E-flora of
Sri Venkateswara College Campus,
University of Delhi,
Delhi

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INTRODUCTION

Flora is defined as a list of plants occurring in a place at a given point of time. It is descriptive as it lists as well as describes the plants found in a region. Flora may describe a small area like flora of Yamuna bank, or it may encompass larger area e.g. flora of India. Given the importance of goods as well as services rendered to us by plants, it is imperative that plants of a region are known and described. Preparation of flora requires survey of the area, collection of plant specimens, identification and then description of species. The collected species are finally arranged by following a system of classification e.g. Bentham and Hooker. Traditionally, all plant specimens were pressed and pasted on herbarium sheets and maintained as herbarium records. However, with improvisation in technology and awareness about drawback of plant collection, digital herbaria are constructed, wherein photographs of specimen accompanied by descriptions are kept as digital records. These digital records help in easy storage as well as retrieval of data.

DELHI

Delhi, the capital state of India is located in northern India between the latitudes of 28°-24'-17" and 28°-53'-00" North and longitudes of 76°-50'-24" and 77°-20'-37" East. Delhi shares borders with the states of Uttar Pradesh and Haryana and covers total area of 1,483 sq. kms. It is situated on the right bank of the river Yamuna whose maximum length and width in its Delhi stretch is 51.90 kms and 48.48 kms, respectively. To its west and south-west is the great Indian Thar desert of Rajasthan state, formerly known as Rajputana and, to the east lies river Yamuna across which has spread the greater Delhi of today. The ridges of the Aravalli range extend right into Delhi proper, towards the western side of the city, and this has given an undulating character to some parts of Delhi. Its unique geographical location gives it atypical humid subtropical climate. The vegetation of Delhi is thorny scrub and the forest has been classified as a Tropical Thorn Forest. The ridge is a northern extension of the ancient Aravalli Range which has been divided into four zones. The present area of study, South Campus of University of Delhi, lies towards the tail end of the DhaulaKuan region, which is a part of the central ridge.

BENTHAM AND HOOKER SYSTEM OF CLASSIFICATION

Two English botanists working with the Royal Botanical Garden, Kew, England, George Bentham and Joseph Dalton Hooker introduced their natural system of classification in their book 'The Genera Plantarum' published in July 1862. This system of classification shares similarity with the classificatory systems of Bessey and Hutchinson. Bentham and Hooker described families and genera of seed plants then known base upon their overall similarity. It is the most popular and widely used system of classification due to its ease to use. It has a great practical application and is followed in curricula in various educational institutes. Their classification system is now used in various commonwealth countries including India.

They described around 97,205 species of flowering plants spread over 202 orders or families. They divided the plants into two sub-kingdoms.

- Cryptogamia
- Phanerogamia

Reproduction in Cryptogamia is mainly by spores, which are unicellular.this sub-kingdom is further divided into Thallophyta, Bryophyta and Pteridophyta.

The Phanerogams are seed producing. They are further divided into three groups

Class
- Group I- Dicotyledons (Exogens)
- Group II- Gymospermae
- Group III- Monocotyledons (Endogens)

Group I- Dicotyledons

- Embryo with 2 cotyledons.
- Ovules enclosed.
- Primary root formed by radical.
- Floral parts are either free or united.

Group II-Gymnospermae

- Leaves are scaly.
- Perianth absent.
- Ovules naked.
- Flowers in cones, spikes or clusters.

Group III-Monocotyledons

- Leaves are large and parallel veined.
- Embryo has one cotyledon.
- Perianth is free or united.
- Radical is replaced with adventitious roots.

Dicotyledons are further divided into three divisions

1. Polypetalae- flowers bear perianth in two whorls.
2. Gamopetalae- flowers epigynous with inferior ovary.
3. Monochlamydeae- flowers are bisexual and lack petal.

Polypetalae is subdivided into 3 series

- Thalamiflorae (includes 6 orders and 34 families).
- Disciflorae (includes 4 orders and 22 families).
- Calyciflorae (includes 5 orders and 27 families).

Gamopetalae is subdivided into 3 series

- Inferae (includes 3 orders and 9 families).
- Heteromerae (includes 3 orders and 12 families).
- Bicarpellatae (includes 4 orders and 23 families).

Monochlamydae is classified into 8 series

- Curvembryeae (includes 6 families).
- Multiovulate aquaticae (includes 1 family).
- Multiovulate terrestris (includes 3 families).
- Microembryeae (includes 4 families).
- Daphnales (includes 5 families).
- Achlamydosporeae (includes 3 families).
- Unisexuales (includes 9 families).
- Ordines Anomali (includes 9 families).

Gymnospermae includes 3 orders

- Gnetaceae
- Coniferae
- Cycadaceae

Monocotyledons is sub-divided into7 series

- Microspermae (includes 3 families).
- Epigynae (includes 7 families).
- Coronarieae (includes 8 families).
- Calycineae (includes 3 families).
- Nudiflorae (includes 5 families).
- Apocarpae (includes 3 families).
- Glumaceae (includes 5 families)

MATERIALS AND METHODS

The following methodology was used:

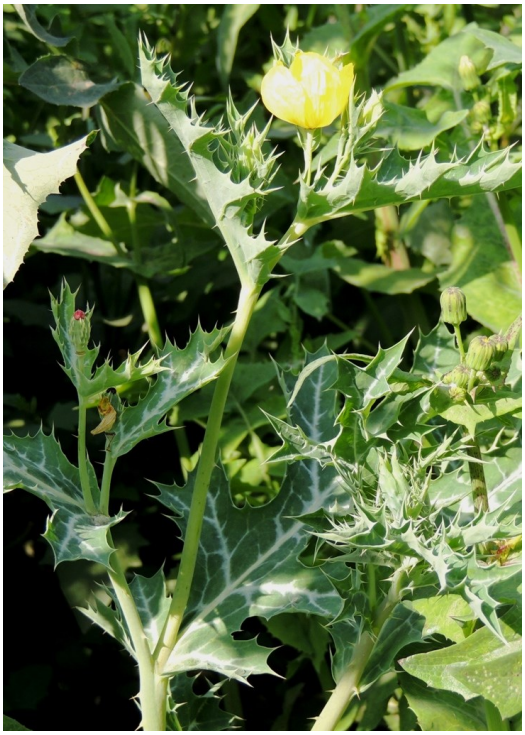
1. Students were divided into small workable groups.
2. A thorough survey of site was conducted by making field visits.
3. The site was divided into smaller sites and each group was allotted a site.

4. Plants were carefully collected by uprooting.
5. The uprooted plants were placed on chart papers (for a proper contrast) and were photographed.
6. Photographs of plants in nature and on chart papers was clicked and saved for digital records.
7. Longitudinal and transverse sections of the flowers were cut, stained and mounted and observed under a compound microscope.
8. Anatomical details of the floral organs, along with reference floras were used to identify plants.
9. Once the identity was established, plants were arranged according to the Bentham and Hooker's system of classification.

RESULTS AND OBSERVATIONS

In the project, 145 herbs and shrubs have been photographed. 70 species belonging to 27 genera and 19 families have been identified. Taxonomic description, classification and medicinal and economic importance has been documented for 40 species. Amongst these, some plants are valued for their high medicinal properties, and some of them are ecologically significant. They are widely used in alternative systems of medicine such as in ayurveda, homeopathy, unani, and even modern medicine. Some of them such as *Catharanthus roseus* have been shown to possess anti-cancerous properties.

Argemone mexicana Mexican prickly poppy



Habit

Flower

Habit: an annual prickly herb with yellowish latex. **Root:** tap, branched. **Stem:** erect, herbaceous, woody below, cylindrical solid, branched, spiny, greenish, yellow latex. **Leaf:** simple, alternate, cauline and ramal, sessile, exstipulate, prickly, deeply cut, with spiny teeth, unicostate reticulate venation. **Inflorescence:** cymose, solitary axillary. **Flowers:** pedicellate, ebracteate, large, yellow, hermaphrodite, actinomorphic, complete, hypogynous, trimerous, cyclic. **Calyx:** 3, polysepalous, green, caduceus, horned at the top, valvate or twisted aestivation. **Corolla:** 6, polypetalous, petals arranged in two whorls, of three each (petals of inner whorl slightly smaller), yellow, inferior, imbricate aestivation. **Androecium:** indefinite, polyandrous, stamens arranged in several alternating whorls, filaments long, anthers extrorse, bicelled, basifixed. **Gynoecium:** four to six carpels (tetracarpellary to hexacarpellary), syncarpous, ovary superior, unilocular, parietal placentation, several ovules on each placenta, style absent or reduced, stigmas as many as the number of carpels, stigma hood-like. **Fruit:** a spiny capsule.

Floral Formula: $\text{Ebr}, \oplus, \female, K_{3}, C_{3+3}, A_{\infty}, \underline{G}_{(4-6)}$

Class: Dicotyledonae

Subclass: Polypetalae

Series: Thalamiflorae

Order: Parietales

Family: Papaveraceae

Economic importance: Seeds are the source of a semi- drying oil, which is used as an illuminant and lubricant. The plant is being used to reclaim ‘usar’ land. The root is alternative and used in chronic skin diseases. The seeds are laxative, emetic, expectorant and demulcent. The plant juice is used for dropsy, jaundice and cutaneous infections.

