

Weed Flora Diversity of Samba District of Jammu & Kashmir, India

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Abstract: The present study was conducted to assess the diversity of common weeds found in Samba district in Jammu and Kashmir (J&K), a Union Territory located in the north west corner of India during May to August 2022. The study resulted in the documentation of a total of 60 weed species belonging to 53 genera and 29 families based on field collections and observations. The predominance was shown by Poaceae represented by 11 weed species; Asteraceae included 6 weed species. Convolvulaceae and Solanaceae were represented by 4 weed species each. Euphorbiaceae and Fabaceae were represented by 3 weed species each. Acanthaceae and Cyperaceae were represented by 2 weed species each. Papavaraceae, Nyctaginaceae, Cannabaceae, Vitiaceae, Asclepiadaceae, Capparidaceae, Chenopodiaceae, Cucurbitaceae, Potenderiaceae, Verbenaceae, Lamiaceae, Brassicaceae, Araceae, Oxalidaceae, Phyllanthaceae, Portulacaceae, Polygonaceae, Malvaceae, Typhaceae represented by only one species. As seen, weeds are common and undesirable plants that impact agricultural biodiversity. They compete with crops, increase water management, reduce crop quality and yield, resulting in increased processing costs. The present study on the distribution of weed species is important for effective ecosystem planning and management and is useful in integrated weed management.

Keywords: Integrated Weed Management, Weeds, Weed Diversity, Weeds Survey

INTRODUCTION

Weeds have been in existence since before human took up cultivation of plants for food, feed, fuel, and fibers. They are the oldest one of the main limiting factors in profitable crop production. Weeds are undesirable plants that grow within agricultural crops and cause significant decline in crop yields, and compete with agricultural crops for space, nutrients, water, light etc. and reduces the quality and quantity of agricultural productivity. They are poisonous useless and harmful to crop plants. They are most complex and serious problem in natural resources management. Weeds cause significant losses each year in agriculture, forestry, grasslands, and aquatic environment.

There are 250,000 species of plants worldwide, constitutes about 250 species. Approximately one-third yield losses occur globally due to weeds. Weeds become a challenge in developing Asian countries, especially in India. The total annual cost of dealing with weeds worldwide is estimated to be hundreds of dollars, including cost of control harmful effects on human health, losses in agriculture production and ecosystem services.

Weed plants grow faster, spread easily, reproduce in high number, and produce large quantity of seeds which enable them to establish a kingdom of their own within a short period

of time (Dangwal *et.al* 2010). Weeds cause harm to crops in many ways and this happens due to the unusual adaptation characteristics of the weeds and their regeneration ability. In general, the yields losses due to weeds are almost always caused by a group of different species, and these species can differ considerably in competitive ability (Weaver and Ivany 1998).

Some qualities of weeds make them superior than crop plants, like, high photosynthetic rate, rapid development of root system, tolerant or resistant to herbicides, have high dispersal capacity. Weeds can survive under adverse environment conditions in the field, because they can modify their seed production and growth according to the availability of moisture and temperature, they have capacity to germinate under adverse soil moisture conditions. Weeds can reproduce both by sexual as well as asexual method and their seeds do not lose their viability for years even under adverse conditions.

"All weeds are unwanted plants but all unwanted plants are not weed'. So, depending on their desirable and undesirable characteristics weeds are differentiated into absolute weeds and relative weeds. It may still be difficult to label a given plant species as a weed. Sometimes one and the same species may be considered in some parts of its area as a harmless plant of natural vegetation, in others as a weed and in again other even as a useful plant species. Weeds is often another man's crop e.g., *Cynadon dactylon* (weed / forage / lawn grass), *Avena fatua* (weed and forage, diet of primitive's people). Water weeds cause troubles for humans hindering their shipping or fishing activities. Weeds impose cost on producers in two ways-through reduction in the quality and quantity of yield and increases in input requirement for weed control.

In India reduction in crop yield was estimated as 31.5% (22.7% in winter and 36.5% in summer and rainy seasons) by weeds (Bhan

et.al. 1999), whereas, the economic losses due to weed in India was estimated in INR 20 to 28 billion about two decades ago (Sahoo and Saraswat,1988; Sachan,1989). In another study, it was reported that loss in agricultural production due to weeds amount to INR 1050 billion per annum (NRCWS, 2001; Varshney and Prasad, 2008).

Traditionally, weed control in India has been largely dependent on manual weeding. Manual weeding is still most predominant method of weed removal in many countries in Asia and Pacific region. However, it is not only tedious, time consuming and inefficient but is increasingly becoming uneconomically well. Earliest attempts in India to control weeds by herbicides were made in 1937. Rice and wheat were the major crops of weed management research in India during past as well as current period.

Integrated weed management (IWM) is an approach to managing weeds using multiple control tactics. The purpose of integrated weed management is to include many methods in growing season to allow produces the best chance to control troublesome weeds. The present study on the distribution and identification of weed species is important for effective ecosystem planning and management and is useful in integrated weed management.

MATERIALS AND METHODS

Study Site

The present study was mainly undertaken to find common weeds found in Samba district. This region is located in Jammu and Kashmir (J&K), a Union Territory located in the north west corner of India. The U.T is blessed with diverse ecosystem. Samba town is situated on the foothills of Shivalik Hills alongside the National highway at an elevation of 384 meters (1259 ft. above sea level) on the bank of river Basantar, at a distance of 40km from Jammu city. It lies between geographical coordinates

32.57 °N to 75.01°E. The average day and night temperature in summer season ranges from 35°C to 40°C in day and 20°C to 25°C at night. The average humidity ranges from 25% to 60%. The average rainfall ranges from 91mm to 3mm. Samba district is a district in Indian Union Territory of Jammu and Kashmir came in existence in 2006. The district covers Samba town and adjoining tehsils: Bari Brahmana, Vijaypur and Ghagwal. Samba district consists of nine blocks: Samba, Vijaypur, Purmandal, Bari Brahmana, Ramgarh, Nud, Rajpura, Sumb, Ghagwal. Ramgarh, Vijaypur and Rajpura is well irrigated areas and show maximum production (Figure 1 a & b).

Collection and Identification

The field trips were conducted in the area of study during May to August 2022. During this field survey interviews of farmers, local people, agriculturist were conducted to acquire information about the seasonal weed plants and their vernacular names. Weed plants were collected from the study area by using disinfected knife or surgical blades. Plant specimens were collected for herbarium, majorities of herbs were uprooted carefully. The photographs of weed plants were taken in their natural habitat with a camera. In some shrubs branches of suitable sizes was cut with the help of scissors or knife. The specimen was pressed in blotting papers in the fields and periodically changed into newspapers until completely dry. Prior to collection and pressing of plant specimens they were identified. All the identification characters noted at the site on notebook. Identification of the specimen is done with the help of different monographs and herbaria. After identification of plants, they were compared with the specimens available to confirm their reliability. For description of specimens, macroscopic characters of specimens and fields observations are used. The final specimens were stored in wooden cases to protect them from insects, pests, fungi

and light damage.

Preparation of Herbarium

The collected specimens were identified with the help of regional floras, and these were pressed, dried and prepared herbarium specimens by wet method. The voucher specimens were deposited in the Department of Botany, Cluster University of Jammu, Jammu.

RESULTS AND DISCUSSION

In the present study, a total of 60 weed species belonging to 53 genera and 29 families were recorded from the Sambha district of Jammu and Kashmir (Table 1). The predominance was shown by Poaceae represented by 11 weed species; Asteraceae included 6 weed species. Convolvulaceae and Solanaceae were represented by 4 weed species each. Euphorbiaceae and Fabaceae were represented by 3 weed species each. Acanthaceae and Cyperaceae were represented by 2 weed species each. Papavaraceae, Nyctaginaceae, Cannabaceae, Vitiaceae, Asclepiadaceae, Capparidaceae, Chenopodiaceae, Cucurbitaceae, Potenderiaceae, Verbenaceae, Lamiaceae, Brassicaceae, Araceae, Oxalidaceae, Phyllanthaceae, Portulacaceae, Polygonaceae, Malvaceae, Typhaceae (represented by only one species) (Figure 2 & 3).

Mostly weeds are annual followed by perennial in their life cycle. Although few weeds showed both type of life cycle i.e.; annual or perennial having broad leaf (Figure 4 & 5). The maximum number of weed species were recorded from terrestrial habitat followed by aquatic based on their distribution in different habitats (Figure 6). During the study it has been recorded that majority of the weeds are host independent, parasitic and herbs, followed by shrubs and climbers in nature (Figure 7 & 8). Weeds species like, *Cayratia trifolia*, *Diplocyclos palmatus*, *Ipomea cairica*, *Ipomea hederacea*, are semi host dependent, *Cuscuta reflexa* are the

only parasitic species. Some of the weeds species like, *Amaranthus viridis*, *Chenopodium album*, *Oxalis corniculata*, *Portulaca oleracea*, *Solanum nigrum*, *Digera muricata* are used for certain cooking recipes in study area. Weed species like, *Achyranthes aspera*, *Arundo donax*, *Cassia tora*, *Cynodon dactylon*, *Cyperus rotundus*, *Cyperus difformis*, *Dactyloctenium aegyptium*, *Echinochloa colona*, *Echinochloa crus-galli*, *Eleusine indica*, *Gomphrena serrata*, *Setaria viridis*, *Setaria pumila* are mostly used as fodder in study area,

Majority of weeds recorded from the study area belongs to Poaceae (18.33%) followed by Amaranthaceae (8.33%) family and this result is comparable to the reports of Dhangwal *et al.*, (2011) who reported the maximum infestation was shown by members of family Poaceae in the three sites of Rajouri district of the Jammu division. Also, all the findings of this study are in a similar pattern with the previous work of Dhangwal (2010) who studied the weed flora of tehsil Nowshera (located in the Rajouri district of the Jammu division in the Union Territory of Jammu and Kashmir, India) and reported 53 weed species represented by 1 monocot and 20 dicot families. Since the present study was undertaken in one district only, hence the weed flora showed more diversity. During the course of present study, the number of collected weed belongs to 53 genera with 60 species of 29 families.

Botanical description of the studied weeds

A total of 60 weed species were collected from the study site Samba district of Jammu and Kashmir (J&K). All specimen has been submitted to the Department of Botany, Cluster University of Jammu, Jammu. The description of all the weed species are given below:

Achyranthes aspera L. (Photo-plate:1&2)

The species of *Achyranthes aspera* was collected from the village Surara of Samba district on 24-05-2022. (Assigned accession number 135-a).

Common name: Prickly chaff flower

Hindi name: Latjeera

Vernacular name: Parkanda

Family: Amaranthaceae

Habit: An erect, annual or perennial herb with spreading branches, usually up to 1m tall, often with a woody base.

Stem: Angular, ribbed, pubescent, simple or branched from the base, often reddish-purplish tinged.

Leaves: Opposite, thick, ovate elliptic or obovate rounded, but variable in shape and size, 4-1cm long and up to 8 cm wide, velvety to mentose.

Flowers: Greenish-white, numerous, in axillary or terminal spikes up to 75 cm long; bracts membranous, oblong, enclosed in the hardened perianth.

Fruits: Utricle, oblong-cylindric, truncate at apex, rounded at base.

Seeds: Reddish-brown, sub-cylindrical.

Ageratum conyzoides L. (Photo-plate:3&4)

The species of *Ageratum conyzoides* was collected from the village Odh of Samba district on 13-05-2022. (Assigned accession number 184).

Common name: Blue Billy goat-weed

Hindi name: Visadodi

Vernacular name: Pudina Jadi

Family: Asteraceae

Habit: Erect, often branched, annual herb and often decumbent; up to 120 cm tall.

Stem: Much branched and rooting at the base; stem, nodes and younger parts with rather long, partly crispy hairs.

Leaves: Opposite, broadly ovate to triangular, 2-10 cm long and 1.5-5 cm wide, more or less hairy.

Flowers: Flowers in flat-topped, peduncled. Flowers white, pale blue or violet with a disagreeable odour.

Fruits: Achene oblong, 5-angular, black with pale base, glabrous or slightly hairy, 1.5-2 mm long with awn-tipped, serrate pappus-scales.

***Alternanthera pungens* H.B&K. (Photo-plate: 5&6)**

The species of *Alternanthera pungens* was collected from the village Ratwana of Samba district on 15-05-2022. (Assigned accession number 185).

Common name: Khaki weed

Hindi name: Garundi

Vernacular name: Pokhada

Family: Amaranthaceae

Habit: A perennial herb with stems prostrates, rarely rising.

Stem: About 10-50 cm long, hairy sometimes rooting at the nodes.

Leaves: Ovate to obovate, 0.5-4.5 cm long, 0.3-2 cm broad, smooth to sparsely hairy.

Flowers: Flowers arise in stalkless, sparsely velvety spikes with spiny bracts and bracteoles.

Fruits: 1.2-1.5 mm long, enclosed by the sepals.

Seed: Discoid, 1 mm across, brown.

