Experimental Results
Taxonomy, Propagation methods and Medicinal uses of selected medicinal herb species.
Abelmoschus esculentus (L.) Moench

**Taxonomical Description:**

- Name of the Family: Malvaceae
- Botanical name of the Plant: *Abelmoschus esculentus* (L.) Moench
- Common name of the Plant: 'Kasturi Bhindi'
- Occurrence and Distribution: *Abelmoschus esculentus* commonly cultivated as a vegetable in various parts around Kanpur.

**Habit and Habitat:** An annual erect herb height approximately upto 0.9-1.2 meter.

- Stem: Stem is herbaceous, aerial, erect, cylindrical, much branched and hairy.
- Leaves: Leaves are palmately 3-5 lobed, coarsely toothed and cordate.
- Flowers: Flowers are large and yellow with crimson center.
- Fruits: Fruits are 7-angled elongated conical capsule, hairy or smooth, green or creamy green. Seeds many, hairy, rotund and striate.

**Fruiting season from June to December.**

**Medicinal Uses of the Plant:**

Fruits of the *Abelmoschus esculentus* are nutritious, demulcent, emollient, diuretic and also very useful in gonorrhoea and in dysuria. Seeds are commonly used as a stimulant and in stomach disorders.

**Method of Propagation:**

*Abelmoschus esculentus* commonly propagated by seeds.
**Allium sativum** Linn.

**Taxonomical Description:**

Name of the Family: Liliaceae

Botanical name of the Plant: *Allium sativum* Linn.

Common Name of the Plant: 'Lahsun'

Occurrence and Distribution: *Allium sativum* commonly cultivated as an important condiment crop or spice around Kanpur.

Habit and Habitat: A perennial bulbous herb.

Stem: Stem is woody, disc-like and short having numerous wiry rootlets on the under side.

Leaves: Folded leaves are yellowish-green in colour, narrow, flat with two white fleshy modified leaf bases or scales, odour peculiarly pungent and disagreeable, taste acrid gives warmth to the tongue.

Flowers: Flowers are small and bulb-bils.

Fruits: Fruits are as a entire bulb or isolated cloves (bulblets), bulb sub globular approximately 4-6 cm. in diameter consisting about 8-20 cloves, surrounded by 3-5 whitish papery membranous scales attached to the stem.

*Fruiting season from May to July.*

**Medicinal Uses of the Plant:**

Bulb constitutes of *Allium sativum* is used as carminative, aphrodisia, expectorant, stimulant and disinfectant in the treatment of pulmonary conditions. It is largely used as condiment. Oil of the *Allium sativum* is used as anthelmintic and rubefacient.

**Method of Propagation:**

*Allium sativum* generally propagated by cloves (segment of bulbs).
Anethum graveolens L.

**Taxonomical Description:**

Name of the Family: Apiaceae  
Botanical name of the Plant: Anethum graveolens L.  
Common Name of the Plant: 'Soya'  
Occurrence and Distribution: Commonly cultivated in the month of September to March around Kanpur.

Habit and Habitat: A flat glabrous herb height is about 1.0 meter long.

Stem: Stem is erect, cylindrical, aromatic and green in colour.

Leaves: Leaves are pinnate, ultimate segments of the leaves are linear, toothed or entire.

Flowers: Flowers are yellow ebracteate, pedicillate, complete, hermaphrodite, Calyx sepals 5, gamosepalous, valvate green or slightly petalloid. Corolla petals 5, polypetalous, bilobed.

Fruits: Fruits are narrowly-winged, thick, monocotyledons.

*Fruiting season from September to March.*

**Medicinal Uses of the Plant:**

Fruits (Seeds) oil of Anethum graveolens is well known as children tonic. Seeds are used for the preparation of gripe water and also useful in halitosis, flatulence, colic, dyspepsia, intestinal worms, amenorrhoea, dysmenorrhoea, spermatorrhoea, skin diseases and cardiac debility. Leaves of Anethum graveolens are used after soaking in worm mustard oil for applying to hasten suppuration.