Photographs by: S. Sarvesh (B.Sc Biological Sciences, III)

Place of Occurrence: Sri Venkateswara College

Brassica campestris Mustard/Sarson

Habit

Flower

Habit: cultivated annual or biennial herb. **Leaves:** alternate, basal leaves lyrate and petiolate, upper progressively smaller and less lobed, uppermost sessile and almost entire, unicostate reticulate. **Inflorescence:** a terminal corymbose raceme. **Flower:** ebracteate, ebracteolate, pedicellate, complete, actinomorphic, bisexual, hypogynous, tetramerous, cyclic. **Calyx:** 4, polysepalous, in two whorls, antero-posterior pair outer, lateral pair inner and saccate at base, green or slightly petaloid reflexed in mature flower, inferior. **Corolla:** 4, polypetalous, cruciform, valvate, yellow, inferior. **Androecium:** 6, polyandrous, tetradynamous(2 outer shorter, 4 inner longer), anthers bithecous, basifixed, 4 green nectaries present near base of filaments, dehiscence longitudinal. **Gynoecium:** bicarpellary syncarpous superior ovary, unilocular becoming bilocular due to formation of false septum, ovules many, placentation parietal, style 1, stigma bifid. **Fruit:** siliqua, seed with large embryo.

Floral Formula: $\mathrm{EBr}, \oplus, ♀, \mathrm{K}_{2+2}, \mathrm{C}_{4}, \mathrm{A}_{2+4}, \underline{\mathrm{G}}_{(2)}$

Class: Dicotyledonae

Subclass: Polypetalae

Series: Thalamiflorae

Order: Parietales

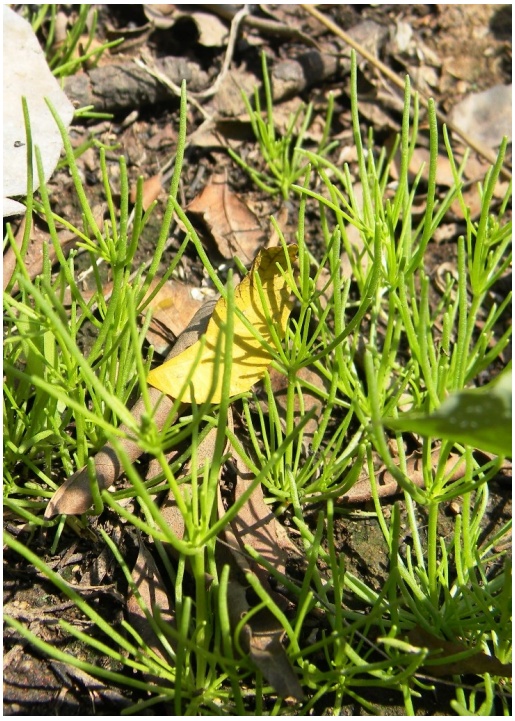
Family: Brassicaceae

Economic importance: Tender leaves and shoots are used as vegetable. Ground mustard seeds are used as a condiment. The seeds yield fatty oil, which is generally used for cooking purposes.

Photographs by: Sanidhya Lakhera (B.Sc(H)Botany , III)

Place of Occurrence: Sri Venkateswara College

Spergula arvensis Corn spurry



Habit

Flower

Stem: herbaceous, aerial, erect, cylindrical, branched, fistular, sparingly pubescent, green. **Leaf:** cauline and ramal, opposite decussate (apparently whorled), stipulate, stipules small, interpetiolar and scarious, simple, sessile, lamina very much dissected into linear, acicular, acute and fleshy segments. **Inflorescence:** dichasial cyme. **Flower:** bracteate, bracteolate, pedicellate, complete, actinomorphic, hermaphrodite, pentamerous, hypogynous and cyclic. **Calyx:** sepals 5, polysepalous, quincuncial, persistent. **Corolla:** petals 5, polypetalous, imbricate, membranous, white. **Androecium:** stamens 10, arranged in two whorls of 5 each, polyandrous, obdiplostemonous, filament slender, dithecous, dorsifixed, introrse. **Gynoecium:** tricarpellary or pentacarpellary, syncarpous, ovary superior, unilocular, ovules many, placentation free-central, style absent, stigmas 3 or 5. **Fruit:** capsule.

Floral Formula: $Br\ ,\ Brl\ ,\ \oplus\ ,\ \male\!\female\ ,\ K_5\ ,\ C_5\ ,\ A_{5+5}\ ,\ \underline{G}_{(3\text{ or }5)}$

Class: Dicotyledonae

Sub-class: Polypetalae

Series: Thalmiflorae

Order: Caryophyllineae

Family: Caryophyllaceae

Economic importance: Grown as a fodder plant and used as a diuretic.

Photographs by: S. Sarvesh (B.Sc Biological Sciences, III)

Place of Occurrence: South Campus

Callistemon citrinus Bottle brush

Habit

Flower

Habit: a small or large tree. **Stem:** herbaceous, lower portions woody, aerial, erect, cylindrical, branched, solid and glabrous, young portions puberulous, brown. **Leaf:** cauline and ramal, alternate 2/5, exstipulate, simple, sub-sessile, lanceolate, entire, acute, unicostate, reticulate, leathery, gland dotted. **Inflorescence:** pendent intercalary spike. **Flower:** bracteate, sessile, complete, actinomorphic, hermaphrodite, pentamerous, epigynous and cyclic. **Calyx:** sepals 5, gamosepalous, imbricate or valvate, persistent. **Corolla:** petals 5, polypetalous, imbricate or boat- shaped. **Androecium:** stamens indefinite, polyandrous, filaments bright red and united at the very base forming stamina sheath, dithecous, versatile, introrse. **Gynoecium:** tricarpellary, syncarpous, ovary inferior, trilocular, placentation axile, many ovules in each locule, style long and stigma capitates. **Fruit:** capsule.

Floral formula: $Br\ ,\ \oplus\ ,\ ♀\ ,\ K_{(5)}\ ,\ C_5\ ,\ A_\infty\ ,\ \overline{G}_{(3)}$

Class: Dicotyledonae

Sub-Class: Polypetalae

Series: Calyciflorae

Order: Myrtales

Family: Myrtaceae

Economic importance: It is grown as an ornamental avenue tree.

Photographs by: S. Sarvesh (B.Sc Biological Sciences, III)

Place of Occurrence: Sri Venkateswara College

Iberis amara Candytuft

Habit

Flower

Habit: annual ornamental herb, cultivated. **Stem:** herbaceous, erect, aerial, branched, green, solid, rough surface. **Leaf:** cauline and ramal, alternate, sometimes opposite, sessile, exstipulate, simple, margin somewhat dissected, acute, glabrous, unicostate reticulate. **Inflorescence:** **r**acemose, corymb. **Flower:** ebracteate, pedicellate, complete, irregular (zygomorphic), hermaphrodite, tetramerous, hypogynous, white, cyclic. **Calyx:** 4, polysepalous, in two whorls of 2 each, imbricate, petaloid, boat shaped. **Corolla:** 4, polypetalous, valvate, 2 anterior petals large, 2 posterior petals small, each petal consists of a claw and limb, cruciform. **Androecium:** 6, free stamens (polyandrous), tetradynamous – 2 outer lateral short, remaining 4 anterio-posterior long, dithecous, dorsifixed, intorse. **Gynoecium:** bicarpellary, syncarpous, ovary superior, unilocular when young, at maturity becomes bilocular because of the development of false septum, parietal placentation, style long, stigma globular. **Fruit:** silicula.

Floral Formula: EBr , ⦶ , ⚥ , K_{2+2} , C_4 , A_{2+4} , $\underline{G}_{(2)}$

Class: Dicotyledons

Subclass: Polypetalae

Series: Thalamiflorae

Order: Parietales

Family: Cruciferae

Economic importance: A common ornamental herb, used in treatment of rheumatism and gouts. Seeds are used to treat symptoms of asthma and bronchitis.

Photographs by: Isaac (B.Sc Biological Sciences, III)

Place of Occurrence: Sri Venkateswara College

Datura inoxia Datura/Angel trumpet

Habit

Flower

Habit: shrubby annual herb. **Leaf:** alternate or subopposite, simple with reticulate venation. **Inflorescence:** solitary axillary. **Flower:** ebracteate, pedicellate, complete, actinomorphic, bisexual, hypogynous, pentamerous, cyclic. **Calyx:** 5 sepals, gamosepalous, tubular, valvate aestivation, green, persistent, inferior. **Corolla:** 5 petals, gamopetalous, twisted, trumpet shaped spreading plicate limb, white, inferior **Androecium:** 5, polyandrous, epipetalous, anthers bithecous, basifixed, dehiscence longitudinal, intorse. **Gynoecium:** bicarpellary, syncarpous, ovary superior, bilocular becoming tetralocular due to formation of false septa, with many ovules in each loculus, placentation axile, placentae swollen, septum oblique, style simple, stigma bilobed. **Fruit:** capsule covered with prickles; seed with endosperm.

