to India and Pakistan.



Cyperaceae



Bolboschoenus glaucus (Lam.) S. G. Smith
(Syn: *Scirpus glaucus* Lam.)

English name: Tuberous bulrushes.

Local name: Cheho.

Description:

A perennial erect semiaquatic herb of about 20-30 cm in height, rhizomes creeping or with stolons ending with tubers, inflorescence mostly branched multiple spikes, dark brown to pale yellow in color.

Flowering Period:

(February-) September (-October).

Habitat:

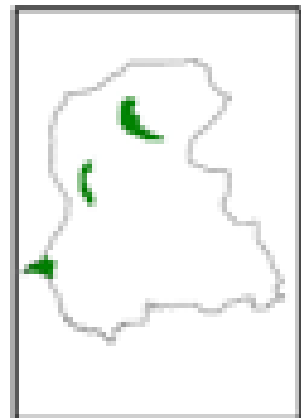
Semiaquatic, found mostly near fresh to brackish water bodies.

Uses:

Use as fodder for livestock.

Distribution:

Senegal and South Africa to Pakistan.



Cyperaceae



Cyperus alopecuroides Rottb.

English name: Foxtail, Flat sedge.

Local name: Wado Cheho.

Description:

Caespitose perennial non woody erect , 70-120 cm tall, with glabrous stem and leaves.

Flowering Period:

April to September.

Habitat:

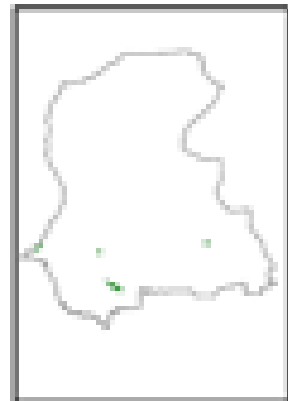
Hydrophytic. Commonly found in swampy, riparian and alluvial areas.

Uses:

Used as fodder for livestock.

Distribution:

North and tropical Africa, West Indies, Pakistan, India, Malaysia and North. East Australia.



Cyperaceae



Cyperus articulatus L.

English name: Jointed flat Sedge.

Local name: Cheho.

Description:

Perennial tall and glabrous erect sedge, 1-2 m tall with stolons, stem lush green with transverse joint like markings, leafless, non woody, round and soft, inflorescence dense, brown in color.

Flowering Period:

July.

Habitat:

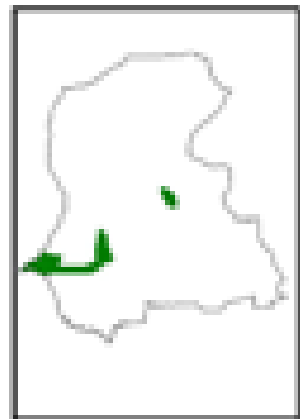
Hydrophytic. Found in shallow fresh water, in pods, channels, marshy grounds.

Uses:

Stem is used to make mats.

Distribution:

Tropical and Sub tropical regions from Bangladesh, Sri Lanka, Pakistan, West Africa and America.



Cyperaceae



Cyperus aucheri Jaub. & Spach
(Syn: *Cyperus conglomeratus* Rottb. Var. *aucheri* (Jaub. & Spach) Kuk))

English name:

Local name: Vinjal.

Description:

A tufted, perennial, 15-35 cm high, rhizome short, with tillers and short stolons roots, dense, rigid covering with short hairs, pale or yellowish basal sheaths. Inflorescence cluster of spikes, sometimes reduced to single cluster.

Flowering Period:

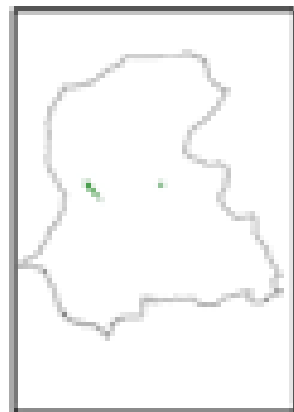
March to May.

Habitat:

Xerophytic. Grows in silt and stony sand in deserts and semi-desert areas.

Distribution:

Iran, Iraq, Afghanistan and Pakistan.



Cyperaceae



Cyperus bulbosus Vahl.

English name: Bush Onion, Wild Onion.

Local name: Nandro Cheho, Kal.

Description:

A perennial herb with angular stem, about 10-30 cm. high, often forming small tufts. Stolons thin, perennating by underground parts, emerging above ground mostly after monsoon rains.

Flowering Period:

August to September.

Habitat:

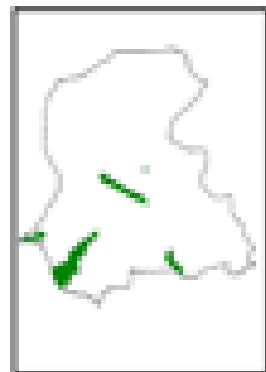
Mesophytic. Commonly found on damp sandy soil in arid regions.

Uses:

The husk can also be eaten. It is eaten raw or cooked in the hot earth by the fire, also used as fodder.

Distribution:

Cape Verde Islands, West Africa, Sahara and Africa, North of Sahara, East Africa from Ethiopia to Egypt, Iran, Pakistan, India, Sri Lanka, and to Vietnam, Malaysia and Australia.



Cyperaceae



Cyperus difformis L.

English name: Rice sedge, one armed sedge, Small flower-umbrella sedge.

Local name: Mono gaah, Kal.

Description:

An annual, 25-60 cm. Roots reddish brown, partial inflorescences 7-15 mm. diameter, with 5-20 flowers.

Flowering Period:

July to August.

Habitat:

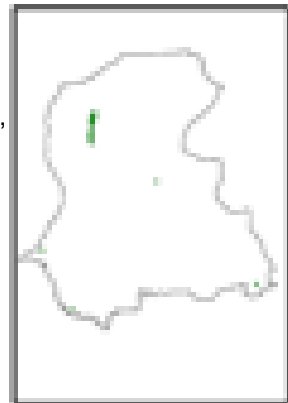
Hydrophytic. It is commonly found in rice fields, ditches, irrigation channels, grassy swamps.

Uses:

Grazed by livestock.

Distribution:

Pakistan; Kashmir; Iran, Afghanistan; Russia, Turkey, Iraq, Syria, Palestine, Cyprus, North Africa.



Cyperaceae



***Cyperus exaltatus* Retz.**

English name: Giant Sedge, Umbrella sedge.

Local name: Cheho.

Description:

An perennial herb up to 1 meter tall. Inflorescence large, much branched. Plant body soft and fleshy.

Flowering Period:

September.

Habitat:

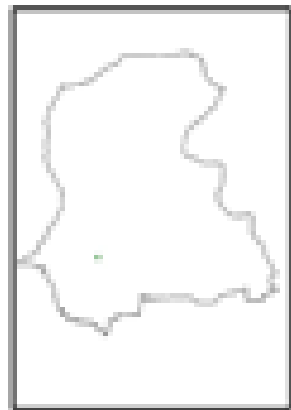
Hydrophytic. Commonly found in ditches, irrigation channels, rice fields.

Uses:

Used as fodder plant and raw material for packing. They are applied externally to ulcers and inflamed parts.

Distribution:

Tropical Africa, in South East Asia from India to Japan and southwards to Southern Australia and Pakistan.



Cyperaceae



Cyperus laevigatus L.

English name: Smooth flat sedge.

Local name: Kehaar.

Description:

A perennial rhizomatous leafless herb, densely branched with soft round glabrous stem, about 60-100 cm in length, rhizome strong, with short stolons, stem leafless, 2-3mm in diameter, spikes white, in lateral clusters.

Flowering Period:

June to October.

Habitat:

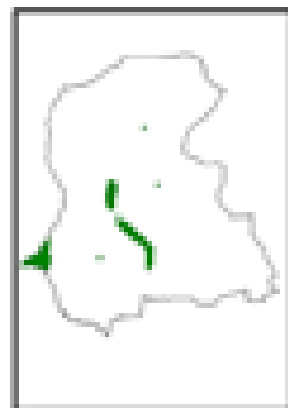
Hydrophytic. Found on wet meadows; marsh-lands and shallow slow running water. Considerably salt tolerant.

Uses:

Grazed by livestock.

Distribution:

Central & Southern Europe, North East and West Africa, in east as far as eastern Kazakhstan, Pakistan and North-West India.



Cyperaceae



***Cyperus longus* L.**

English name: Sweet galingale.

Local name: Nandro Cheho, Kal.

Description:

A perennial dark green sedge species leaves mostly shorter than the stem, 80-100 cm. Spikes normally dark brown in colour, It is reminiscent of tall plants of *Cyperus rotundus*.

Flowering Period:

June to October.

Habitat:

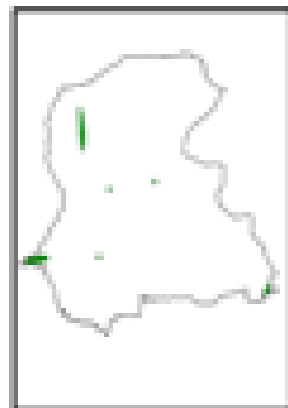
Found on wet meadows; marsh-lands and rice-fields.

Uses:

Used as a fodder.

Distribution:

Widely distributed throughout the world.



Cyperaceae



Cyperus pangorei Rottb.

English name: Cyperus.

Local name: Nandro Cheho.

Description:

Perennial, upto 120 cm tall, rhizome short, with short stolons, leaf blade almost straight about 15 cm long. Inflorescence large, much branched.

Flowering Period:

October to December.

Habitat:

Mesophytic. Usually found on marshy grounds, margins of water channel.

Uses:

Grazed by livestock.

Distribution:

Pakistan, Nepal, India, Sri Lanka and China.



Cyperaceae



***Cyperus pygmaeus* Rottb.**

English name: Dwarf Flat-Sage.

Local name: Nandro Cheho.

Description:

A tufted, annual dwarf herb, 3-6 cm in height, roots fibrous, stem 0.7-1.2 mm diameter, leaves as long as stem, inflorescence globose about 1 to 1.5 cm across, green and white in colour.

Flowering Period:

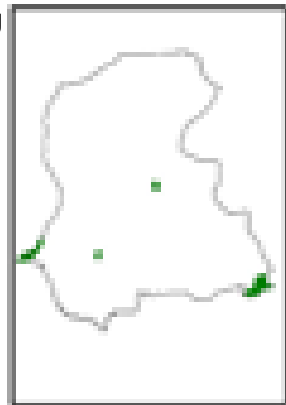
June to September.

Habitat:

Commonly found on moist soil around the edge of water in wetland habitats. Typically on the soil exposed by receding water.

Distribution:

The plant is distributed from Greece, Turkey, and Israel to Egypt, Algeria, Tropical Africa, Mauritius, Madagascar, Namibia, Azerbaijan, Pakistan, India, Sri Lanka, Taiwan, Malaysia, Australia and Philippines.



Cyperaceae



***Cyperus rotundus* L.**

English name: Nut-grass, Coco grass.

Local name: *Sindhi-* Kabbah, Kal, *Urdu-* Nagur motha, *Punjabi-* Motha.

Description:

A perennial, erect herb usually 20-60 cm high, stolons numerous. Flowers in spikelets in umbels; brown, Sometimes called the “Worlds Worst Weed”. Propagates by seeds or by tuberous rhizomes.

Flowering Period:

June to November.

Habitat:

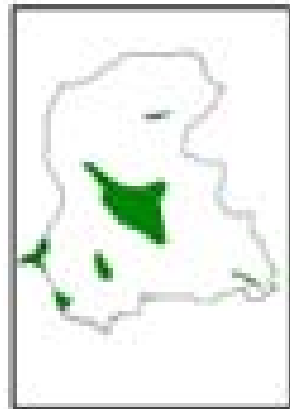
Mesophytic. Commonly found in wet meadows, ditches, rice-fields, moist roadsides and waste places.

Uses:

The tubers are used to treat stomachaches; it produces significant reduction in body weight and lowers blood pressure in hypertensive obese patients. An infusion is effective in fevers, loss of appetite, vomiting and cholera.

Distribution:

Tropical and subtropical areas of all continents.



Cyperaceae



Eleocharis geniculata (L.) Roemer & Schult.
(Syn: *Scripus geniculatus* L.)

English name: Spike rush.

Local name:

Description:

A tufted leafless annual, 12-25 cm roots white, fibrous, spikes globose brown in colour, many flowered.

Flowering Period:

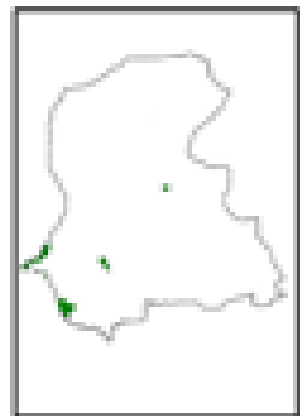
April to June.

Habitat:

Commonly found in water margins, rice fields, marshlands, wet meadows.

Distribution:

Pantropical extending into subtropics; Europe (Italy), Africa, Madagascar, Egypt, from Iraq to Pakistan, India, China, Taiwan, Malaysia, Australia, North and South America.



Cyperaceae



***Eleocharis palustris* (L.) Roem. & Schult. Subsp. *iranica* Kukkonen**

English name: Spike-rush.

Local name:

Description:

A perennial semi-aquatic herb with dark green colour, about 20-40 cm in height. Stem green soft and cylindrica. Flowers in terminal spikes, brown in colour, conical.

Flowering Period:

June.

Habitat:

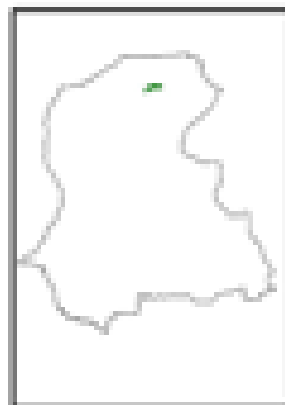
The plant usually found along river shores, wet meadows in partially shady places.

Uses:

Grazed by livestock.

Distribution:

Eastern Turkey, Iraq, Iran, Afghanistan, and Pakistan.



Cyperaceae



Fimbristylis bisumbellata (Forssk.) Bubani
(Syn: *Scripus bisumbellatus* Forssk.)

English name: Fimbry.

Local name:

Description:

A grayish-green small erect or ascending annual herb, forming small tufts annual, (3-) 10-35 cm.

Flowering Period:

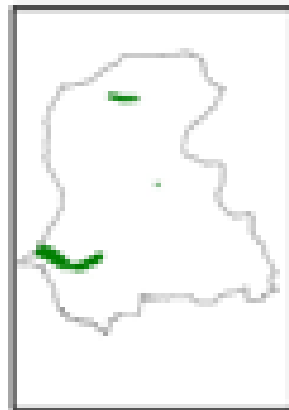
July to October but may flower almost throughout the year.

Habitat:

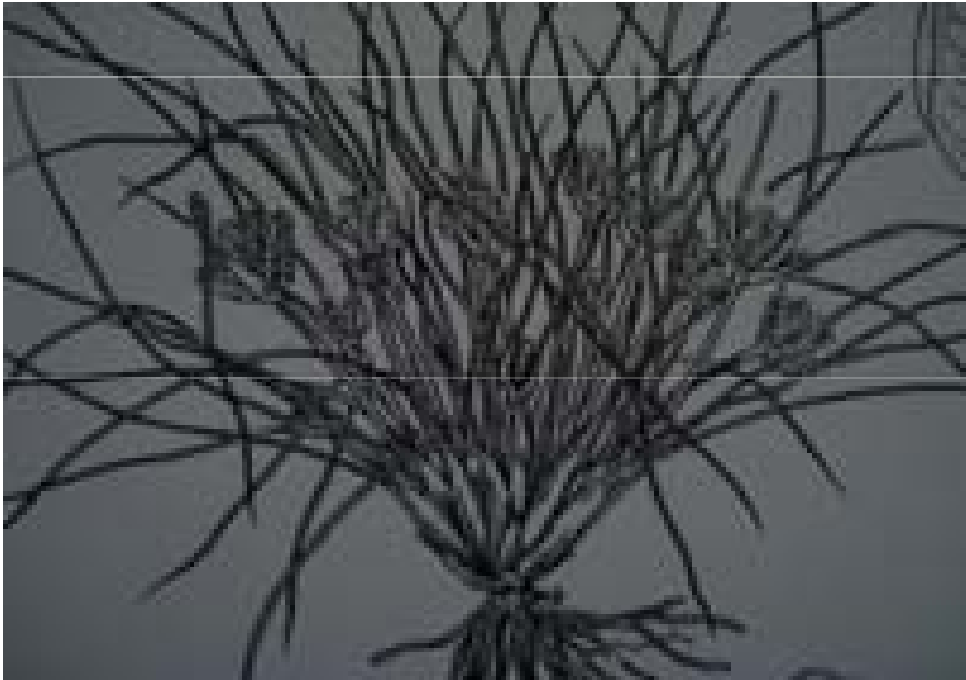
Found in moist, marshy places along rivers, ditches, irrigation channels, around lakes.

Distribution:

Western tropical and South East Africa to Southern Europe and eastwards to Madagascar, Pakistan, India, Malaysia, Tropical Australia and New Zealand.



Cyperaceae



Pycreus dwarkensis (Sahni & Naithani) Hooper
(Syn: *Cyperus dwarkensis* Sahni & Naithani)

English name:

Local name:

Description:

An erect tufted small dark green annual herb, up to 20 cm. The plant is very similar to *Cyperus* genus, inflorescence globose about 1.5 to 2 cm across.

Flowering Period:

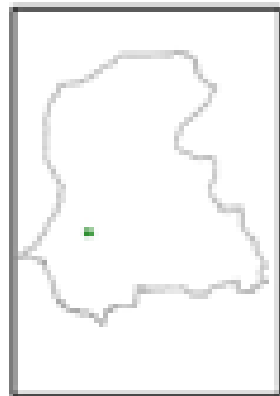
January to October.

Habitat:

Emergent. Found in standing water along margins of lakes, etc.

Distribution:

The plant is distributed in Somalia, Oman, Pakistan and India. Mostly in coastal areas, rare in Pakistan.



Cyperaceae



Schoenoplectus litoralis* subsp. *thermalis (Trabut) S. Hooper
(Syn: *Scripus thermalis* Trabut.)

English name: Bulrush.

Local name: Cheho.

Description:

A tall cylindrical leafless or with submerged leaves herb, Stem 3-6 mm diameter, rounded, green and glabrous, inflorescence brown to reddish brown in colour.

Flowering Period:

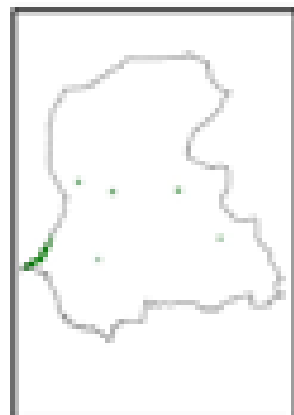
February to July.

Habitat:

Emergent hydrophytic. Found in slightly saline and shallow water, in ditches and rivers.

Distribution:

Africa, Madagascar, Italy, Arabia, from Iran to Pakistan, India, Australia, New Guinea, also reported from Japan (Okinawa).



Hydrocharitaceae



Hydrilla verticillata (L.f.) Royle

English Name: Hydrilla.

Local name: Urdu- Jhangi, Kureli, Jhanjh.

Description:

A branched fresh water green herb with 5-50 mm long internodes, each node with whorled leaves, male and female flowers separate but on same plant (monoecious) or some time at separate plant (dioecious).

Flowering Period:

October to January.

Habitat:

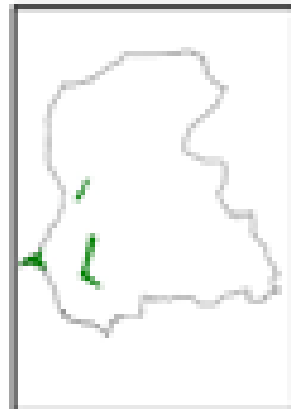
Submerged hydrophytic. Gregarious in ditches, pools, lakes, ponds, rice fields, and slow running water streams.

Uses:

The plant provides food to herbivorous fresh-water fish species and may be used as manure wherever it occurs in large quantities. The plant is suitable for indoor and outdoor aquaria and is considered to be a good oxygenator. It is also used in the process of sugar refining. A dense mass of the plant some time alter water quality by increasing temperature decrease oxygen in the water or may be change pH and also provide breeding ground for mosquitoes.

Distribution:

South East Europe, Africa, Asia and Australia.