**Method of Propagation:**

Anethum graveolens generally propagated by seeds.
**Arachis hypogaea L.**

**Taxonomical Description:**

- **Name of the Family:** Fabaceae
- **Botanical name of the Plant:** *Arachis hypogaea* L.
- **Common name of the Plant:** 'Mungphali'
- **Occurrence and Distribution:** *Arachis hypogaea* commonly cultivated as crop around Kanpur.

Habit and Habitat: A 30-60 cm. long prostate, erect branched herb.

Stem: An erect, green and branched stem.

Leaves: Leaves are alternate, stipulated, entire leaflets are oval.

Flowers: Flowers are ephemeral, yellow in colour. Calyx sepals 4, gamosepalous, valvate aestivation. Corolla polypetalous, valvate aestivation. Androecium polyandrous, filaments filiform.

Fruits: Pods hard indehiscent, reticulated long with pericarp. Seeds are covered by a light reddish brown seed coat, consist two white fleshy cotyledons.

*Fruiting season from September to February.*

**Medicinal Uses of the Plant:**

Seeds of *Arachis hypogaea* are sweet oleaginous, aphrodisiac, galactagogue, constipating and rich with protein sources. The oil is sweet, purgative and emollient and is used in nephropalhy and dislocated joints and also in the preparation of various Ayurvedic formulations.

**Method of Propagation:**

*Arachis hypogaea* propagated by seeds and germination of seeds takes place in the winter season.
**Brassica campestris** L.

**Taxonomical Description:**

Name of the Family: Brassicaceae  
Botanical name of the Plant: *Brassica campestris* L.  
Common Name of the Plant: 'Sarson'  
Occurrence and Distribution: *Brassica campestris* commonly cultivated in village areas around Kanpur.

Habit and Habitat: A highly branched annual or biennial herb height approximately upto 1-1.2 meter.

Stem: Stem is herbaceous, soft, branched and compressed.

Leaves: Leaves are hairy especially along the veins usually leaves large, petioled, more or less pinnatifid, upper oblong or lanceolate, sharply dentate.

Flowers: Flowers are bright yellow in colour, pedicels approximately 1.5 cm, ascending or spreading.

Fruits: Fruits are pods, glabrous and suberect. Seeds are small, smooth and pale yellow in colour.

*Fruiting season from September to March.*

**Medicinal Uses of the Plant:**

Crushed seeds of the *Brassica campestris* are beneficial in rheumatic affections while seed oil mixed with common salt is reported to cure haemophilia and gum inflammation in teeth. Seed oil is also used externally in cutaneous affections and with camphor finds local application in muscular rheumatism.

**Method of Propagation:**

*Brassica campestris* generally propagated by seeds.
**Herb species**

**Cannabis sativa** Linn.

**Taxonomical Description:**

Name of the Family: 

Botanical name of the Plant: 

Common Name of the Plant: 

Occurrence and Distribution: 

Habit and Habitat: An annual dioecious herb height upto 1-2 meter long.

Stem: Stem is thin, straight, cylindrical, long, furrowed, aromatic and green in colour.

Leaves: Leaves are palmately compound, leaflets linear lanceolate with linear margins, narrow at base, upper surface dark green and rough, lower pale and downy. Leaves of the female plant are longer than the male, odour strong and characteristic, taste slightly acrid.

Flowers: Flowers are green, small, formed in axil of each bracteole with 2 long brownish red stigmas.

Fruits: Fruits are achene type approximately 5 to 6 mm. in length and 4 mm. in width, ovate, glossy green or yellowish green in colour with single seed.

*Fruiting season from September to March.*

**Medicinal Uses of the Plant:**

*Cannabis sativa* is a narcotic, sedative and analgesic plant. It has psychotropic properties. Fruits and leaves of the *Cannabis sativa* are beneficial in digestive problems, respiratory tract problems, urinary disorders, piles and impotency and in female reproductive organ disorders. But at present it is very little used as a drug in Ayurvedic preparations because it causes intoxication, euphoria and later mental disturbances.

**Method of Propagation:**

*Cannabis sativa* generally propagated by seeds.
Herb species

_Cassia tora_ L.

**Taxonomical Description:**

Name of the Family: Caesalpinioideae

Botanical name of the Plant: *Cassia tora* L.