Floral Formula: $\mathrm{EBr}\ ,\ \oplus\ ,\ \male\female\ ,\ K_{(5)}\ ,\ C_{(5)},\ A_5\ ,\ \underline{G}_{(2)}$

Class: Dicotyledonae

Subclass: Gamopetalae

Series: Bicarpellatae

Order: Polemoniales

Family: Solanaceae

Economic importance: Dried leaves are used for treatment of asthma and respiratory ailments. The fruits also have high religious value and is used in ceremonies.

Photographs by: Sanidhya Lakhera (B.Sc (H) Botany, III)

Place of Occurrence: Sri Venkateswara College

Salvia splendens Scarlet sage

Habit

Flower

Habit: herb. **Root:** branched tap root. **Stem:** herbaceous, aerial, erect, quadrangular, branched, solid, smooth and green. **Leaf:** cauline and ramal, opposite decussate, exstipulate, simple, petiolate, petiole filiform, ovate, serrate, acute, unicostate reticulate, glabrous. **Inflorescence:** verticillaster. **Flower:** bracteate, pedicellate, complete, zygomorphic, hermaphrodite, pentamerous, hypogynous, cyclic. **Calyx:** sepals 5, gamosepalous, calyx 3/2 bilabiate, the upper 3 sepals are represented by one large lobe, valvate, bright red. **Corolla:** petals 5, gamopetalous, 2/3 bilabiate, imbricate, bright red. **Androecium:** stamens 2, situated near the mouth of the corolla, polyandrous, epipetalous, distractile and out of the two anther lobes, the lower one is sterile. **Gynoecium:** bicarpellary, syncarpous, ovary superior, bilocular when young but tertralocular when old, with one ovule in each locule, placentation axile, a nectar is present on anterior side of the ovary, style, gynobasic, long and curved, stigma bifid. **Fruit:** carcerulus.

Floral Formula: Br , ⊕ , ♀ , $K_{(3/2)}$, $\overbrace{C_{(2/3)}}$, A_2 , $\underline{G}_{(2)}$

Class: Dicotyledonae

Sub-Class: Gamopetalae

Order: Lamiales

Family: Labiatae

Economic importance: Grown as an ornamental plant.

Photographs by: Harsha (B.Sc Biological Sciences, III)

Place of Occurrence: Sri Venkateswara College

Delphinium ajacis Larkspur

Habit

Flower

Habit: herb. **Root:** tap and branched. **Stem:** erect, aerial, herbaceous, branched, cylindrical, fistular, glabrous, green. **Leaf:** cauline and ramal, exstipulate, alternate, simple, sessile, much dissected, each segment is linear-lanceolate, entire and acute, glabrous, multicostate reticulate. **Inflorescence:** racemose raceme. **Flower:** bracteate, bracteolate, pedicellate, complete, zygomorphic, hermaphrodite, pentamerous, hypogynous and cyclic. **Calyx:** sepals 5, polysepalous, petaloid, quincuncial, posterior sepal is modified into spur. **Corolla:** petals 4, (the 5^{th} is reduced), gamopetalous, 2 posterior petals form the spur which enters the spur of sepal, valvate, blue or violet in colour. **Androecium:** stamens 15 in five groups of 3 each, polyandrous, filaments flattened, dithecous, adnate, extrorse. **Gynoecium:** monocarpellary, ovary superior, unilocular with many ovules, placentation marginal, style reduced and stigma simple. **Fruit:** follicle.

Floral Formula: Br , Brl , ⊕ , ♀ , K_5 , $C_{(4)}$, A_{15} , $\underline{G}_1$

Class: Dicotyledonae

Sub-class: Polypetalae

Series: Thalamiflorae

Order: Ranales

Family: Ranunculaceae

Economic importance: It is grown as an ornamental plant, seeds have insecticidal properties.

Photographs by: Kollori Dhar (B.Sc Biological Sciences, III)

Place of Occurrence: Sri Venkateswara College

Papaver rhoeas Corn poppy

Habit

Flower

Habit: herb. **Stem:** herbaceous, aerial, erect, cylindrical, rarely branched, fistular, hairy, green, milky latex present. **Leaf:** alternate, exstipulate, simple, sessile, amplixicaul, lobed, upper leaves not lobed, lobes serrate, hairy, unicostate, reticulate. **Inflorescence:** solitary terminal. **Flower:** ebracteate, pedicellate, complete, actinomorphic, hermaphrodite, dimerous, hypogynous and cyclic. **Calyx:** sepals 2, polysepalous, anterio-posterior, caduceus, hairy. **Corolla:** petals 4, arranged in 2 whorls of 2 each, polypetalus, crumpled in the bud. **Androecium:** stamens indefinite, polyandrous, dithecous, basifixed, extrorse. **Gynoecium:** polycarpellary, syncarpous, ovary superior, unilocular, ovules many, placentation parietal, style absent, stigma hood-like. **Fruit:** capsule.

Floral Formula: $EBr, \oplus, ♀, K_2, C_{2+2}, A_{\infty}, \underline{G}_{\infty}$

Class: Dicotyledonae

Sub-class: Polypetalae

Series: Thalamiflorae

Order: Parietales

Family: Papaveraceae

Economic importance: Besides being grown as an ornamental, the latex of the fruit is used as a narcotic and mild sedative.

Photographs by: Isaac (B.Sc Biological Sciences, III)

Place of Occurrence: Sri Venkateswara College

Coronopus didymus Lesser swine-cress

Habit

Flower

Habit: wild annual herb, foetid (foul smelling). **Leaves:** alternate, deeply pinnatisect with very small segments, venation reticulate. **Inflorescence:** terminal as well as leaf opposed racemes. **Flower:** ebracteate, ebracteolate, pedicellate, complete (incomplete with petals absent), actinomorphic, bisexual, hypogynous, tetramerous, cyclic. **Calyx:** 4, polysepalous, in two whorls, antero-posterior pair outer, lateral pair inner, green, inferior. **Corolla:** 4, polypetalous, cruciform, much smaller than sepals, white sometimes absent, inferior. **Androecium:** 2, anterio-posterior, polyandrous, anthers bithecous, basifixed, nectaries present near base of filaments, dehiscence longitudinal. **Gynoecium:** bicarpellary syncarpous superior ovary, unilocular becoming bilocular due to formation of false septum, ovules 2 in each chamber, placentation parietal, ovary deeply bilobed, style 1, stigma bifid. **Fruit:** silicula, deeply bilobed with prominent replum outside, separating at maturity into 2 single-seeded nutlets; seeds with large embryo.

Floral Formula: $EBr\ ,\ \oplus\ ,\ \female\ ,\ K_4\ ,\ C_0\ ,\ A_2\ ,\ \underline{G}_{(2)}$

Class: Dicotyledonae

Subclass: polypetalae

Series: Thalamiflorae

Order: Parietales

Family: Brassicaceae

Economic Importance : Its used as medicine for respiratory problem such as asthma and emphysema. The leaves are edible and have a strong pungent taste so can be cooked or used raw in salads. This plant has cooling properties. It induces feeling of coolness in the body and used as fumigant to repel the insects.

Photographs by: S. Sarvesh (B.Sc Biological Sciences, III)

Place of Occurrence: Sri Venkateswara College

Helianthus annuus Sun flower/Suraj mukhi

Habit

Flower

Habit: cultivated annual herb. **Leaves:** alternate, simple, hairy, venation unicostate reticulate, stipules absent. **Inflorescence:** capitulum, radiate head with broad receptacle bearing disc florets towards centre and ray florets towards periphery surrounded by green involucre bracts (phyllaries). **Ray floret:** bracteate, sessile**,** incomplete, zygomorphic, female or sterile, epigynous, pentamerous, cyclic. **Calyx:** represented by pappus with 2-3 free scales. **Corolla:** 5, gamopetalous, ligulate, 3-toothed, valvate, yellow, superior. **Androecium:** absent. **Gynoecium:** absent if present bicarpellary syncarpous inferior ovary, unilocular with single ovule, placentation basal, style bifid above, stigmas 2. **Disc floret:** bracteate, sessile, complete, actinomorphic, bisexual, epigynous, pentamerous, cyclic. **Calyx:** represented by pappus with 2-3 free scales. **Corolla:** 5, Gamopetalous, tubular, 5-toothed, valvate, yellow, superior. **Androecium:** 5, epipetalous, syngenesious anthers forming a tube around style, anthers bithecous, basifixed, dehiscence longitudinal, introrse. **Gynoecium:** bicarpellary syncarpous, inferior ovary, unilocular with single ovule, placentation basal, style bifid above, stigmas 2. **Fruit** cypsela.

Floral Formula: $Br\ ,\ \oplus\ ,\ \female\ ,\ K_{2(pappus)}\ ,\ \overbrace{C_{(5)}\ ,\ A_{(5)}}\ ,\ \underline{G}_{(2)}$

Class: Dicotyledonae

Subclass: Gamopetalae

Series: Inferae

Order: Asterales

Family: Asteraceae

Economic importance: Seeds are the source of oil, which is used in foods, salads and for burning purposes. It can be used in place of groundnut oil in the preparation of vanaspati. It can be safely used by heart patients. The oil does not raise the cholesterol level in the blood. It contains proteins, vitamins A, D and E. The oil is easily digested. Seeds are diuretic, expectorant, used in bronchial, laryngeal, pulmonary infections, coughs and colds, and in scorpion sting.