***Alternanthera sessilis* (L.) D C. (Photo-plate: 7&8)**

The species of *Alternanthera sessilis* was collected from the village Nichla of Samba district on 1-06-2022. (Assigned accession number 185-a).

Common name: Sessile joyweed

Hindi name: Garundi

Vernacular name: Stali.

Family: Amaranthaceae

Habit: A prostrate or procumbent, annual or perennial herb.

Stem: The stems are generally prostrate, 0.2-1 m high, with strong creeping tap roots,

often rooting at the nodes, sometimes floating, creeping or ascending at the tips, cylindrical and slightly hairy, with numerous erect branches.

Leaves: Simple, opposite, shortly petiolate or sessile, broadly lanceolate or spatulate to almost linear, 0.6-5 cm long, and 0.3-1 cm wide. They are attenuated at the base, and the apex is acute to blunt, with entire, glabrous or pilose margins.

Flower: Flowers inconspicuous, white, borne in small, axillary, dense, sessile, silvery-white clusters of compressed spikes.

Fruits: Utricle cordiform and strongly compressed.

Seeds: Dark-brown to black, disc-shaped and shiny, about 0.8-1 mm in diameter.

***Arundo donax* (L.) (Photo-plate:9 &10)**

The species of *Arundo donax* was collected from the village Odh of Samba district on 11-06-2022. (Assigned accession number 187).

Common name: Giant reed

Hindi name: Baranal

Vernacular name: Nadd

Family: Poaceae

Habit: A very tall and robust, bamboo-like, perennial grass.

Stem: Spreading clumps of thick culms.

Leaves: 30-60 cm long, 5 cm wide, arranged conspicuously in two opposite ranks on the culms. The margins are sharp to touch.

Flower: Inflorescence is a 30-60 cm long, purplish, aging to silver, plume that stands above the foliage.

***Argemone mexicana* L. (Photo-plate:11&12)**

The species of *Argemone mexicana* was collected from the village Ratwana of Samba district on 11-06-2022. (Assigned accession number 188).

Common name: Mexican poppy

Hindi name: Siyaal kanta

Vernacular name: Kandyari

Family: Papaveraceae

Habit: An erect prickly annual herb.

Leaves: Up to 1.2 m tall with yellow sap.

Stem: Sessile, with slightly incised undulated margins and white veins, spiny on margins, midrib and veins beneath.

Flower: Yellow, 2.5-7.5 cm in diameter, with 4-6 petals.

Fruits: Capsules 2-4 cm long, elliptic or oblong, prickly, rarely unarmed.

Seeds: Numerous, small, round, blackish-brown, deeply reticulate and pitted.

***Amaranthus viridis* Hook. F. (Photo-plate: 13&14)**

The species of *Amaranthus viridis* was collected from the village Odh of Samba district on 05-05-2022. (Assigned accession number 145-a).

Common name: Slender amaranth

Hindi name: Jangli chaulayi

Vernacular name: Chalari

Family: Amaranthaceae

Habit: An erect annual herb.

Stem: 6 to 100 cm tall, glabrous to pubescent, pubescent especially upwards.

Leaves: Glabrous or pubescent on the veins of the lower surface; petioles long (up to 10 cm), occasionally longer than the blade; blade ovate to rhombic-oblong, 2-7 x 1.5-5.5 cm, base tapered to blunt, tip rounded, minutely mucronate, barely to clearly emarginate.

Leaves: Green, unisexual, male and female intermixed, in slender axillary to terminal panicle spikes 2-12 cm long and 2-5 mm wide, or in dense axillary clusters in the lower part of the stem.

Fruits: Capsule nearly globose 1.25-1.75 mm long, not rupturing or rupturing irregularly, surface rough.

Seeds: 1-1.25 mm, round, slightly compressed, dark brown to black with a paler thick border.

***Biden pilosa* L. (Photo-plate:15&16)**

The species of *Biden pilosa* was collected from the village Odh of Samba district on 15-05-2022. (Assigned accession number 189).

Common name: Spanish needles

Hindi name: Kumra

Vernacular name: Lamb

Family: Asteraceae

Habit: An erect, simple or much-branched annual or perennial herb, 60-90cm tall.

Stem: Glabrous or more or less pubescent, quadrangular, grooved; branches opposite.

Leaves: Very variable, sometimes trifoliate, but usually consisting of 2 sub opposite pairs of leaflets and a larger, deeply 3-lobed, terminal leaflets.

Flower: The inflorescence is an isolated or grouped pedunculated capitula, emerging from the leaf axil. Heads borne singly at the ends of long, slender, nearly leafless branches; narrow, discoid, the disk 4-6 mm wide at anthesis; ray florets white or pale-yellow and disk florets yellow.

Fruits: Achenes 0.8-1.7 cm long, linear, quadrangular, slightly tapering towards the apex, black, glabrous, bearing a few pale stiff hairs on the angles in the upper part; pappus bristles 2-4, straw-colored, 2-3 mm long.

***Boerhavia diffusa* L. (Photo-plate:17&18)**

The species of *Boerhavia diffusa* was collected from the village Odh of Samba district on 17-06-2022. (Assigned accession number 190).

Common name: Red spiderling

Hindi name: Punarnava

Vernacular name: Lit sit

Family: Nyctaginaceae

Habit: A very variable, diffusely branched, pubescent or glabrous, prostrate herb.

Stem: Creeping, often purplish, swollen at the nodes, up to 1.2 m long with a stout woody root stock.

Leaves: Long-petioled, ovate or oblong-cordate, entire or sinuate, usually whitish and smooth beneath and rough green on upper surface.

Flower: Flowers red, pink or white, borne in small umbels arranged in axillary and terminal panicles.

Fruit: Ovate, oblong, 1.3 cm long, five-ribbed, pubescent, viscid, glandular.

***Cannabis sativa* L. (Photo-plate:19&20)**

The species of *Cannabis sativa* was collected from the village Ghagwal of Samba district on 05-06-2022. (Assigned accession number 113-a).

Common name: Hemp

Hindi name: Marijuana

Vernacular name: Bhang

Family: Cannabaceae

Habit: Annual herb, usually erect; up to 5 m tall.

Stem: Stems variable, with resinous pubescence angular, sometimes hollow.

Leaves: Basal leaves opposite, the upper leaves alternate, stipulate, long petiolate, palmate, with 3-11, rarely single, lanceolate, serrate, acuminate leaflets up to 10 cm long, 1.5 cm broad.

Flowers: Flowers monoecious or dioecious, the male in axillary and terminal panicles, apetalous; female flowers in the axils and terminally with 5 yellowish petals.

Fruits: A brown, shining achene variously marked or plain

***Cassia tora* (L.) Roxb. (Photo-plate:21&22)**

The species of *Cassia tora* was collected from the village Odh of Samba district on 14-06-2022. (Assigned accession number 191).

Common name: Sickie pod

Hindi name: Charota

Vernacular name: Hedwa

Family: Fabaceae

Habit: A fetid, annual herb or undershrub.

Stem: 0.3-1m tall with glabrous branches.

Leaves: Leaves 6-12.5 cm long; leaflets in 2-4 opposite pairs with a conical gland between each of the two lowest pairs of leaflets; blades 1.5-5 cm long and 1.5-2.5 cm wide, membranous, ovate, oblong, apex acute to subacute, often mucronate, base acute to asymmetrically rounded.

Flower: Usually in pairs, on very short axillary peduncle; pale yellow, upper petal 2-lobed and the others entire.

Fruits: Pods stout, 4-angled, 15-25 cm long, containing 25-30 seeds.

Seeds: 4-5 mm long, rhomboidal, yellowish brown to tan red, shiny.

***Cayratia trifolia* (L.) (Photo-plate:23&24)**

The species of *Cayratia trifolia* was collected from the Tehsil Ghagwal of Samba district on 31-07-2022. (Assigned accession number 192).

Common name: Bush grape

Hindi name: Amlabel

Vernacular name: Rodi

Family: Vitaceae

Habit: A perennial climber.

Stem: Up to 7m long and 4.5cm in diameter; stems woody at the base only.

Leaves: Alternate, trifoliate; tendrils slender, leaf opposed; leaflets thick, generally 3.8-5.7 cm

long and 2.2-3.2 cm wide, ovate-lanceolate to obovate or rotund-ovate, apex acute, mucronate, base rounded, obtuse or acute, margins crenate to serrate, more or less pubescent on both surfaces.

Flower: Borne in branched, divaricate, pubescent, long peduncled, axillary or terminal cymes, up to 8cm long and broad.

Fruits: Berries white, globose or turbinate, fleshy, 1.2-2cm long, 2-4 seeded.

Seeds: Triangular, rounded and rugose on the back, cuneate on the face.

***Calotropis procera* (Aiton) Dryand. ex. (Photo-plate: 25&26)**

The species of *Calotropis procera* was collected from the Tehsil Ghagwal of Samba district on 19-05-2022. (Assigned accession number 152-a).

Common name: Swallow wort

Hindi name: Safed aak

Vernacular name: Desi-aak

Family: Asclepiadaceae

Habit: A hardy, erect, pubescent evergreen shrub.

Stem: Angular, ribbed, thickened above the node more or less densely hairy.

Leaves: Leaves subsessile, broadly ovate, ovate, oblong, elliptic or obovate, acute or mucronate, slightly cordate and auricled at base, cottony pubescent when young, glabrous when full-grown, 5-23 cm long and 4-9 cm wide, pale green above, white tawny beneath.

Flowers: White to pink, tinged with purple.

Fruits: Follicle sub globose, ellipsoid or ovoid, recurved, generally 10-14 cm long.

Seeds: Numerous, ovoid, acute narrowly margined, light brown, with a white tuft of silky hair (coma) at the pointed end.

***Cleome viscosa* L. (Photo-plate:27&28)**

The species of *Cleome viscosa* was collected from the Tehsil Ghagwal of Samba district on 12-05-2022. (Assigned accession number 193).

Common name: Tick weed

Hindi name: Jakhya

Vernacular name: Neoli jadi

Family: Capparidaceae

Habit: An erect, simple or sparsely branched, unarmed annual herb.

Stem: Up to 1.5 m tall with a strong, penetrating and unpleasant odour; stems grooved, densely clothed with glandular or simple hairs.

Leaves: Leaves 3-5 foliate, densely glandular-pubescent when young, petioles of the lower leaves 2.5-5 cm long, those of the upper leaves 0.4-3.8 cm; leaflets elliptic-oblong or obovate, 2-4.3 cm long and 0.8- 2.5 cm wide, base cuneate to attenuate, apex acute or obtuse.

Flower: Flowers various shades of yellow or white to pinkish or purple, 1.3 cm long, borne in the axils of reduced leaf-like bracts in lax corymbose racemes.

Fruit: A slender, erect, glandular pubescent cylindrical capsule, 5-12 cm long.

Seeds: About 1 mm in diameter, granular, black or dark brown.

***Chenopodium album* L. (Photo-plate:29 &30)**

The species of *Chenopodium album* was collected from the village Odh of Samba district on 05-05-2022. (Assigned accession number 194).

Common name: Wild Spinach

Hindi name: Bathua

Vernacular name: Bathua

Family: Chenopodiaceae

Habit: A polymorphous, non-aromatic, erect herb.

Stem: 0.3-3 m tall with angled stems that are often striped green, red or purple, clammy to the touch.

Leaves: Leaves very variable in size and shape, rhomboid, deltoid to lanceolate, upper leaves entire, lower ones toothed or irregularly lobes, 10-15 cm long, with petioles often as long as leaf blades.

Flower: Green, borne in clusters forming a compact or loosely paniced axillary spike.

Fruits: Utricle.

Seeds: Round, compressed, black and shining.

***Cynodon dactylon* (L.) Pers. (Photo-plate: 31&32)**

The species of *Cynodon dactylon* was collected from the village Surara of Samba district on 6-05-2022. (Assigned accession number 106-a).

Common name: Bermuda grass

Hindi name: Druva ghass

Vernacular name: Khabal

Family: Poaceae

Habit: Perennial grass.

Stem: The rhizomes are mainly in the top 10 cm of the soil. They spread horizontally for several meters, with nodes at approximately 10 cm intervals, each with 2-3 scale leaves and a single axillary bud. In dense stands, shoots developing from buds on rhizomes or runners tend to be erect and quite short, up to 25 cm high, but develop into prostrate runners under less dense conditions.

Leaves: Leaf blades are usually dull grey-green, flat, up to 15 cm long and 3-5 mm wide, tapering to an abrupt point, finely parallel-ribbed on both surfaces, without a conspicuous midrib. Ligule is very short but with a conspicuous fringe of white hairs.

Flower: The inflorescence is supported on a culm up to 25cm high and consists of a single whorl of 3-7 narrow racemes, each 3-8 cm long. Spikelets are 2-2.5 mm long, in two rows, closely appressed to the rachis.

***Cyperus rotundus* L. (Photo-plate:33&34)**

The species of *Cyperus rotundus* was collected from the village Surara of Samba district on 11-07-2022. (Assigned accession number 195).