Common name of the Plant: 'Chakunda'

Occurrence and Distribution: *Cassia tora* commonly found as ground weed in the waste land around Kanpur.

Habit and Habitat: An erect under shrub or annual herb.

Stem: Erect, cylindrical, young stem is herbaceous.

Leaves: Leaves are paripinnate, 2-4 cm. long. Leaflets are in 4-8 pairs, ovate or oblong.

Flowers: Flowers are bisexual, complete and slightly perigynous. Calyx sepals 5, polysepalous, obtuse. Corolla petals 5, polysepalous, ascending imbricate aestivation. Androecium 10 stamens arranged in 2 whores, Polyandrous filament short.

Fruits: Fruits are long ribbed green, cylindrical pod narrow. Seeds many, flat and dark.

_Fruiting season almost throughout the year mainly during July to November._

**Medicinal Uses of the Plant:**

The raw seeds and leaves are utilized as a laxative. The torrefied seeds are effective for insomnia, headache, constipation, oliguria, cough, opthalmia, dacryoliihs, amblyopia and hypertension. The alcoholic or vinegar maceration of pounded fresh leaves is used externally to treat eczema and dermatomycosis.

**Method of Propagation:**

*Cassia tora* propagated by seeds and germination takes place in the rainy season.
Capsicum annuum L.

Taxonomical Description:

Name of the Family: Solanaceae

Botanical name of the Plant: Capsicum annuum L.

Common name of the Plant: 'Lal Mirch'

Occurrence and Distribution: Capsicum annuum L. commonly cultivated in the field by farmers around Kanpur.

Habit and Habitat: An annual erect herb or under shrub.

Stem: Stem is erect, long, well branched and smooth.

Leaves: Leaves are ovate, simple and small in size.

Flowers: Bell shaped, solitary, white in colour. Flowers 2-3 in axillary fascicles. Calyx campanulate, subentire or minutely 5-toothed. Corolla rotate variable in size.

Fruits: Fleshy and berry. Seeds are discoid, smooth, subscabrous.

Fruiting season commonly throughout the year.

Medicinal Uses of the Plant:

Fruits of Capsicum annuum show antidiarrhoeal and carminative properties. Fruits are very useful in the abatement of stomachic troubles and in various types of indigestion disorders. The green chilies are used for garnishing or flavouring savory dishes. Capsicum is extensively used as food flavouring in processed foods, meat and vegetable sayzys, etc.

Method of Propagation:

Capsicum annuum commonly propagated by seeds in the month of July and cultivated throughout the year.
**Herb species**

*Catharanthus roseus* (L.) G. Don.

**Taxonomical Description:**

Name of the Family: Apocynaceae  
Botanical name of the Plant: *Catharanthus roseus* (L.) G. Don.  
Common name of the Plant: ‘Sadabahar’  
Occurrence and Distribution: *Catharanthus roseus* commonly found as an ornamental plant around Kanpur.

Habit and Habitat: An erect everblooming herb, height upto 1-2 feet, ornamental.

Stem: Stem is erect, cylindrical, branched, solid, purple red with milky latex, pubescent.

Leaves: Leaves are simple, exstipulate, opposite decussate, sub sessile or petiolate, ovate or obovate, entire, mucronate, unicostate reticulate.

Flowers: Flowers are rosy purple in colour, ebracteate, pedicellate, complete, actinomorphic, bisexual, hypogynous, pentamerous, cyclic. Calyx sepals 5, polysepalous, valvate. Corolla petals 5, gamopetalous, twisted, pink, violet or purple in colour.

Fruits: Follicles 2, slender, erect or spreading. Seeds subcylindric, truncate at both ends.

**Fruiting season from November to December.**

**Medicinal Uses of the Plant:**

*Catharanthus roseus* plant shows hypoglycemic properties and leaves are useful in treating oliguria, haemoturia, diabetics mellitus and menstrual disorders. The roots and leaves in the form of a decoction or extract are active on hypertension.

**Method of Propagation:**

*Catharanthus roseus* propagated by seeds in the month of July-August.
**Cicer arietinum L.**

**Taxonomical Description:**

Name of the Family: Papilionoideae

Botanical name of the Plant: *Cicer arietinum* L.