Photographs by: Kollori Dhar (B.Sc Biological Sciences, III)

Place of Occurrence: Sri Venkateswara College

Stellaria media Chickweed

Habit

Flower

Habit: wild annual herb. **Leaves:** opposite and decustate, lower petiolate upper sessile, entire, simple unicostate reticulate. **Inflorescence:** dichasial cyme. **Flower:** lower ebracteate, uppermost bracteate and bracteolate, pedicellate, complete, actinomorphic, bisexual, hypogynous, pentamerous, cyclic. **Calyx:** 5, polysepalous, imbricate, green with membranous margin, covered outside with glandular hairs inferior. **Corolla:** 5, polypetalous, each petal deeply bilobed giving appearance of 10 petals, imbricate, white, inferior. **Androecium:** 10 or less, in two whorles(stamens in outer whorles less than 5 or totally missing), polyandrous, opdiplostemonous (outer whorl opposite the petals), anthers bithecous, basifixed, dehiscence longitudinal, introrse. **Gynoecium:** tricarpellary syncarpous superior ovary, unilocular, ovules many, placentation free central, styles 3, stigmas linear. **Fruit:** capsule opening by 3 valves; seed with curved embryos.

Floral Formula: Br , ⊕, ♀, K_5 , C_5 , A_{5+5}, $\underline{G}_{(3)}$

Class: Dicotyledonae

Subclass: Polypetalae

Series: Thalamiflorae

Order: Caryophyllineae

Family: Caryophyllaceae

Economic importance: Chickweed is best known for its ability to cool inflammation and speed healing for internal or external flare-ups.

Photographs by: Kollori Dhar (B.Sc Biological Sciences, III)

Place of Occurrence: Sri Venkateswara College

Petunia nyctaginifolia Petunia

Habit

Flower

Habit: annual cultivated ornamental herb. **Root:** tap and branched. **Stem:** erect, aerial, herbaceous, branched, cylindrical, solid, hairy and green. **Leaf:** cauline and ramal, alternate in basal part and opposite decussate in upper part, exstipulate, sessile, simple, ovate, entire, acute, hairy, coriaceous, unicostate reticulate. **Inflorescence:** cymose, axillary dichasial cyme. **Flower:** bracteate, pedicellate, actinomorphic, regular, hermaphrodite, pentamerous, hypogynous, complete, cyclic. **Calyx:** 5 sepals, gamosepalous, deeply lobed, persistent, hairy, inferior, green. **Corolla:** petals 5, gamopetalous, induplicate, valvate, infundibuliform, white or purple coloured, inferior. **Androecium:** 5 stamens, polyandrous, epipetalous, filaments unequal, dithecous, basifixed, introrse. **Gynoecium:** 2 carpels (bicarpellary), syncarpous, ovary superior, bilocular, many ovules in each locule, axile placentation, septum oblique, placenta swollen, style long, stigma capitates. **Fruit:** capsule.

Floral formula: $Br, \oplus, \female, K_{(5)}, C_{(5)}, A_5, \underline{G}_{(2)}$

Class: Dicotyledonae

Subclass: Gamopetalae

Series: Bicarpellatae

Order: Polemoiales

Family: Solanaceae

Economic importance: The plant is grown as an ornamental for its variously coloured funnel-shaped flowers.

Photographs by: S. Sarvesh (B.Sc Biological Sciences, III)

Place of Occurrence: Sri Venkateswara College

Luffa cylindrica Spongegourd

Habit

Habit: annual vine. **Stem:** herbaceous, aerial, weak, climbing by tendrils, angular, branched, solid, rough and green. **Leaf:** cauline and ramal, alternate, exstipulate, simple, palmately lobed, lobes denticulate, acute and hairy, multicostate reticulate. **Inflorescence:** male flowers in clustered raceme and female flowers solitary.

1. Male flower: bracteate, pedicellate, incomplete, actinomorphic, unisexual, staminate, pentamerous, cyclic. **Calyx:** sepals 5, polysepalous, basally connate, valvate. **Corolla:** petals 5, polypetalous, imbricate or quincuncial, basally connate. **Androecium:** Stamens 5, polyandrous, adnate to the petals at the very base, monothecous, basifixed, extrorse. **Gynoecium:** absent.

Floral formula: Br , ⊕ , ♂ , K_5 , C_5 , A_5 , G_0

2. Female flower: bracteate**,** pedicellate, incomplete, actinomorphic, unisexual, pistillate, pentamerous, epigynous and cyclic. **Calyx:** sepals 5, polysepalous, valvate, basally connate, persistent. **Corolla:** petals 5, polypetalous, imbricate, basally connate. **Androecium:** absent. **Gynoecium:** tricarpellary, syncarpous, ovary inferior, unilocular, placentation parietal, placentae intruding, styles 3, teminating into 3 lobed stigmas.

Floral formula: Br , ⊕ , ♀ , K_5 , C_5 , A_0 , $\overline{G}_{(3)}$

Fruit: pepo.

Class: Dicotyledonae

Sub-Class: Polypetalae

Series: Calyciflorae

Order: Passiflorales

Family: Cucurbitaceae

Economic importance: It is cultivated for its fruits which are used as vegetable. Dried fruits yield sponge.

Photographs by: S. Sarvesh (B.Sc Biological Sciences, III)

Place of Occurrence: Sri Venkateswara College

Abutilon indica Country mallow, Indian abutilon

Habit

Stem: herbaceous, aerial, erect, cylindrical, branched, solid, pubescent and green. **Leaf:** cauline and ramal, alternate, stipulate, simple, petiolate, deltoid, serrate, acute, slightly hairy and rugose above, velvety, multicostate, reticulte, divergent type. Inflorescence solitary axillary. **Flower:** bracteate, pedicellate, complete, actinomorphic, hermaphrodite, pentamerous, hypogynous and cyclic. **Calyx:** sepals 5, gamosepalous, free at the tips, valvate, persistent, green. **Corolla:** petals 5, polypetalous, slightly connate, at the base and adnate to stamina tube, twisted**. Androecium:** stamens indefinite, monadelphous forming a tube around the style, the tube being united with the petals. In the upper part of the staminal tube are borne monothecous and extrorse anthers. **Gynoecium:** multicarpellary, syncarpous, ovary superior, multilocular, with one ovule in each lobule, placentation axile, style long and stigmas as many as carpel. **Fruit:** capsule.

Floral formula: $Br, \oplus, \female, \overbrace{K_{(5)}}, C_5, A_{(\infty)}, \underline{G}_{(5-\infty)}$

Flower

Class: Dicotyledonae

Sub-Class: Polypetalae

Series: Thalamiflorae

Order: Malvales

Family: Malvalceae

Economic importance: the stem on retting, yield a fibre used for making ropes.

Photographs by: Isaac (B.Sc Biological Sciences, III)

Place of Occurrence: South Campus

Catharanthus roseus Madagascar periwinkle

Habit

Flower

Habit: evergreen, subshrub and herbaceous plant. **Stem:** herbaceous, aerial, erect, angular, branched, solid, puberulous, purple-red, milky latex present. **Leaf:** cauline and ramal, opposite decussate, stipulate interpetiolar, simple, elliptic-obovate, entire, mucronate, puberulous, unicostate reticulate, latex present. **Inflorescence:** axillary dichasial cyme or solitary axillary. **Flower:** ebracteate, pedicellate, complete, actinomorphic, hermaphrodite, pentamerous, hypogynous and cyclic. **Calyx:** sepals 5, polysepalous, valvate, persistent. **Corolla:** petals 5, gamopetalous, twisted, corolla hypocrateriform, purple. **Androecium:** stamens 5, polyandrous, inserted at the mouth of the corolla tube, epipetalous, dithecous, dorsifixed, introrse. **Gynoecium:** bicarpellary, syncarpous, ovaries are free and superior, placentation marginal, style long, stigma drum-shaped and sticky. Two ligulate hypogynous nectaries are present one on the anterior side and the other on the posterior side of the ovary. **Fruit:** etaerio of follicles.

Floral formula: $\mathrm{Ebr}, \oplus, \female, \mathrm{K}_5, \overbrace{\mathrm{C}_{(5)}}, \mathrm{A}_5, \underline{\mathrm{G}_{(2)}}$

Class: Dicotyledonae

Sub-Class: Gamopetalae

Series: Bicarpellate

Order: Gentianales

Family: Acocynaceae

Economic importance: The plant is grown as an ornamental. Vincristine and Vinblastine have been proven to have anti-cancerous properties.