Hydrocharitaceae



Ottelia alismoides (L.) Pers.
(Syn: *Stratiotes alismoides* L.)

English name: Duck lettuce, Water plantain ottelia.

Local name:

Description:

An annual hydrophytic herb. Leaves thin, light green in color. Flowers white, fruit winged.

Flowering Period:

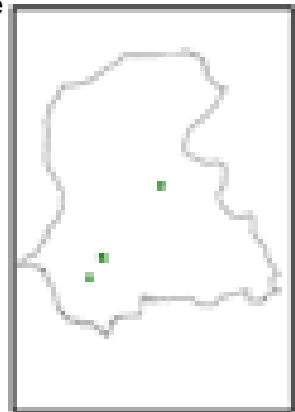
Throughout the year.

Habitat:

Hydrophytic. Mostly found in rice fields, near to water course

Distribution:

Africa, Asia, Australia and Solomon Islands.



Hydrocharitaceae



Vallisneria spiralis L.

English name: Tape grass.

Local name:

Description:

A soft submerged aquatic fast growing herb, highly variable in size. Leaves radical, ribbon-shaped, up to 50 cm long, 1-1.5 (-2) cm broad. Flowers unisexual, male and female flowers on same plant. Female flower solitary, minute on long pedicel, which spirally coils after fertilization. Fruit up to 20 cm long, greenish-yellow, many-seeded.

Flowering Period:

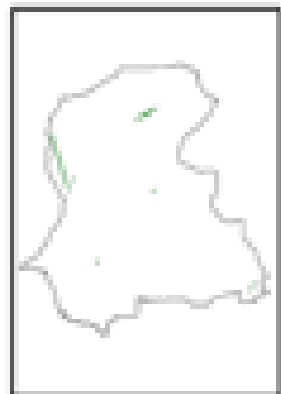
Mostly from October to March.

Habitat:

Hydrophytic. Grows in stagnant water near tube wells, small water courses, fresh water ponds and lakes.

Distribution:

Almost cosmopolitan.



Najadaceae



Najas marina L.

English name: Brittle Waternymph.

Local name:

Description:

An annual herbaceous submerged hydrophytic species, male and female flowers are separate but on same plant (monoecious). Stem and leaves, dark green in color, sometimes reddish. Stem highly branched, 25-30 cm long. The plant only grows in shallow water. Propagated by vegetative parts as well as by seeds.

Flowering Period:

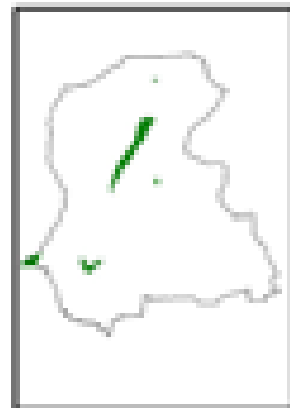
March to September.

Habitat:

A submerged aquatic species found in ponds, shallow parts of lakes, etc.

Distribution:

A widespread species distributed in Europe to Asia throughout Africa, America.



Poaceae / Gramineae



Aeluropus lagopoides (L.) Trin. ex Thw.
(Syn: *Dactylis lagopoides* Linn.)

English name: mamoncilo.

Local name: Jaaru.

Description:

Small stoloniferous perennial grass species, flowering stem up to 15 cm high, erect or creeping at the base, the species can tolerate high salt concentration, can excrete excess amount of salt by special mechanism through trichomes and leaf surface. Inflorescence globose.

Flowering Period:

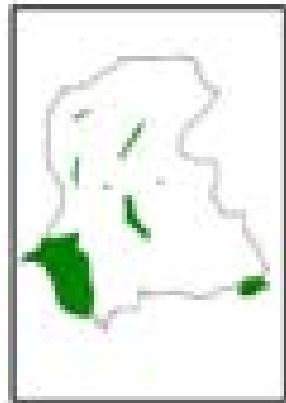
April to October.

Habitat:

Halophytic. Mostly found in coastal areas and highly saline inland areas.

Distribution:

Pakistan (Sindh, Balochistan & Punjab); northern Africa from Morocco to Somalia & Cyprus through the Middle-East to central Asia and India.



Poaceae / Gramineae



Aristida adscensionis L.

English name: Three Awn.

Local name: Lanbh gaah.

Description:

An annual or short-lived perennial grass, very variable in appearance depending on environmental conditions, forming erect or sprawling tufts 10-100 cm high, fruiting spikelets with 3 persistent awns.

Flowering Period:

March to December.

Habitat:

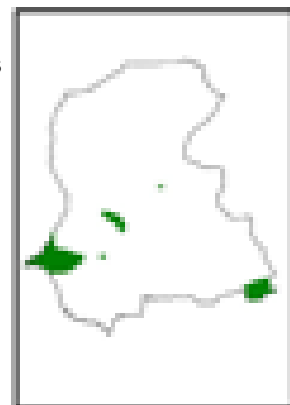
Found in dry stony, gravelly, and sandy areas.

Uses:

Mostly grazed by cattle, but nothing more definite about its economic value in Pakistan to be known.

Distribution:

Pakistan (Sindh, Baluchistan, Punjab, KPK, Gilgit, and Kashmir) and throughout the tropics.



Poaceae / Gramineae



Aristida funiculata Trin. & Rupr.
(Syn: *Aristida royleana* Trin. & Rupr.)

English name:

Local name: Lanbh gaah.

Description:

A small erect tufted and cylindrical, annual grass species, with wiry culms, 15-30 cm high. It can be distinguished by its keeled glumes and presence of few long hairs in leaf axils and on the pedicels. Awns long, breaking at the base of column.

Flowering Period:

June to September.

Habitat:

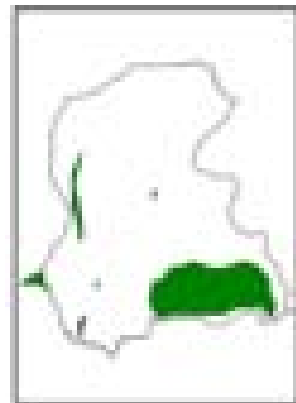
Mesophytic. Grows in dry lands, desert areas in extensive patches of dull grey colour almost throughout the area.

Uses:

Grazed by livestock in young stage.

Distribution:

Hottest and driest parts of North Africa, Arabia, Pakistan (Sindh, Balochistan) and India.



Poaceae / Gramineae



Aristida mutabilis Trin. & Rupr.

English name: Aristida.

Local name: Lanbh gaah.

Description:

An annual grass; culms (10-) 30-70 cm high. Inflorescence panicle spikelets grey or pallid. The habitat and appearance has close resemblance with *A. adscensionis* but can be differentiated by the presence of an articulation between the lemma and awns situated at the top of the column.

Flowering Period:

September to October.

Habitat:

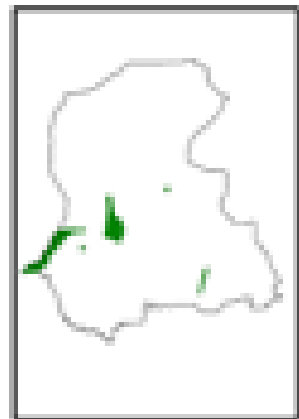
Grows on open stony and sandy soil.

Uses:

The species provide very good nutrition to livestock in young stage. It is not palatable after fruiting due to their stiff awns and spiny fruit.

Distribution:

Pakistan, Mauritiana to India and Africa.



Poaceae / Gramineae



Avena fatua Linn.

English name: Wild oat.

Local name: Jangli Jai.

Description:

A common weed of wheat crop. It is a green erect grass up to 1.5 m in height, with hollow stem.

Flowering Period:

July and August while fruiting in October.

Habitat:

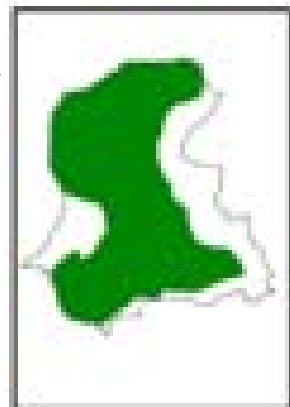
Extensively found in wheat crop.

Uses:

Seed of this plant can be used as a staple food crop. Seeds have some medicinal properties, used as diuretic, emollient, straw can be used as fiber, mulch, paper making.

Distribution:

Europe, Central and Western Asia.



Poaceae / Gramineae



Brachiaria ovalis Stapf

English name:

Local name: Sattii.

Description:

A tufted, annual grass, 10-50 (-150) cm with smooth shiny inflorescence. Spikelets larger than *B. ramosa*.

Flowering Period:

September to November.

Habitat:

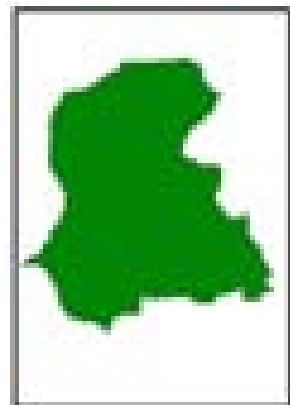
Xerophytic. It's a grass of very arid regions.

Uses:

Considered to be an excellent fodder grass.

Distribution:

Dry areas of Pakistan especially in Sindh region; Kenya and Sudan to southern Arabia.



Poaceae / Gramineae



***Brachiaria ramosa* (L.) Stapf**
(Syn: *Panicum ramosum* L.)

English name:

Local name: Urdu-Jhanda, Sawari ; Sindhi- Murat, Madhiaro.

Description:

An annual grass about 60 cm high, spikelets in branched spikes.

Flowering Period:

July to November.

Habitat:

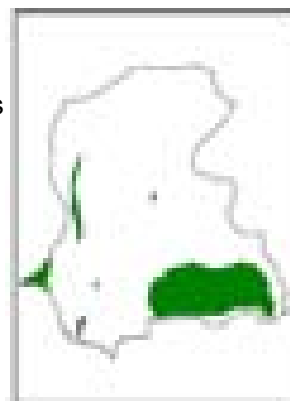
Mesophytic. Commonly found in open, rocky places, also around cultivated areas.

Uses:

Commonly used for fodder.

Distribution:

Pakistan, India, and Senegal to Yemen and Southwards to Malawi, Rhodesia & South Africa. In Pakistan it is most commonly found in Sindh, Baluchistan, KPK and Kashmir.



Poaceae / Gramineae



Brachiaria reptans (L.) Gardner & Hubbard
(Syn: *Panicum reptans* L.)

English name:

Local name: Kandeeri.

Description:

A decumbent annual grass of moist areas, rooting from the nodes, about 15-60 cm high, spikes racemose, green to deep purple.

Flowering Period:

June to October.

Habitat:

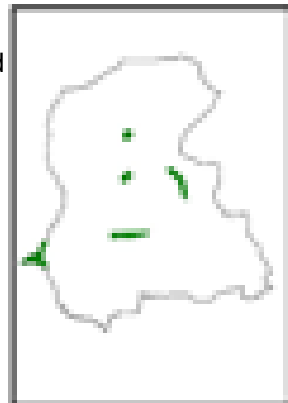
Mostly found in moist areas, agricultural fields and near water courses.

Uses:

A good fodder grass whose grain has been used as food in times of famine.

Distribution:

All over Pakistan; Tropical Asia, introduced throughout the tropics.



Poaceae / Gramineae



***Cenchrus biflorus* Roxb.**

(Syn: *Cenchrus barbatus* Schumach.)

English name: Indian sandbur.

Local name: *Sindhi*- Dhaman gah, Borut; *Urdu*- Dhaman.

Description:

An ascending annual grass, about 5-90 cm high, spikes pale green in flowering, straw colored in fruiting. The fruiting spikelets become troublesome prickly due to the stiffening of straight and retrorse barbs.

Flowering Period:

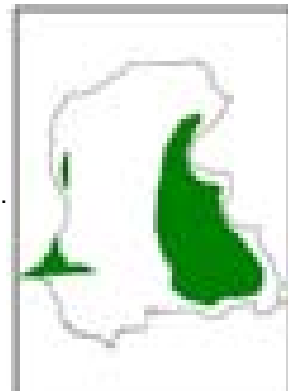
January to April and again September to November.

Habitat:

Grows on wide range of soil and climate, a weed of cultivated fields, fallow and waste land, open, sandy and stony grounds, this grass is acceptable to stocks when young, but it is commonly a very noxious weed, especially in the plains.

Distribution:

Pakistan, tropical Africa, extending through Arabia to India.



Poaceae / Gramineae



***Cenchrus ciliaris* L.**

(Syn: *Pennisetum cenchroides* Rich.)

English name: Buffelgrass, African foxtail.

Local name: *Sindhi-* Bhurt, Coori, *Urdu-* Dhaman, Dhamanio.

Description:

A tufted perennial grass, from a woody root stock. Leaves linear tapering to a fine point, glabrous often forming mats or tussocks. Flowering stem reached 10-150 cm high, ascending, wiry or sometimes almost woody, spikes pale green to straw colored.

Flowering Period:

Most of summer season.

Habitat:

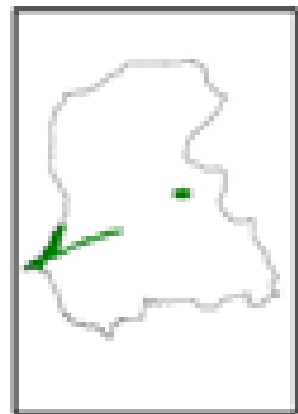
Found in sandy, gravelly soil and ditches.

Uses:

Used as fodder for sheep, cattle and horses.

Distribution:

Tropical Africa, Pakistan, India, Australia and America.



Poaceae / Gramineae



Cenchrus pennisetiformis Hochst & Steud. ex Steud.

(Syn: *Cenchrus echinoids* Wight ex Steud.)

English name: Buffel Grass, Lidder.

Local name: Dhaman gaah, Sitti.

Description:

An annual or perennial (short-lived) tufted, ascending drought tolerant grass species. Flowering stem 10-40 cm high, spikes pale green, straw colored or purplish.

Flowering Period:

February to April and again August to October.

Habitat:

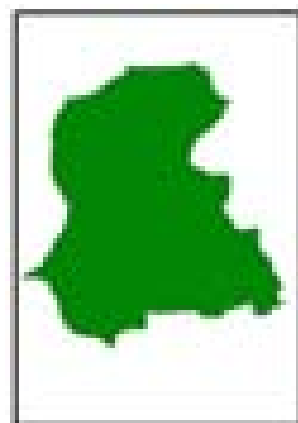
Xerophytic. It favors sub-desert conditions.

Uses:

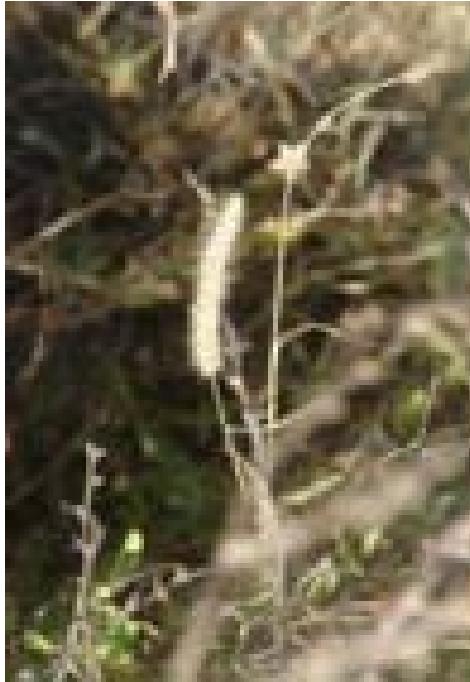
It is an extremely valuable fodder grass as it remains green during the dry season. Cattle are very fond of it.

Distribution:

Africa, Arabia, Pakistan and India (hotter and drier parts).



Poaceae / Gramineae



Cenchrus prieurii (Kunth.)Maire
(Syn: *Pennisetum prieurii* Kunth.)

English name: Buffelgrass.

Local name: Dhaman gaah.

Description:

An annual erect or ascending tufted herb. Flowering stem 12-35 cm high, it is also consider as good soil binder species in the semi-arid zone.

Flowering Period:

September to November.

Habitat:

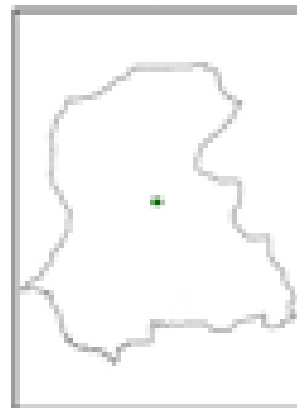
Xerophytic. Found in desert areas.

Uses:

An excellent fodder grass in desert regions, grains of the grass eaten raw, mix with millet and use for making bread.

Distribution:

Pakistan (Sindh), Northern Africa, Arabia and India.



Poaceae / Gramineae



Cenchrus setigerus Vahl
(Syn: *Pennisetum vahlii* Kunth.)

English name: Birdwood or Mode dhaman grass.

Local name: Dhaman gaah, Anjan.

Description:

A tufted perennial. Flowering stem is very variable, about 5-80 cm high, geniculate ascending, racemes straw colored, pale green or purple, solitary, cylindrical, spikelets in a cluster of 2-3, 4mm long, sessile, ovate and acute.

Flowering Period:

Most part of the year.

Habitat:

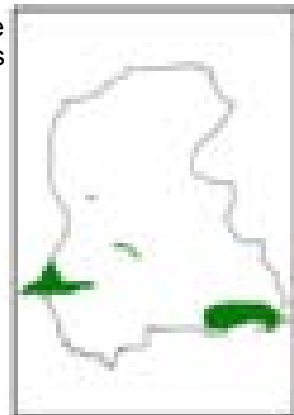
Mesophytic. This species is very common throughout the plains and the lower hills often gregarious and growing in tufts

Uses:

It is considered a very fine fodder grass.

Distribution:

Africa, Arabia, India and Pakistan.



Poaceae / Gramineae



***Chloris barbata* Sw.**
(Syn: *Adropogon barbatus* L.)

English name: Swollen finger grass.

Local name: Janio gaah, Phuliaro.

Description:

An annual or perennial ascending or erect aggressive grass species of comparatively dryer areas, up to 1 m high, loosely tufted, stoloniferous, glabrous, spikes purplish, digitate, 4-several together, feathery.

Flowering Period:

Most part of the year.

Habitat:

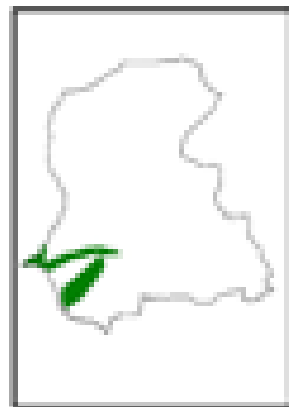
Common near agricultural fields, lawns, water courses, tolerant to brackish conditions.

Uses:

Used as a fodder grass when young.

Distribution:

Pakistan (Sindh); widespread throughout the tropics.



Poaceae / Gramineae



Chrysopogon aucheri (Boiss) Stapf
(Syn: *Andropogon aucheri* Boiss)

English name: Aucher's grass.

Local name:

Description:

A tufted-glaucous, perennial, about 60 cm tall erect or ascending grass, inflorescence a loose panicle, typically with golden yellow tinge.

Flowering Period:

February to May and again September to November.

Habitat:

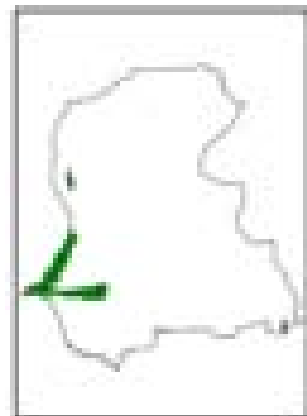
Xerophytic. A wiry desert species growing in the most inhospitable habitats such as rocky slopes and rock fissures.

Uses:

A welcome fodder plant in these places.

Distribution:

Iran, Afghanistan, Arabia, Pakistan, East Africa and India.



Poaceae / Gramineae



Cymbopogon jwarancusa (Jones.) Schult
(Syn: *Andropogon jwarancusa* Jones.)

English Name: Oilgrass, Jwarancusa grass, Rusa grass, Squinauch.

Local name: *Sindhi*-Khavi, Kitran, *Urdu*- Buraro, Khawi, Lamjak, Ganni.

Description:

Perennial erect tufted grass, culms erect or geniculately ascending, up to 150 cm high, spikes typically subtended by boat-shaped bracts, usually red-tinged.

Flowering Period:

February to September.