Common name: Nut Grass

Hindi name: Motha

Vernacular name: Dilla ghass

Family: Cyperaceae

Habit: A perennial sedge.

Stem: Hard, fragrant, globose-ovoid tubers, up to 1.2cm long and 0.3-0.7 cm in diameter;

culms solitary or few together, sparsely tufted, erect, 10-75 cm tall, 3-angled at top.

Leaves: Narrowly linear, shorter or longer than stem, 0.4-0.8 cm wide, dark green above, pale beneath.

Flower: Inflorescence a simple or compound umbel, rays 2-8, each up to 7.5 cm long, bearing short spikes of 3-10 spreading, red-brown spikelets.

Fruits: Nuts oblong to ovate-oblong, 3-sided, 1.3-1.5 mm long and 0.5-0.7 mm wide, maturing brown.

***Cyperus difformis* L. (Photo-plate:35&36)**

The species of *Cyperus difformis* was collected from the village Surara of Samba district on 11-07-2022. (Assigned accession number 196).

Common name: Small flower umbrella sedge.

Hindi name: Motha

Vernacular name: Dilla

Family: Cyperaceae

Habit: An annual sedge, sometimes behaving as a perennial, varies in height from 6-80 cm.

Stem: Smooth, triangular, slightly winged and 0.7-3.0 mm thick. The roots are numerous, fibrous and reddish.

Leaves: Smooth, (or slightly scabrid on the midrib and margin), flat, linear, 5-25 cm long or often two-thirds of the plant height, 2-6 mm wide, sometimes reduced to sheaths. Sheaths are tubular, united, green to reddish-brown and without leaf blades at the base.

Flower: Inflorescence consists of dense, globose, umbellate heads, simple or compound, 5-15 mm in diameter, with 10-60 stellately spreading spikelets.

Fruits: Nutlets, 0.6-0.8 mm long and 0.3-0.4 mm wide, triangular, obovate-elliptic, yellowish-brown or pale-brown, minutely papillose.

***Cuscuta reflexa* Roxb. (Photo-plate:37&38)**

The species of *Cuscuta reflexa* was collected from the village Goran of Samba district on 11-06-2022. (Assigned accession number 197).

Common name: Giant dodder.

Hindi name: Amar bel.

Vernacular name: Andal.

Family: Convolvulaceae.

Habit: It is a parasitic leafless plant species. It is a stout succulent twiner.

Stem: Stem up to 2.5 in diameter, yellowish in color.

Flowers: Flowers sessile in lateral racemes.

Seeds: Seeds 3-3.5 mm long black.

***Datura stramonium* L. (Photo-plate:39&40)**

The species of *Datura stomonium* was collected from the village Nichla of Samba district on 08-06-2022. (Assigned accession number 158-a).

Common name: Thorn apple

Hindi name: Datura

Vernacular name: Aak datura

Family: Solanaceae

Habit: An erect, soft-stemmed shrub usually less than 1 m tall.

Stem: Branches somewhat zig-zag, almost glabrous, green or reddish-tinged to almost black.

Leaves: Large, acrid-smelling when crushed, triangular-ovate in outline, irregularly toothed or lobed, 7.5-15 cm long and 3.2-7.5 cm wide, largest leaves usually towards the ends of shoots, apex acute or acuminate.

Flower: Erect, solitary in leaf axils, tubular to funnel shaped; white to violet or purple on the outside and white within.

Fruits: A globose capsule, usually covered with stout tubercles or prickles, borne on a short, thick drooping peduncle; capsule 4-valved or irregularly dehiscent near the apex.

Seeds: Yellowish-brown, flat.

***Digera muricata* (L.) Mart. (Photo-plate: 41&42)**

The species of *Digera muricata* was collected from the village Surara of Samba district on 18-08-2022. (Assigned accession number 198).

Common name: False Amaranthus

Hindi name: Chanchali.

Vernacular name: Tandala

Family: Amaranthaceae

Habit: An annual herb, 30-60 cm high. With spreading branches.

Leaves: Variable, 2-7.5 cm long and 1.3-4.5 cm wide, ovate or elliptic, acute or rounded at the apex, sometimes with reddish margins, glabrous.

Flower: Flowers pink, borne in threes in lax, axillary, pedunculate spikes, 2.5-12.5 cm long.

Fruits: Globose, approximately 0.3 cm in diameter.

Seed: Yellowish-brown.

***Dactyloctenium aegyptium* (L.) Wild. (Photo-plate: 43&44)**

The species of *Dactyloctenium aegyptium* was collected from the village Surara of Samba district on 11-06-2022. (Assigned accession number 199).

Common name: Crowfoot grass.

Hindi name: Makra.

Vernacular name: Madani ghass.

Family: Poaceae

Habit: Annual, very variable, grass, 10-44 cm high. Erect or creeping culms, rooting from the profusely branched nodes.

Stem: Linear, tapering to a fine point, 2-10 cm long and 0.2-0.4 cm wide, flat, glaucous, glabrous or hispid; leaf sheaths striate, the lower whitish; ligules membranous, very short.

Flower: Inflorescence comprised of 2-6 digitate spikes, 0.5-4 cm long, olive-grey;

spikelets 2-5 flowered, spreading at right angles, pendulous, strongly striate.

Fruits: Grain 0.5-1 mm long, sub globose, reddish, very rugose.

***Diplocyclos palmatus* (L.) C. Jeffrey. (Photo-plate:45&46)**

The species of *Diplocyclos palmatus* was collected from the village Odh of Samba district on 16-08-2022. (Assigned accession number 200).

Common name: Lollipop climber.

Hindi name: Shivlingi.

Vernacular name: Jehr mora

Family: Cucurbitaceae

Habit: A tuberous, slender annual vine.

Stem: Glabrous with forked tendrils.

Leaves: Ovate-suborbicular in outline, 7.5-15 cm long, base cordate, blade membranous, scabrid above with minute red scales, smooth or slightly scabrid beneath; lobes lanceolate, acute to acuminate, margins coarsely, irregularly serrate or sinuate and distantly denticulate.

Flower: Small, greenish-yellow, the female flowers borne in fascicles, the male solitary.

Fruits: Berry rounded, 2-3 cm in diameter, bluish green with eight vertical white streaks, ripening red.

Seed: Brown, obovate, compressed, 4 mm long and 3mm wide, encircled by a prominent raised band.

***Echinochloa colona* (L.) Link. (Photo-plate: 47&48)**

The species of *Echinochloa colona* was collected from the village Rajpura of Samba district on 12-08-2022. (Assigned accession number 201).

Common name: Barnyard grass

Hindi name: Jungali chawal

Vernacular name: Edar

Family: Poaceae

Habit: An annual grass, 1m or taller.

Stem: Culms stout, erect to decumbent, often branching from the base.

Leaves: Sheath glabrous, ligule absent or occasionally represented by a rim of very short hairs, Leaf blades glabrous, elongate, 5-15 mm wide, light green.

Flowers: Panicle erect or nodding, green or purple tinged, 10-20 cm long. Racemes numerous, 2-4cm long, spreading, ascending, sometimes branched.

Fruits: Caryopsis ovate, obtuse, usually 2.5-3.5 mm long. Seed white to hyaline with longitudinal ridges on the convex surface.

***Echinochloa crus-galli* (L.) Beauv. (Photo-plate: 49&50)**

The species of *Echinochloa crus-galli* was collected from the village Rajpura of Samba district on 12-08-2022. (Assigned accession number 202).

Common name: Barnyard millet

Hindi name: Sawa ghass.

Vernacular name: Sankhi.

Family: Poaceae

Habit: Robust, tufted annual grass, erect or at the base decumbent and rooting at the nodes, 20-150 cm tall.

Stem: Culms cylindrical, glabrous, filled with white spongy pith.

Leaves: Leaf sheaths glabrous or the margin or the exposed part of it fimbriate, 9-13 cm long. Blades merging into the sheath, linear, with a broad, rounded base and acute top; rough margined, glabrous or at the base with a few long hairs, smooth or the upper surface minutely bristly.

Flowers: Inflorescence an apical panicle of 5-40 spikelike racemes, all turned to one side, with shortly ascending branches, the crowded spikelets at one side only, initially erect, later often bent down, 5-21 cm long.

Fruits: Caryopsis ovoid to obovoid, compressed, 1.5-2 mm long.

***Eleusine indica* (L.) Gaertner. (Photo-plate: 51&52)**

The species of *Eleusine indica* was collected from the village Rajpura of Samba district on 23-06-2022. (Assigned accession number 203).

Common name: Goosegrass.

Hindi name: Mandla

Vernacular name: Tarakad ghass

Family: Poaceae.

Habit: An annual grass.

Stem: Erect, Slender, flattened, radiating outwards from a central distinctive white center.

Leaves: 2-14 inches long, 3-8 mm wide, without hairs or only sparsely hairy, and folded along the midvein. The ligule is 1-2 mm long, fringed, uneven, and membranous. Sheaths are flattened, whitish at the base, and sparsely hairy in the collar region.

Flowers: Seed heads composed of 2-13 spikes each 1.5 to 6 inches long, 3-7 mm wide, in clusters at the top of stems. Two rows of flattened spikelets occur along each spike.

Seed: Light brown to black, 1-2 mm long.

***Eicchornia crassipes* (Mart.) Solms (Photo-plate:53&54)**

The species of *Eicchornia crassipes* was collected from the village Mansar of Samba district on 13-06-2022. (Assigned accession number 204).

Common name: Water hyacinth

Hindi name: Jal kumbi

Vernacular name: Jal kumbi.

Family: Pontederiaceae

Habit: A free-floating or partly rooting perennial aquatic herb.

Stem: With numerous, long, fibrous roots, short leafy.

Leaves: In rosettes, spoon or paddle-shaped, apex rounded, 5-20 cm wide; petioles turbinate swollen and spongy, enabling the plant to float.

Flowers: Mauve, lilac or blue, funnel-shaped, 2.5-3.8 cm long.

Fruits: Capsule, many-seeded.

***Euphorbia hirta* L. (Photo-plate:55 & 56)**

The species of *Euphorbia hirta* was collected from the village Sumb of Samba district on 16-05-2022. (Assigned accession number 205).

Common name: Asthma weed

Hindi name: Dudhi

Vernacular name: Dudhli

Family: Euphorbiaceae

Habit: An erect or procumbent annual herb, 15-50 cm high.

Stem: Densely clothed with yellow hairs; branches often 4-angled.

Leaves: Opposite, 1.3-3.8 cm long and 0.6-1.6 cm wide, obliquely elliptic, apex acute, base usually unequal-sided, margins serrulate or dentate, hairy, dark green above and pale beneath.

Flowers: Numerous, less than 1.3 mm long, crowded in small, globose, greenish-yellow axillary cymes.

Fruits: Capsules minute, 1.25 mm in diameter, trigonous, appressed hairy.

Seeds: Angular, 0.8 mm long, light reddish-brown.

***Euphorbia prostrata* Aiton. (Photo-plate: 57&58)**

The species of *Euphorbia prostrata* was collected from the village Sumb of Samba district on 17-05-2022. (Assigned accession number 206).

Common name: Prostrate Sandmat

Hindi name: Lal dudhi.

Vernacular name: Shoti dudhli

Family: Euphorbiaceae

Habit: Annual herb, up to 20 cm long, 1-3 mm in diameter.

Stem: Delicate, usually stolon-shaped, multiramose, sparsely pilose.

Leaves: Opposite, elliptic, oblong or obovate, 4-8mm long, 2-5 mm wide, apex rounded, base oblique, in-equilateral, rounded or subcordate, margins serrulate, rarely entire, sparsely pilose on both surfaces, rarely glabrous.

Flowers: Inflorescences solitary or severally clustered at leaf axils. Male flowers several, slightly exceeding involucre. Female flower 1, styles of ovaries very shorter.

Fruits: Appressed-pubescent, trivalved cocci.

Seeds: Long, ovoid-tetragonal, 0.7 mm long, 0.5 mm in diameter, scarlet.

***Erigeron bonariensis* L. (Photo-plate: 59&60)**

The species of *Erigeron bonariensis* was collected from the village Surara of Samba district on 18-05-2022. (Assigned accession number 207).

Common name: Hairy horseweed

Hindi name: Makshikaa-visha.

Vernacular name: Doodh patal

Family: Asteraceae.

Habit: Erect perennial, 20-75 cm tall.

Stem: Erect with stiff hairs, branching at the base, decreasing upwards.

Leaves: Narrow, lanceolate, grey to green color, 2-6 cm long, coarsely toothed and covered with fine hairs; upper leaves are smaller and linear.

Flowers: Inflorescence much branched; capitulum is greater than 2 mm in diameter.

Fruits: Cypsela linear shaped, 1.5 mm long, straw colored, covered in hairs with 16-20, noticeably longer, at the top that are white or pink.

***Gomphrena serrata* L. (Photo-plate:61&62)**

The species of *Gomphrena serrata* was collected from the village Ratwana of Samba district on 13-06-2022. (Assigned accession number 208).