Photographs by: S. Sarvesh (B.Sc Biological Sciences, III)

Place of Occurrence: Sri Venkateswara College

Foeniculum vulgare Fennel

Habit

Flower

Habit: cultivated annual herb. **Stem:** erect, glaucous, green, hollow stem. **Leaves:** alternate, decompound with filiform segments, leaf base sheathing, unicostate reticulate. **Inflorescence:** compound umbel, involucre and involucel bracts absent. **Flower:** ebracteate, pedicellate, complete, actinomorphic, bisexual, epigynous, pentamerous, cyclic. **Calyx:** sepals 5, gamosepalous, lobes very small, valvate, green, superior. **Corolla:** petals 5, polypetalous, tip inflexed, valvate, yellow, superior. **Androecium:** stamens 5, polyandrous, filaments long, inflexed in bud, exserted in open flower, anthers bithecous, dorsifixed, dehiscence longitudinal. **Gynoecium:** bicarpellary syncarpous inferior ovary, bilocular with one ovule in each loculus, placentation axile, base of style surrounded by a bilobed nectary persisting in fruit in the form of stylopodium, style bilobed with 2 stigmas. **Fruit:** schizocarpic fruit known as cremocarp splitting at maturity into 2 one seeded mericarps.

Class: Dicotyledonae

Sub-Class: Polypetalae

Series: Calyciflorae

Order: Umbellales

Family: Apiaceae

Economic importance: Dried fennel seeds are used for flavouring soups, meat dishes, sauces, pastries, and liquors, confectionary and also in the manufacture of pickles. The leaves are used to flavour fish sauces and for garnishing. Fennel oil is used as a stimulant and carminative. The oil also finds wider application in perfumes, soaps and medicine.

Photographs by: Isaac (B.Sc Biological Sciences, III)

Place of Occurrence: Sri Venkateswara College

Solanum nigrum Black nightshade

Habit

Flower

Habit: wild annual herb. **Stem:** angular, sparsely-pubescent **Leaves:** alternate, simple with reticulate venation. **Inflorescence:** extra-axillary scorpioid cyme known as rhipidium. **Flower:** ebracteate, pedicellate, complete, actinomorphic, bisexual, hypogynous, pentamerous, cyclic: **Calyx:** sepals 5, gamosepalous, campanulate, valvate, green persistent, inferior. **Corolla:** petals 5, gamopetalous, rotate, valvate, white, inferior. **Androecium:** stamens 5, polyandrous, epipetalous, anthers bithecous, basifixed, slightly connivent, dehiscence by apical pores. **Gynoecium:** bicarpellary syncarpous ovary superior, bilocular with several ovules in each loculus, placentaton axile, placentae swollen, septum oblique, style simple, stigma bilobed. **Fruit:** succulent berry, seed small, endospermic.

Floral formula: $\mathrm{Ebr}, \oplus, \female, \mathrm{K}_{(5)}, \overset{\frown}{\mathrm{C}_{(5)}}, \mathrm{A}_{5}, \underline{\mathrm{G}_{(2)}}$

Class: Dicotyledonae

Sub-Class: Gamopetalae

Series: Bicarpellatae

Order: Polemoiales

Family: Solanaceae

Economic importance: The juice of black nightshade is sometimes used to treat fever and alleviate pain. Its fruit is used as a cosmetic; as rubbing its seeds on the cheeks helps remove freckles. Children extensively eat the mature fruit. It has been used for diabetes as well. Freshly prepared extract of the plant is effective in treating cirrhosis of the liver and also works as an antidote to poisoning by opium.

Photographs by: Harsha (B.Sc Biological Sciences, III)

Place of Occurrence: South Campus

Calotropis procera Akund, Swallow-wart

Habit

Flower

Habit: woody perennial shrub. **Stem:** herbaceous, lower portions woody, aerial, erect, cylindrical, branched, solid, lower portions smooth, upper portions covered with woolly hairs, pale green, milky latex present. **Leaf:** cauline and ramal, acute, hairy, woolly, unicostate reticulate, hermaphrodite, pentamerous, hypogynous and cyclic. **Inflorescence:** polychasial cyme; **Flower:** bracteate, bracteolate, pedicellate, complete, actinomorphic, hermaphrodite, pentamerous, hypogynous and cyclic. **Calyx:** sepals 5, polysepalous, quincuncial. **Corolla:** petals5, gamopetalous, twisted, coloured. **Androecium:** stamens 5 ,united with stigma to form gynostegium, each stamen is represented by two pollinia with their retinaculae. The pollinia of adjacent anthers are joined by their retinaculae to corpusculum in a groove, to form a unit known as translator. A coronary outgrowth is present at the back of each stamen. **Gynoecium:** bicarpellary, ovaries free but upper portion of style and stigma are fused, superior, placental, marginal, ovules many per locule, stigmatic head pentagonal. **Fruit:** etaerio of follicle.

Floral formula: $Br\ ,\ brl\ ,\ \oplus\ ,\ \female\ ,\ K_5\ ,\ \overset{\frown}{C_{(5)}\ ,\ A_{(5)}}\ ,\ \underline{G_2}$

Class: Dicotyledonae

Sub-Class: Gamopetaleae

Series: Bicarpellatae

Order: Gentianales

Family: Asclepiadaceae

Economic importance: Madar fibre extracted from stem is made into cordage. Floss from seeds is used as stuffing material. Milky latex is used as an infanticide and abortifacient. The leaves are insecticidal and are also used in fomentation.

Photographs by: Harsha (B.Sc Biological Sciences, III)

Place of Occurrence: Sri Venkateswara College

Lantana indica Shrub verbenas

Habit

Flower

Habit: perennial shrub. **Stem:** herbaceous, lower portion woody, aerial, erect, quadrangular, branched, solid, hairy with some recurved spines and green. **Leaf:** cauline and ramal, opposite decussate, exstipulate, simple, petiolate, ovate, dentate or crenate, acute, unicostate reticulate, surface rough and textured coriaceous. **Inflorescence:** axillary peduncled head or spiked. **Flower:** bracteate, sessile, complete, zygomorphic, hermaphrodite, pentamerous, hypogynous and cyclic. **Calyx:** sepals 5, gamosepalous, valvate. **Corolla:** petals 5, gamopetalous, quincuncial, corolla 4/1 bilipped, one anterior petal is large and pointed, the petals are variously coloured, coronary outgrowths present at the throat of the corolla. **Androecium:** stamens 4, situated in the throat of the corolla, polyandrous, epipetalous, didynamous, adnate and introrse. **Gynoecium:** bicarpellary, syncarpous, ovary superior, bilocular, with one ovule in each locule, placentation axile, style simple, stigma knob-like. **Fruit:** drupe.

Floral formula: $\mathrm{Br}\ ,\ \mathrm{brl}\ ,\ \oplus\ ,\ \varphi\ ,\ \mathrm{K}_{(5)}\ ,\ \overset{\frown}{\mathrm{C}_{(4/1)}}\ ,\ \overset{\frown}{\mathrm{A}_{2+2}}\ ,\ \underline{\mathrm{G}}_{(2)}$

Class: Dicotyledonae

Sub-Class: Gamopetalae

Series: Bicarpellatae

Order: Lamiales

Family: Verbenaceae

Economic importance: Leaves are said to be used as an antidote for snake bites. It is also an invasive plant.

Photographs by: S. Sarvesh (B.Sc Biological Sciences, III)

Place of Occurrence: Sri Venkateswara College

Viola tricolor Pansy

Habit

Flower

Habit: annual herb, ornamental, cultivated. **Root:** tap, branched. **Stem:** erect, branched, glabrous, angular, green, herbaceous, fistular. **Leaf:** simple, cauline and ramal, alternate, stipulate (foliaceous stipules), petiolate, oblong, margins with rounded teeth, unicostate reticulate venation. **Inflorescence:** cymose, solitary axillary. **Flower:** large, showy (violet), pedicellate, bracteate (two bracteloes), hermaphrodite, zygomorphic, hypogynous, complete. **Calyx:** 5 sepals, polysepalous, green, lanceolate, appendiculate, quincuncial aestivation, inferior. **Corolla:** 5 petals, polypetalous, petals unequal, violet, dark streaks present, the anterior or lower petal is produced backward into a spur and collects honey, imbricate aestivation; **Androecium:** 5 stamens, alternating with the petals, the stamens form a ring like structure round the ovary and style, filaments short, anthers introrse, connate, connectives of the two lower often spurred at the base which project into the spur of the anterior petal. **Gynoecium:** 3 carpels, syncarpous, ovary superior, unilocular, parietal placentation, many ovules attached to parietal placentas, style short, tip straight or oblique, stigma lobed. **Fruit:** 3-valved loculicidal capsule.

Floral formula: $Br\ ,\ Brl\ ,\ \oplus\ ,\ \male\ ,\ K_5\ ,\ C_5\ ,\ A_5\ ,\ \underline{G_{(3)}}$

Class: Dicotyledonae

Sub-Class: Polypetalae

Series: Thalamiflorae

Order: Parietales

Family: Violaceae

Economic importance: Grown as an ornamental. The plant is considered stimulant and used in rheumatism and in skin diseases. The infusion of root is useful in dysentery of children.

Photographs by: S. Sarvesh (B.Sc Biological Sciences, III)

Place of Occurrence: Sri Venkateswara College

Lobularia maritima Sweet Alyssum

Habit

Flower

Habit: cultivated annual herb. **Leaves:** alternate, simple, linear or lanceolate, unicostate, reticulate. **Inflorescence:** a terminal corymb. **Flower:** ebracteate, ebracteolate, pedicellate, complete, actinomorphic, bisexual, hypogynous, tetramerous, cyclic. **Calyx:** 4, polysepalous, in two whorls, antero-posterior pair outer, lateral pair inner, green, inferior. **Corolla:** 4, polypetalous, cruciform, valvate, white, inferior. **Androecium:** 6, polyandrous, tetradynamous (2 outer shorter, 4 inner longer), anthers bithecous, basifixed, 4 green nectaries present near base of filaments, dehiscence longitudinal. **Gynoecium:** bicarpellary syncarpous superior ovary, unilocular becoming bilocular due to formation of false septum, ovules usually 2, placentation parietal, style 1, stigma bifid. **Fruit:** silicula; seed with large embryo, endosperm almost absent.