Habitat:

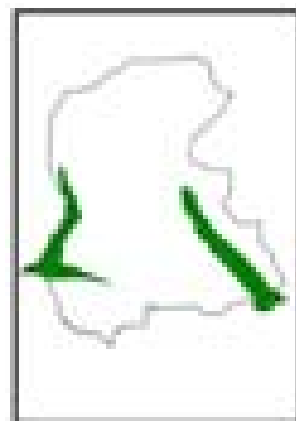
Xerophytic. Grows on loamy, sandy and stony grounds.

Uses:

Lemon scented grass, not good fodder but grazed in young stage. It is useful for the treatment of fever, vomiting, blood and skin diseases. The plant is also administered in cases of cough, chronic rheumatism, and cholera. The plant bears antiseptic properties. The flowers are used as a haemostatic.

Distribution:

Pakistan, India, China, Bangladesh, whole North-eastern Africa, and Nepal.



Poaceae / Gramineae



***Cynodon dactylon* (L.) Persoon**

(Syn: *Panicum dactylon* Linn.)

English name: Lawn-grass, Bermudagrass.

Local name: *Sindhi-* Chabbar, *Sanhee Chabbar*, *Urdu-* Chabbar, *Punjabi-* Khabbal, *Talla*, *Daurva*.

Description:

A prostrate, perennial grass. Culms slender with many nodes. Inflorescence green digitate. Propagates by splitting of the rooting nodes.

Flowering Period:

Most of the year.

Habitat:

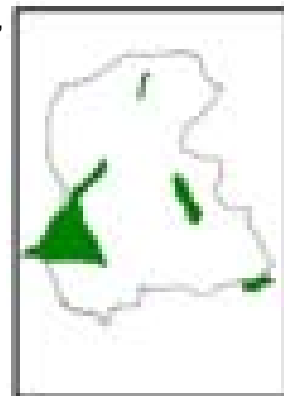
Mesophytic. Common along trails, or on uncultivated land, grasslands, lawns, widely grown as turf grass.

Uses:

Juice of the plant is taken to relieve indigestion; a paste of the plant is applied to cuts and wounds. The plant has good fodder value; leaves are deemed to be auspicious, playing a role in many rituals. Widely grown as turf grass.

Distribution:

Pakistan (Sindh, Balochistan, N.W.F.P. & Kashmir), tropical and warm temperate regions throughout the world.



Poaceae / Gramineae



Dactyloctenium aegyptium (L.) Willd.
(Syn: *Cynosurus aegyptius* Linn.)

English name: Egyptian grass, four finger grass.

Local name: Mudhani gaah.

Description:

An annual or perennial ascending grass, 20-40 cm height; culms erect. Stem stoloniferous, rooting from nodes, glabrous, spikes digitate, 2-5 together, straight, pale green or red tinged.

Flowering Period:

July to October.

Habitat:

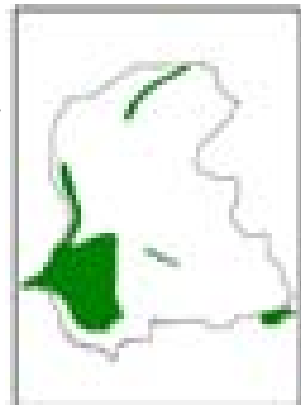
Mesophytic. Common in and around cultivated areas.

Uses:

Very nutritive fodder grass for cattle, being both fattening and milk producing. Leaves and stem are applied externally to treat ulcers.

Distribution:

Widespread in tropical and temperate parts of the world.



Poaceae / Gramineae



Dactyloctenium aristatum Link.
(Syn: *Dactyloctenium semipunctatum* Courb.)

English name: Comb fringe grass, Crowfoot grass.
Local name: Kirtio gaah.

Description:

A rambling; tufted annual decumbent grass resembling *D. scindicum* but distinguish by its straight spikes and needle like appendages on tip of each spikelet; culms slender 4-38 cm high.

Flowering Period:

August and September.

Habitat:

In sandy, gravelly and rocky places, also in dry streams beds.

Uses:

The plant is very valuable and nutrient for cattle.

Distribution:

The species is distributed in East of Africa, Arabia and South Asia.



Poaceae / Gramineae



Dactyloctenium scindicum Boiss.
(Syn: *Dactyloctenium glaucophyllum* Courb.)

English name:

Local name: Kirtio, Madaro gaah.

Description:

A perennial stoloniferous extensively spreading mat forming grass of bush land and sandy habitat. Flowering stem is slender with swollen bases, 7-45 cm high, erect, widely spreading, and rooting at distant, thickened, woody nodes. A common gravel grass throughout the area, often covering large patches of land with woody stolons, spikes digitate, usually 4 together, thick, short, characteristically curved downwards. Spikelets unarmed.

Flowering Period:

September to May.

Habitat:

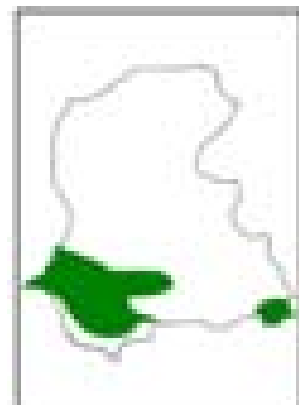
Xerophytic. Found in bushlands and sandy areas.

Uses:

Considered as a good fodder grass.

Distribution:

Hottest part of Middle East to Pakistan and India.



Poaceae / Gramineae



Desmostachya bipinnata (L.) Stapf
(Syn: *Briza bipinnata* Linn.)

English name: Deep root grass.

Local name: *Sindhi-* Drabh gaah, *Urdu-* Dab, *Punjabi-* Dab, Drubh.

Description:

A tufted, perennial salt tolerant grass, culms up to 120 cm. Propagates by seeds or by splitting the roots.

Flowering Period:

June to October.

Habitat:

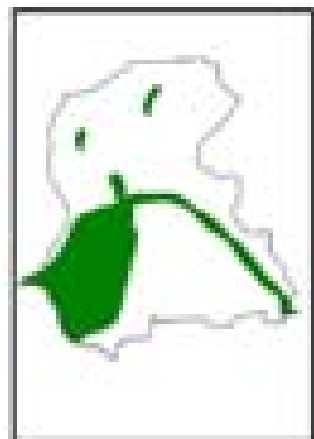
Halophytic. Common in fallow fields and on un-used grounds.

Uses:

Grazed by livestock. The juice of the root is given for indigestion a paste of the root is for treating dental caries, culms are diuretic and used for dysentery. The plant is used in religious ceremonies such as Shradhha, that is, rituals and offerings to the dead.

Distribution:

Pakistan, India, Egypt and Syria, etc.



Poaceae / Gramineae



Dichanthium annulatum (Forssk.) Stapf
(Syn: ***Andropogon annulatus*** Forssk.)

English name: Ringed dichanthium, Angleton grass.

Local name: Sindhi- Palwan, Marvel, Dinahee gaah.

Description:

Perennial, 25-100 cm high, geniculately ascending, nodes with typical ring of hairs, spikes sub-digitate, 4-5 or more together, golden brown spikes, sessile spikelets about 4mm long. It is morphologically and cytologically very variable.

Flowering Period:

March to November.

Habitat:

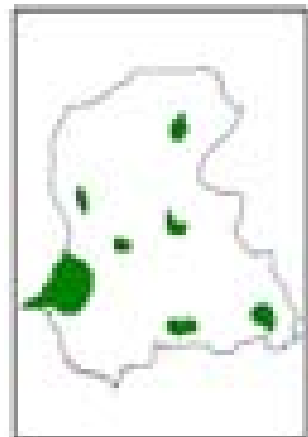
Mexophytic. Often grows in sheltered hedges or on road side.

Uses:

Used as a fodder.

Distribution:

Pakistan, Kenya, Tanzania and Senegal, through the Middle East to Indonesia; introduced to Southern Africa, Tropical America and Australia.



Poaceae / Gramineae



Dichanthium foveolatum (Del.) Roberty
(Syn: *Andropogon foveolatum* Del.)

English name: Curly blue grass.

Local name: Ghandel.

Description:

A tufted perennial grass with silky hairy basal sheaths; erect or ascending, 15-80 cm high, spikes single, red-tinged.

Flowering Period:

March to September or December.

Habitat:

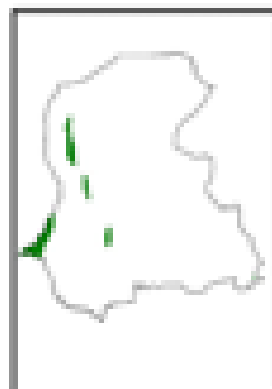
A tough xerophyte. Grows in open dry gravelly and rocky places.

Uses:

Grazed by livestock.

Distribution:

Pakistan, Kenya, Mali and North Africa, eastwards through the Middle East and Somalia to India and Sri Lanka.



Poaceae / Gramineae



Digitaria bicornis (Lam.) Roem. & Schult.

English name: Southern Crabgrass, Asian crabgrass.

Local name: Pachar gaah.

Description:

Annual erect grass of moist soil, culms decumbent, rooting at lower nodes, 30-60 cm tall. Inflorescence digitate or subdigitate, racemes 2-5, spikelets paired.

Flowering Period:

February to April.

Habitat:

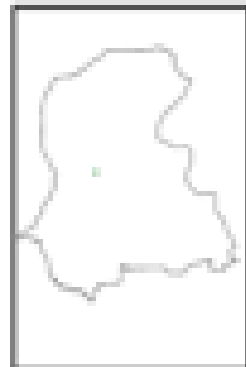
Grows in waste grounds, often on sand.

Uses:

Used as a fodder.

Distribution:

India, Indonesia, Malaysia, New Guinea, Sri Lanka, Thailand, Africa, Australia, introduced in America and Pakistan.



Poaceae / Gramineae



Digitaria ciliaris (Retz.) Koel.

(Syn: *Panicum ciliare* Retz.)

English name: Crabgrass.

Local name: Pachar gaah.

Description:

A tall erect, annual, 20-100 cm high, decumbent at the base and geniculately ascending, inflorescence digitate or sub digitate, composed of 2-12 racemes, spikelets oblong, acute, bearded.

Flowering Period:

July to October.

Habitat:

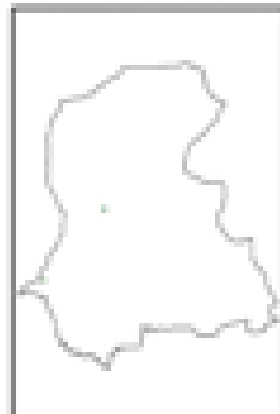
Mesophytic. A common grass in open fields and wayside places.

Uses:

The species have of great fodder value, the cattle savor to graze the plant.

Distribution:

Pakistan (Sindh, Punjab, KPK and Kashmir), common Throughout much of the tropics.



Poaceae / Gramineae



Diplachne fusca (L.) P. Beauv. ex Roem. & Schult.
(Syn: ***Festuca fusca*** Linn.)

English name: Kallar grass.

Local name: Jhang sari, Lowandi.

Description:

An aquatic or semi-aquatic rhizomatous perennial salt tolerant plant; flowering stem about 60-150 cm high, rooting and branching from the lower nodes, spikes green or grey-tinged.

Flowering Period:

March to November.

Habitat:

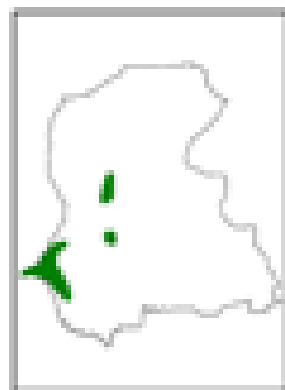
Halophytic. Common in saline and waterlogged areas.

Uses:

Buffaloes are very fond of this grass.

Distribution:

Pakistan; Tropical and Sub-tropical regions of the old world and Australia.



Poaceae / Gramineae



Echinochloa colona (L.) Link.

(Syn: *Panicum colonum* (L.) Link.)

English name: Jungle rice, water grass.

Local name: Sanwak, Naanglee.

Description:

An annual tufted decumbent or sub-ascending grass; 10-100 cm high, leaves sometimes with transverse purple-red markings, stem shortly creeping below, smooth, dull green or partly purplish, spikes green or purple-tinged.

Flowering Period:

May to September.

Habitat:

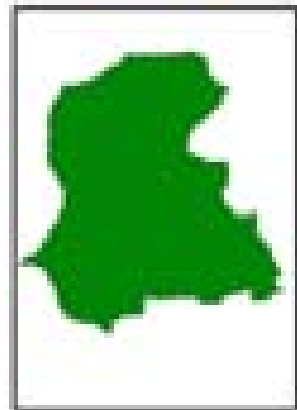
Grows on the margins of water channels in cultivated fields and other water-logged places.

Uses:

One of the finest fodder grasses and is eagerly eaten by cattle both before and after flowering.

Distribution:

Pakistan (Sindh, Baluchistan, Punjab, KPK & Kashmir); throughout the tropics and subtropics.



Poaceae / Gramineae



Echinochloa crus-galli (L.) P. Beauv.
(Syn: *Panicum crus-galli* L.)

English name: Japanese millet, Barnyard grass.

Local name: Burut gaah.

Description:

A common annual grass of cultivated beds and adapted nearly all types of wet places; 25-100 cm high, erect or ascending. Inflorescence linear to ovate, 6-22 cm long, the racemes untidily 2-several-rowed, the longest 2-10 cm long, usually with short secondary branchlets at the base. Spikelets ovate-elliptic, mostly 3-4 mm long, distinctly awned.

Flowering Period:

June to October.

Habitat:

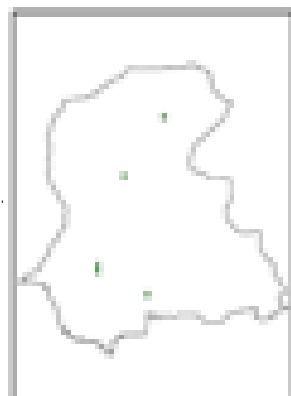
Common in marshy places and rice fields.

Uses:

It is a good fodder grass.

Distribution:

Pakistan (Sindh, Balochistan, Punjab, KPK, Gilgit and Kashmir); warm temperate and subtropical regions of the World, extending into the tropics (but scarcely so in Africa).



Poaceae / Gramineae



***Echinochloa frumentacea* Link.**

(Syn: *Panicum frumentaceum* Roxb.)

English name: Japanese Millet, White Millet.

Local name: Sanwak, Bajhar.

Description:

A robust annual herb 30-150 cm high, erect, spikes dense, greenish. Spikelets unawned or shortly awned.

Flowering Period:

Mostly from September to October but also sporadically earlier in the year.

Habitat:

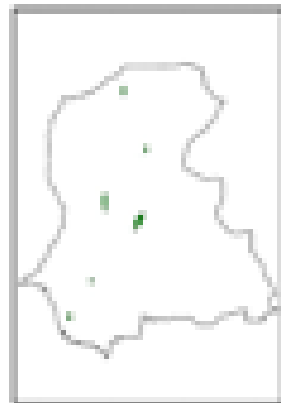
A common grass species of cultivated beds and moist soil.

Uses:

The grains are sweet, acrid, oleaginous, cooling and digestible. They are said to be useful in biliousness and constipation.

Distribution:

Pakistan, tropical East Africa Southwards to Rhodesia, India; Australia. Sometimes cultivated for grains in Asia and Africa.



Poaceae / Gramineae



Eleusine indica (L.) Gaertn.

(Syn: *Cynosurus indicus* L.)

English name: Indian millet, Crab or Crowfoot grass.

Local name: Mandhano.

Description:

A tufted annual grass of all disturbed places. Flowering stem 15-85 cm high, erect or geniculately ascending, spikes digitate, green, 4-5 arising from one point, spikelets 3-9 flowered.

Flowering Period:

June to August.

Habitat:

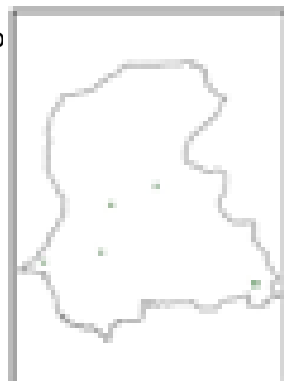
Usually found in moist soils in the plains.

Uses:

Crab or Crowfoot grass is considered in some regions to be a good fodder grass. The grass is considered diuretic, laxative, stomachic, depurative and good for liver. It is also used against influenza, hypertension, oliguria and retention of urine. It is highly esteemed as a pasture grass in Australia and North America.

Distribution:

Pakistan, India, Iran, Afghanistan, Central and East Africa, Australia and North America.



Poaceae / Gramineae



Elionurus royleanus Nees. ex A. Rich.

English name:

Local name:

Description:

An annual, erect grass; 5-30 cm tall; forming cluster of erect branches. Inflorescence composed of racemes, single 2-6 cm long, terminal and axillary, spikelets sessile, fertile, pedicels linear, flattened and glabrous.

Flowering Period:

September to October.

Habitat:

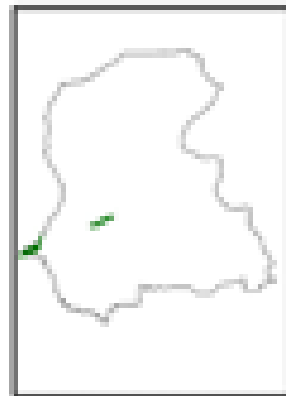
Tough xerophyte. Common in stony, gravelly and hilly habitat.

Uses:

Apalatable species.

Distribution:

Africa, Asia-temperate tropical and Arabia.



Poaceae / Gramineae



Eragrostis cilianensis (All.) Lut. ex F. T. Hubbard
(Syn: *Briza eragrostis* Linn.)

English name: Grey love grass, Stink grass.

Local name: Puchhir ghaa.

Description:

A loosely-tufted slender annual or short-lived perennial grass; 10-90 cm high, erect or ascending, glabrous, shining, spikelets linear to ovate or oblong, compressed pale green rarely purplish at base.

Flowering Period:

May to October.

Habitat:

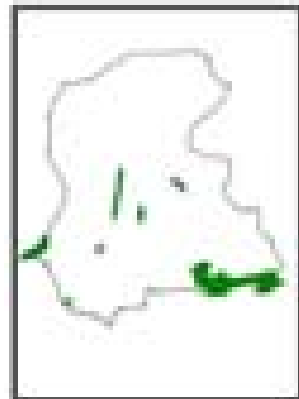
In moist places, in and around cultivated areas, also in dry stream beds.

Uses:

Occasionally used as a fodder.

Distribution:

Pakistan (Sindh, Balochistan, Punjab, KPK & Kashmir); tropical and warm temperate regions of the old world; introduced to the new world.



Poaceae / Gramineae



Eragrostis ciliaris (L.) R. Br.
(Syn: *Poa ciliaris* L.)

English name: Gophertail lovegrass.

Local name: Bubrio ghaa, Puchhir ghaa.

Description:

A tufted annual or short-lived perennial herb, flowering stem 5-60 cm high, erect, slender, glabrous, smooth. Spikelets 6-12 flowered, crowded, strongly compressed.

Flowering Period:

Most of the year except winter.

Habitat:

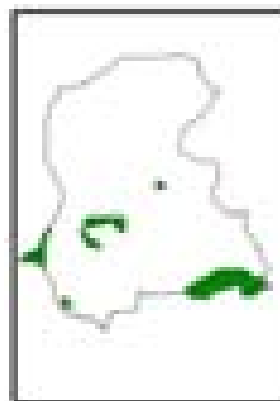
Grows in wide range of soil and habitat.

Uses:

In sufficient quantity this grass affords good grazing.

Distribution:

Tropical Africa, America, Arabia, India and Pakistan.



Poaceae / Gramineae



Eragrostis minor Host.

English name: Little lovegrass, Small stinkgrass.

Local name:

Description:

A loosely tufted annual; flowering stem, 6-60 cm high, ascending. Inflorescence a panicle, open, ovate, dense or loose 4-20 cm long, spikelets solitary, comprising 6-10 (-40) fertile florets.

Flowering Period:

May to September.

Habitat:

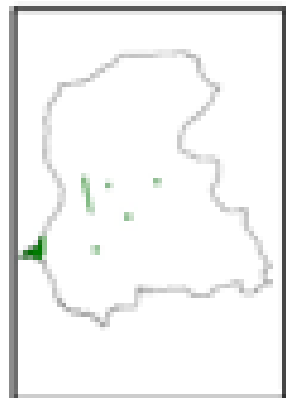
Found irrigated fields and ditches.