Common name: Prostrate globe amaranth.

Hindi name: Makhmali

Vernacular name: Stali

Family: Acanthaceae.

Habit: An annual or perennial, prostrate or decumbent herb.

Stem: Clothed with white, shaggy hairs.

Leaves: Subsessile, 1.5-5 x 0.5-1.5 cm, spatulate or oblong-lanceolate, acute, entire.

Flowers: White in sessile, terminal, sub globose heads or spikes, up to 4 cm long, pilose on the back.

Seeds: 1.5 x 1 mm, black, shining.

***Ipomea carnea* Jacq. (Photo-plate:63&64)**

The species of *Ipomea carnea* was collected from the village Odh of Samba district on 29-05-2022. (Assigned accession number 209).

Common name: Bush morning glory

Hindi name: Behaya

Vernacular name: Aak

Family: Convolvulaceae

Habit: A robust, perennial shrub, 1-5 m tall.

Stem: Branched, luster green with milky latex.

Leaves: Ovate-lanceolate, pubescent, particularly beneath.

Flowers: Flowers in clusters at the ends of branches, pale to deep pink, darker in the corolla throat.

Fruits: Capsule glabrous, dehiscent, brown.

***Ipomea cairica* (L.) Sweet. (Photo-plate:65&66)**

The species of *Ipomea cairica* was collected from the village Nichla of Samba district on 05-07-2022. (Assigned accession number 210).

Common name: Cairo morning glory.

Hindi name: Neeli bel

Vernacular name: Rodi

Family: Convolvulaceae

Habit: An extensive perennial climber.

Stem: Tubercled with tuberous rootstock.

Leaves: Ovate to orbicular in outline, 3-10 cm long and wide, deeply palmately 5-7-lobed, the lobes lanceolate to ovate or elliptic, acute or obtuse and mucronate at the apex, 3-5 cm long.

Flowers: Purple, blue-purple or white with a purple center, funnel-shaped, 4.6-6 cm long, borne 1 or 3 together in axillary cymes.

Fruits: Capsular, sub globose, 1-1.2 cm long, glabrous.

Seeds: Sub globose to ovoid, blackish to tan, 0.4-0.6 cm long, densely short-tomentose, sometimes with long silky trichomes.

***Ipomea hederacea* (L.) Jacq. (Photo-plate: 67&68)**

The species of *Ipomea hederacea* was collected from the village Odh of Samba district on 14-08-2022. (Assigned accession number 211).

Common name: Ivy leaf morning glory.

Hindi name: Kaladana.

Vernacular name: Khadpave.

Family: Convolvulaceae.

Habit: An annual vine.

Stem: Twining or climbing.

Leaves: Alternate, hairy, petioled, 2-5 inches long and distinctly 3-lobed or ivy shaped.

Flowers: 1-2 inches long, with petals fused into a funnel; purple or blue or white in color.

Fruits: Capsule, spherical, 3-locular, brown

***Justicia adhatoda* L. (Photo-plate: 69&70)**

The species of *Justicia adhatoda* was collected from the village Ratwana of Samba district on 08-05-2022. (Assigned accession number 212).

Common name: Malabar nut.

Hindi name: Vaska.

Vernacular name: Brenkad.

Family: Acanthaceae.

Habit: It is an evergreen much branched perennial shrub with a strong, unpleasant odour, 1.2-6m tall.

Leaves: Leaves opposite, elliptic-lanceolate or ovate-lanceolate, margins entire, apex acute, 5-30cm long hairy, light green above, dark beneath, leathery.

Flowers: Flowers large, white with red or yellow – barred throats, borne in compact, axillary, pedunculate spikes with large bracts.

Fruits: Fruits (capsules) clavate, longitudinally channelled, 1.9-2.2 cm long and 0.8 cm wide, pubescent.

Seeds: Globular.

***Lantana camara* L. (Photo-plate: 71&72)**

The species of *Lantana camara* was collected from the village Nud of Samba district on 01-07-2022. (Assigned accession number 122-a).

Common name: Wild sage.

Hindi name: Raimuniya.

Vernacular name: Panjphuli.

Family: Verbenaceae

Habit: A perennial shrub, 2-5 m tall.

Stem: Woody, 4-angled, often bearing recurved prickles.

Leaves: Serrated leaves are ovate to ovate-lanceolate (up to 10 cm long and 7.5 cm wide) and usually light colored.

Flowers: Yellow and pink, later turning orange then red and sometimes blue or purple.

Fruits: Black, fleshy drupes, borne in clusters, 3-6 mm in diameter and contain 1-2 seeds.

***Leucas aspera* (Willd.) Link. (Photo-plate: 73&74)**

The species of *Leucas aspera* was collected from the village Odh of Samba district on 02-08-2022. (Assigned accession number 213).

Common name: common leucas

Hindi name: Shota halkusa.

Vernacular name: Booti

Family: Lamiaceae

Habit: An annual herb; 15-45 cm tall.

Stem: Erect, usually much diffusely branched from below, stout, hispid. Branches quadrangular, hispid.

Leaves: Linear or oblong, 2.5 to 7.5 cm long with blunt tips and scalloped margins.

Flowers: Whorls are large, terminal and axillary, about 2.5 cm in diameter and crowded with white bell-shaped flowers.

Fruits: Nutlets long-oblong sub-truncate at the apex, smooth and brown.

Seeds: Subcylindric, truncate at apex, reddish brown.

***Lipidium virginicum* L. (Photo-plate:75&76)**

The species of *Lipidium virginicum* was collected from the village Sumb of Samba district on 07-08-2022. (Assigned accession number 214).

Common name: Virginia pepper weed.

Hindi name: Alon.

Vernacular name: Rodi

Family: Brasicaceae

Habit: A small herbaceous annual; 15-45 cm tall.

Stem: Erect, branched, glabrous.

Leaves: Variable, entire or variously lobed or pinnatisect. Lower leaves long-petioled, twice pinnatisect; upper leaves sessile, linear, linear oblong or pinnatifid.

Flowers: Small, white in long racemes.

Fruits: An ovoid, flattened silique, measuring 4.5-6.5 mm X 3-4 mm, pale green to yellowish, with prominent apical wings.

Seeds: Sub-ovoid, flattened, measuring 2-3 mm X 1.5 mm, wingless and reddish brown.

***Leptochloa chinensis* (L.) Nees. (Photo-plate: 77&78)**

The species of *Leptochloa chinensis* was collected from the village Sumb of Samba district on 08-06-2022. (Assigned accession number 215).

Common name: Chinese sprangle top

Hindi name: Ghass

Vernacular name: sui ghass.

Family: Poaceae.

Habit: An aquatic or semi-aquatic tufted annual or perennial grass.

Stem: Stout to slender, erect or geniculate culms up to 1.5 m tall, often rooting at the lower nodes.

Leaves: Leaf-sheath loose, sub glaucous, smooth, up to 10 cm long; ligule a fringed, hairy membrane, 1-2 mm long; leaf-blade linear, up to 50 cm x 1 cm, long-attenuate, flat or folded, scabrid above.

Flowers: Inflorescence 10-60 cm long, composed of numerous slender racemes scattered along an elongate central axis; racemes flexuous, 2-13 cm long, erect or laxly ascending.

Fruits: Spikelets 3-7 flowered, narrowly elliptical oblong, 2-3 mm, subsessile, often purplish, disarticulating above the glumes and between the florets.

Seeds: Caryopsis ellipsoid-oblongoid, 6-9 mm long, brown, smooth or wrinkled.

***Lemna minor* L. (Photo-plate:79&80)**

The species of *Lemna minor* was collected from the village Sumb of Samba district on 10-06-2022. (Assigned accession number 216).

Common name: Common duckweed.

Hindi name: Chhota Panna

Vernacular name: Kanduri.

Family: Aracaceae.

Habit: It is a free-floating freshwater aquatic plant.

Leaves: It has one, two, three or four leaves each having a single root hanging in water. Leaves are oval, 1-8mm long and 0.6-5mm broad light green in colour.

Roots: The roots are 1-2cm long.

Flowers: Flowers are rarely produced and measured about 1mm in diameter.

Seed: The seed is 1mm long

***Martynia annua* L. (Photo-plate:81&82)**

The species of *Martynia annua* was collected from the Tehsil Ghagwal of Samba district on 30-07-2022. (Assigned accession number 217).

Common name: Cat's claw.

Hindi name: Ult-Kanta.

Vernacular name: Pidul.

Family: Pedaliaceae.

Habit: An herbaceous, annual, 0.3-2 m high.

Stem: Erect, branched, glandular-hairy.

Leaves: Opposite, broadly ovate to deltoid, 7-23 cm long and 7-20 cm wide; base cordate, apex acute, margins repand-dentate; petioles 7-18 cm long.

Flowers: Large, foxglove-shaped, pink and dark purple botched with yellow inside, borne in 10-20 flowered racemes, 4-10 cm long.

Fruits: Hard, woody, with 2 sharp recurved hooks.

Seed: Oblong, black, hairy and shining.

***Mimosa pudica* L. (Photo-plate:83&84)**

The species of *Mimosa pudica* was collected from the Tehsil Ghagwal of Samba district on 17-07-2022. The specimen is submitted to the department of botany, Cluster University of Jammu assigned accession number 218.

Common name: Touch-me-not

Hindi name: Chui-mui.

Vernacular name: Sharmili

Family: Fabaceae.

Habit: A low-growing, much-branched, prickly, sprawling shrub. It grows 15-100 cm tall and is erect or more generally has a trailing growth habit.

Stem: Woody at the base, stiff, cylindrical, reddish-brown or purple, pubescent and bear scattered prickles along the internodes. The prickles are 3-4 mm long, compressed, slightly curved, hard and very sharp.

Leaves: Dark green, bipinnate and hairy. Leaflets 12-50, each 6- 12 mm long, 1.5 mm wide, oblong- linear and pointed, glabrous above but with a hairy margin and lower surface. Leaflets and leaves fold up rapidly when touched and also close at night.

Flowers: Flowers bright purplish-pink; occur in globular or ovoid heads about 9 mm in diameter.

Fruits: Fruits are borne in clusters in the leaf axils. Each fruit is an oblong, flattened, recurved pod about 8-20 mm long and 2-6 mm wide containing 1-5 seeds. The pod is pointed at the apex, glabrous, edged with bristles and breaks into one-seeded segments which fall away from unbroken marginal sutures when mature.

Seeds: Light-brown, flattened, 2.5-3 mm in diameter and with finely granular surface.

***Oplismenus hirtellus* (L.) P. Beauv. (Photo-plate: 85&86)**

The species of *Oplismenus hirtellus* was collected from the village Surara of Samba district on 09-08-2022. (Assigned accession number 219).

Common name: Basketgrass.

Hindi name: Ven upatrika

Vernacular name: Banj ghass.

Family: Poaceae

Habit: An annual grass; 10-60 cm tall.

Stem: Culms prostrate; mid-culm nodes glabrous.

Leaves: Leaf-blades lanceolate or ovate, 1-10 cm long, 5-20 mm wide. Leaf-blade

venation with obscure cross nerves; surface smooth.

Flower: Inflorescence compound, a panicle of racemes.

Fruits: The shortly pedicellate spikelets consist of two awned glumes, a lower floret that is sterile or staminate and usually has an awned lemma but no palea, and an upper floret that is enclosed by the upper lemma and palea,

***Oxalis corniculata* L. (Photo-plate:87&88)**

The species of *Oxalis corniculata* was collected from the village Surara of Samba district on 27-05-2022. (Assigned accession number 220).

Common name: Creeping wood sorrel.

Hindi name: Amrulsak.

Vernacular name: Lunak.

Family: Oxalidaceae.

Habit: A small annual or perennial, procumbent or more or less erect herb, 6-25 cm high.

Stem: Pubescent with appressed hairs.

Leaves: Palmately trifoliate; leaflets 1.2-2.5 cm long, obcordate, base cuneate, margins entire; petioles 3.5-9 cm long, very slender, pubescent.

Flowers: Yellow, axillary in umbellate clusters on slender axillary peduncles.

Fruits: Capsules 2 cm long, linear-oblong, 5-angles, tomentose.

Seeds: Dark brown, broadly ovoid, transversely striate.

***Parthenium hysterophorus* L. (Photo-plate: 89&90)**

The species of *Parthenium hysterophorus* was collected from the tehsil Ghagwal of Samba district on 08-06-2022. (Assigned accession number 221).

Common name: Carrot grass

Hindi name: Gajar ghass

Vernacular name: Moti jadi

Family: Asteraceae

Habit: A short-lived annual herb with an extensive root system and an erect shoot; up to 2 m high.

Stem: Erect main stem, upper half of the main stem becomes highly-branched at flowering; stems appear to be striped due to longitudinal grooves or ribs and they become woody with age.

Leaves: Pale green, deeply lobed and covered with fine soft hairs.

Flowers: Creamy-white flowers occur at the tips of the stems. Clusters of male and female florets are grouped as five-lobed flowers on the terminal branches of the flower stem and measure 4-6 mm in diameter.