Common name of the Plant: 'Chana'

Occurrence and Distribution: *Cicer arietinum* commonly cultivated as main source of pulse crop around Kanpur.

Habit and Habitat: An erect, branched, annual herb.

Stem: A spreading cylindrical, herbaceous stem with glandular hairs.

Leaves: Leaves are compound, pinnate, leaflets oval, small, rachis ending in a tendric leaves, stipules are present.

Flower: Flowers are blue in colour, bisexual, polyandrous. Calyx polysepalous, imbricate aestivation, Sepals are one seeded. Corolla Polypetalous, posterious coloured, imbricate aestivation.

Fruits: Fruits are lomentum, legumes have 1-2 seeds.

*Fruiting season from April to June.*

**Medicinal Uses of the Plant:**

Leaves of *Cicer arietinum* are used externally in painful conditions while leaf juices, which are laxative, commonly beneficial in the stomach problem. Seeds are rich with protein properties and also useful in jaundice, leprosy, pharyngopathy, bronchitis, inflammations and skin diseases.

**Method of Propagation:**

*Cicer arietinum* cultivated by seeds as a main source of pulse crop.
Coriandrum sativum L.

**Taxonomical Description:**

- **Name of the Family:** Apiaceae
- **Botanical name of the Plant:** Coriandrum sativum L.
- **Common name of the Plant:** 'Dhania'
- **Occurrence and Distribution:** Coriandrum sativum L. commonly cultivated in the month of September to March around Kanpur.

**Habit and Habitat:** An annual glabrous cultivated herb height is about 0.25-0.50 meter long.

**Stem:** Stem is herbaceous, erect, cylindrical, branched, angular, aromatic and greenish in colour.

**Leaves:** Leaves are ramal and cauline, alternate, exstipulate, petiolate or sub-sessile, decompound with ovate or lanceolate segments.

**Flowers:** Flowers are ebracteate, pedicillate, complete, hermaphrodite, outer flower zygomorphic white or purplish in colour. Calyx sepals 5, gamosepalous, valvate green or slightly petaloid.

**Corolla petals** 5, polypetalous, bilobed, lobes are equal in size in actinomorphc flowers, but in zygomorphic flowers two posteriorly placed petals are equally lobed.

**Fruits:** Coriander is a sub-globular cremocarpous fruit. About 10 primary ridges and 8 secondary ridges are present on the fruits. Primary ridges are wavy and inconspicuous, while secondary ridges are straight. It is further described as an endospermic and a coelospermic. The weight of 100 fruits is approximately 1 gram.

**Fruiting season from March to April.**
Medicinal Uses of the Plant:

Plant juice of *Coriandrum sativum* used in indigestion, seeds are used as aromatic, refrigerant, stimulants and diuretic. Seed powder used in the trouble of vomiting. According to Ayurveda, *Coriandrum sativum* is beneficial in cough, fever, thrust vomiting and also in gastric problem. Its oil is used as an ingredient of compound spirit of orange and cascara elixir.

Method of Propagation:

The farmers of the Kanpur propagated Coriander by seeds in the month of September to March.
**Crotalaria juncea L.**

**Taxonomical Description:**

Name of the Family: Papilionoideae

Botanical name of the Plant: *Crotalaria juncea* L.

Common name of the Plant: 'Sannai'

Occurrence and Distribution: *Crotalaria juncea* commonly cultivated as a crop around Kanpur.

Habit & Habitat: An erect under shrub or annual herb, height up to 1.22-3.05 meter.

Stem: Stem is long, cylindrical and branched.

Leaves: Leaves are simple, acute, subsessile and narrow.

Flower: Flowers are yellow in colour, bisexual, complete, pedicillate. Calyx polysepalous, valvate aestivation. Corolla polypetalous, petals 5, yellow coloured.

Fruits: Pod, narrow at both end with consisted seeds.

*Fruiting season from October to March.*

**Medicinal Uses of the Plant:**

Seeds of the *Crotalaria juncea* plant are used in the treatment of psoriasis. Seeds are abortifacient causes bleeding, cures severe body ache.

**Method of Propagation:**

*Crotalaria juncea* propagated by seeds in the month of July-August.
**Curcuma amada** Roxb.