Uses:

Use as a fodder, occurs as a weed in gardens, Little Lovegrass has no known economic value.

Distribution:

America, Australia, Africa, Arabia, Brazil, India, Pakistan, China and Malaysia.



Poaceae / Gramineae



Eragrostis pilosa (L.) P. Beauv.
(Syn: *Poa pilosa* L.)

English name: Soft lovegrass.

Local name: Nika Sanwak, Bekahoon.

Description:

A loosely tufted annual 8-70 cm high, erect or ascending, spikelets 4-14 flowered, inflorescence a panicle, fertile spikelet pedicellate, pedicels glandular.

Flowering Period:

July to October.

Habitat:

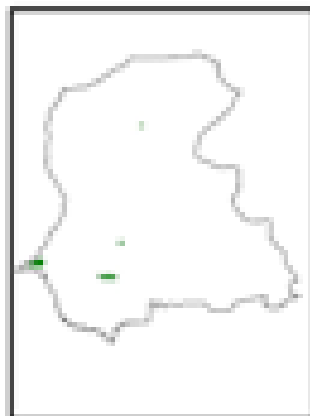
Abundant after monsoon rains on a variety of soils ranging from gravelly, sandy to clayey soils.

Uses:

Hairy or India Lovegrass is considered to be good fodder.

Distribution:

Pakistan, Tropical and warm temperate regions of the old world, introduced to the new world.



Poaceae / Gramineae



Eragrostis tenella (L.) P. Beauv ex Roem & Schult.
(Syn: *Poa tenella* Linn.)

English name: Bug's egg grass.

Local name: Bharbhuri.

Description:

Fragile tufted annual grass, 6-50 cm tall, erect or geniculately ascending, Inflorescence a panicle, spikelets minute, green to purple, in dense panicles.

Flowering Period:

March to September.

Habitat:

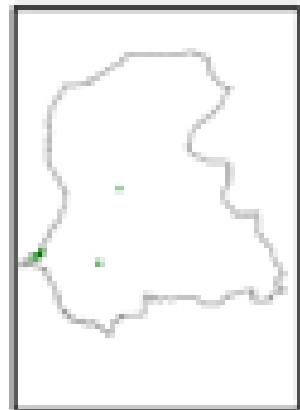
Moist and shady places, mostly near cultivated areas.

Uses:

It is eaten by cattle both fresh and dry. The grain is said to be very nutritious.

Distribution:

Pakistan, India, Afghanistan, Tropical Africa, throughout the Tropics.



Poaceae / Gramineae



Eragrostis viscosa (Retz.) Trin.
(Syn: *Poa viscosa* Retz.)

English name: Sticky love grass.

Local name: Bhurbhuri.

Description:

Tufted annual grass of moist habitat, culms 10-40 cm high, erect, spikelets yellowish to purplish. Closely resembles *E. Tenella*, but inflorescence sticky glandular.

Flowering Period:

September to November.

Habitat:

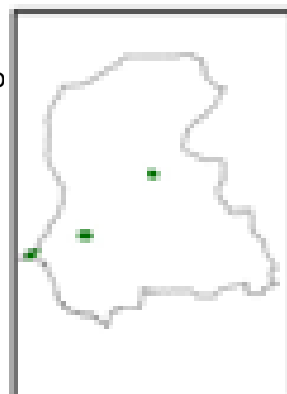
Grows in moist areas near to water bodies.

Uses:

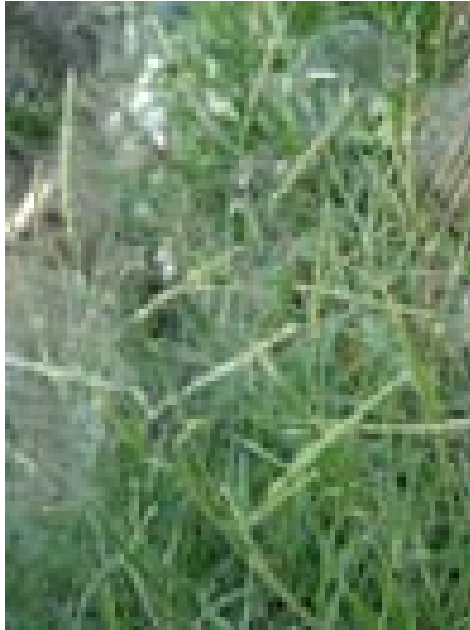
It is eaten by cattle both fresh and dry.

Distribution:

Pakistan, Kashmir; Eastwards from Nigeria through India to Thailand and the Philippines, and Southwards to South Africa. A few records from tropical America.



Poaceae / Gramineae



Eriochloa procera (Retz.) C.E. Hubbard
(Syn: ***Agrostis procera*** Retz.)

English name: Tropical cupgrass, Spring grass.

Local name:

Description:

An annual tufted grass, culms 20-100 cm high, erect or geniculately ascending, Inflorescence composed of racemes, spikelets in pairs, pedicles free or fused, oblong, glabrous.

Flowering Period:

May and again in August to October.

Habitat:

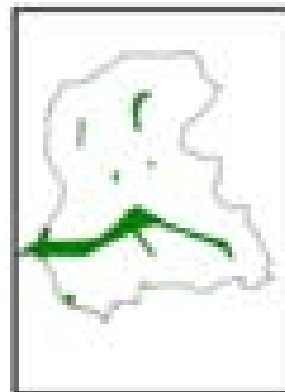
Commonly found in gardens roadsides, pathways. It favors Damp places, ditches and the edge of the paddy fields.

Uses:

Used as a fodder.

Distribution:

Widely distributed but nowhere very common.



Poaceae / Gramineae



Hemarthria compressa (L. f.) R. Br.
(Syn: *Hemarthria coromandelina* Steud.)

English name:

Local name: Baika.

Description:

Stoloniferous perennial grass of moist agricultural fields, flowering stem is up to 1 m long or more, prostrate and rooting at the nodes below, spikes solitary or paired, cylindrical, green or purple-tinged.

Flowering Period:

July to September.

Habitat:

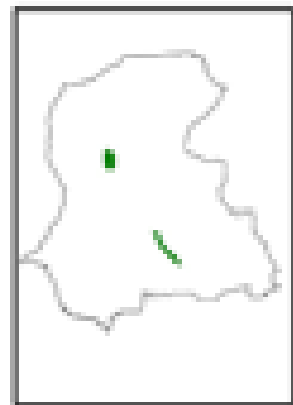
Commonly found in agricultural fields.

Uses:

Used as a fodder.

Distribution:

Pakistan, Iraq and Afghanistan throughout India to China, Taiwan, Indo-China and Thailand.



Poaceae / Gramineae



Imperata cylindrica (L.) Raeuschel
(Syn: *Imperata allang* Jungh.)

English name: Cogongrass, Satintail, Blady grass.

Local name: Siru, Ulu, Dabhor.

Description:

A common perennial grass of cultivated fields, forming tufts of leaves from a scaly rhizome; about 10-120 cm high; erect, when mature the inflorescence appear in shiny white colour.

Flowering Period:

April to June.

Habitat:

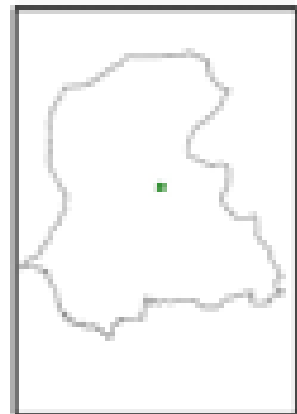
Very common with banks of water courses.

Uses:

The root is used as emollient in Cambodia, mostly as a fumigant for piles. In China it is reputed as retorative, haemostatic and antifebrile. The plant is excellent for thatching, can be made into paper, and is also relished by grazing animals after the annual fires when the young shoots appear. It is seldom eaten when old.

Distribution:

Pakistan, throughout the Old World tropics, extending to Mediterranean and the Middle East, also in Chile.



Poaceae / Gramineae



Lasiurus scindicus Henr.

English name:

Local name: Gorkah, Sain.

Description:

Tufted perennial sand binder grass of arid and semi-arid regions. Flowering stem often woody below, up to 90 cm high, simple or suffruticose, erect from a thick woody rhizome, Inflorescence cylindrical spike silvery white, spikelets in pairs.

Flowering Period:

March to May and September to October.

Habitat:

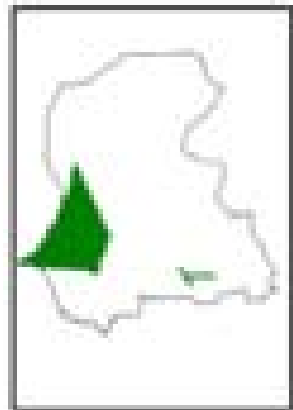
Common in dry, stony, gravelly areas.

Uses:

A valuable fodder grass said to be relished by camels, sheep and cattle.

Distribution:

Pakistan, Tropical North West, North East Arabia and India.



Poaceae / Gramineae



Leptochloa panacea (Retz.) Ohwi
(Syn: *Poa panacea* Retz.)

English name:

Local name:

Description:

An annual ascending grass species, 25 -110 cm in height, inflorescence 20-30 cm long and branched.

Flowering Period:

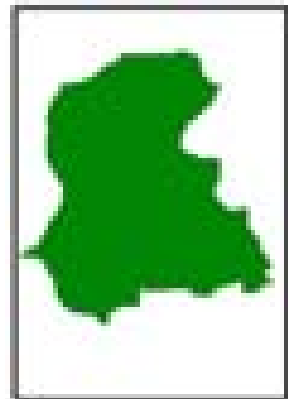
February to March.

Habitat:

Found in cultivated fields.

Distribution:

Widely distributed in Sindh, Punjab and KPK, West-Africa to tropical Asia and America.



Poaceae / Gramineae



Leptothrium senegalense (Kunth.) W. D. Clayton
(Syn: *Latipes senegalensis* Kunth.)

English name: Hook grass.

Local name: Paperi gaah.

Description:

Short-lived tufted perennial herb, the plant forming tough bunches; flowering stem 10-60 cm in height, thin, wiry, ascending, Inflorescence composed of racemes, spikelets in pairs, sessile, 2 in cluster, It forms cushions in hot desert areas where it is grazed by cattle.

Flowering Period:

January to March.

Habitat:

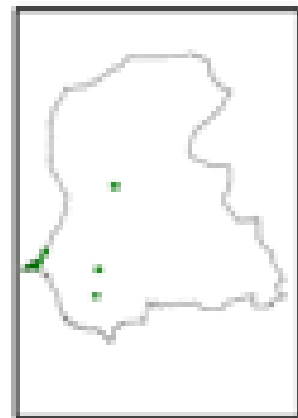
Xerophytic. Common in sandy to stony soil of arid and semi-arid regions.

Uses:

Used as a fodder plant.

Distribution:

Pakistan, tropical East Africa and Senegal.



Poaceae / Gramineae



Melanocenchrus abyssinica (R. Br. ex Fresen.) Hochst.
(Syn: *Eutriana abyssinica* R. Br. ex Fresen.)

English name:

Local name:

Description:

Annual slender grass species up to 20 cm high. Leaves very narrow spikelets silvery, without pedicel. It is a procumbent species, spread over gravel surface of dry land.

Flowering Period:

August to November.

Habitat:

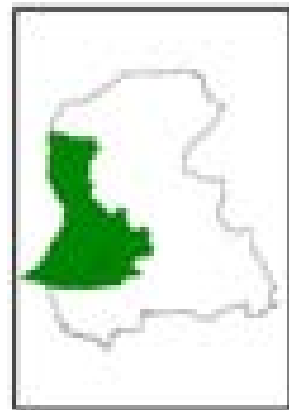
Mostly found in stony and gravely dry habitat and semi-deserted areas.

Uses:

Palatable grass species, mostly grazed by sheep in immature stage.

Distribution:

In Pakistan it is commonly found in Sindh, Balochistan and Punjab, while distributed range is from Arabia to Tropical Africa



Poaceae / Gramineae



Ochthochloa compressa (Forssk.) Hilu.
(Syn: ***Panicum compressum*** Forssk.)

English name: Ochthochloa.

Local name: Madaro, Ghander.

Description:

An extensive, stoloniferous perennial plant; culms prostrate or geniculate ascending up to 30 cm high rarely forming clumps up to 90 cm high, Inflorescence composed of 3-5 digitate spikes, spikelets solitary, fertile, sessile, red-tinged.

Flowering Period:

March to September.

Habitat:

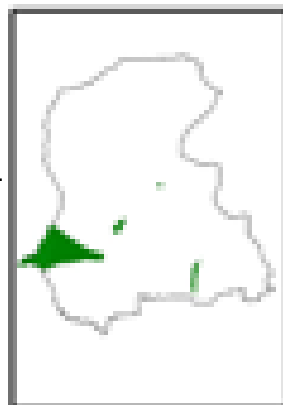
Xerophytic. Very common species of dry stony, gravelly, desert and semi-desert areas.

Uses:

Good fodder for cattle & horses.

Distribution:

Pakistan, Afghanistan, Iran and Northwest India to North Africa.



Poaceae / Gramineae



Oryza coarctata Roxb.

English name:

Local name: Sohan gaah.

Description:

A perennial grass species of deltaic areas, with extensive creeping rhizomes, culms smooth, hard and polished.

Flowering Period:

March to June.

Habitat:

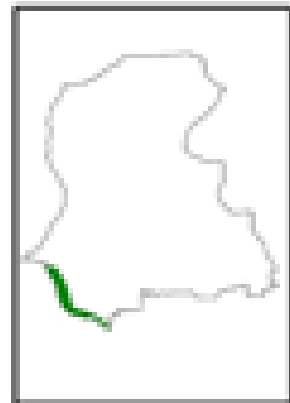
Coastal plant common in the Indus Delta. Mostly in intertidal zones and on mudflats.

Uses:

Formerly used for edible grain. Also grazed by livestock.

Distribution:

Distributed in southern Asia, Pakistan (Indus Delta), India and Burma.



Poaceae / Gramineae



***Panicum antidotale* Retz.**

English Name: Blue Panicum, Blue Panicgrass.

Local name: *Sindhi*- Gharam, *Urdu*- Gunara, Garmano, Ghirano.

Description:

A tall Perennial grass with creeping woody rootstock; flowering stem 90-180 cm high, woody, erect or ascending, inflorescence a loose panicle, green.

Flowering Period:

Most part of the year.

Habitat:

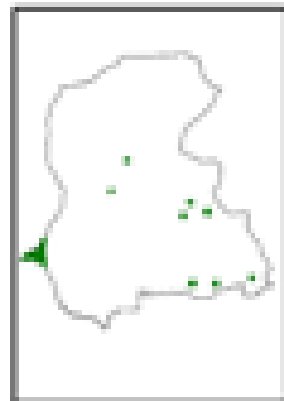
Usually grows in clumps or in shelter of bushes and hedges on sandy, sandy loam soils, in flood plains and river bed margins.

Uses:

It is an excellent sand binder, but of doubtful value as fodder. The smoke of the burning plant is said to be used to fumigate wounds and as disinfectant in small pox. It is said to be employed in throat affections and as antidote for hydrophobia.

Distribution:

Pakistan, tropical Africa, Arabia, throughout Iran and Afghanistan to India.



Poaceae / Gramineae



Panicum turgidum Forssk.

English name: Desertgrass.

Local name: *Sindhi*- Munt, *Urdu*- Murtio-ghas.

Description:

Tufted Perennial grass, an excellent sand binder species, forming bushes, 40-100(-200) cm high, flowering stem erect or ascending, woody, the plant form low rounded bushes.

Flowering Period:

April to May.

Habitat:

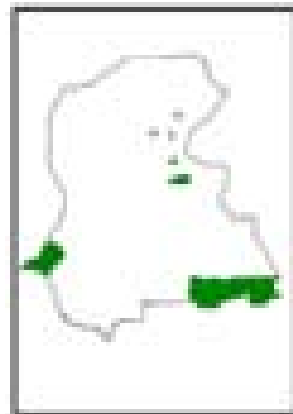
Tough xerophyte. Most common in desert habitat.

Uses:

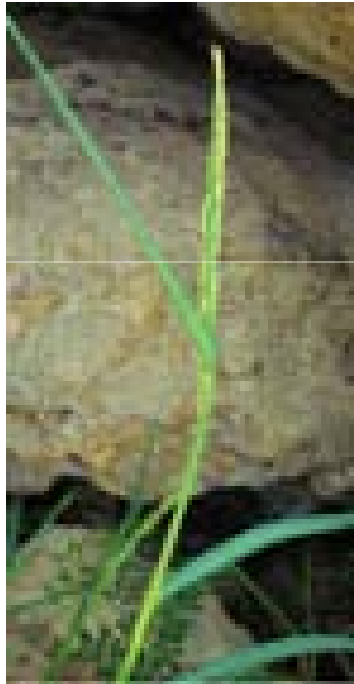
Plant is palatable and heavily grazed particularly relished by cattle and camels, an excellent fodder and soil binder plant of desert areas.

Distribution:

Spread in arid and semi-arid areas of Asia and Africa especially in Morocco, Sudan, Arabia, Somalia, Jordan and Pakistan.



Poaceae / Gramineae



Paspalidium flavidum (Retz.) A.Camus
(Syn: *Panicum flavidum* Retz.)

English name:

Local name: Kangna.

Description:

Tufted annual or perennial grass of moist habitat; 10-120 cm high, erect or ascending from a prostrate base.

Flowering Period:

July to October.

Habitat:

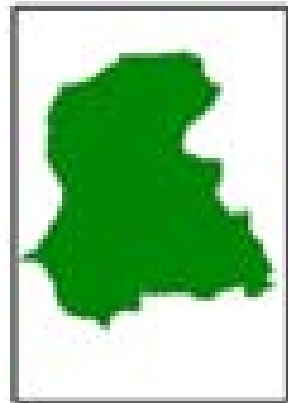
It is a shade-loving species found in forest undergrowth, roadside, ditches near to water courses and damp hollow places.

Uses:

It is eaten by horses and cattle and it produces a large quantity of grain that has been eaten by man in times of want.

Distribution:

East Africa, Tropical Asia and Australia.



Poaceae / Gramineae



Paspalidium geminatum (Forssk.) Stapf
(Syn: *Panicum geminatum* Forssk.)

English name: Egyptian Paspalidium, Water Paspalidium, Alligator grass.

Local name: Sawani gaah.

Description:

A perennial ascending plant, with creeping or floating, culms 10-60 cm high, the plant has rooting at its lower nodes.

Flowering Period:

Mostly in October to January but sometimes as early as August or as late as March.

Habitat:

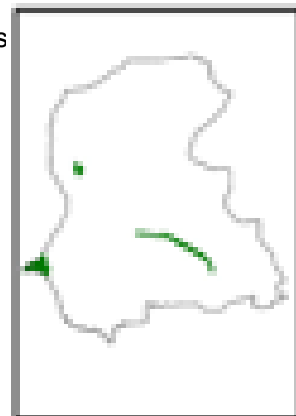
Commonly found around water ponds, irrigation channels or marshy soil.

Uses:

Used as a fodder.

Distribution:

Pakistan, widely spread over tropical countries of the old world.



Poaceae / Gramineae



Paspalum paspaloides (Michx.) Scribner

English name: Knotgrass, Water grass.

Local name: Koda.

Description:

A hydrophytes creeping stoloniferous perennial grass of moist areas; a dwarf grass culms 6-35 cm high.

Flowering Period:

April to May and August to September.

Habitat:

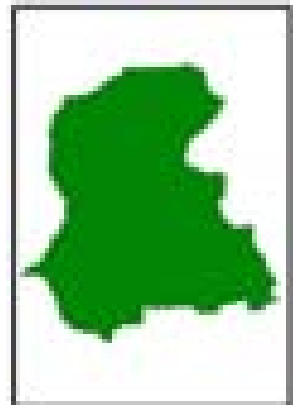
It occurs as a garden weed, along ditches and irrigation channels, in rice fields, and is gregarious in swampy places.

Uses:

It provides good pasturage, especially on alluvial flats known as Knot-grass having high nutritional values.

Distribution:

Pakistan, tropics and Sub-tropics throughout the world.



Poaceae / Gramineae



***Paspalum scrobiculatum* L.**

English name: Rice grass, Koda millet.

Local name: Koda.

Description

Perennial loosely tufted; flowering stem 10-15 cm high, highly polymorphic species, propagation by seeds.

Flowering Period:

April to May and October to December.