Fruits: Achene small (1-2 mm across), flattened, triangular and dark brown-black with two thin, white, spoon-shaped appendages

***Physalis minima* L. (Photo-plate:91&92)**

The species of *Physalis minima* was collected from the village Nichla of Samba district on 19-07-2022. (Assigned accession number 222).

Common name: Little gooseberry

Hindi name: Rasbhari

Vernacular name: Kayan Kothi

Family: Solanaceae

Habit: A fairly low-growing annual, usually up to 1-3ft.

Stem: Erect, delicate and pubescent.

Leaves: Petiolate (4.1 cm long), ovate to cordate, pubescent, delicate, exstipulate, acuminate, having reticulate-palmate venation and undulate margins; dorsal surface of the leaves, dark green and the ventral surface, light green; 9.7 cm long and 8.1 cm broad.

Flowers: Pedicellate having 1.2 cm long pedicel, hermaphrodite, complete, solitary, small campanulate, 1.2 to 1.4 cm in diameter;

yellow, having five black spots on yellow ground in the middle of the corolla cup.

Fruits: A berry, enclosed within the enlarged, 10-ribbed, reticulately veined calyx, which is 4.1 cm long and 2.5 cm broad; berries, stalked (stalk, 2.2 cm long), almost round having a pinhead-sized depression at the end; fully mature fruits primrose yellow.

Seeds: Globose, flat, yellow.

***Phyllanthus niruri* L. (Photo-plate:93&94)**

The species of *Phyllanthus niruri* was collected from the tehsil Ghagwal of Samba district on 05-07-2022. (Assigned accession number 223).

Common name: Stonebreaker.

Hindi name: Bahupatra.

Vernacular name: Chokhal

Family: Phyllanthaceae

Habit: A small, erect, annual herb that grows up to 30–40 cm in height.

Stem: Quite glabrous, stem often branched at the base, leaf bearing branchlets slender, spreading. The bark is smooth and light green.

Leaves: Numerous, subsessile, distichous leaves.

Flowers: Small, white to light yellowish. Male flowers in axillary, females in solitary.

Fruits: Capsules depressed-globose, smooth scarcely - lobed.

Seeds: Seeds trigonous, rounded.

***Portulaca oleracea* L. (Photo-plate:95&96)**

The species of *Portulaca oleracea* was collected from the village Nud of Samba district on 15-05-2022. (Assigned accession number 224).

Common name: Common purslane.

Hindi name: Kulfa

Vernacular name: Kulfa

Family: Portulacaceae.

Habit: An annual glabrous herb.

Stem: Prostrate, succulent; trichomes at nodes.

Leaves: Obovate or spatulate, flattened, 4-28 × 2-13 mm, apex round to retuse or nearly truncate; Involucres like leaves 1-4.

Flowers: 3-10 mm diameter; yellow.

Fruits: Capsules ovoid, 4-9 mm diameter.

Seeds: Black or dark brown, orbiculate or elongate, flattened, 0.6-1.1 mm; surface cells smooth, granular, or stellate, with rounded tubercles.

***Polygonum plebeium* R. Br. (Photo-plate: 97&98)**

The species of *Polygonum plebeium* was collected from the village Nud of Samba district on 29-05-2022. (Assigned accession number 225).

Common name: Small knotweed

Hindi name: Lal Buti.

Vernacular name: Stali.

Family: Polygonaceae

Habit: A prostrate, densely branched, annual herb.

Stem: Branched from base, branches numerous.

Leaves: Lance-like, elliptic, stalkless, 1.0-3.0 × 0.1-0.4 cm, entire. Ochrea are 1-2 mm long, membranous, ovate, tube-shaped.

Flowers: Inflorescence axillary, 3-4 flowered. Flowers sunken between ochrea or hardly coming out, 1-2 mm across, nearly stalkless; pinkish red.

Fruits: Nuts 1.0-1.75 mm long, circular to ovate, shining, black, glabrous.

***Polypogon monospermis* L. Desf. (Photo-plate: 99&100)**

The species of *Polypogon monospermis* was collected from the village Odh of Samba district on 18-05-2022. (Assigned accession number 226).

Common name: Beard grass.

Hindi name: Dadi ghass.

Vernacular name: Sittu

Family: Poaceae

Habit: An annual grass.

Stem: 15-100 cm long, weak, erect to geniculate, decumbent at base. Herbage glabrous to scabrous; culms branched to unbranched.

Leaves: Leaf blades flat, linear, 1.5-22 cm or more long, 1.1-10 mm or more wide, scabrous, margins scabrous, apices acute. Basal leaf sheaths terete, minutely scabrous to glabrous; sheaths open, loosely enclosing culm. Ligule membranous to chartaceous, 1.7-6 mm or more long, smooth, acute to truncate, irregularly dentate, minutely hairy. No auricles present.

Flowers: Inflorescence a terminal panicle, very dense and spike-like, occasionally with short, dense branches below, bristly with tawny, yellowish awns; ovoid-cylindric to cylindric, symmetrical.

Fruits: Caryopsis free from lemma and palea, elliptical, terete, 0.9-1.2 mm long, 0.5-0.6 mm wide, glabrous, amber colored.

***Ricinus communis* L. (Photo-plate: 101&102)**

The species of *Ricinus communis* was collected from the tehsil Ghagwal of Samba district on 17-06-2022. (Assigned accession number 176-a).

Common name: Castor bean.

Hindi name: Banaspati.

Vernacular name: Arend.

Family: Euphorbiaceae

Habit: Annual herbaceous perennial shrub or small tree usually up to 6-10 feet tall and 2-4 feet wide.

Stem: Stem are red to green or purple.

Leaves: leaves are glossy green, star shaped with 5-10 points, serrated margins, and measure 6-30 inches wide.

Flower: Non-petaled yellowish-green flowers appear on spikes measuring up to 18 inches long on the top of the stem.

Fruits: Fruit capsule is red, green or purple round covered in dense spines.

Seed: Seeds are mottled smooth, and resembles a dog tick.

***Setaria viridis* (L.) P. Beauv. (Photo-plate: 103&104)**

The species of *Setaria viridis* was collected from the village Nud of Samba district on 10-08-2022. (Assigned accession number 227).

Common name: Green foxtail.

Hindi name: Bandra.

Vernacular name: Colona ghass.

Family: Poaceae.

Habit: An annual grass.

Stem: Erect or spreading, 10 - 100 cm tall or occasionally taller, usually round in cross-section but occasionally much flattened.

Leaves: Leaves and leaf sheaths of very young plants often densely hairy but with upward-pointing hair; upper leaf blades and leaf sheaths mostly without hair; margins and both surfaces of leaf blades rough with very fine forward-pointing barbs; leaf sheath split with overlapping margins, both margins being fringed with a band of short hair.

Flowers: Very dense spike; 1 - 15 cm long and 0.6 - 2.0 cm wide, usually straight and erect or rarely somewhat curved, the larger ones sometimes with short branches up to 1 cm long, and covered with short green to slightly purplish bristles which give the inflorescence a bottlebrush appearance.

Fruits: Rounded on one surface but flattened on the other, finely cross-ridged, and dull yellowish green with brownish spots.

***Setaria pumila* (Poir.) Roem & Schult. (Photo-plate:105&106)**

The species of *Setaria pumila* was collected from the village Nud of Samba district on 10-08-2022. (Assigned accession number 228).

Common name: Yellow foxtail.

Hindi name: Bandra

Vernacular name: Sittu.

Family: Poaceae.

Habit: An annual grass.

Stem: Stems are erect, often flattened, without hairs (glabrous), reaching 3 feet in height, and often with a reddish tint at the base.

Leaves: Leaf blades may reach 12 inches in length and 7 to 12 mm in width, and have long silky hairs at the leaf bases. Auricles are absent and the ligule is a fringe of hairs reaching 2 mm in length.

Flowers: The seed head is a cylindrical bristly panicle, reaching 6 inches in length and 1/3-2/3 inch in width. Spikelets are approximately 3 mm long, green, and each spikelet has 1-3 bristles that are 5-10 mm long. The bristles turn yellow at maturity, giving the plant's name.

Seeds: More prominently cross-ridged, and yellowish or straw-colored.

***Sida rhombifolia* L. (Photo-plate:107&108)**

The species of *Sida rhombifolia* was collected from the village Odh of Samba district on 26-05-2022. (Assigned accession number 230).

Common name: Arrow leaf sida

Hindi name: Sehdev

Vernacular name: Tamanni jadi.

Family: Malvaceae

Habit: An erect, annual or perennial undershrub.

Stem: Up to 1.5 m tall with string, wiry, flexuous branches.

Leaves: Simple, alternate, 3.5-10 cm long and 1-5 cm wide, highly variable in size and shape, usually rhomboid-lanceolate, apex acute, acuminate or obtuse, base cuneate or rounded, margins serrate, glabrate or stellate-hairy above, greypubescent beneath.

Flowers: Yellow or rarely white, 1-2 cm across, solitary or in 2-5-flowered clusters in leaf axils or on short branchlets.

Fruits: Mericarps 9-12, 2.5-3.5 mm long, trigonous, sparsely pubescent, short or long, awns up to 1 mm long.

Seeds: 2 mm in diameter, subreniform, smooth, dark

***Solanum nigrum* L. (Photo-plate:109&110)**

The species of *Oplismenus hirtellus* was collected from the village Rajpura of Samba district on 20-05-2022. (Assigned accession number 229).

Common name: Black nightshade.

Hindi name: Kakmachi

Vernacular name: Pilka.

Family: Solanaceae

Habit: A variable annual herb.

Stem: Up to 1 m tall with an erect, glabrous or sparsely pubescent stem and divaricate branching pattern.

Leaves: 2.5-9 cm long and 2-5 cm wide, ovate or ovate lanceolate, glabrous, thin, margins subentire to sinuately toothed, tapering into the petiole, apex subacute or acuminate.

Flowers: Small, white, borne in drooping, umbellate 3-8 flowered cymes.

Fruits: Berries globose, 5-8 mm in diameter, red, yellow or purplish-black when ripe.

Seeds: Numerous, disc-shaped, 1.5 mm in diameter, yellow, minutely pitted.

***Solanum viarum* Dunal. (Photo-plate:111&112)**

The species of *Solanum viarum* was collected from the Tehsil Ghagwal of Samba district on 28-05-2022. (Assigned accession number 231).

Common name: Tropical soda apple.

Hindi name: Kanteli

Vernacular name: Kandyari

Family: Solanaceae.

Habit: Bushy, prickly herbaceous perennial.

Stem: Up to 2 m tall, more commonly 1 m tall; stems armed with broad-based, straight

or downward-pointing prickles and clothed in a mixture of stellate and simple glandular or non-glandular hairs.

Leaves: Alternate, simple, clearly petioled, prickly; blades oval-triangular, nearly as broad as long, to 20 cm long and 15 cm wide, angular-lobed; surfaces dense with fine soft hairs giving blades a velvety sheen; veins prickly.

Flowers: White, in small terminal clusters.

Fruits: A globose berry, 2-3 cm wide, green with dark veining, like a tiny watermelon, when immature, dull medium yellow when ripe.

Seeds: Flattened, reddish brown.

***Tephrosia purpurea* (L.) Pers. (Photo-plate: 113&114)**

The species of *Tephrosia purpurea* was collected from the village Rajpura of Samba district on 27-05-2022. (Assigned accession number 232).

Common name: Wild Indigo

Hindi name: Bajardanti.

Vernacular name: Joal

Family: Fabaceae.

Habit: A polymorphic, much-branched, suberect, perennial herb.

Stem: Usually 30-60 cm tall; branches spreading, glabrous or sparsely pilose.

Leaves: Leaves imparipinnate, 5-15 cm long; petiolets 6-12 mm long. Leaflets 7-12, narrow, elliptic to oblanceolate, apex obtuse or retuse, mucronate, base acute or cuneate, 2-2.8 cm long and 0.8-1.3 cm wide, glabrous above, silky pubescent beneath, with numerous closely parallel veins.

Flowers: Pink, red or purple, 4-9 mm long, borne in many flowered, leaf-opposed racemes.

Fruits: Pods slightly curved, compressed, glabrescent, dehiscing by both sutures, 3-5 cm long and 4 mm wide, containing 4-10 seeds.

Seeds: 4 mm long, suborbicular,

compressed, greenish-grey to dull brown, smooth.

***Tridax procumbens* L. (Photo-plate: 115&116)**

The species of *Tridax procumbens* was collected from the Tehsil Ghagwal of Samba district on 16-06-2022. (Assigned accession number 233).

Common name: Coat buttons.

Hindi name: Ghamra.

Vernacular name: Gooti jadi

Family: Asteraceae

Habit: A hispid, procumbent herb.

Stem: Up to 60 cm tall; base woody, sometimes rooting at the nodes.

Leaves: Ovate, 2-7 cm long and 1-4 cm wide, apex acute or acuminate, base cuneate, margins serrate to coarsely dentate or trilobed.