**Taxonomical Description:**

Name of the Family: **Zingiberaceae**

Botanical name of the Plant: **Curcuma amada** Roxb.

Common name of the Plant: 'Ama-haldi'

Occurrence and Distribution: **Curcuma amada** commonly cultivated in the agricultural areas around Kanpur.

Habit and Habitat: A rhizomatus aromatic herb.

Stem: Stem is like a leafy tuft, height approximately 65-95 cm.

Leaves: Leaves are long, petiolate, oblong-lanceolate, tapering at both ends, glabrous, green on both sides.

Flowers: Flowers are white or pale-yellow in spikes in the centre of the tuft of leaves.

Fruits: Fruits are lip semi elliptic, yellow in colour, 3 lobed, the midlobe emarginated.

*Fruiting season from May to July.*

**Medicinal Uses of the Plant:**

The rhizomes of *Curcuma amada* are bitter, sweet, sour, aromatic, cooling, appetizer, carminative, digestive, stomachic, demulcent, vulnerary, febrifuge, alexeteric, aphrodisiac, laxative, diuretic, expectorant, anti-inflammatory and antipyretic and are useful in anorexia, dyspepsia, flatulence, colic, wounds, chronic ulcers, skin diseases, pruritis, fever, constipation, bronchitis and inflammations.

**Method of Propagation:**

*Curcuma amada* commonly propagated by vegetative method.
**Daucus carota** Linn.

**Taxonomical Description:**

- **Name of the Family:** Apiaceae
- **Botanical name of the Plant:** *Daucus carota* Linn.
- **Common name of the Plant:** 'Gajar'
- **Occurrence and Distribution:** *Daucus carota* commonly cultivated in the month of December to March around Kanpur.

**Habit and Habitat:** An annual or biennial herb usually found in the field of farmers.

**Stem:** Stem is dorsally compressed.

**Leaves:** Leaves are segmented, 2-4 pinnate, ultimate segments narrow or small.

**Flowers:** Flowers are compound and umbels. Petals are obovate, outer part of the flower is radiant.

**Fruits:** Fruits are elliptic, dorsally compressed. Seed half-terete, dorsally subcompressed, inner face plain.

**Fruiting season from April to July.**

**Medicinal Uses of the Plant:**

Fruits of the *Daucus carota* are used in diarrhoea, and as a nerve tonic. Seed juice is beneficial in uterine trouble. Roots of the *Daucus carota* are rich with vitamins and iron properties and used as deobstruent, diuretic, refrigerant and stimulant.

**Method of Propagation:**

The farmers of the Kanpur propagated *Daucus carota* by seeds.
Herb species

*Dhatura stramonium* L.

**Taxonomical Description:**

Name of the Family: Solanaceae

Botanical name of the Plant: *Dhatura stramonium* L.

Common name of the Plant: 'Dhatura'

Occurrence and Distribution: Dhatura is a genus of poisonous shrubs of tropical and sub-tropical parts. Commonly found in the waste fields and road sides around Kanpur.

Habit and Habitat: An annual herb or under shrub height about 1-2 meters.

Stem: Stem is well branched, glabrous and smooth.

Leaves: Leaves are unequal at the base with acute apex and glabrous lamina. Each leaf has 3 to 4 coarse veins on each side and 4 to 6 secondary veins on either side of the midrib.

Flowers: Flowers of the plant are about 7 cm. in length, white to reddish-purple or purple on the outer side, while whitish internally. Corolla of the flower is thin, acuminate and triangular to circular in shape. Flowers are funnel shaped with pedicel, which is never erect.

Fruits: Fruits are capsuled, brown coloured seeds of the plant are triangular and are found in the thorny capsule.

_Fruiting season from July to November._

**Medicinal Uses of the Plant:**

Fruits, seeds of *Dhatura stramonium* are toxic in nature, used in cure of dandruff, loss of hair. Leaves are used as antiseptic and antipyretic. Flowers juice is useful to cure ear pain. Beside this *Dhatura stramonium* is used in the treatment of asthma and cough. It is also an antispasmodic and a depressant of the central nervous system.