Habitat:

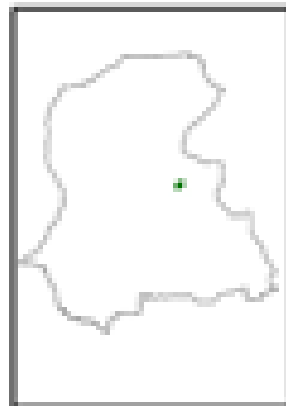
Found in ditches, near to water bodies, irrigation canals, water courses.

Uses:

The grains are astringent, cooling, constipating, diuretic, and sedative. They are useful in ulcers, flatulence, diarrhea, inflammation and burning sensation. The stem is useful for corneal opacity. The crude extracts and the pure isolates were reported to have nutritive, antifungal, tranquilizing and food poisoning properties.

Distribution:

Pakistan, Mauritiana to India and Africa.



Poaceae / Gramineae



Paspalum vaginatum Swartz

English name: Biscuit grass, Knot grass.

Local name: Dinahee gaah.

Description:

A warm season extensive turf grass, perennial grass, creeping and rooting from lower nodes. Stem, glabrous. Inflorescence composed of racemes, shortly pedunculate, bearing solitary spikelets; oblong, acute and dorsally flattened 3 mm long.

Flowering Period:

July-October.

Habitat:

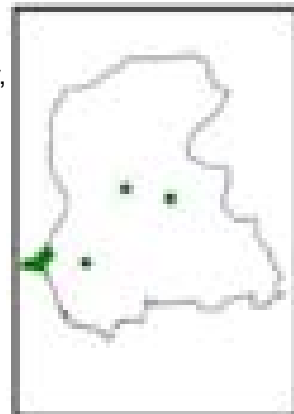
Semiaquatic grass, common near to water bodies.

Uses:

A very good pastures species, provide healthy fodder, the plant is also use in preparation of golf grounds.

Distribution:

Tropics and sub-tropics of the world.



Poaceae / Gramineae



Pennisetum purpureum K. Schum, Beskr

English name: Elephant grass, Cane grass, Napier grass.

Local name: Haati gaah, Kamaandi gaah.

Description:

Tall erect perennial rhizomatous grass with thick stem, 2-4.5 m high, widely grown for fodder under the names Elephant and Napier grass. The involucre is sessile or shortly pedicellate, it grows very rapidly and if cut before full grown it yields excellent hay. When mature the leaves are razor-sharp on the margins and therefore unpopular with cattle at this stage.

Flowering Period:

September to November.

Habitat:

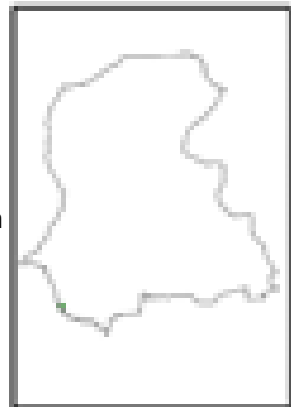
The grass is found in moist soil near to water courses.

Uses:

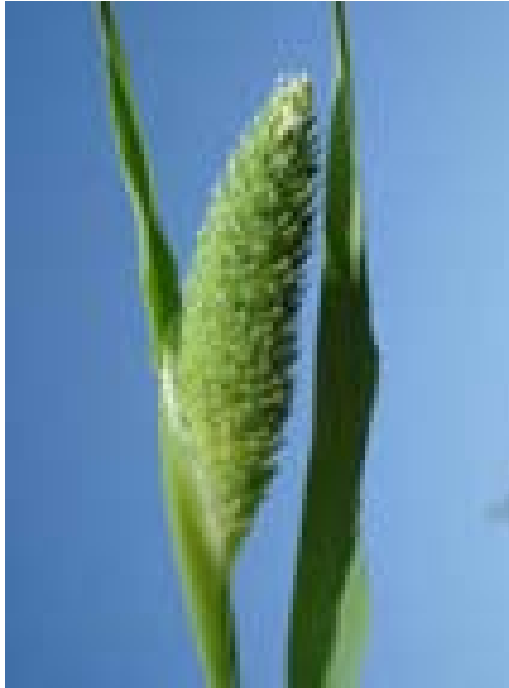
A very good fodder species, it is also a favorite food for elephants, the plant has potential for bio-fuel preparation.

Distribution:

South America, Philippine Islands, Hawaii, India, Pakistan and China.



Poaceae / Gramineae



Phalaris minor Retz.

English name: Littleseed canarygrass.

Local name: Dombhisity, Kangai gaah.

Description:

A common weed grass of wheat crop, annual erect up to 100 cm tall, it is considered as potential contaminant of wheat crop.

Flowering Period:

March to May.

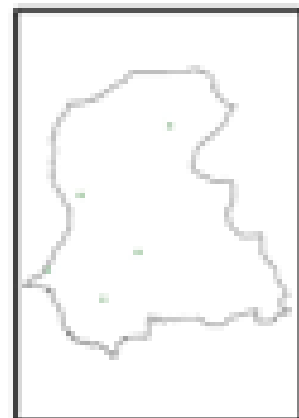
Habitat:

Common in wheat agriculture field.

Uses:

Distribution:

Throughout the world.



Poaceae / Gramineae



Phragmites australis (Cay.) Trin. ex Steud.

(Syn: *Arundo australis* Cay.)

English name: Common reed.

Local name: Dila, Naar.

Description:

A perennial tall grass with round hollow stem and creeping rhizomes, flowering stem erect, 1.5-3 (-6) m high. Leaves flat hard but as compare to *Phragmites karka* tip of leaves are soft.

Flowering Period:

November to February.

Habitat:

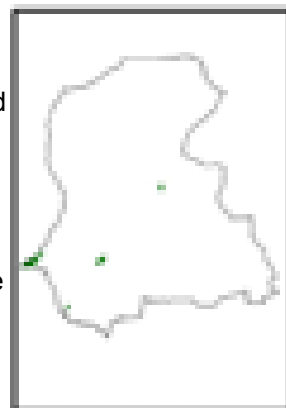
Margins of lakes and ponds and in shallow water in the plains.

Uses:

Rhizomes and roots possess anti-emetic, diuretic and diaphoretic properties and are used in diabetes. The plant is reported to be employed in rheumatic complaints. Use in construction of houses by the locals. The plant is also providing habitat to honey bees.

Distribution:

Pakistan, temperate regions of both hemispheres in the Old World and the New.



Poaceae / Gramineae



Phragmites karka (Retz.) Trin. ex Steud.
(Syn: *Arundo karka* Retz.)

English name: Tall reed.

Local name: Naar, Nalu.

Description:

A perennial tall grass, with creeping rhizomes, culms erect, up to 10 m high. Leaves flat hard with stiff tip.

Flowering Period:

April to November.

Habitat:

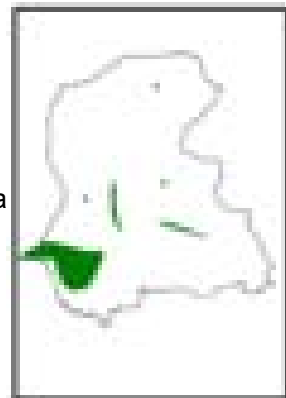
Commonly occurs in swamps and banks of streams.

Uses:

It is said to be poisonous to cattle, but in any case it is far too coarse for fodder. Decoction of the root is orally given acts as diuretic and used in kidney, gall bladder's stones and bleeding piles.

Distribution:

All over Pakistan, Tropical Africa, Polynesia, Northern Australia and tropical Asia.



Poaceae / Gramineae



***Polypogon monspeliensis* (L.) Desf.**
(Syn: *Alopecurus monspeliensis* L.)

English name: Beardgrass.

Local name: Poochar.

Description:

A tufted annual grass, 6-8 cm high, erect or geniculately ascending, glabrous, Panicle narrow, very dense, pale green or yellowish. Spikelets 2-3 mm long, very common throughout Pakistan from the plains to 4000 m.

Flowering Period:

Throughout the year, but mostly between March-July.

Habitat:

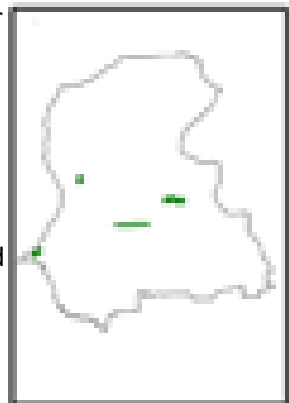
Commonly found in gardens, damp places, near to water courses, irrigation canals.

Uses:

Grown as an ornamental but often becoming a weed, little value for fodder.

Distribution:

Pakistan (Sindh, Baluchistan, Punjab, KPK, Gilgit & Kashmir); northeast tropical and South Africa; Mediterranean region northwards to the British Isles and eastwards to India and China; introduced and naturalized in most warm temperate countries.



Poaceae / Gramineae



***Saccharum bengalense* Retz.**

English name: Sweetcane.

Local name: Kano-Sar, Sarkanda, Dangri gaah.

Description:

A tall, caespitose perennial; culms up to 4 m high; large tufted grass, spikelets slightly heteromorphous, acute or very shortly awned, the awn not visible beyond the glumes.

Flowering Period:

October to January.

Habitat:

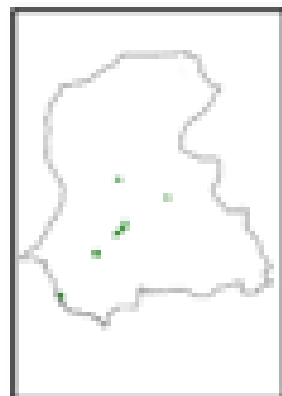
Near water bodies, in moist soil.

Uses:

stem is used for making roof called "Patar" sitting chair is made from the stem called "Booro." It is of little account as a fodder since cattle and buffaloes will only eat the tender young leaves. A valuable fiber can be extracted from the upper leaf-sheaths of the flowering culm.

Distribution:

Pakistan (Sindh, Punjab, KPK), North & North West India and Afghanistan.



Poaceae / Gramineae



Saccharum griffithii Munro. ex Boiss.

English name:

Local name: Daab, Sankanda, Dangri gaah.

Description:

A tall erect hollow stem perennial rhizomatous grass with thick stem; flowering stem up to 2 m high, *S. griffithii* shorter than in *S. bengalense* and cream or yellow rather than silver or grayish. It grows very rapidly and if cut before full grown it yields excellent hay. When mature the leaves are razor-sharp on the margins and therefore unpopular with cattle at this stage.

Flowering Period:

September to November.

Habitat:

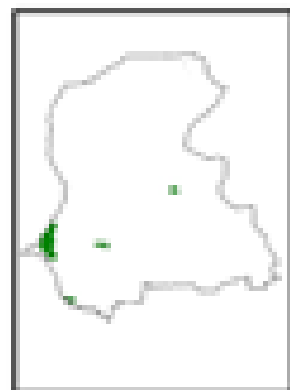
The grass is found in moist places near water courses.

Uses:

A very good fodder species, it is also a favorite food for elephants, the plant have potential for bio-fuel preparation.

Distribution:

Pakistan, South America, Philippine Islands, Hawaii, India and China.



Poaceae / Gramineae



Saccharum ravennae (L.) Murr.
(Syn: *Andropogon ravennae* L.)

English name: Ravenna grass, Plume grass.
Local name: Dholu.

Description:

Tall caespitose perennial grass; flowering stem up to 4.5 m high. Leaf-blades up to 100 cm long, 3-20 mm wide, flat. Panicle 25-70 cm long, dense, the axis markedly angular (usually 6-angled), peduncle glabrous; racemes 1.5-3 cm long, much shorter than the supporting branches, the internodes and pedicels hirsute with hairs 3-6 mm. long. Spikelets slightly heteromorphous, 3-6 mm long, glumes equal, membranous, upper lemma narrow, lower lemma lanceolate, glabrous.

Flowering Period:

August to December.

Habitat:

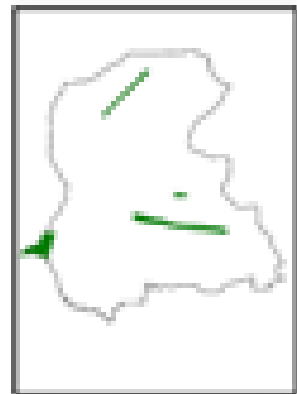
Found in dry as well as near to agricultural fields.

Uses:

A valuable fodder species.

Distribution:

Pakistan, Northern India and South West Asia
Westwards to the Mediterranean region.



Poaceae / Gramineae



***Saccharum spontaneum* L.**

English name: Wild sugarcane, Thatch grass.

Local name: Sacho Sar.

Description:

A tall, erect, perennial grass up to 6 m in height with slender culms, leaves are long with stiff margins, generally taper towards the base, peduncle mostly hairy.

Flowering Period:

July to September.

Habitat:

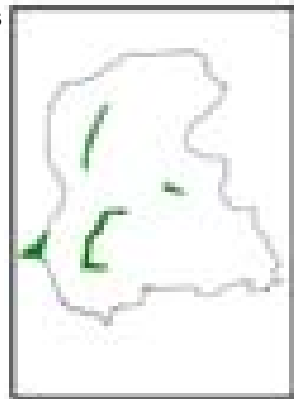
Common in moist areas.

Uses:

The panicle is used in blood diseases; the decoction of the bark of stem is used as mouth gargle; outer scales of leaves are effective in cough. The root-system is extremely extensive and the grass acts as an effective soil-binder.

Distribution:

Widely distributed in the warmer regions of the world.



Poaceae / Gramineae



Setaria verticillata (L.) P. Beauv.
(Syn: *Panicum verticillatum* L.)

English name: Hooked bristlegrass.

Local name: Krangh gaah, Dangri gaah.

Description:

A loosely tufted annual, erect, 10-100 cm high or more, ascending, glabrous, angular often rough below the inflorescence. Panicle spiciform, spikelets oblong or ellipsoid, pale green. Spikelets awns with retrorse barbs.

Flowering Period:

Throughout the year.

Habitat:

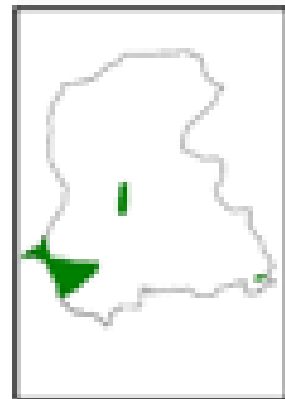
Found in moist soils of road sides, near to tube wells, irrigation canals, water courses.

Uses:

Used as fodder, eaten by cattle before the appearance of spikes.

Distribution:

Pakistan (Sindh, Balochistan, Punjab, KPK and Kashmir),
Tropical and warm temperate regions generally.



Poaceae / Gramineae



Sporobolus arabicus Boiss.
(Syn: *Vilfa Arabica* (Boiss.) Steud.)

English name:

Local name: Deer gaah.

Description:

A tussocky, perennial grass, flowering stem up to 60 cm high. Leaves narrowly linear to acuminate up to 25 cm long and 2 to 3 mm broad. Panicle up to 20 cm long, elliptical or pyramidal. Lower branches verticillate. Seeds 0.8 to 1.2 mm long. The species can be distinguished from *S. kentrophyllus* by its stiff, pungent, inrolled glaucous leaves.

Flowering Period:

March to October.

Habitat:

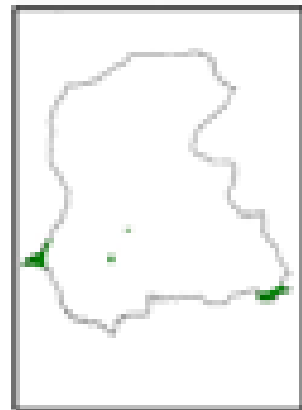
Arid and semi-arid areas. A typical desert species.

Uses:

Grazed by livestock.

Distribution:

Pakistan, Saudi Arabia, Iran and India.



Poaceae / Gramineae



Sporobolus helvolus (Trin.) Dur. & Schinz
(Syn: *Vilfa helvola* Trin.)

English name: Okrich, Sporobolus grass.

Local name:

Description:

Tufted perennial erect plant with long slender stolons; flowering stem wiry 15-60 cm high, spikelets greenish brown

Flowering Period:

March to May and October.

Habitat:

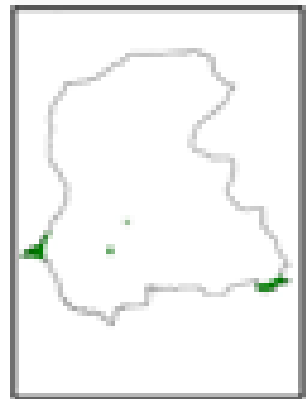
Dry areas, slightly saline habitats.

Uses:

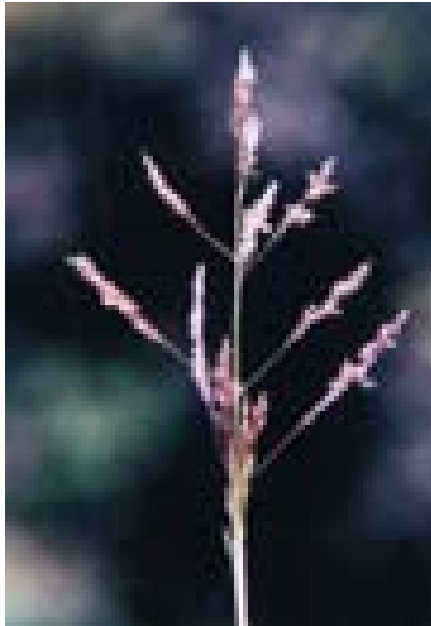
A desert grass species making good fodder for livestock especially for camels.

Distribution:

Pakistan, tropical Africa, Arabia and India.



Poaceae / Gramineae



Sporobolus kentrophyllus (K. Schum.) W. D. Clayton
(Syn: *Agrostis kentrophyllus* K. Schum.)

English name: Sporobolus grass.

Local name: Deer gaah.

Description:

A tussocky perennial erect grass, the tufts often connected by stolons; leaves usually short and stiff; flowering stem 15-80 cm high.

Flowering Period:

August to November.

Habitat:

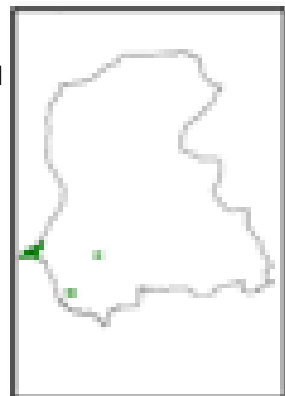
It is a plant of saline or alkaline grass-lands, sea-shore sands and sandy patches in mangrove swamps rarely observed on stony soil.

Uses:

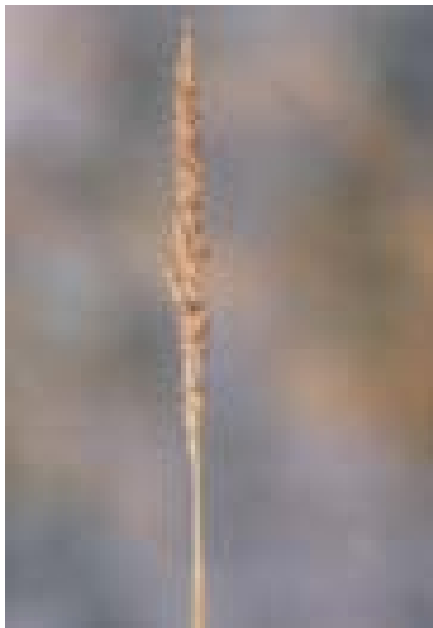
Grazed by livestock at early stage but occasionally.

Distribution:

Sandy areas of Pakistan, India, Bangladesh, Central and East Africa to Sri Lanka.



Poaceae / Gramineae



Sporobolus virginicus (L.) Kunth.

(Syn: *Agrostis virginicus* L.)

English name: Salt couch, Crab-grass, Marsh-grass, Coastal rat-tail grass.

Local name: Deer gaah.

Description:

A perennial grass, that creeps along the ground or tends erect, up to 40 cm high.

Flowering Period:

September to March.

Habitat:

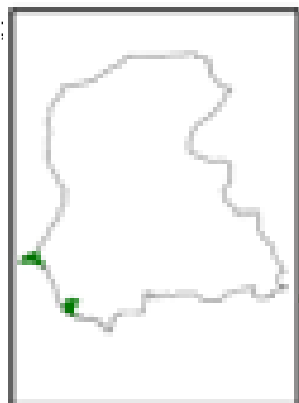
Common on mud flats in intertidal zones and river estuaries, rarely on saline soils inland.