Flowers: Flowers borne in small, solitary, terminal heads; peduncles 10-20 cm long; ray florets strap-shaped, white; disc florets yellow.

Fruits: Achenes black, turbinate, 2-2.5 mm long with feathery pappus.

***Typha domingensis* Pers. (Photo-plate: 117&118)**

The species of *Typha domingensis* was collected from the village Odh of Samba district on 29-05-2022. (Assigned accession number 234).

Common name: Southern cattail.

Hindi name: Patera.

Vernacular name: Aera.

Family: Typhaceae.

Habit: A tall, robust perennial march plant.

Stem: Usually, 1.5-3 m high with a creeping, branched rhizome.

Leaves: Distichous, semicylindrical above the leaf sheath, spongy up to 3 m long and 2-3.5 cm wide, often longer than the flowering stalk, narrower above the sheath.

Flowers: Minute, borne on cylindrical spikes, 0.8-2.2 cm in diameter, the male and female spikes often widely separated on the

stalk, sometimes on different plant; male spikes 25-50 cm long, consisting of deep-yellow anthers; female spikes 22-38 cm long, pale brown.

Fruits: Fusiform, dehiscent by an apical lid.

***Xanthium strumarium* L. (Photo-plate: 119&120)**

The species of *Xanthium strumarium* was collected from the village Ratwana of Samba district on 30-05-2022. (Assigned accession number 235).

Common name: Rough cocklebur.

Hindi name: Gokhru

Vernacular name: Jojda.

Family: Asteraceae.

Habit: Annual herb.

Stem: Stout and hairy, much branched, up to 1.5 m tall.

Leaves: Leaves broadly triangular ovate or suborbicular, scarbid or hispid on both surfaces, apex acute, often 3-5 lobed, irregularly serrate, base somewhat cordate or shortly cuneate; petioles 2.5-7.5 cm long.

Flowers: Flower heads monoecious, numerous, white or green, in terminal and axillary racemes; male heads in upper axils, globose; female heads in the lower axils, ovoid, covered with hooked bristles, ending in 2 strong hooked beaks.

Fruits: Achenes 1.3 cm long, obovoid, compressed, enclosed in a hardened, spinescent involucre.

The present study may be helpful in identification of common weeds and for agriculturists, scientists involved in the management of weeds. Outcome of the present study will be useful in the management of weeds and further research work in the area of weed biology and integrated weed management.

CONCLUSION

Total 60 weed species were collected of 29 plant families, maximum weed species is from Poaceae family with 11 plant species, 6 from Asteraceae family, 4 weed species each from Convolvulaceae and Solanaceae family. Euphorbiaceae and Fabaceae were represented by 3 weed species each and 2 from Acanthaceae and Cyperaceae. Papavaraceae, Nyctaginaceae, Cannabaceae, Vitiaceae, Asclepiadaceae, Capparidaceae, Chenopodiaceae, Cucurbitaceae, Potenderiaceae, Verbenaceae, Lamiaceae, Brassicaceae, Araceae, Oxalidaceae, Phyllanthaceae, Portulacaceae, Polygonaceae, Malvaceae, Typhaceae represented by only one species. The present study is the first attempt to identify and investigate weeds from the study site in Samba district of Jammu and Kashmir. It will prove to be helpful as a guide to researchers and agriculturists in future for identification and classification of weeds so that effective weed management can be done. Weeds are undesirable plants in any agricultural land. Mostly weeds grow at a faster rate than crops, which in turn has a bad effect on the production of crops. Weeds compete fiercely with crops for nutrition, water and minerals etc. due to which the yield of crops gets reduced, causing loss to the farmers. Weed control by traditional methods proves to be very expensive, so that farmers do not even cover the production cost by following these traditional control practices. Therefore, documentation of weed flora is necessary for developing conservation strategy. The present study provides an accurate knowledge of Samba district to explore and identify the weeds. Although the present study has revealed that these weeds have medicinal value, yet their high growth rate and the increasing rate of yield loss each year is a matter of concern.

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Author contribution: Shastri Prasad Shukla conceptualized the idea, wrote the original MS and supervised the work. Nandita Shrama surveyed sites, performed the experiment and collected data. R K Salgotra helped editing and finalization of MS. All authors have critically read the drafted manuscript and approved it for publication.

Conflict of interest: None

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Legends to the figure (Photo-plate): Weeds species in the study area.

1&2: *Achyranthes aspera*, 3&4: *Ageratum conyzoides*, 5&6: *Alternanthera pungens*, 7&8: *Alternanthera sessilis*, 9&10: *Arundo donax*, 11&12: *Argemone mexicana*, 13&14: *Amaranthus viridis*, 15&16: *Biden pilosa*, 17&18: *Boerhavia diffusa*, 19&20: *Cannabis sativa*, 21&22: *Cassia tora*, 23&24: *Cayratia trifolia*, 25&26: *Calotropis procera*, 27&28: *Cleome viscosa*, 29&30: *Chenopodium album*, 31&32: *Cynodon dactylon*, 33&34: *Cyperus rotundus*, 35&36: *Cyperus difformis*, 37&38: *Cuscuta reflexa*, 39&40: *Datura stramonium*, 41&42: *Digera muricata*, 43&44: *Dactyloctenium aegyptium*, 45&46: *Diplocyclos palmatus*, 47&48: *Echinochloa colona*, 49&50: *Echinochloa crus-galli*, 51&52: *Eleusine indica*, 53&54: *Eicchornia crassipes*, 55&56: *Euphorbia hirta*, 57&58: *Euphorbia prostrata*, 59&60: *Erigeron bonariensis*, 61&62: *Gomphrena serrata*, 63&64: *Ipomea carnea*, 65&66: *Ipomea cairica*, 67&68: *Ipomea hederacea*, 69&70: *Justicia adhatoda*, 71&72: *Lantana camara*, 73&74: *Leucas aspera*, 75&76: *Lipidium virginicum*, 77&78: *Leptochloa chinensis*, 79&80: *Lemna minor*, 81&82: *Martynia annua*, 83&84: *Mimosa pudica*, 85&86: *Oplismenus hirtellus*, 87&88: *Oxalis corniculata*, 89&90: *Parthenium hysterophorus*, 91&92: *Physalis minima*, 93&94: *Phyllanthus niruri*, 95&96: *Portulaca oleracea*, 97&98: *Polygonum plebeium*, 99&100: *Polypogon monosperma*, 101&102: *Ricinus communis*, 103&104: *Setaria viridis*, 105&106: *Setaria pumila*, 107&108: *Sida rhombifolia*, 109&110: *Solanum nigrum*, 111 & 112: *Solanum viarum*, 113 & 114: *Tephrosia purpurea*, 115 & 116: *Tridax procumbens*, 117&118: *Typha domingensis*, 119&120: *Xanthium strumarium*

Table 1: List of the 60 weeds species along with their families, vernacular names and impacts during the study

S. No.	Botanical names	Vernacular names	Family	Impact
1	<i>Achyranthes aspera</i> L.	Parkanda	Amaranthaceae	It helps in reducing body weight and helpful in digestion. But if plant comes in direct contact with skin can cause skin irritation.
2	<i>Ageratum conyzoides</i> L.	Pudina jadi	Asteraceae	This induces liver and kidney disorders but use to cure wound as traditional medicines.
3	<i>Alternanthera pungens</i> H.B&K.	Pokhde	Amaranthaceae	Plant parts like, leaves and shoots are boiled and drunk as antihypertensive remedy. The sharp spines irritate the farmers.
4	<i>Alternanthera sessilis</i> (L.) D C.	Stali	Amaranthaceae	It is used as medicines often in mixtures with other medicinal plants. It acts as alternative host of nematodes.
5	<i>Arundo donax</i> (L.)	Nadd	Poaceae	It is widely used as power generation biogas, control soil erosion and used to feed livestock.
6	<i>Argemone mexicana</i> L.	Kandyari	Papavaraceae	It is poisonous to livestock but the yellow latex is applied on affected areas by skin infections.
7	<i>Amaranthus viridis</i> Hook. F.	Chaleri	Amaranthaceae	Leaves are widely used in eating purposes but can be poisonous to livestock or humans with kidney disorders if eaten excessively.
8	<i>Biden pilosa</i> L.	Saryala	Asteraceae	Its spines can cause irritation to humans and livestock. But used to treat fever and inflammations.
9	<i>Boerhavia diffusa</i> L.	Lit-sit	Nyctaginaceae	It is harmful in some cases like flu but useful in curing diseases of liver, heart and kidney.
10	<i>Cannabis sativa</i>	Bhang	Cannabaceae	It is harmful while smoking, drinking but helps in insomnia and depression if use in prescribed amount.
11	<i>Cassia tora</i> (L.) Roxb.	Hedwa	Fabaceae	Its seeds help in eyesight booster and treat ringworms as antiseptics. But it has bad effects if excessively used for long term.
12	<i>Cayratia trifolia</i>	Rodi	Vitiaceae	Leaves and roots are used to treat fever but distort the healthy plant growth.
13	<i>Calotropis procera</i> (Aiton) Dryand.ex.	Desi Aak	Asclepiadaceae	Plant has antiparasitic, antifungal and antimicrobial properties but latex is toxic for human eyes.
14	<i>Cleome viscosa</i> L.	Neoli jadi	Capparidaceae	Its paste is applied on scorpion sting. But it is not suitable for livestock.
15	<i>Chenopodium album</i> L.	Bathua	Chenopodiaceae	Act as blood purifier and a good source of vitamins, minerals and fibres. Raw leaves can interfere with absorption.
16	<i>Cynadon dactylon</i> (L.) Pers.	Khabal	Poaceae	It is used to treat cough and many stomach related problems.
17	<i>Cyperus rotundus</i> L.	Dilla ghash	Cyperaceae	It is helpful in treating stomach ulcer, asthma.
18	<i>Cyperus difformis</i> L.	Dilla	Cyperaceae	It is used to treat diarrhoea, diabetes and stomach disorders.
19	<i>Cuscuta reflexa</i> Roxb.	Andal	Convolvulaceae	It is used externally in treatment of body pains and itchy skin and use internally in treating fever.
20	<i>Datura stramonium</i> L.	Aak datura	Solanaceae	It is used in treatment of intestinal pain, toothache and fever.
21	<i>Digera muricata</i> (L.) Mart.	Tandala	Amaranthaceae	It helps in indigestion and urinary disorders
22	<i>Dactyloctenium aegyptium</i> (L.) Wild.	Madani ghash	Poaceae	It has anticancer and anti-inflammatory and used in treating small pox, ulcers and wounds.

S. No.	Botanical names	Vernacular names	Family	Impact
23	<i>Diplocyclos palmatus</i> (L.) C. Jeffrey.	Jehr mora	Cucurbitaceae	Its leaves are used to cure stomach ache.
24	<i>Echinochloa colona</i> (L.) Link.	Edar	Poaceae	It is used as forage for livestock.
25	<i>Echinochloa crus-galli</i>		Poaceae	Plant extract is used in diseases of spleen. It mitigates nitrogen quantity in soil.
26	<i>Eleusine indica</i> (L.) Gaertner.	Tarakad ghash	Poaceae	It is used in traditional medicines for treating cough.
27	<i>Eichhornia crassipes</i> (Mart.) Solms	Jal kumbi	Pontederiaceae	It has anticancer, antioxidant, anti-inflammatory properties. It blocks waterways and reduces oxygen level for fish.
28	<i>Euphorbia hirta</i> L.	Dudhli	Euphorbiaceae	It is used to treat respiratory ailments (cough, asthma).
29	<i>Euphorbia prostrata</i> Aiton.	Booti	Euphorbiaceae	It is used in treatment of bleeding haemorrhoids. Its juice contains toxic substance.
30	<i>Erigeron bonariensis</i> L.	Dudh patal	Asteraceae	It is used to cure respiratory disease but poisonous to dog is a result of the ingestion of the plant.
31	<i>Gomphrena serrata</i> L.	Booti	Acanthaceae	It is used to treat liver disorders. Also used to cure dermatological disease and acts as antimicrobial, anti-inflammatory.
32	<i>Ipomea carnea</i> Jace.	Aak	Convolvulaceae	It causes poisoning of livestock. It has antibacterial and antifungal properties.
33	<i>Ipomea cairica</i> (L.) sweet.		Convolvulaceae	Young leaves are used for consumption. It helps in healing body rashes and fever.
34	<i>Ipomea hederacea</i> (L.) Jacq	Khadpave	Convolvulaceae	It acts as anti-inflammatory, blood purifier. It can be toxic if consumed in large quantities.
35	<i>Justicia adhatoda</i> L.	Brenkad	Acanthaceae	It is useful in the respiratory system related issues. It is used to treat cough and cold.
36	<i>Lantana camara</i> L.	Panjphuli	Verbenaceae	It has insecticidal and fungicidal properties. But it is poisonous for livestock.
37	<i>Leucas aspera</i> (Wild.) Link.	Booti	Lamiaceae	It is used as insecticides and also useful in the remedy of snakebite and scorpion sting.
38	<i>Lipidium virginicum</i> L.	Rodi	Brassicaceae	Its leaves contain vitamin C and A. This plant is edible but its whitetop is toxic to cattles.
39	<i>Leptochloa chinensis</i> (L.) Nees.	Sui ghash	Poaceae	It is used as fodder for plants.
40	<i>Lemna minor</i>	Kanduri	Araceae	It has high protein content. In water it blocks oxygen and light for aquatic life.
41	<i>Martynia annua</i>	Pidu	Pedaliaceae	The leaf paste is used on wounds of domestic animal.
42	<i>Mimosa pudica</i> L.	Sharmili	Fabaceae	It has antibacterial, antivenom, anti-asthmatic properties.
43	<i>Oplismenus hirtellus</i> (L.) P. Beauv	Banj ghash	Poaceae	It is used as animal food and medicines.
44	<i>Oxalis corniculata</i> L.	Lunak	Oxalidaceae	It has antibiotic, anticancer and wound healing properties. Its leaves are edible, but excessive eating led to kidney stone.
45	<i>Parthenium hysterophorous</i> L.	Moti jadi	Asteraceae	It causes allergic respiratory problems, contact dermatitis and mutagenicity in humans and livestock.