**Method of Propagation:**

*Dhatura stramonium* propagated by seeds in the month of July.
**Foeniculum vulgare** Mill.

**Taxonomical Description:**

Name of the Family: Apioceae  
Botanical name of the Plant: *Foeniculum vulgare* Mill.  
Common Name of the Plant: ‘Saunf’  
Occurrence and Distribution: *Foeniculum vulgare* commonly cultivated as an important condiment crop or spice around Kanpur.

Habit and Habitat: A flat glabrous herb height is about 1.0 meter long.

Stem: Stem is erect, cylindrical, aromatic and green in colour.

Leaves: Leaves are pinnate, ultimate segments of the leaves are linear, toothed or entire.

Flowers: Flowers are small, yellow in colour, ebracteate, pedicillate, complete, hermaphrodite. Calyx sepals 5, gamosepalous, valvate green or slightly petalloid. Corolla petals 5, polypetalous, bilobed.

Fruits: Fruits are usually entire with pedicel attached, mericarps upto about 10 mm. long and 4 mm. broad, five sided with a wider commissural surface, tapering slightly towards base and apex, crowned with a conical styloped, glabrous, greenish or yellowish-brown with five paler prominent primary ridges. Seeds are endospermic and orthospermy.

Fruiting season from December to March.

**Medicinal Uses of the Plant:**

Fruits of the *Foeniculum vulgare* are beneficial in digestive problems, respiratory tract disorders, skin diseases, fever, tubercular conditions, urinary disorders and in general debility. Fruit juice of the *Foeniculum vulgare* is useful in mental disturbances.

**Method of Propagation:**

*Foeniculum vulgare* generally propagated by seeds and also by vegetative method.
**Lathyrus sativus** L.

**Taxonomical Description:**
- **Name of the Family:** Papilionoideae
- **Botanical name of the Plant:** *Lathyrus sativus* L.
- **Common name of the Plant:** ‘Jangali Matar’
- **Occurrence and Distribution:** *Lathyrus sativus* commonly cultivated as a crop around Kanpur.

**Habit and Habitat:** A much-branched sub erect seasonal climbing herb.

**Stem:** Approximately 1.2 meter long stem is prostate, weak, climbing, branched, solid and green in colour.

**Leaf:** Leaves are couline, ramal, alternate, entire leaf modified into tendril, stipulate, large green, foliacious, entire acute.

**Flowers:** Flowers are complete, zygomorphic, bisexual, pentamerous, perigynous, pedicellate. Calyx gamosepalous, sepals 5, Valvate aestivation. Corolla polypetalous, petals 5, axillary aestivation.

**Fruits:** Legumes, pods flat, oblong, dorsally 2-winged, slightly curved, 2.5-3.7 cm. long. Seeds 4-5, usually spotted or mottled, yellowish or grayish brown.

**Fruiting season from February to March.**

**Medicinal Uses of the Plant:**

Seeds of the *Lathyrus sativus* are nutritive and used in anti cough preparations but due to its toxic effect it is used in less formulations. Prolonged consumption of *Lathyrus sativus* seeds may cause paralysis in human beings and animals both.

**Method of Propagation:**

*Lathyrus sativus* propagated by seeds in the month of September-October and germination takes place in the month of February-March.
**Linum usitatissimum** L.

**Taxonomical Description:**

Name of the Family: Linaceae

Botanical name of the Plant: *Linum usitatissimum* L.

Common name of the Plant: 'Alsi'

Occurrence and Distribution: *Linum usitatissimum* commonly cultivated chiefly for oil in various parts and occasionally met in waste places around Kanpur.

Hab'it and Habitat: An annual herb, rarely shrubby.

Stem: Stem is usually solitary, corybosely branched above, striate.

Leaves: Leaves are linear, lanceolate or ovate.

Flowers: Flowers are blue in colour, in corymbose, leafy panicles.

Fruits: Fruits are globose capsule, 5-celled, septicidally splitting. Seeds compressed, ovoid-oblong, dark brown.