Uses:

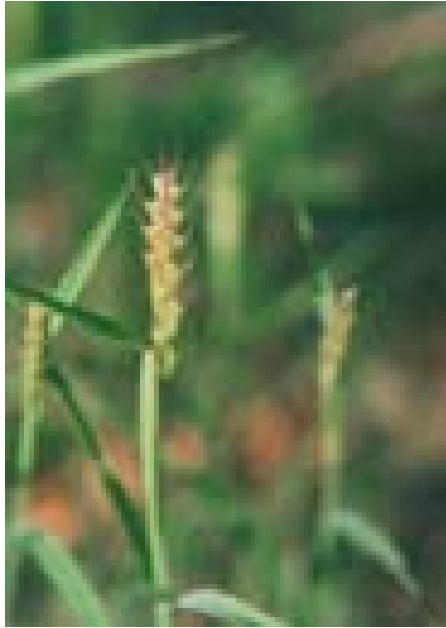
Used as nutritious forage for cattle and is readily grazed; also used medicinally to relieve urinary irritation and as a gargle.

Distribution:

Pakistan (Sindh); tropics and subtropics throughout the world.



Poaceae / Gramineae



Tetrapogon tenellus (Koen. ex Roxb.) Chiov.
(Syn: ***Chloris tenella*** Koen. ex Roxb.)

English name:

Local name:

Description:

An annual or short-lived perennial geniculately erect grass, loosely tufted, with 4-6 nodes flowering stem up to 60 cm high.

Flowering Period:

April to June.

Habitat:

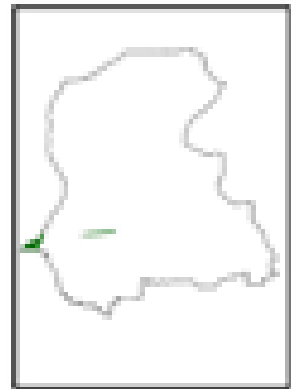
This grass is found in desert areas and sometimes on limestone.

Uses:

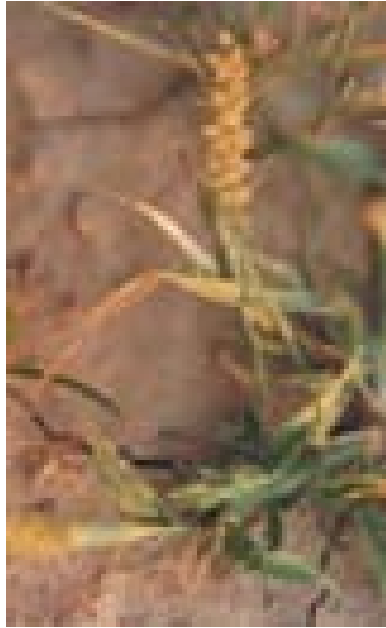
Good fodder grass.

Distribution:

Pakistan (Sindh, Punjab); Tropical Africa, eastwards to India and Southwards to Rhodesia and Angola.



Poaceae / Gramineae



Tragus roxburghii Panigrahi

English name:

Local name:

Description:

A radiantly spreading annual, culms 3-20 cm long, ascending from a prostrate base, a sporadic xerophytic species.

Flowering Period:

Most of the year.

Habitat:

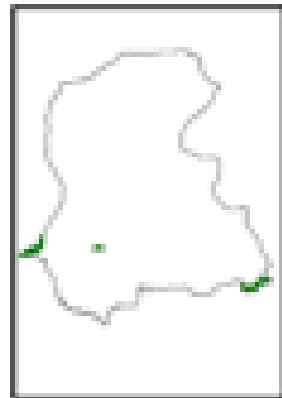
Found in dry, stony and open areas as well as on dry soil of roadsides.

Uses:

Grazed during the rains and said to be nutritious.

Distribution:

Pakistan, South-east Asia and East Africa.



Poaceae / Gramineae



Urochondra setulosa (Trin.) C. E. Hubbard
(Syn: *Villa setulosa* Trin.)

English name:

Local name: Budhala.

Description:

Densely tufted perennial with short rhizomes. Highly salt tolerant grass species of coastal belt, flowering stem erect or geniculately ascending, stout, 15-90 cm high, densely pubescent below the inflorescence. Leaves stiff and narrow most dense in the lower part of the plant.

Flowering Period:

Almost throughout the year.

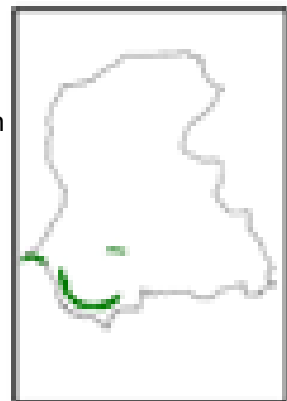
Habitat:

Common species of dune-slacks, banks of salt water creeks and saline flats.

Uses:

Distribution:

Morocco to Somalia (Northern Africa), India and Pakistan and Arabia.



Pontederiaceae



Eichhornia crassipes (Mart.) Solma.
(Syn: *Pontederia crassipes* Mart.)

English name: Water Hyacinth.

Local name: Naagin wal.

Description:

A 30-50 cm high aquatic herb, with short stem and many long fibrous roots, the lilac flowers are a beautiful sight during the flowering season, difficult to eradicate due to its quick growth. It has become troublesome weed in Sindh and Punjab, propagates by stolons and multiplying very fast.

Flowering Period:

May to July.

Habitat:

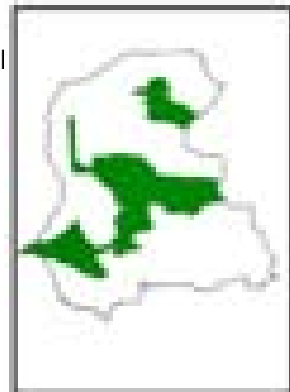
Found in lakes, ponds, slow-moving streams and canals.

Uses:

Plant is rich in potash. The plant have excellent potential for bio-fuel. One hectare of standing crop can thus produce more than 70,000 m³ biogas. It is a best water treatment plant can absorb pollutant form the polluted water. The flowers are used to medicate skin of horses.

Distribution:

Native to Brazil. Introduced and naturalized in many tropical countries. A notorious invasive species in water bodies of many tropical and subtropical countries.



Potamogetonaceae



Potamogeton lucens L.

English name: Shining pondweed.

Local name: Gidar Ponch.

Description:

Perennial, rhizomatous partially submerged aquatic herb of ponds, lakes and slow moving streams which is now very rare, leaves with short stalk and wavy edges, stem branched.

Flowering Period:

July to August.

Habitat:

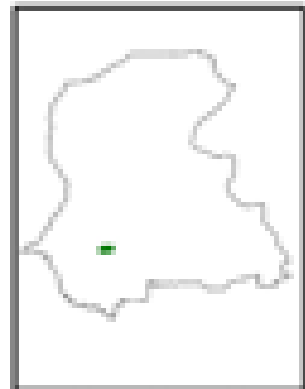
Found in fresh water lakes, ponds.

Uses:

The plant is used for manuringm and in pisciculture.

Distribution:

Europe, North Africa and temperate Asia.



Potamogetonaceae



Potamogeton natans L.

English name: Floating pondweed.

Local name: Gidar Ponch.

Description:

Perennial, rhizomatous partially submerged leaves are smooth 8 cm long and about 3-4 cm broad with long stalk, a rare species.

Flowering Period:

August to September.

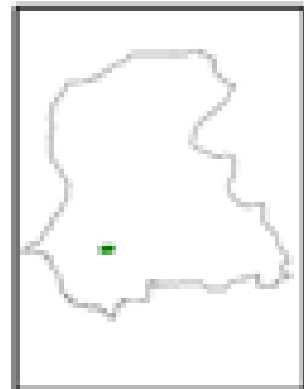
Habitat:

An aquatic partially submerged herb of slow flowing fresh water habitats.

Uses:

Distribution:

Temperate and arctic regions of Europe, Asia and Northern America.



Potamogetonaceae



Potamogeton perfoliatus L.

English name: Pondweed.

Local name: Gidar Ponch.

Description:

A rhizomatous, aquatic submerged common herb of fresh water, stem branched or simple, fruit-let polymorphism has been noticed in this species.

Flowering Period:

November to March.

Habitat:

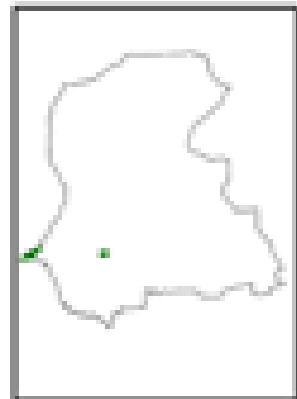
Common aquatic submerged herb of stagnant or slow moving fresh water habitats.

Uses:

Plants are generally used in manuring and the root-stocks are used as food for animals.

Distribution:

Europe, Asia, Africa, Northern America and Australia.



Typhaceae



Typha dominghensis Pers.
(Syn: *Typha angustata* Bory & Chaub.)

English name: Narrow leaved Cat-tail.

Local name: Phan, Pan.

Description:

A robust plant 1.5-3.0 m or more tall. Leaves narrow about 12 mm broad, equal or longer than the flowering stem. Stem somewhat stout, male and female flowers separated on the same stalk.

Flowering Period:

Flowering most of the year.

Habitat:

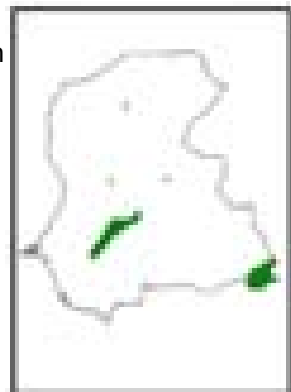
Commonly found at the edges of ponds, lakes, slow moving canals and marshes.

Uses:

Dry inflorescence is used for cooling effects, a local dish called "Bhorani" prepared from the pollen of the plant. Leaves used for making mats and as packing material.

Distribution:

Pantropical.



Typhaceae



Typha elephantina Roxb.

English name: Bulursh, Indian reedmace.

Local name: Phan, Pan.

Description:

Perennial 1.5-4.0 m tall. Leaves linear or broadly linear; trigonous above the sheath, angular keeled dorsally three angled; lamina 25-40 mm broad; male and female parts separate; axis of the male spike covered with hairs; female spike cylindrical, blackish brown or brown; female flowers having bracts with laceolate stigma.

Flowering Period:

March to August.

Habitat:

Common on borders of pond, marsh canals and slow streams.

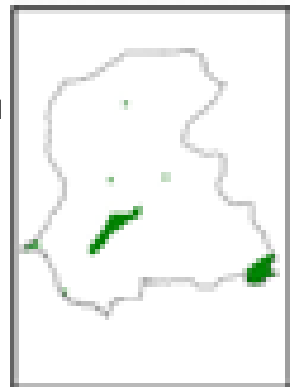
Uses:

Young shoots and roots are sometimes eaten.

Silosangami, a traditional Korean medicine consisting of the pollens of *Typha elephantiana*. Bhorani is a local dish prepared by the pollens of the same plant. Leaves are used in mat making. Roots are used as diuretic and astringent.

Distribution:

Africa, South and Central Asia, Pakistan, India, Nepal and Iran.



Poaceae / Gramineae



***Saccharum bengalense* Retz.**

English name: Sweetcane.

Local name: Kano-Sar, Sarkanda, Dangri gaah.

Description:

A tall, caespitose perennial; culms up to 4 m high; large tufted grass, spikelets slightly heteromorphous, acute or very shortly awned, the awn not visible beyond the glumes.

Flowering Period:

October to January.

Habitat:

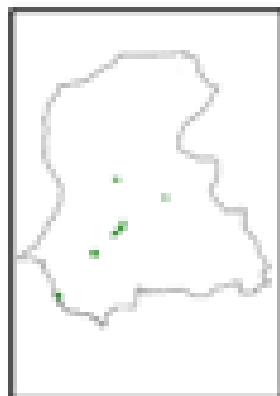
Near water bodies, in moist soil.

Uses:

stem is used for making roof called "Patar" sitting chair is made from the stem called "Booro." It is of little account as a fodder since cattle and buffaloes will only eat the tender young leaves. A valuable fiber can be extracted from the upper leaf-sheaths of the flowering culm.

Distribution:

Pakistan (Sindh, Punjab, KPK), North & North West India and Afghanistan.



Poaceae / Gramineae



Saccharum griffithii Munro. ex Boiss.

English name:

Local name: Daab, Sankanda, Dangri gaah.

Description:

A tall erect hollow stem perennial rhizomatous grass with thick stem; flowering stem up to 2 m high, *S. griffithii* shorter than in *S. bengalense* and cream or yellow rather than silver or grayish. It grows very rapidly and if cut before full grown it yields excellent hay. When mature the leaves are razor-sharp on the margins and therefore unpopular with cattle at this stage.

Flowering Period:

September to November.

Habitat:

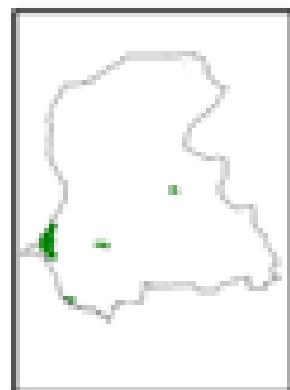
The grass is found in moist places near water courses.

Uses:

A very good fodder species, it is also a favorite food for elephants, the plant have potential for bio-fuel preparation.

Distribution:

Pakistan, South America, Philippine Islands, Hawaii, India and China.



Poaceae / Gramineae



Saccharum ravennae (L.) Murr.
(Syn: *Andropogon ravennae* L.)

English name: Ravenna grass, Plume grass.

Local name: Dholu.

Description:

Tall caespitose perennial grass; flowering stem up to 4.5 m high. Leaf-blades up to 100 cm long, 3-20 mm wide, flat. Panicle 25-70 cm long, dense, the axis markedly angular (usually 6-angled), peduncle glabrous; racemes 1.5-3 cm long, much shorter than the supporting branches, the internodes and pedicels hirsute with hairs 3-6 mm. long. Spikelets slightly heteromorphous, 3-6 mm long, glumes equal, membranous, upper lemma narrow, lower lemma lanceolate, glabrous.

Flowering Period:

August to December.

Habitat:

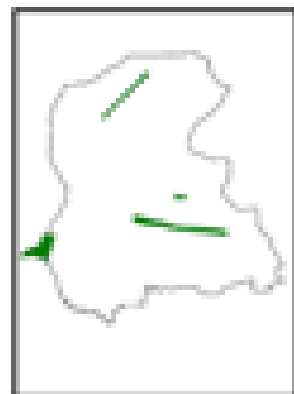
Found in dry as well as near to agricultural fields.

Uses:

A valuable fodder species.

Distribution:

Pakistan, Northern India and South West Asia
Westwards to the Mediterranean region.



Poaceae / Gramineae



***Saccharum spontaneum* L.**

English name: Wild sugarcane, Thatch grass.

Local name: Sacho Sar.

Description:

A tall, erect, perennial grass up to 6 m in height with slender culms, leaves are long with stiff margins, generally taper towards the base, peduncle mostly hairy.

Flowering Period:

July to September.

Habitat:

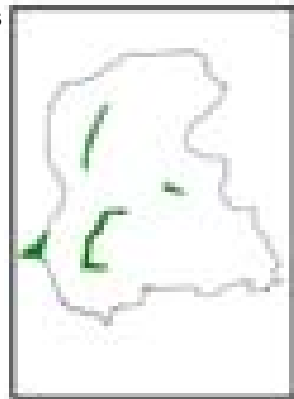
Common in moist areas.

Uses:

The plant is used in blood diseases; the decoction of the bark of stem is used as mouth gargle; outer scales of leaves are effective in cough. The root-system is extremely extensive and the grass acts as an effective soil-binder.

Distribution:

Widely distributed in the warmer regions of the world.



Poaceae / Gramineae



Setaria verticillata (L.) P. Beauv.
(Syn: *Panicum verticillatum* L.)

English name: Hooked bristlegrass.

Local name: Krangh gaah, Dangri gaah.

Description:

A loosely tufted annual, erect, 10-100 cm high or more, ascending, glabrous, angular often rough below the inflorescence. Panicle spiciform, spikelets oblong or ellipsoid, pale green. Spikelets awns with retrorse barbs.

Flowering Period:

Throughout the year.

Habitat:

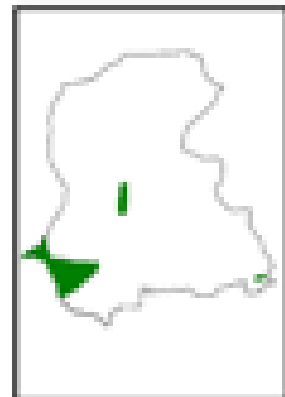
Found in moist soils of road sides, near to tube wells, irrigation canals, water courses.

Uses:

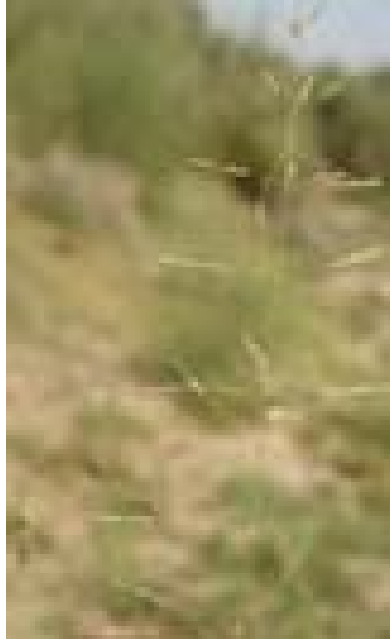
Used as fodder, eaten by cattle before the appearance of spikes.

Distribution:

Pakistan (Sindh, Balochistan, Punjab, KPK and Kashmir),
Tropical and warm temperate regions generally.



Poaceae / Gramineae



Sporobolus arabicus Boiss.
(Syn: *Vilfa Arabica* (Boiss.) Steud.)

English name:

Local name: Deer gaah.

Description:

A tussocky, perennial grass, flowering stem up to 60 cm high. Leaves narrowly linear to acuminate up to 25 cm long and 2 to 3 mm broad. Panicle up to 20 cm long, elliptical or pyramidal. Lower branches verticillate. Seeds 0.8 to 1.2 mm long. The species can be distinguished from *S. kentrophyllus* by its stiff, pungent, inrolled glaucous leaves.

Flowering Period:

March to October.

Habitat:

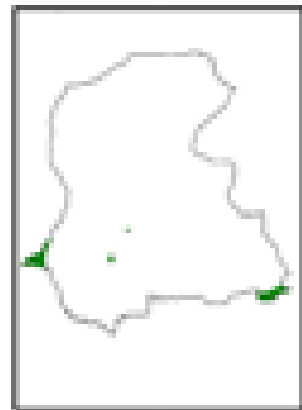
Arid and semi-arid areas. A typical desert species.

Uses:

Grazed by livestock.

Distribution:

Pakistan, Saudi Arabia, Iran and India.



Poaceae / Gramineae



Sporobolus helvolus (Trin.) Dur. & Schinz
(Syn: *Vilfa helvola* Trin.)

English name: Okrich, Sporobolus grass.

Local name:

Description:

Tufted perennial erect plant with long slender stolons; flowering stem wiry 15-60 cm high, spikelets greenish brown

Flowering Period:

March to May and October.

Habitat:

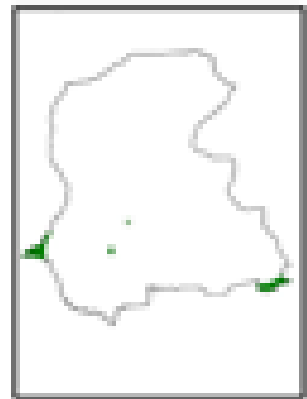
Dry areas, slightly saline habitats.

Uses:

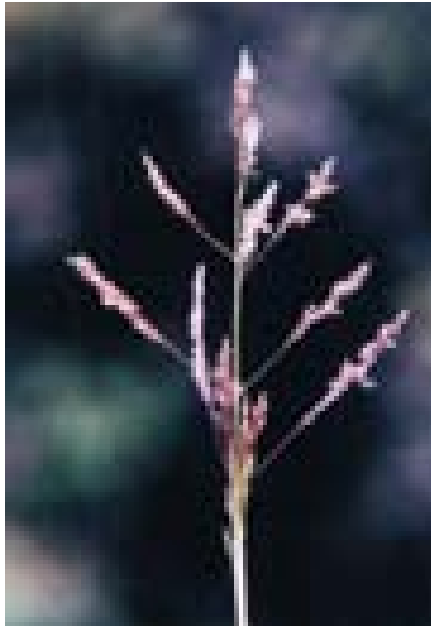
A desert grass species making good fodder for livestock especially for camels.