Floral formula: EBr , EBrl , $\oplus$, $\male$, K_{2+2} , C_4 , A_{2+4} , $\underline{G}_{(2)}$

Class: Dicotyledonae

Sub-Class: Polypetalae

Series: Thalamiflorae

Order: Parietales

Family: Brassicaceae

Economic importance: Sweet alyssum is a good groundcover around vegetable plants because it attracts beneficial insects that eat aphids and caterpillars and helps smother weeds, and it breaks up the soil, adding organic matter.

Photographs by: S. Sarvesh (B.Sc Biological Sciences, III)

Place of Occurrence: Sri Venkateswara College

Malvastrum tricuspidatum False mallow

Habit

Habit: an annual or perennial herb. **Root:** tap, branched. **Stem:** erect, aerial, herbaceous, cylindrical, branched, solid, hairy, green. **Leaf:** cauline and ramal, petiolate, stipulate, stipules small and free lateral, alternate, simple, ovate-lanceolate, serrate, acute, glabrous, unicostate reticulate. **Inflorescence:** cymose, solitary axillary. **Flower:** bracteate, bracteolate, 3 small bracteoles, pedicellate, actinomorphic, hermaphrodite, hypogynous, pentamerous, cyclic. **Calyx:** 5 sepals, gamosepalous, valvate aestivation, persistent. **Corolla:** 5 petals, polypetalous, twisted, yellow. **Androecium:** indefinite, monoadelphous, a stamina tube is formed around the style, epipetalous, monothecous, reniform, basifixed, extrose. **Gynoecium:** many carpels, syncarpous, ovary superior, multilocular, axile placentation, stigmas as many as carpels, style within stamina tube. **Fruit:** capsule.

Floral formula: $Br\ ,\ Brl\ ,\ \oplus\ ,\ \female\ ,\ K_{(5)},\ C_{5},\ A\infty\ ,\ \underline{G}_{(\infty)}$

Class: Dicotyledonae

Sub-Class: Polypetalae

Series: Thalamiflorae

Order: Malvales

Family: Malvaceace

Flower

Economic importance: It has abroad range of biological effects such as anti -inflammatory, anti-pyretic, anti-bacterial activity. Flowers are used in cough, chest and lung diseases. It also has wound-healing potential.

Photographs by: Sanidhya Lakhera (B.Sc Botany, III)

Place of Occurrence: Sri Venkateswara College

Achyranthus aspera Prickly chaff flower

Habit

Flower

Habit: herb. **Root** branched tap root. **Stem:** herbaceous, aerial, erect, quadrangular, branched, solid, hairy, and green. **Leaf:** cauline and ramal, opposite decussate, exstipulate, simple, sub-sessile, elliptic-ovate, entire, acute, unicostate, reticulate, rough, coriaceous. **Inflorescence:** spike in which flowers are sharply deflexed. **Flower:** bracteate, bracteolate, bracts and bracteoles have spinous tips, sessile, complete, actinomorphic, hermaphrodite, pentamerous, hypogynous and cyclic. **Perianth:** tepals 5, polytepalous , quincuncial, membranous and chaffy. **Androecium:** stamens 10 in 2 whorls of 5 each, the outer whorl is reduced to fimbriate staminodes, monadelphous, filaments thin, dithecous, versatile and introrse. **Gynoecium:** bicarpellary, syncarpous, ovary superior, unilocular with a single ovule on a basal placentum, style short, stigma knobs-like. **Fruit:** utricle.

Floral formula: $Br\ ,\ brl\ ,\ \oplus\ ,\ \female\ ,\ P_5\ ,\ A_{(5+5)}\ ,\ \underline{G}_{(2)}$

Class: Dicotyledonae

Sub-Class: Monochlamydeae

Series: Curvembryae

Family: Amaranthaceae

Economic importance: The plant is used in treatment of piles, boils, skin eruptions, renal dropsy and bronchial infection.

Photographs by: Isaac (B.Sc Biological Sciences, III)

Place of Occurrence: Sri Venkateswara College

Ricinus communis Castor bean

Habit

Flower

Habit: shrub**. Root:** tap, branched. **Stem:** herbaceous, aerial, erect, cylindrical, branched, older portions fistular, younger portions solid, glabrous, green- purple. **Leaf:** cauline and ramal, alternate, stipulate, stipule convolute, simple, palmately lobed, petiolate; petiole filiform, lobes serrate, acute, glabrous, multicostate reticulate, divergent type. One or two glands may be present at the junction of petiole and lamina. **Inflorescence:** panicle cyme. The male flowers are present at the base and the female flowers at the apex.

Male flower: bracteate, pedicellate, incomplete, actinomorphic, unisexual, staminate, pentamerous and cyclic. **Perianth:** tepals 5, polyteplous, valvate, slidely connate at the base. **Androecium:** stamens 5, polyandrous, anteposed, each stamen is profusely branched with anthers borne on ultimate branches, monothecous, basifixed and introrse. **Gynoecium:** absent.

Floral formula: $Br, \oplus, \male, P_5, A_{\infty}, G_0$

Female flower: bracteate, pedicellate, incomplete, actinomorphic, unisexual, pistillate, trimerous, hypogynous and cyclic. **Perianth:** tepals 3, polytepalous, valvate. **Androecium:** absent. **Gynoecium:** tricarpellary, syncarpous, ovary superior, trilocular with one ovule in each locule, placentation axile, style absent, stigma 3, bright red and each is bifid. Ovary has appendages on its outer wall. **Fruit:** regma splitting into cocci. A caruncle is present at the apex of the seed.

Floral formula: $Br, \oplus, \female, P_3, A_0, \underline{G_{(3)}}$

Class: Dicotyledonae

Sub-Class: Monoclamydeae

Series: Unisexuales

Family: Euphorbiaceae

Economic importance: The seeds are the sources of castor oil, used mainly as a lubricant and as a purgative. The oil cake is a good fertilizer.

Photographs by: S. Sarvesh (B.Sc Biological Sciences, III)

Place of Occurrence: Sri Venkateswara College

Trianthema portulacastrum Horse Purslane

Habit

Habit: succulent annual herb with numerous prostrate branches. **Root:** tap root, much branched. **Stem:** aerial, creeping, much branched, often tinged purple, herbaceous, succulent, solid, angular-ribbed, pustular, with fine lines on hairs on younger branches. **Leaves:** opposite, with unequal pairs of leaves, branches usually arising from axils of smaller leaf of each pair, petiole almost as long as blade, dilated towards base with wing-like stipules, sheathing nodes, blade suborbicular to obovate, cuneate towards base, spex rounded, truncate or retuse, venation unicostate reticulate. **Inflorescence:** solitary flowers in leaf axils. **Flowe**r: ebracteate, in axil of pouch like petiole base, bracteolate, bracteoles two, fused with calyx, sessile, complete, actinomorphic, bisexual, perigynous, pentamerous. **Calyx:** 5, united below, 5 - lobed valvate, lobes green outside, pinkish within, somewhat hood-like, with horn- like projection on back of each lobe below tip. **Corolla:** absent. **Androecium:** 5-20, inserted on hypanthium in two or more whorls, free, filaments slender, anthers bithecous, dorsifixed, dehiscence longitudinal, introrse. **Gynoecium:** bicarpellary syncarpous, ovary half- inferior, bilocular, placentation axile, ovules many, style simple, sigmas 2. **Fruit:** capsule, closely invested by petiolar sheath and calyx tube, circumscissile, dehiscing transversally, walls membranous below, thick above, seeds 5-10, globose- reniform, papillate, reddish brown to black.

Floral formula: $\text{Ebr}, \oplus, \varsigma, K_{(5)}, C_0, A_{5\text{-}20}, \underline{G}_{(2)}$

Class: Dicotyledonae

Series: Calyciflorae

Order: Ficoidales

Family: Aizoaceae

Economic importance: Roots are used as emmenagogue in amenorrhoea, and for the treatment eye inflammation and weak eye sight. Its infusion is used for treatment of constipation . The leaves have diuretic action hnd used for treatment of gonnorrohea.

Photographs by: Samarth Kaushal (Bsc. (H) Botany,II)

Place of Occurrence: Sri Venkateswara College

Bougainvillea spectabilis Paper Flower

Habit

Flower

Habit: shrub or thorny, woody vine. **Leaf:** simple and alternate, oval in shape, tapering to a point, glabrous , bright green. **Flowers:** hermaphroditic flowers are small, tubular and white, typically in clusters of three, surrounded by three papery bracts. These bracts vary in color from magenta and purple to orange, white and yellow. **Fruit:** small, inconspicuous, dry, elongated achene.