S. No.	Botanical names	Vernacular names	Family	Impact
46	<i>Physalis minima</i> L.	Kayan kothi	Solanaceae	It has anticancerous, antidiabetic, anti-inflammatory properties. Ripe fruits are usually edible.
47	<i>Phyllanthus niruri</i> L.	Chokhal	Phyllanthaceae	It is used to treat jaundice, skin diseases and urinary complications. But excessive use is not good.
48	<i>Portulaca oleracea</i> L.	Kulfa	Portulacaceae	It causes poisoning in sheep and goat but safe for humans. It is a good source of vitamin C but excessive use is not good.
49	<i>Polygonum plebeium</i> R.Br.	Stali	Polygonaceae	It helps in curing liver disorder, like jaundice.
50	<i>Polypogon monospermis</i> L. Desf.	Sittu	Poaceae	It is used as fodder for animals.
51	<i>Ricinus communis</i> L.	Arend	Euphorbiaceae	It helps in treating insomnia, abdominal disorder but poisonous for humans.
52	<i>Setaria vidis</i> (L.) P. Beauv.	Colona ghass	Poaceae	The seed bristles are very sharp and harmful leads to swelling and pain.
53	<i>Setaria pumila</i> (Poir.) Roem & Schult.	Sittu	Poaceae	Its root paste is used to reduce pain. It is used as forage.
54	<i>Sida rhombifolia</i> L.	Tamanni jadi	Malvaceae	It is used to treat diarrhoea, fever, malaria and asthma.
55	<i>Solanum nigrum</i> L.	Pilka	Solanaceae	It helps in treating bacterial infections, cough and indigestion but poisonous for humans.
56	<i>Solanum viarum</i> Dunal.	Kandyari	Solanaceae	It has anticancer and anti-fungal properties. Its fruit is poisonous to humans.
57	<i>Tephrosia purpurea</i> (L.) Pers.	Joal	Fabaceae	It is used to treat asthma, ulcers and kidney disorders. Its seeds are lethal to fish.
58	<i>Tridax procumbens</i> L.	Gooti jadi	Asteraceae	It helps in treating diarrhoea, dysentery and liver diseases. It is used as fodder.
59	<i>Typha domingensis</i> Pers.	Aera	Typhaceae	It helps in treating nose bleeding, uterine bleeding and abdominal pain. It releases phytotoxins (secondary plant metabolites).
60	<i>Xanthium strumarium</i> L.	Jojda	Asteraceae	It helps in treating fungal infections. It is toxic to animals.