Distribution:

Pakistan, tropical Africa, Arabia and India.



Poaceae / Gramineae



Sporobolus kentrophyllus (K. Schum.) W. D. Clayton
(Syn: *Agrostis kentrophyllus* K. Schum.)

English name: Sporobolus grass.

Local name: Deer gaah.

Description:

A tussocky perennial erect grass, the tufts often connected by stolons; leaves usually short and stiff; flowering stem 15-80 cm high.

Flowering Period:

August to November.

Habitat:

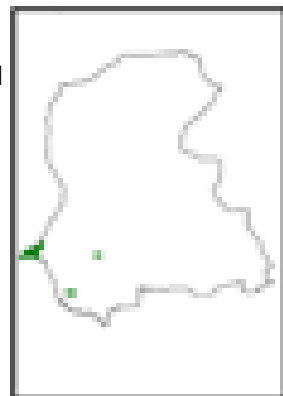
It is a plant of saline or alkaline grass-lands, sea-shore sands and sandy patches in mangrove swamps rarely observed on stony soil.

Uses:

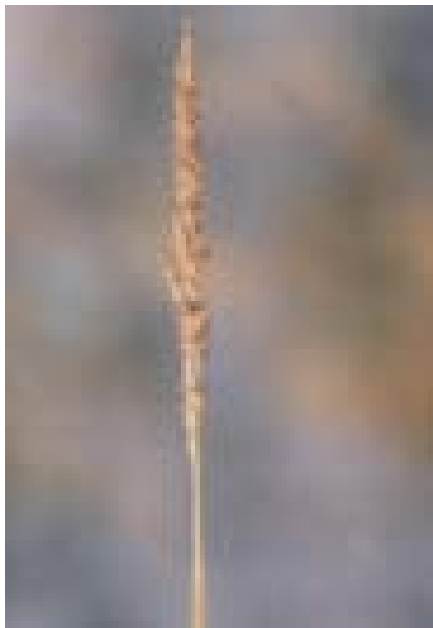
Grazed by livestock at early stage but occasionally.

Distribution:

Sandy areas of Pakistan, India, Bangladesh, Central and East Africa to Sri Lanka.



Poaceae / Gramineae



Sporobolus virginicus (L.) Kunth.

(Syn: *Agrostis virginicus* L.)

English name: Salt couch, Crab-grass, Marsh-grass, Coastal rat-tail grass.

Local name: Deer gaah.

Description:

A perennial grass, that creeps along the ground or tends erect, up to 40 cm high.

Flowering Period:

September to March.

Habitat:

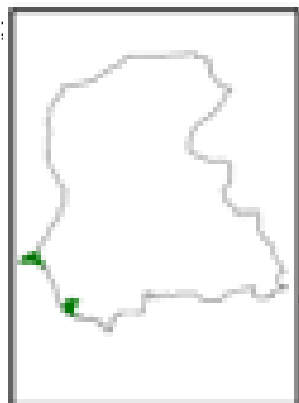
Common on mud flats in intertidal zones and river estuaries, rarely on saline soils inland.

Uses:

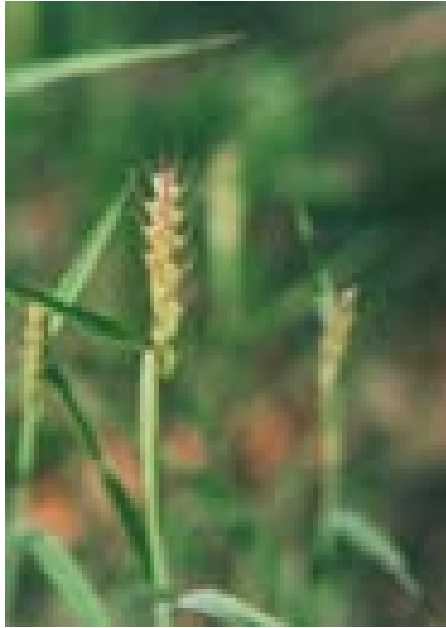
Used as nutritious forage for cattle and is readily grazed; also used medicinally to relieve urinary irritation and as a gargle.

Distribution:

Pakistan (Sindh); tropics and subtropics throughout the world.



Poaceae / Gramineae



Tetrapogon tenellus (Koen. ex Roxb.) Chiov.
(Syn: ***Chloris tenella*** Koen. ex Roxb.)

English name:

Local name:

Description:

An annual or short-lived perennial geniculately erect grass, loosely tufted, with 4-6 nodes flowering stem up to 60 cm high.

Flowering Period:

April to June.

Habitat:

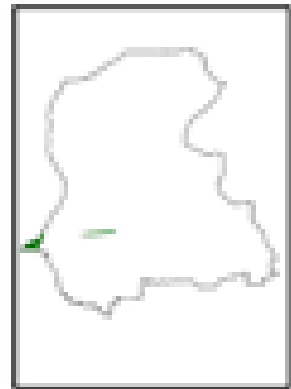
This grass is found in desert areas and sometimes on limestone.

Uses:

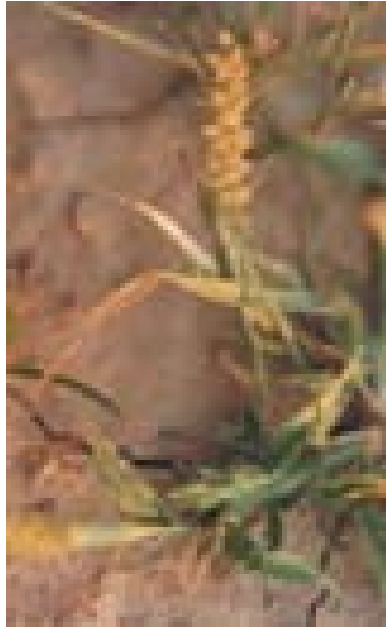
Good fodder grass.

Distribution:

Pakistan (Sindh, Punjab); Tropical Africa, eastwards to India and Southwards to Rhodesia and Angola.



Poaceae / Gramineae



Tragus roxburghii Panigrahi

English name:

Local name:

Description:

A radiantly spreading annual, culms 3-20 cm long, ascending from a prostrate base, a sporadic xerophytic species.

Flowering Period:

Most of the year.

Habitat:

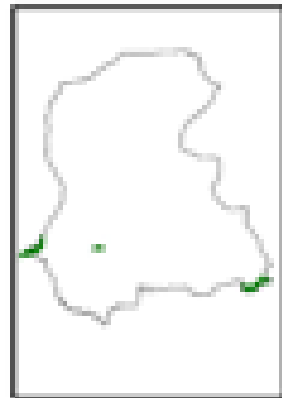
Found in dry, stony and open areas as well as on dry soil of roadsides.

Uses:

Grazed during the rains and said to be nutritious.

Distribution:

Pakistan, South-east Asia and East Africa.



Poaceae / Gramineae



Urochondra setulosa (Trin.) C. E. Hubbard
(Syn: *Villa setulosa* Trin.)

English name:

Local name: Budhala.

Description:

Densely tufted perennial with short rhizomes. Highly salt tolerant grass species of coastal belt, flowering stem erect or geniculately ascending, stout, 15-90 cm high, densely pubescent below the inflorescence. Leaves stiff and narrow most dense in the lower part of the plant.

Flowering Period:

Almost throughout the year.

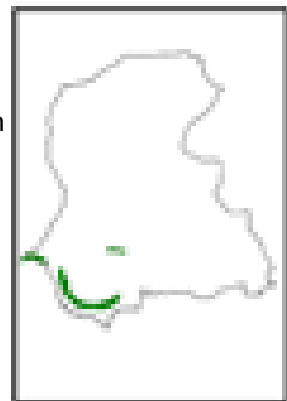
Habitat:

Common species of dune-slacks, banks of salt water creeks and saline flats.

Uses:

Distribution:

Morocco to Somalia (Northern Africa), India and Pakistan and Arabia.



Pontederiaceae



Eichhornia crassipes (Mart.) Solma.
(Syn: *Pontederia crassipes* Mart.)

English name: Water Hyacinth.

Local name: Naagin wal.

Description:

A 30-50 cm high aquatic herb, with short stem and many long fibrous roots, the lilac flowers are a beautiful sight during the flowering season, difficult to eradicate due to its quick growth. It has become troublesome weed in Sindh and Punjab, propagates by stolons and multiplying very fast.

Flowering Period:

May to July.

Habitat:

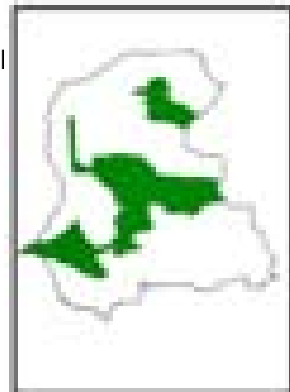
Found in lakes, ponds, slow-moving streams and canals.

Uses:

Plant is rich in potash. The plant have excellent potential for bio-fuel. One hectare of standing crop can thus produce more than 70,000 m³ biogas. It is a best water treatment plant can absorb pollutant form the polluted water. The flowers are used to medicate skin of horses.

Distribution:

Native to Brazil. Introduced and naturalized in many tropical countries. A notorious invasive species in water bodies of many tropical and subtropical countries.



Potamogetonaceae



Potamogeton lucens L.

English name: Shining pondweed.

Local name: Gidar Ponch.

Description:

Perennial, rhizomatous partially submerged aquatic herb of ponds, lakes and slow moving streams which is now very rare, leaves with short stalk and wavy edges, stem branched.

Flowering Period:

July to August.

Habitat:

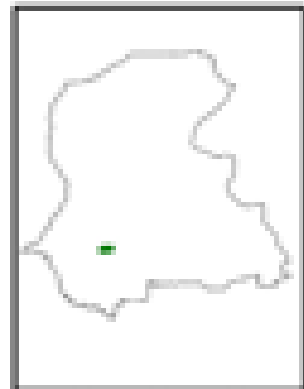
Found in fresh water lakes, ponds.

Uses:

The plant is used for manuringm and in pisciculture.

Distribution:

Europe, North Africa and temperate Asia.



Potamogetonaceae



Potamogeton natans L.

English name: Floating pondweed.

Local name: Gidar Ponch.

Description:

Perennial, rhizomatous partially submerged leaves are smooth 8 cm long and about 3-4 cm broad with long stalk, a rare species.

Flowering Period:

August to September.

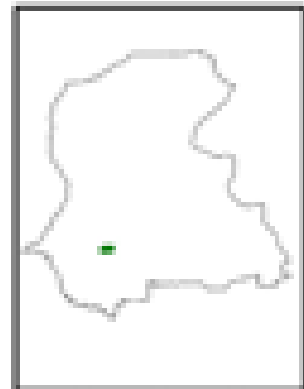
Habitat:

An aquatic partially submerged herb of slow flowing fresh water habitats.

Uses:

Distribution:

Temperate and arctic regions of Europe, Asia and Northern America.



Potamogetonaceae



Potamogeton perfoliatus L.

English name: Pondweed.

Local name: Gidar Ponch.

Description:

A rhizomatous, aquatic submerged common herb of fresh water, stem branched or simple, fruit-let polymorphism has been noticed in this species.

Flowering Period:

November to March.

Habitat:

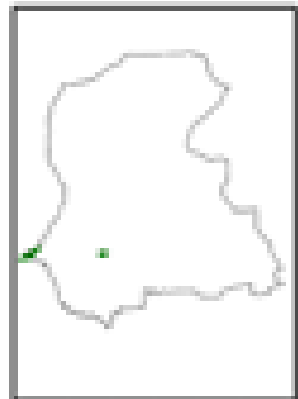
Common aquatic submerged herb of stagnant or slow moving fresh water habitats.

Uses:

Plants are generally used in manuring and the root-stocks are used as food for animals.

Distribution:

Europe, Asia, Africa, Northern America and Australia.



Typhaceae



Typha dominghensis Pers.
(Syn: *Typha angustata* Bory & Chaub.)

English name: Narrow leaved Cat-tail.

Local name: Phan, Pan.

Description:

A robust plant 1.5-3.0 m or more tall. Leaves narrow about 12 mm broad, equal or longer than the flowering stem. Stem somewhat stout, male and female flowers separated on the same stalk.

Flowering Period:

Flowering most of the year.

Habitat:

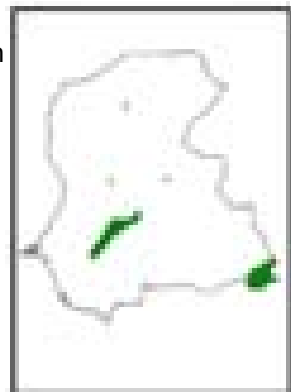
Commonly found at the edges of ponds, lakes, slow moving canals and marshes.

Uses:

Dry inflorescence is used for cooling effects, a local dish called "Bhorani" prepared from the pollen of the plant. Leaves used for making mats and as packing material.

Distribution:

Pantropical.



Typhaceae



Typha elephantina Roxb.

English name: Bulursh, Indian reedmace.

Local name: Phan, Pan.

Description:

Perennial 1.5-4.0 m tall. Leaves linear or broadly linear; trigonous above the sheath, angular keeled dorsally three angled; lamina 25-40 mm broad; male and female parts separate; axis of the male spike covered with hairs; female spike cylindrical, blackish brown or brown; female flowers having bracts with laceolate stigma.

Flowering Period:

March to August.

Habitat:

Common on borders of pond, marsh canals and slow streams.

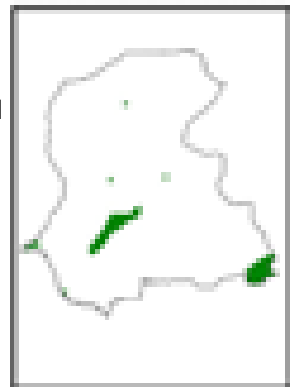
Uses:

Young shoots and roots are sometimes eaten.

Silosangami, a traditional Korean medicine consisting of the pollens of *Typha elephantiana*. Bhorani is a local dish prepared by the pollens of the same plant. Leaves are used in mat making. Roots are used as diuretic and astringent.

Distribution:

Africa, South and Central Asia, Pakistan, India, Nepal and Iran.



List of Endemic Species

S#	Plant Family & Species	Distribution	Conservation Status
1	Acanthaceae <i>Justicia vahlii</i> subsp. <i>Scindica</i> Malik & Ghafoor	Karachi and Dadu Distt	Rare
2	Asparagaceae <i>Asparagus deltae</i> Blatter	Thatta	Extinct
3	Asparagaceae <i>Asparagus gharoensis</i> Blatter	Southern Sindh	Probably extinct
4	Asparagaceae <i>Asparagus dumosus</i> Baker	Coastal areas of Sindh	Vulnerable
5	Burseraceae <i>Commiphora stocksiana</i> (Engl.)	Lasbela District, Karachi Division, Thatta and Sangarh Districts.	Rare
6	Chenopodiaceae <i>Atriplex stocksii</i> Boiss.	Coastal areas of Sindh and Balochistan.	Fairly common
7	Compositae <i>Pulicaria boisseri</i> Hook.f.	Sindh, southern Balochistan, Punjab	Fairly common
8	Convolvulaceae <i>Convolvulus scindicus</i> Stocks	Balochistan (Sibi) and Sindh (Dadu and Thatta Districts)	Rare
9	Malvaceae <i>Abutilon alii</i> Abedin	Karachi Division and Lasbela District	Critically Endangered
10	Malvaceae <i>Abutilon karachianum</i> Husain & Baquar	Karachi Division and Lasbela District	Critically Endangered
11	Malvaceae <i>Abutilon sepalum</i> Husain & Baquar	Karachi Division and Thatta District	On the brink of extinction
12	Malvaceae <i>Hibiscus scindicus</i> Stocks	Sindh and southern Balochistan	Rare
13	Malvaceae <i>Pavonia glechomaefolia f. karachiensis</i> Abedin	Karachi	Rare
14	Malvaceae <i>Sida spinosa</i> var. <i>kazmii</i> Abedin	Sindh and southerh Punjab	Rare
15	Mimosaceae <i>Acacia nilotica</i> subsp. <i>hemispherica</i> Ali & Faruqi	Karachi	Vulnerable
16	Tamaricaceae <i>Tamarix alii</i> Qaiser	Southern Sindh (Karachi, Thatta Dist. Nagar Parker) Coastal parts of Balochistan.	Fairly Common
17	Tamaricaceae <i>Tamarix salina</i> Dyer	Khairpur, Mirpurkhas, Sukkur and Karachi	Rare
18	Tamaricaceae <i>Tamarix sarenensis</i> Qaiser	Tharparkar district, Keti bunder and Keenjhar	Rare
19	Tamaricaceae <i>Tamarix sultanii</i> Qaiser	Southern Sindh	Rare

Glossary of Botany Terms

A

Achene	Small dry indehiscent fruit with the seed distinct from the fruit wall, term usually apply for the fruits of family Asteraceae/compositae.
the	
Acicular	Needle-shaped.
Adventitious	Roots that arise from any part of the plant as in many grasses from internodes.
Aerial	Growing above the ground or water.
Aestival	Appearing during the summer season.
Alternate	Leaves arranged singly at each node on the stem.
Amplexicaul	Clasping the stem, as some leaves do at their base.
Angiospermae	Group of plants producing seeds protected by carpel.
Annual	Plants that flower and fruit in one year.
Anther	Part of the stamen that bears pollen.
Apical	Term refer to tip or distal end.
Aquatic	Growing in water.
Aromatic	Agreeable, usually spicy, odor.
Ascending	Generally pertaining to plant habit, where the stem and branches are produced upward obliquely.
are	
Auriculate	Leaf base with small rounded lobes.
Awns	Bristle like appendages.
Axil	Upper angle that a petiole or peduncle makes with the stem that bears it.
Axillary	In the axil.

B

	Refers to position, base of an organ like leaves borne at the base of stem.
Bi-labiate	A flower petals with two lips.
Bisexual	Having both sexes.
Bract	Usually a small leaf like structure present at the base of a flower stalk.
Bracteole	Secondary bract, generally present on the flower stalk.
Bulb	An underground reduced stem, in which the inner leaves are fleshy outer ones scaly, as in onion.
and	
Buttress	A tree trunk with a widening base.

C

Caespitose	Growing in tufts.
Calyx	Outermost whorl of a flower, made up of individual parts, the sepals.
Canescent	Bearing a hoary, grayish pubescence
Carpel	Seed producing part of a flower.
Caulescent	Having a manifest stem above ground
Ciliate	Bearing hairs on the margin.

Glossary of Botany Terms

Cladode	A leaf-like stem, e.g. Asparagus
Cluster	A number of similar flowers or fruits growing closely together.
Compound	A structure made up of several similar parts as compound leaf and compound flower.
Cone in the	A fruiting body comprising of bracts arranged on an elongated axis, axil of which lie the male or female flowers, e.g. <i>Ephedra</i> .
Cordate	Heart shaped. Pertaining to leaf shape.
Corolla	The second whorl of a flower. Individual parts are the petals
Corona	A cup-like or crown-like process from the throat of the corolla.
Cosmopolitan	Growing in most parts of the world.
Creeping	Spreading over the ground or other surface.
Crenate	Margin of leaf that is lobed. The lobes being rounded.
Culms	Refers to peculiar hollow, jointed stem of grasses.
Cuneate	Margin of leaf or petal narrowing or tapering towards the base or apex.
Cupressiform	A cone shaped appearance of tree.
Cyathia	A cup shaped Inflorescence, characteristic feature of the genus
<i>Euphorbia</i> .	
Cylindrical	Having the form of a cylinder.
Cyme	An inflorescence in which the primary axis bears a single central or terminal flower that blooms first.

D

Deciduous	Plants shedding leaves during unfavorable seasons, e.g. <i>Capparis</i>
<i>decidua</i> .	
Decumbent	Trailing along the ground with the end ascending.
Dentate	Generally pertaining to leaf margin in which teeth are at more or less right angles to the mid-vein of the leaf.
Dichotomous	Branch of stem is forked once or twice.
Digitate	Palm or hand-like. e.g, the leaves of <i>Merremia</i> .
Dimorphous	Generally a leaf with two forms, e.g. <i>Cocculus</i> .
Dioecious	Male and female flowers borne on the different plants, e.g. <i>Phoenix sylvestris</i> (Palm), <i>Populus euphratica</i> and <i>Ephedra</i> .
Divaricate	Forked branches, spreading apart.
Dormant	Resting or non-vegetative stage, usually during winter.
Drupe	A fleshy or pulpy fruit.