Class: Dicotyledonae

Sub-Class: Monochlamydonae

Series: Curvembryeae

Family: Nyctaginaceae

Economic importance. Neither the bracts nor the flowers have any scent, but the bracts hold their color and their shape when they're dry. They make a colorful addition to a bowl of potpourri.

Photographs by: Yash Kumar (Bsc. (H) Botany,II)

Place of Occurrence: Sri Venkateswara College

Euphorbia hirta Crown of thorns

Habit

Flower

Habit: Ornamental thorny undershrub, with milky latex. Leaves: Alternate, simple, spathulate, venation reticulate**. Inflorescence:** cyathia arranged indichotomous umbellate cymes, each cyathium is surrounded by two scarlet bracts and is cup shaped with 5 nectaries along the rim and enclosing numerous male flower (each represented by a single stamen; it is a flower because of presence of bracts, joint in the middle of stalk and scorpioid arrangement) arranged in scorpoid cymes and a single female flower in the centre. **Male flower:** Bracteate, pedicellate(joint separating pedicel from filament), incomplete, actinomorphic , unisexual. Perianth: absent. **Androecium:** 1, anther bithecous, innate, dehiscence longitudinal, introrse. Gynoecium: absent. **Female flower:** Bracteate, subsessile, a joint below ovary, incomplete, actinomorphic , unisexual, hypogynous. Perianth: absent**. Androecium**: absent**. Gynoecium:** Tricarpellary syncarpous ovary superior,trilocular with single ovule in each loculus, placentation axile, styles 3, each bifid at tip with 2 stigmas. Fruit: Schizocarpic splitting into 3 one seeded cocci.

Class: Dicotelodons

Subclass: Monochlamydae

Series: Unisexuales

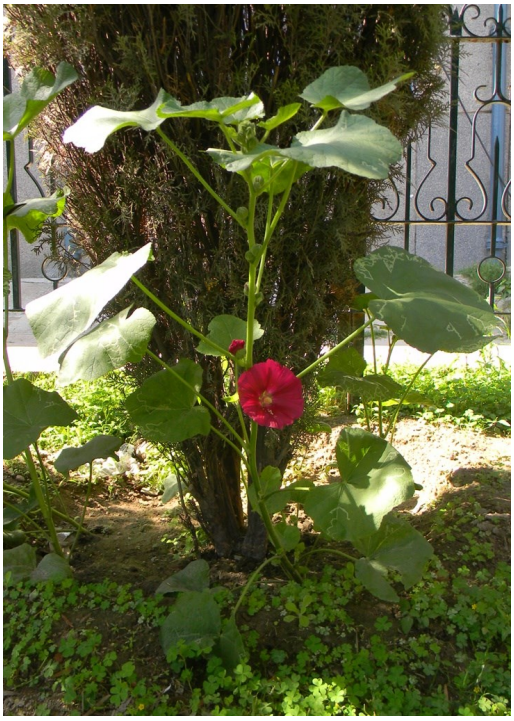
Family: Euphorbiaceae

Economic Importance: The leaves, flowes and sap are commonly used as asthma weed. It has ant-inflammatory, anti-parasitic properties and boost the immune system. It is also helpful in gastro-intestinal issues. Paste of leaves is applied on the skin for the treatment of rashes, wounds and other marks.

Photographs by: Vivekanand (Bsc. (H) Botany,II)

Place of Occurrence: Sri Venkateswara College

Althea rosea Hollyhock



Habit

Flower

Habit: cultivated annual herb. **Leaves:** alternate, simple, palmately lobed, stipulate, muticostate reticulate. **Inflorescence:** solitary axillary or axillary cymose clusters. **Flower** ebracteate, pedicellate, complete, actinomorphic, bisexual, hypogynous, mucilaginous, pentamerous, cyclic. **Epicalyx:** 6-9, united, green, linear. **Calyx:** sepals 5, gamosepalous, campanulate, valvate, green, inferior. **Corolla** petals 5, polypetalous, twisted, variously coloured, mucilaginous, inferior. **Androecium:** many, monoadelphous, epipetalous, stamina tube enclosing ovary, anthers monothecous, transversely attached, dehiscence longitudinal, extrorse. **Gynoecium:** polycarpellary syncarpous superior ovary, multilocular, ovule one in each lobules, placentation axile, style divided above into as many branches as carpels, stigmas linear. **Fruit:** carcerulus splitting into one seeded mericarps, seed with curved embryo, endosperm absent.

Floral formula: $\mathrm{Ebr}, \oplus, \female, \mathrm{EpiK}_{(6\text{-}9)}, \mathrm{K}_{(5)}, \mathrm{C}_{5}, \mathrm{A}_{(\infty)}, \underline{\mathrm{G}}_{(\infty)}$

Class: Dicotyledonae

Sub-Class: Polypetalae

Series: Thalamiflorae

Family: Malvaceae

Order: Malvales

Economic importance: It helps in curing swelling and pain in mouth. It is advantageous for throat infection and goitre. Its antidote is used against snakebite.

Photographs by: Prerna Budhiraja (Bsc. (H) Botany,II)

Place of Occurrence: Sri Venkateswara College

Amaranthus viridis Slender Amaranth

Habit

Flower

Habit: Erect, almost hairless, annual herb; **Root:** Taproot; **Stem** Erect, spreading or upward bending. branched. often striped with purple. Branches often have a red tinge. **Leaf:** Alternate. Pale green.Soft. Blade - Egg shaped to oblong. Prominent white veins on the underside, Hairless. Rounded or notched tip. Relatively soft. **Flowers:** Greenish. Separate male and female flowers on the same plant. Female flowers more numerous than the male flowers. **Perianth:** Green, 3 segments with an acute tip but not sharply pointed. free. papery. spreading. Oblong to egg or spoon shaped. **Fruit:** Small, bladdery bag.

Class: Dicotyledonae

Sub-Class: Monochlamydonae

Series: Curvembryeae

Family: Amaranthaceae

Economic importance: Leaves and seeds are edible and eaten as vegetable. The therapeutic properties and dosage are used as antidote for snake bites. Leaves used for scorpion stings. Traditionally used for constipation, inflammation, eczema, bronchitis, anaemia and leprosy.

Photographs by: Yash Kumar (Bsc. (H) Botany,II)

Place of Occurrence: Sri Venkateswara College

Tropaeolum majus Nasturtium

Habit

Flower

Habit: Sprawling, succulent, annual plant. **Leaf:** large and round, green to glaucous green on the upper side, paler green below. **Flowers:** Flowers are five-petaled, trumpet-shaped flowers. They vary from yellow to orange, red ,bisexual and zygomorphic, with five petals, a superior three-carpelled ovary. **Fruit:** naked and nut-like, with three single seed segments.

Class: Dicotyledonae

Series: Thalamiflorae

Order: Brassicales

Family: Tropaeolaceae

Economic importance: It has strong antibiotic, antiseptic and antibacterial effects. It also acts as an expectorant, diuretic, and emmenagogue. Internally, it is used in treatments of urinary infections, and the infections of the respiratory tract (bronchitis, angina, flu, common cold). The most common way to consume it is as infusion of leaves. Traditionally, Nasturtium has also been used as a stimulant for hair growth. Used externally, Nasturtium acts as an excellent antiseptic in treatments of wounds and skin eruptions.

Photographs by: Prerna Budhiraja (Bsc. (H) Botany,II)

Place of Occurrence: Sri Venkateswara College

Bellis pererennis Lawn Daisy

Habit

Flower

Habit: herbaceous, perennial plant. **Root:** Tuft with fibrous roots. **Stem:** short creeping rhizomes, simple or branched. **Leaf:** basal rosette of rounded or egg-shaped, light-green leaves. blade oblanceolate or obovate, tapered to winged petiole, tip obtuse, margin entire, crenate or serrate, faces loosely soft-hairy. **Inflorescence:** capitulum with white ray florets (often tipped red) and yellow disc florets surrounded by two rows of green btacts known as "phyllaries". **Flowers:** composite, Flower heads are produced on leafless stalks. **Fruit:** light brown, glabrous.

Class: Dicotyledonae

Sub-Class: Gamopetalae

Series: Inferae

Order: Asterales

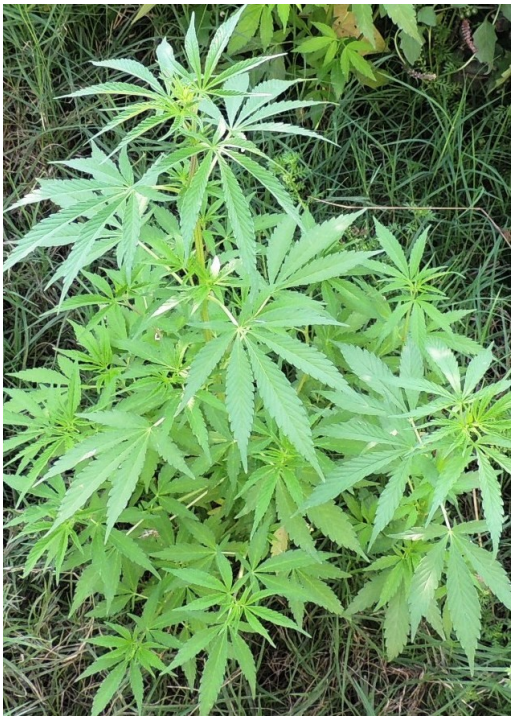
Family: Asteraceae

Economic importance. Common Daisy is considered to have astringent, demulcent, expectorant, digestive, emollient and tonic properties. Used internally, Daisy can be an effective herbal remedy against cold, cough and digestive complaints. In form of an infusion, Common Daisy is beneficial in cases of arthritis, catarrh, hepatic and renal disorders, diarrhea and rheumatism. Its external use, as a poultice or addition to bath, can help in cases of wound healing, rashes, wounds and skin inflammations.