Figure 1a: Map of Jammu and Kashmir



Figure 1b: Location of Study Area in Samba District

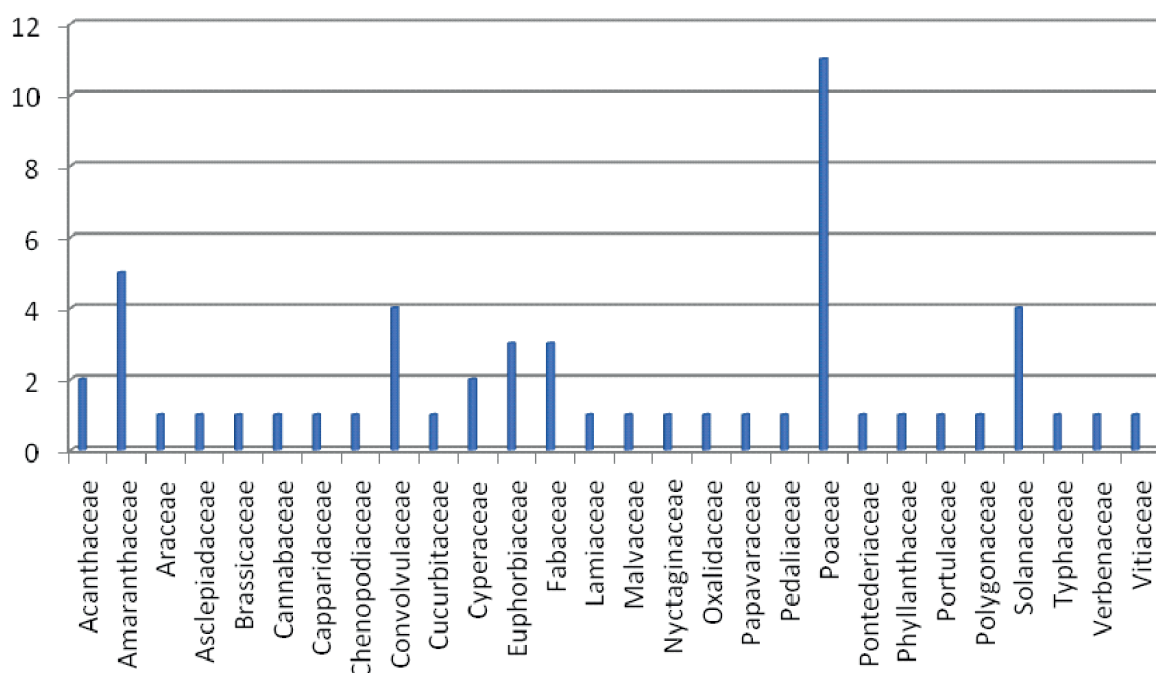


Figure 2: Number of individuals of weeds in each family

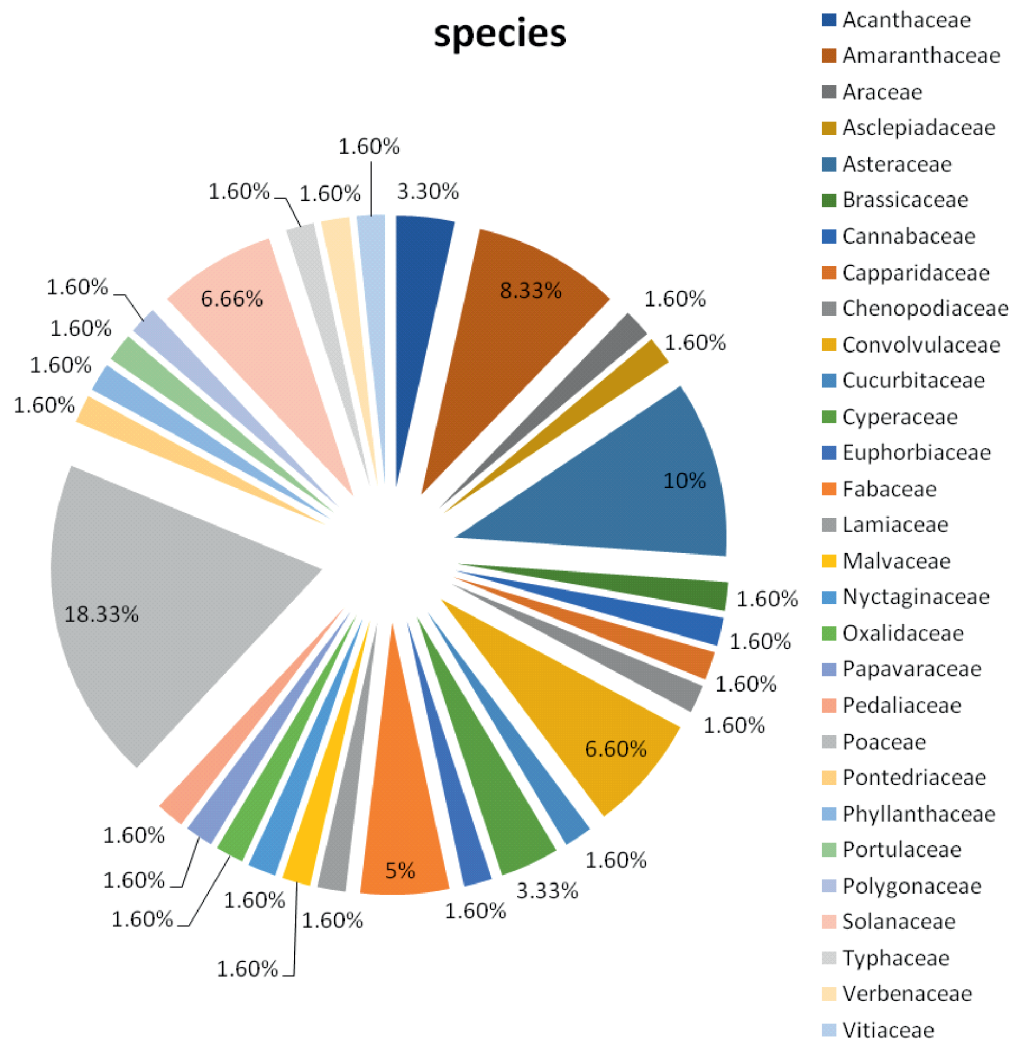


Figure 3: Showing comparative percentage of weed families

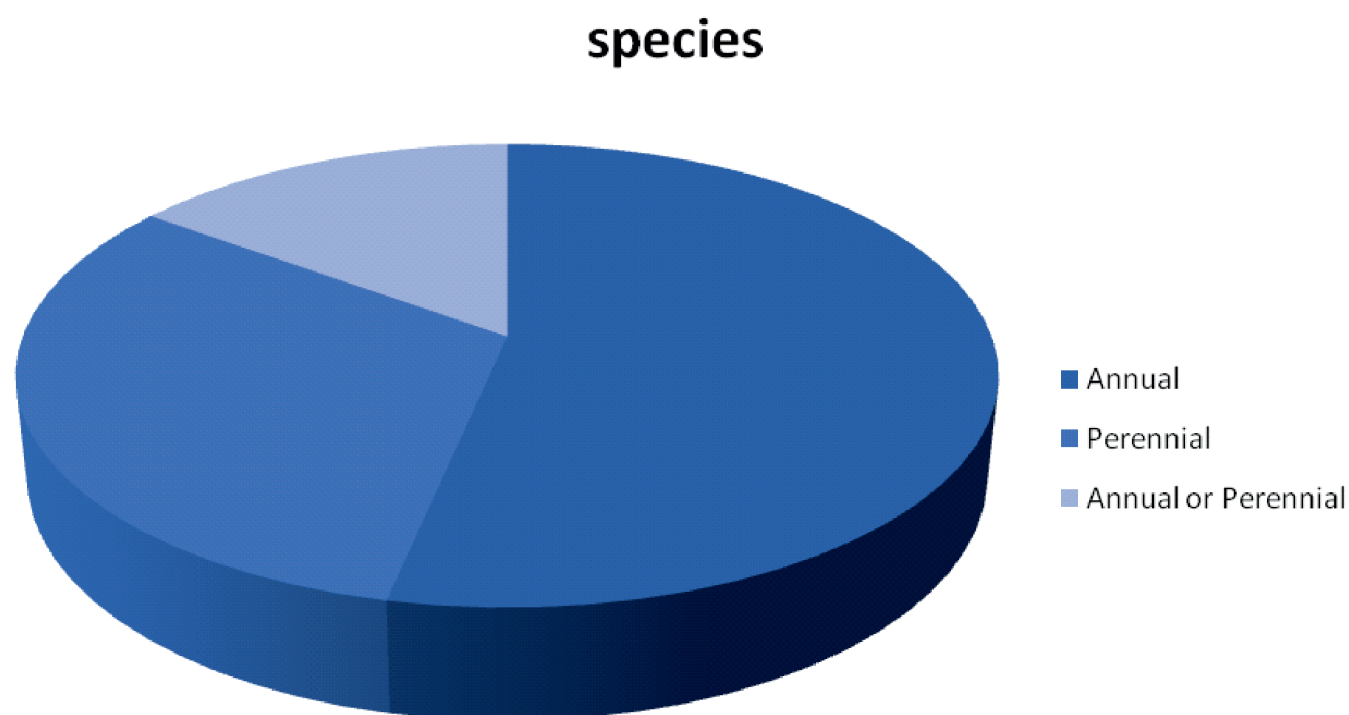


Figure 4: Showing weeds species on the basis of life cycle

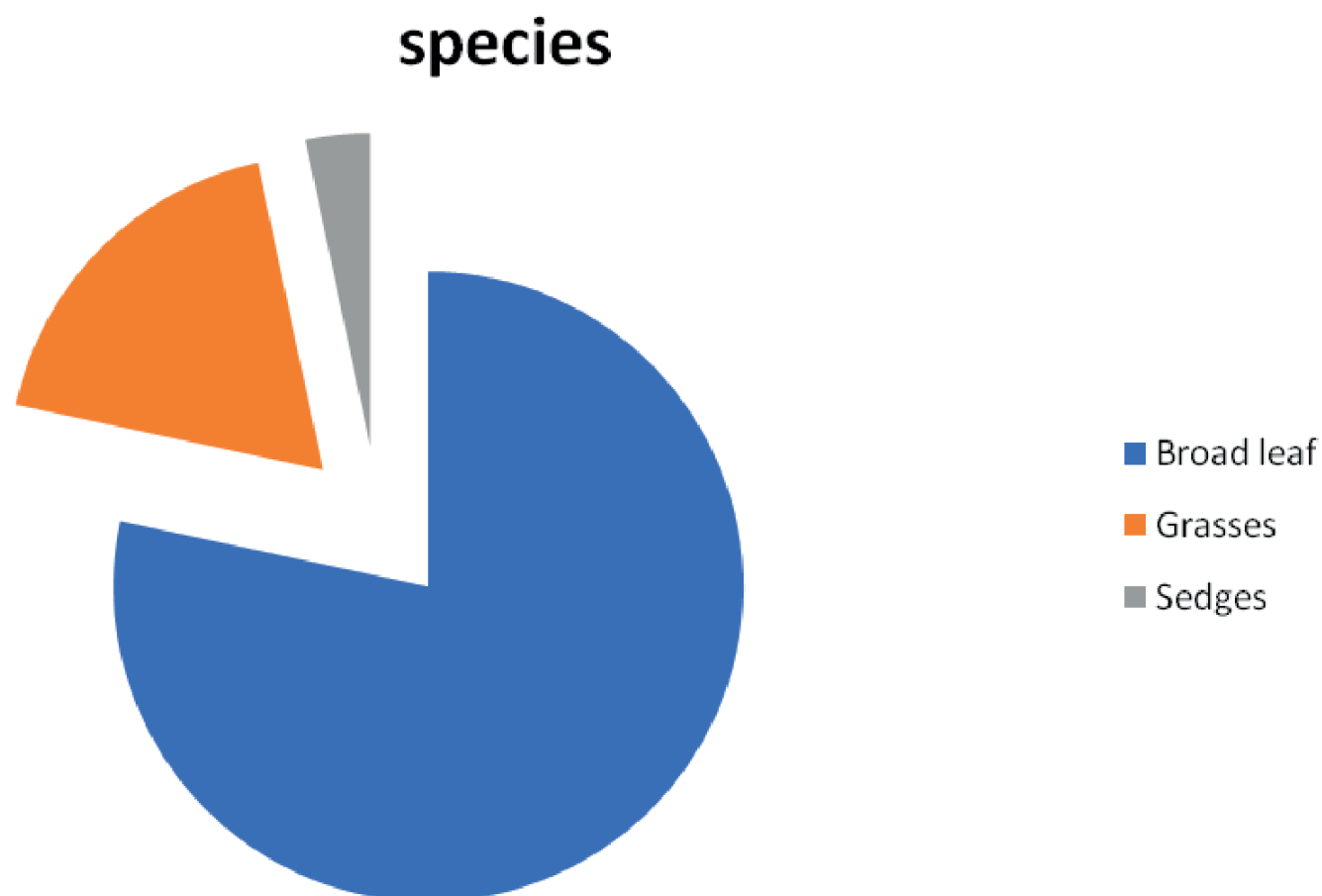


Figure 5: Showing weeds species on the basis of morphology

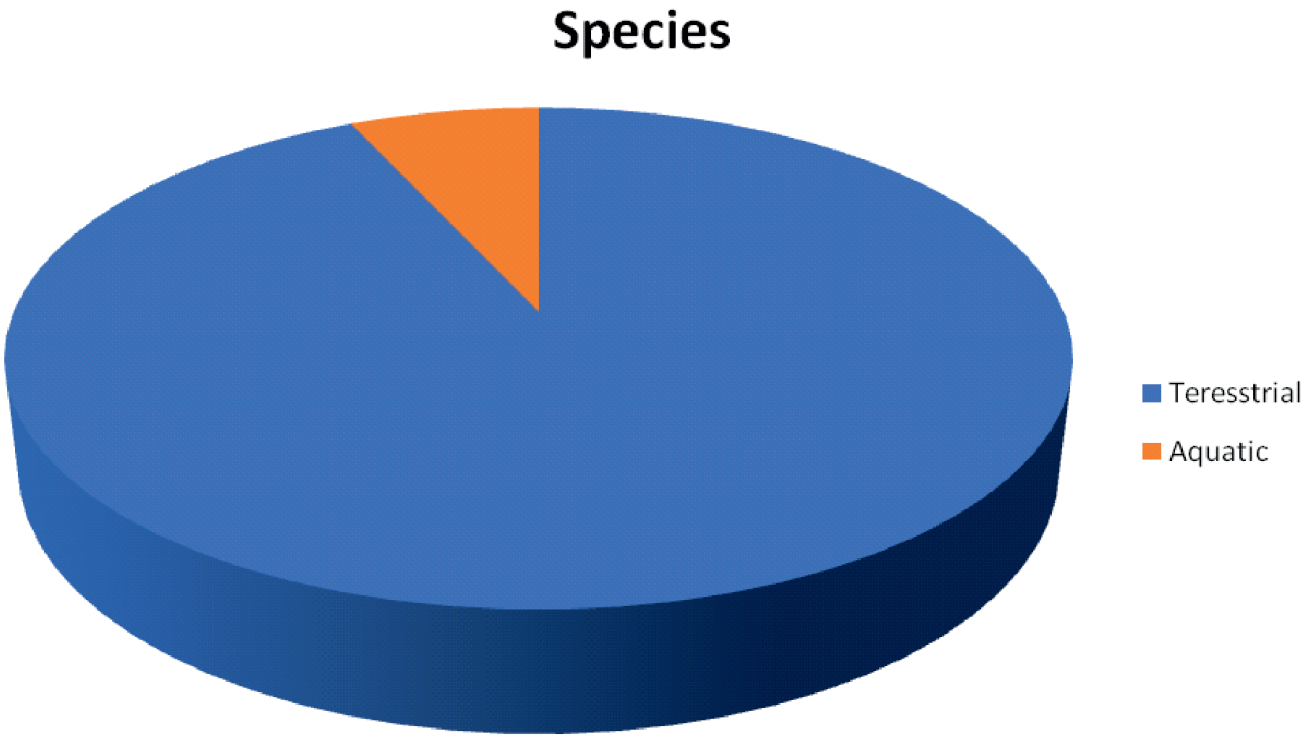


Figure 6: Showing weed species on the basis of habitat

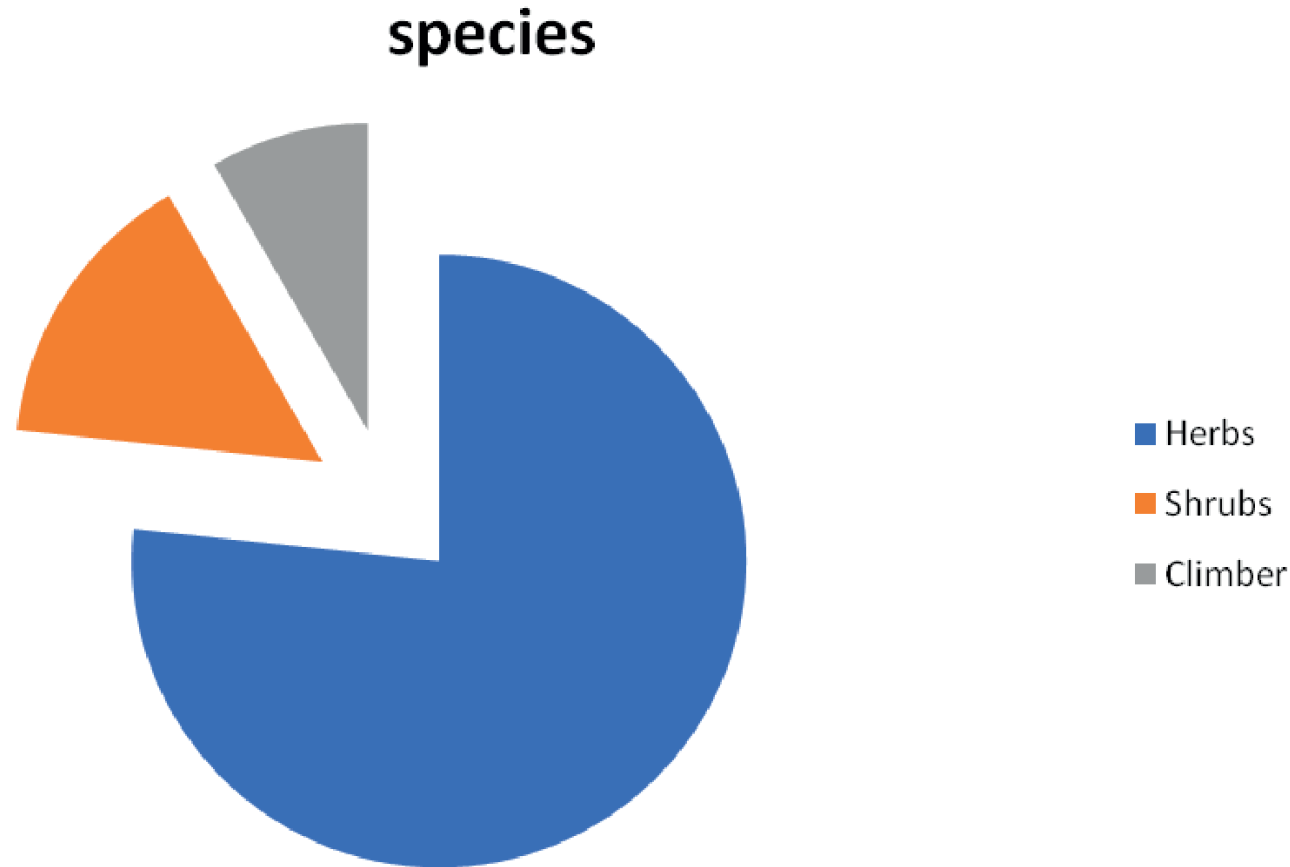


Figure 7: Showing weeds species on the basis of habit

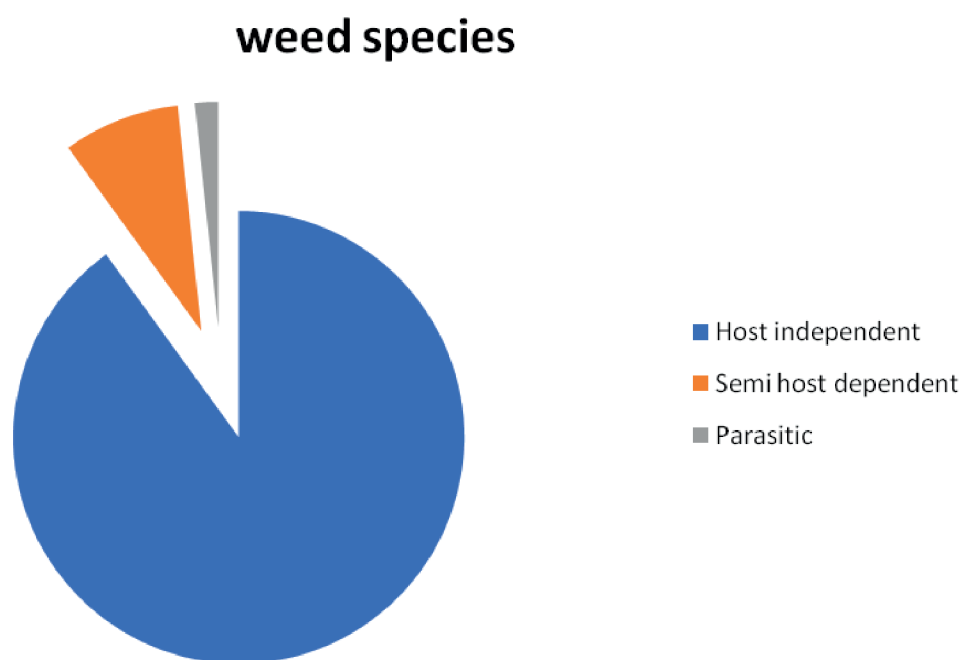


Figure 8: Showing weed species on the basis of dependence on another host