E

Elliptic	Leaf shape in the form of ellipse.
Endemic	Generally plants or animals of localized or restricted distribution.
Epicalyx	A whorl of bract-like structures below the calyx, e.g. <i>Pavonia</i> .
Erect	Upright in position, vertical throughout.
Evergreen	Plants having persistent leaves and remain green throughout the year, e.g. <i>Salvadora</i> .

Glossary of Botany Terms

F

Family species.	A unit of conventional classification composed by related genera and
Fascicle	Clustered together in groups.
Fastigate	Refers to branches clustered, parallel and erect.
Fern	Group of plants without flowers (stamen and carpels).
Filament	The stalk of stamen.
Fissure	A long, narrow crack or opening.
Fron	Term applies to leaf-like structures of ferns.
Funnel form	Funnel-shaped: calyx/corolla tube gradually widening upwards. e.g. <i>Convolvulus</i> spp.

G

Geniculate	Bent abruptly like a knee.
Genus	Unit of classification consisting of a group of species exhibiting similar characteristics.
Glabrous	Smooth, without any hairs.
Glandular	Bearing secreting glands or hairs.
Globose	Nearly spherical.
Glume	One of the two chaffy basal bracts of a grass spikelet.
Gregarious	Growing in open clusters or colonies; not matted together.
Gynoecium	A collective term for the carpels, i.e, the female part of the flower.

H

Habitat	Particular location where plant usually grows.
Halophytic	Growing in saline habitat.
Head family.	A short dense aggregate. As a collection of flowers in sunflower
Herb	A plant that is not woody.
Hirsute	With rough or coarse hairs.
Hispid	Having stiff or bristly hairs.
Hydrophytic	Growing near and in the water.

I

Imparipinnate	A term applied to compound leaf when petiole is terminated by a single leaflet e.g, Neem or tendril as in Pea.
Indehiscent	Not splitting or not opening at all.
Inferior and	Term applied to flower when ovary is borne below the sepals, petals
Inflorescence	stamens.
Internode	Arrangement of flowers on the plant. The interval between two nodes.

Glossary of Botany Terms

Introduced A plant brought into a region where it is not native.
 Involucre A collection of bracts usually present near the flower base, e.g. Vernonia.

L

Lactiferous Latex producing
 Lamina Expanded or green portion of a leaf.
 Lanceolate Leaf shape that widens above the base and tapers towards the apex.
 Lateral Occurring on a side.
 Latex The milky juice of plants such as the *Calotropis procera* and *caducifolia*.
 Leaflet A leaf-like unit of compound leaf, e.g. *Acacia*.
 Lemma Term used for part of grass flowers.
 Ligulate A strap-shaped leaf or petal.
 Linear Long and narrow as in grass leaf.

M

Mericarp A carpel with one seed.
 Mesophytic Plants growing to moderate moisture.
 Midrib A central leaf vein.
 Monoecious A species having male and female reproductive part on a same plant.
 Mucilage A viscous slimy material exuded by certain plants.
 Muriccate Rough with short hard points.

N

Native Naturally occurring in a region, not introduced.
 Naturalized A species introduced from another region, now fully established and reproducing naturally.
 Nocturnal Flowers that open during the night.
 Node Part of a stem where leaf arises.
 Nut A hard indehiscent one-seeded fruit, resulting from a compound ovary.

O

Ochreae A pair of stipules united about a stem.
 Oblong Two or three times as long as broad.
 Ob-ovate Egg shaped leaf shape in outline, with the broader end towards apex and narrower towards the base.
 Obtuse Blunt or rounded at the apex.
 Operculum A part serving as a lid or cover, as a covering flap on a seed vessel.

Glossary of Botany Terms

Ovate

Egg shaped outline.

P

Palmate

Lobed or divided in a palm-like manner, i.e. like the extended fingers of an open hand.

Panicle

Any loose, diversely branching flower cluster.

Papillose

Small pimple-like projections on the surface.

Pappus

Refers to ring of hairs of some fruits as in members of Sunflower family as in *Vernonia*.

Paripinnate

Term used for pinnate leaf when number of leaflets is even and rachis not terminated by leaflet or tendril.

Pedicel

The stalk of a flower.

Peduncle

A primary flower stalk, supporting either a cluster or a solitary flower.

Pentamerous

Floral parts: sepals, petals, stamens, etc. each whorl having 5 parts

Perennial

Plants with three or more season's duration.

Perianth

A term used for both sepals and petals collectively.

Petal

The individual part(s) of a corolla.

Petiole

Stalk of a leaf.

Pilose

Covered with short weak thin hairs.

Pinnate

Compound leaf with leaflets arranged on either side of rachis. feather-like.

Pistil

Female part of a flower consisting of ovary, style and stigma.

Pod

Dry many-seeded fruit, opening at maturity, as in *Acacia* and *Prosopis*.

Polygamo

A plant group which has bisexual male flower on some plants and bisexual female flowers on others.

Polymorphic

Having different shape and forms.

Posterior

Term applied to that portion (i.e. sepal or petal) of an axillary or lateral flower that faces towards the axis of inflorescence.

Prostrate

Lying flat on ground.

Procumbent

Near to prostrate, having stems that trail along the ground without putting down roots.

Pteridophyta

Containing all the vascular plants that do not bear seeds: ferns, horsetails, club mosses, and whisk ferns.

Pubescent

A plant covered with small soft hairs.

Pulvinate

A swelling at the base. Used of a leafstalk

Pyriform

Pear shaped.

R

Raceme

Inflorescence having elongated central axis and stalked flowers with younger ones present towards the top.

Rachis

The term used for the axis of compound leaf bearing leaflets; or axis of compound inflorescence bearing flowers; or axis of fern fronds.

Glossary of Botany Terms

Radical	Leaves that arise from the base of the stem.
Reticulate	Forming a net or network, as the veins of some leaves.
Rhizome	A root-like underground stem, having leaves and roots.
Rosettes	A circular cluster of leaves that radiate from a center at or close to the ground.
Rugose	A rough, wrinkled surface, as in certain prominently veined leaves.
Runner	An elongated lateral shoot, rooting at regular intervals, e.g. the grass <i>Ochthochloa</i> .

S

Saprophytic	Feeding on dead and decaying organic material
Scabrid	Term applied to rough or hardish surface.
Scandent	Climbing with support of other trees or rocks or walls etc.
Scape	A leafless peduncle rising from the ground.
Schizocarp	A dry, dehiscent fruit that at maturity splits into two or more one-seeded carpels.
Sedge	Refers to grass-like plants with jointless, 3-angled stem, usually growing around water. Members of family <i>Cyperaceae</i> are referred as Sedge. e.g. <i>Cyperus</i> .
Sepal	Individual member of a calyx.
Sessile	Without a stalk, e.g. leaf of <i>Calotropis procera</i> (Akk).
Shrub	Perennial plant with woody stems, and branching from the base.
Simple	Term used for a single leaf or flower, as opposed to compound.
Species	Basic unit of classification, member of a genus.
Spiciform	Spike-like
Spike	Flowers borne on central axis without any stalk, e.g. <i>Typha</i> .
Stamen	Individual part of the androecium or male part of the flower.
Stellate	Star-like, branches radiating from center like rays of star.
Stigma	Part of the pistil that receives the pollen.
Stipule	Appendages present at the base of a leaf.
Stolon	A branch lying on the ground, rooting and producing shoot(s) at regular intervals.
Stoloniferous	Producing stolon.
Style	Portion of the pistil which lies above the ovary and bears the stigma.
Subspecies	A sub-unit of a species.
Succulent	Thick, fleshy, water-storing leaves or stems.
Suffruticose	Very low and woody.
Symbiosis	Relation of two different species of organisms that is interdependent.

Glossary of Botany Terms

T

Tendril	A slender process serving as a holdfast or for climbing.
Terminal	End of stem or branches.
Ternate	Consisting of three leaflets, as a compound leaf.
Thallose	A cellular expansion of stem and foliage.
Tomentose	Term applied to surface covered with dense, rigid hairs perceptible by touch as in <i>Abutilon</i> and <i>Sida</i> .
Trailing	Drag along the ground.
Trifoliolate	With three leaflets.
Trigonus	Three angled.
Tussocky	A tuft or clump of growing grass or the like.
Tuber	A swollen underground stem as in potato.

U

Umbel	Type of inflorescence in which the pedicels radiate from the top of a common peduncle and are of nearly the same length.
Unarmed	Without spines.
Undulate	Wavy margin, e.g. leaf of <i>Glossonema</i> .
Uni-foliolate	Compound leaf with one leaflet.

V

Vaginate	Having a vagina or sheath; sheathed.
Variety	A sub-unit of a species below the rank of a sub-species.
Villous	A part of plant body covered with long shaggy hairs.
Verticillate	Disposed in or forming whorls, as flowers or hairs.
Vexillum	The large upper petal of the flower.

W

Whorl	Ring of leaves or flowers around stem.
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X

Xerophytes	Plant species growing in very hot and dry condition.
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GLOSSARY OF PHARMACOLOGICAL

A

Abortifacient	A substance or device used to induce abortion.
Abscess	An inflamed area in the body tissues that is filled with pus.
Agalactia	Absence of secretion of milk following childbirth.
Alexipharmic	An internal antidote.
Allergenic	Produces allergy.
Amenorrhoea	Resembles or abnormal suppression of menstruation.
Amylaceous	Resembling or having starch.
Anemia	Blood disorder, deficiency of red blood cells.
Anesthetic	A substance that reduce sensitivity to any pain.
Anodyne	Relieves or quiets pain.
Anorexia	Loss of appetite and inability to eat.
Antacid	Neutralizes excess acidity in the alimentary canal.
Anthelmintic	Capable of expelling or destroying intestinal worms.
Antiasthmatic	Relaxes bronchial muscles and relieves labored breathing.
Antidiarrheal	Counteracts diarrhea.
Antidote	Counteracts the action of poison.
Antiemetic	Lessens the tendency to vomit.
Anti-infective	Prevents or inhibits infection.
Anti-inflammatory	Reduces inflammation and swelling.
Antipruritic	Prevents or relieves itching.
Antipyretic	Reduces fever.
Antirheumatic	Reduces pain in the joint.
Antiseptic	Checks or inhibits the growth of microorganisms.
Antispasmodic	Reduces spasm or prevents convulsion.
Aperient	A laxative or milk purgative.
Aphrodisiac	A drug or medicine, stimulates sexual desires.
Arthralgia	Pain in the joints.
Ascites	Abnormal accumulation of fluid in abdominal cavity.
Asthma	Allergic disorder of respiration.
Astringent	Causes the contraction of tissue.

B

Bilious	Characterized by excess secretion of bile.
Blepharitis	Inflammation of the eyelid.
Boils	Red, pus-filled lumps on the skin that are warm and tender to the touch.
Bronchiti	Inflammation of the membranes lining in bronchial tubes.

GLOSSARY OF PHARMACOLOGICAL

C

Carcinogenic	Causing cancer.
Cardio	Pertaining to heart.
Carminative	Used to relieve gas and colic.
Catarrhal	Related to inflammation of the respiratory tract.
Cathartic	Causes an evacuation of the bowel.
Caustic	Destroys tissue.
Cytotoxic	Poisonous to cell.

D

Debility	General weakness.
Demulcent	Substance used to protect or soothe the mucous membrane.
Depurative	Removes impurities and waste materials and purifies the blood.
Diaphoretic	Used to increase perspiration.
Digestant	Aids in the digestion of foods.
Disinfectant	Destroys or inhibits the growth of harmful microorganisms.
Diuretic	Increases the volume of urine.
Dropsy	Edema, swelling from excessive accumulation of watery fluid in tissues.
cells and Dyspepsia	A disturbed digestive condition characterized by nausea, gas and heartburn.
Dysentery and Dysuria	A disease characterized by severe diarrhea with passage of mucus blood and usually caused by infection Painful or burning on urination.

E

Eczema	Inflammatory conditions of the skin.
Emetic	An agent that causes vomiting.
Emmenagogue	An agent that induces menstrual flow.
Emmolient	Used externally to soften the skin and protect it.
Eruption	A rash or blemish on skin.
Estrogenic	Relating to or caused by estrogen.
Expectorant	An agent that causes expulsion of mucous from respiratory tract.

GLOSSARY OF PHARMACOLOGICAL

F

Febrifuge	Reduces fever (antipyretic).
Febrile eruption	Highly infectious disease, common among children like measles etc.
Fistula	An abnormal opening into the soft parts with a constant discharge.
Flaccid	Not firm or stiff.
Flatulence	Stomach discomfort caused by gas.
Fungicide	An agent that destroys fungi.
Furuncles	Boil, painful sore with a hard core filled with pus.

G

Gonorrhoea	Sexually transmitted infection (STI) can exist in the back of the rectum.
throat and Gout	Joint pain and swelling due to uric acid accumulation.

H

Haemostatic	An agent used to stop internal hemorrhage.
Hemorrhoids	A disease causing the swelling of blood vessels in the anal region.
Homeostasis	Metabolic equilibrium actively maintained by several complex biological mechanisms that operate via the autonomic nervous system to offset disrupting changes.
Hyperhidrosis	Abnormal excessive sweating.

I

Insecticide	An agent that kills insects.
Intoxicant	An agent that produces mental confusion with subsequent loss of muscular control.
Irritant	Causes inflammation of, or stimulation to, the tissues.

L

Lathyrism	A neurological disorder in humans and livestock, caused by eating some type of legumes, the infected one loses ability to move.
Laxative	A cathartic that causes a more or less normal evacuation of the bowel without griping or irritation.

GLOSSARY OF PHARMACOLOGICAL

Leucoderma	Loss of pigmentation of skin, causing white patches.
Leukemia	A kind of cancer in which the number of white blood cells in the blood greatly increases.
Lumbago	Pain of lower back.

M

Mercurial Salivation	Offensive odor from mouth indicated by red swollen gums.
Micturition	Urination.

N

Narcotic	An agent that induces sleep.
Nephritic	A degenerative kidney disease.
Nephritis	An inflammation in kidney.

O

Oliguria	Less urination than normal.
Ophthalmiatric	Used in the treatment of eye diseases.
Ophthalmia	Severe conjunctivitis (inflammation of conjunctiva of the eye).
Otalgia	Earache.
Otitis	Inflammation of the ear.
Oxytocic	Promoting or accelerating child birth.

P

Paralysis	Loose the ability to move any body part.
Pectoral lungs.	Usually an expectorant, used for the diseases of the chest and lungs.
Piles	An itching or painful mass of dilated veins in swollen anal tissue.
Pneumonia	Inflammation of the lungs with congestion.
Psoriasis scaly	A common chronic, inflammatory skin disease characterized by scaly patches.
Purgative	Increases peristalsis (contraction of the bowel).

R

Refrigerant	Allays thirst and gives a sensation of coolness to the body.
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GLOSSARY OF PHARMACOLOGICAL

Resolvent An agent capable of absorbing or dispersing inflammatory products.
Rheumatic Causes joint inflammation and destruction of connective tissues and other organs.

Rubifacient Causes reddening and mild irritation of the skin.

S

Scabies A skin disease caused by a mite, marked by itching.

Scrofula A disease common in children due to lack of resistance, making them
Susceptible to tuberculosis and other diseases.

Sedative Used to quiet the individual.

Soporific Tending to cause sleep.

Spermicidal An agent that kills spermatozoa.

Stimulant A substance which increases general function activity.

Stomachic Stimulates appetite and increases secretion of digestive juice.

Strangury Painful urination.

Syphilis A chronic infectious disease affecting almost any organ or tissue in the body.

T

Tonic Stimulates the restoration of tone to the muscles.

Tubercular Characterized by the presence of tuberculosis lesions or tubercles.

Tuberculosis Infection transmitted by inhalation or ingestion of tubercle bacilli and manifested in fever and small lesions (usually in the lungs but in various other parts of the body in acute stages).

U

Ulcer A sore on the skin or a mucous membrane.

Urinogenitary Involving both urinary and genital functions or structures.

V

Vermicide An agent that destroys worms.

Vermifuge A medicine that expels intestinal worms.

Viscera The organs in the cavities of the body like intestines, bowels.

Vulnerary An agent that promotes healing of open wounds.

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The Floral Guide is a first of its kind document, compiled specifically on Indus Ecoregion. The inventory of flora in this book includes key information on each taxon.

The Guide confirms the ecological and biological diversity of the region. It will not only be valuable for botanists or plant related scientists, but will also be important for social scientists such as geographers, anthropologists, sociologists and plant lovers. Additionally, this Guide is useful as a reference book for organizations such as herbarium. Illustrations and photographs of plant species will be a great help for identification of plant species.

The book is certainly a benchmark work on floral diversity of this region. A number of research projects can be launched based on the information in the Guide, such as faunastic biodiversity profile, integrating floral composition of Indus Ecoregion, ethno-pharmacological survey and seed bank.

It is a great effort by Indus for All Programme WWF - Pakistan.

Dr. Ghulam Raza Bhatti
PhD (University of London), Presidential Award (Izaz-i-Fazeelat)
Director (Botanical Gardens and Herbarium), Professor (Botany)
Shah Latif University
Khairpur

The general introduction setting out of scope of the work together with a historical background of Sindh is really good. It provides brief but comprehensive information on climate, Physiography, demographic profile, historical sites of Sindh and details of different ecosystem.

The need for a comprehensive floral guide has been felt since long, and here at least it is the beginning to appear.

The Floral Guide Indus Ecoregion, developed under the Indus for All Programme, WWF – Pakistan provides brief description of species, distribution, flowering period, uses, habitat, local and English names and distribution maps are also given.

Most of the species are clearly illustrated except in a few cases. Appropriate synonymy is also listed; there is a glossary of botanical terms used in the text.

The book has reasonable scientific value, with a good practical outlook. In some cases the description of species is very short. My criticism is of very minor importance, in comparison with the excellence of the Floral Guide.

Floral Guide is prepared under the guidance of Dr. Ghulam Akbar a leading ecologist, Team Leader of the Indus for All Programme, WWF – Pakistan for whom I have great respect and admiration. This book will prove to be vital for ecologists, botanists and the conservationists concerned with study of plants and conservation of the Indus Ecoregion.

Professor Muhammad Tahir Rajput
Dean,
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University of Sindh, Jamshoro

Dr. Ghulam Akbar

A passionate environmentalist, Dr. Ghulam Akbar has to his credit conservation projects across Pakistan. In addition to programme management, he has extensive experience in developing and conducting resource monitoring surveys, environmental education and awareness, capacity building and technically coordinating policy formulation for various components of biodiversity. He also holds 30 years experience in application of participatory learning approaches. Dr. Akbar has served as referee, examiner and member of numerous scientific institutions and societies. Envisaging an environmental career, he completed MSc (Forestry) from Peshawar University followed by a PhD (Rangeland Ecology) from Utah State University, USA. Due to his distinguished work, he has been conferred positions and awards by his universities and other development institutions. He has authored over 50 research papers in refereed journals, popular articles and over a dozen books especially on environmental education and biodiversity of Pakistan. He has remained a prolific writer with credible knowledge. Dr. Akbar is currently based in Islamabad and is working as Senior Director Programmes at WWF – Pakistan.

Dr. Surayya Khatoon

Among the few women in Pakistan who contribute meaningfully to scientific work and work incessantly in the field, Dr. Surriaya Khatoon stands high as an ardent scholar. Dr. Khatoon gained recognition as a researcher in the field of biological sciences and is currently working as a Professor in the Department of Botany at University of Karachi, where she plays a key role in designing courses and administrative functions. A first position holder student herself, she also supervises the research work of PhD students. Dr. Khatoon has presented her research papers and delivered lectures in innumerable national and international conferences. She has extensive knowledge on the flora of Pakistan and has contributed to reputable research journals, with several publications to her credit. She has contributed to Biodiversity Action Plan of Pakistan, as well as WWF publications including those on Indus Ecoregion. She is a member of national and international bodies on botany and taxonomy. Her areas of interest include: (a) plant taxonomy with particular reference to cytotaxonomy, plant reproductive biology etc. (b) biodiversity -inventorying, monitoring, conservation etc.



WWF is one of the world's largest and most experienced independent conservation organizations, with over 5 million supporters and a global network active in more than 100 countries. WWF's mission is to stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature, by conserving the world's biological diversity, ensuring that the use of renewable natural resources is sustainable, and promoting the reduction of pollution and wasteful consumption.