Photographs by: Vivekanand (Bsc. (H) Botany,II)

Place of Occurrence: Sri Venkateswara College

Cannabis sativa Hemp



Habit

Flower

Habit: annual plant. **Stem:** erect, stiff , fibrous, very slightly branched, having greyish-green hairs, long thin petioles with acute stipules at the base, linear-lanceolate, tapering at both ends, the margins sharply serrate, smooth and dark green on the upper surface, lighter and downy on the under one. **Leaf:** oppositely arranged near the bottom, alternate near the top. They are palmately divided into 3 to 7 toothed leaflets. **Flowers:** Flowers are very small and green, unisexual, the male having five almost separate, downy, pale yellowish segments, and the female a single, hairy, glandular, five-veined leaf enclosing the ovary in a sheath. **Fruit:** small, smooth, light brownish-grey in colour, and completely filled by the seed.

Class: Dicotyledonae

Sub-Class: Polypetalae

Series: Calyciflorae

Order: Rosales

Family: Cannabinaceae

Economic importance: It has been traditionally used by different cultures in treatment of various types of ailments: asthma, cystitis, diarrhoea, dysentery, gonorrhoea, gout, epilepsy, malaria, fevers etc. The whole plant is considered to be anodyne, anti-inflammatory, antispasmodic, cholagogue, diuretic, emollient, hypnotic, hypotensive, laxative, narcotic, ophthalmic and sedative. Today, cannabis is used as help in relieving side effects of cancer treatments, such as nausea and vomiting. Since it increases the desire for food, it is also used in treatment of anorexia nervosa. Cannabis can be used externally in treatments of gout, sores, varicose veins and rheumatism.

Photographs by: Samarth Kaushal (Bsc. (H) Botany,II)

Place of Occurrence: Sri Venkateswara College

Capsicum annuum Pepper

Habit

Flower

Habit: perennial but often cultivated as an annual in temperate climates. **Leaf:** simple and alternate, elliptical to lanceolate, with smooth margins (entire). **Flowers:** The small flowers (around 1.5 cm, or 1 in, in diameter), are borne singly or, rarely, in pairs in the axils (where leaves join stems); they are white or occasionally purple, campanulate (bell-shaped), often with 5 lobes, and contain 5 bluish stamens. **Fruit:** many-seeded berries--pod-like, but with no sutures—that vary considerably in size and shape, ripening to green, yellow, orange, red, or purple.

Class: Dicotyledonae

Sub-Class: Gamopetalae

Series: Bicarpellatae

Order: Polemoiales

Family: Solanaceae

Economic importance: The fruits have high culinary value and are used s spice.

Photographs by: Yash Kumar (Bsc. (H) Botany,II)

Place of Occurrence: Sri Venkateswara College

Parthenium hysterophorus Carrot Grass

Habit

Flower

Habit: erect, much-branched with vigorous growth habit, aromatic, annual (or a short-lived perennial), herbaceous plant. **Root:** deep taproot. **Leaf:** The alternately arranged leaves are simple with stalks (petioles) and form a basal rosette during the early stages of growth. The lower leaves are relatively large and are deeply divided (bi-pinnatifid or bi-pinnatisect). Leaves on the upper branches decrease in size and are also less divided than the lower leaves. **Flower:** Numerous small flower-heads (capitula) are arranged in clusters at the tips of the branches (in terminal panicles). Each flower-head (capitulum) in borne on a stalk (pedicel). These flower-heads are white or cream in colour and have five tiny 'petals' (ray florets). They also have numerous tiny white flowers (tubular florets) in the centre and are surrounded by two rows of small green bracts (an involucre).

Class: Dicotyledonae

Sub-Class: Gamopetalae

Series: Inferae

Order: Asterales

Family: Asteraceae

Economic importance: *Parthenium* is a known invasive plant.

Photographs by: Prerna Budhiraja (Bsc. (H) Botany,II)

Place of Occurrence: Sri Venkateswara College

Centaurea cyanus Cornflower

Habit

Flower

Habit: common in cultivated fields and by roadsides. **Stem:** 1 to 3 feet high, tough and wiry, slender, furrowed and branched, somewhat angular and covered with a loose cottony down. **Leaf:** very narrow and long, arranged alternately on the stem, and like the stem are covered more or less with white cobwebby down that gives the whole plant a somewhat dull and grey appearance. The lower leaves are much broader and often have a roughly-toothed outline. **Flower:** solitary.

Class: Dicotyledonae

Sub-Class: Gamopetalae

Series: Inferae

Order: Asterales

Family: Asteraceae

Economic importance: The flowers are the part used in modern herbal medicine and are considered to have tonic, stimulant and emmenagogue properties, with action similar to that of Blessed Thistle. The expressed juice of the petals makes a good blue ink; if expressed and mixed with alum-water, it may be used in water-colour drawing. It dyes linen a beautiful blue, but the colour is not permanent.

Photographs by: Samarth Kaushal (Bsc. (H) Botany,II)

Place of Occurrence: Sri Venkateswara College

Dianthus barbatus Sweet William

Habit

Flower

Habit: short-lived perennial. **Leaf:** The leaves are opposite, simple, mostly linear and often strongly glaucous grey-green to blue-green. **Flowers:** The flowers have five petals, typically with a frilled margin, and are (in almost all species) pale to dark pink. **Fruit:** the fruit is dry and splits open when ripe**.**

Class: Dicotyledonae

Sub-Class: Polypetalae

Series: Thalamiflorae

Order: Caryophyllales

Family: Caryophyllaceae

Economic importance: The flowers have a mild flavour and are used as a garnish for vegetable and fruit salads, cakes, desserts, cold drinks etc.

Photographs by: Prerna Budhiraja (Bsc. (H) Botany,II)

Place of Occurrence: Sri Venkateswara College

Kalanchoe blossfeldiana Kalanchoe

Habit

Flower

Habit: glabrous, bushy, evergreen and perennial succulent plant. **Leaf:** The scallop-edged and ovate leaves leaves are arranged in an opposite/ suboppositefashion, are simple in type with crenate margins and an oblong shape.[2] The arrangement of the veins in a leaf (venation) can be absent or very hard to see; **Flowers:** each flower has four petals and can be one of a wide variety of colours, from the dark reds and pinks to oranges, golds and whites. **Fruit:** inconspicuous and not showy.

Class: Dicotyledonae

Sub-Class: Polypetalae

Series: Calyciflorae

Family: crassulaceae

Economic importance: The plant is used for treatment of stone and snake bite cases.

Photographs by: Mahima Chauhan (Bsc. (H) Botany,II)

Place of Occurrence: Sri Venkateswara College

Oxalis stricta Yellow Wood Sorrel

Habit

Flower

Habit: It tends to grow in woodlands, meadows, and in disturbed areas as both a perennial and annual. **Leaf:** Leaves are palmately divided into three distinct lobes and have a mildly sour taste. **Flowers:** buttery yellow in color and relatively small, measuring 1.5 cm. in width. This radially symmetrical flower has five petals that surround ten stamens and a singular, erect central pistil. Flowers are widely spaced and moderate in number per plant. **Fruit:** capsule

Class: Dicotyledonae

Sub-Class: Rosidae

Order: Geraniales

Family Oxalidaceae

Economic importance: The leaves and flowers of the plant are sometimes added to salads for decoration and flavoring. These can also be chewed raw (along with other parts of the plant, but not the root) as a thirst-quencher.[4] The green pods are pleasant raw, having a juicy crisp texture and a tartness similar to rhubarb in flavor. The leaves can be used to make a flavored drink that is similar in taste to lemonade],[4] and the whole plant can be brewed as herbal tea that has an aroma somewhat like that of cooked green beans. The juices of the plant have been extracted from its greens as a substitute to common vinegar.

Photographs by: Mahima Chauhan (Bsc. (H) Botany,II)

Place of Occurrence: Sri Venkateswara College

Setaria verticillata Hooked Bristlegrass

Habit: annual grass. **Leaf:** The leaf blades are up to 25 centimeters long and have a long sheath around the stem. **Inflorescence**: is a dense panicle up to 15 centimeters long which tapers at both ends. It contains many small spikelets and bristles. The bristles have tiny backwards-pointing barbs that help them hook onto clothing or animal fur, facilitating their dispersal.

Class: Monocotyledons

Series: Glumaceae

Family: Poaceae

Economic importance: Its seed are used to produce malt from beer and also in making porridge. Dried inflorescence have been used as a layer on the top of stored grains to protect them from rats.

Photographs by: Samarth Kaushal (Bsc. (H) Botany,II)

Place of Occurrence: Sri Venkateswara College