*Fruiting season February -March.*

**Medicinal Uses of the Plant:**

Fresh leaves and bark of the *Linum usitatissimum* is very effective in gonorrhoea. Demulcent seeds are useful in gonorrhoea and strangury while crushed seeds are useful externally to accelerate suppuration of abscesses, boils, carbuncles and also useful in ulcerated and inflamed surfaces, gout and in rheumatic swellings. Linseed oil has laxative properties but is seldom employed due to its unpleasant taste. Flowers are cardiac and used as a nervine tonic.

**Method of Propagation:**

*Linum usitatissimum* commonly propagated by seeds and also by vegetative method.
Herb species

*Mucuna pruriens* (L.) DC.

**Taxonomical Description:**

- **Name of the Family:** Papilionoideae
- **Botanical name of the Plant:** *Mucuna pruriens* (L.) DC.
- **Common name of the Plant:** 'Kewanch'
- **Occurrence and Distribution:** *Mucuna pruriens* commonly cultivated as a medicinal plant around Kanpur.

**Habit and Habitat:** A twinning annual herb.

**Stem:** Stem is climbing, herbaceous, green, solid and cylindrical.

**Leaf:** Leaves are trifoliate, grey silky, leaflets elliptic, broadly ovate, unequal at base.

**Flower:** Flowers are purple in colour, born in axillary, pendulous, racemes, actinomorphic. Calyx gamosepalous, valvate aestivation. Corolla purple petals, papilionaceous, standard aestivation.

**Fruits:** Legumes, pods curved, turgid, longitudinally ribbed, with grey or pale-brown bristles. Seeds 4-6, ovoid.

*Fruiting season almost through out the year.*

**Medicinal Uses of the Plant:**

The leaves of the *Mucuna pruriens* are aphrodisiac, anthelmintic and tonic and are useful in ulcers inflammation, helminthiasis, cephalagia and general debility. Seeds are used in the manufacturing of various Ayurvedic formulations such as for the treatment of leucorrhoea, menorrhagia and in paralysis. Root powder is beneficial in the urinary problems and in elephantiasis. Pods of the *Mucuna pruriens* show antihelminitic properties.

**Method of Propagation:**

*Mucuna pruriens* propagated by seeds and also by vegetative method.
Mimosa pudica L.

**Taxonomical Description:**

Name of the Family: Mimosoideae

Botanical name of the Plant: *Mimosa pudica* L.

Common name of the Plant: 'Lajwanti'

Occurrence and Distribution: *Mimosa pudica* commonly found as an ornamental plant and as a waste land weed around Kanpur.

Habit and Habitat: An erect under shrub or annual herb 50 to 90 cm. long.

Stem: Stem and rachis are covered with small thorn.

Leaves: Leaves are bipinnate, sensitive, collapse on touching, pinnae 2-4, digitately arranged with 10-20 pairs of leaflets.


Fruits: Fruits are elongated pod. Pods flat, small, straw coloured, provided with many bristles. Seeds 3-5.

*Fruiting season through out the year.*

**Medicinal Uses of the Plant:**

Leaf juices of *Mimosa pudica* are used in sinus, piles and fistula and also in glandular swellings and hydrocele. Roots are beneficial in urinary tract disorders, dysentery, fever, syphilis, leprosy, stomach worms, venereal diseases and insect bite.

**Method of Propagation:**

*Mimosa pudica* propagated by seeds and also by vegetative method.
**Ocimum sanctum** Linn.

**Taxonomical Description:**

Name of the Family: Labiatae  
Botanical name of the Plant: *Ocimum sanctum* Linn.  
Common Name of the Plant: 'Tulsi'  
Occurrence and Distribution: *Ocimum sanctum* commonly found as a religious plant around Kanpur.

Habit and Habitat: An aromatic herb height is about 1.0 meter long.

Stem: Stem is herbaceous but woody below, erect, quadrangular, branched, hairy, aromatic and green in colour.

Leaves: Leaves are ramal and cauline, exstipulate, petiolate, opposite decussate, simple, ovate, serrate, hairy, unicostate, reticulate and aromatic.

Flowers: Flowers are bracteate, ebracteolate, pedicillate, complete, hermaphrodite, zygomorphic, hypogynous, bilabiate, small and aromatic. Calyx sepals 5, gamosepalous, valvate violet green. Corolla petals 5, gamopetalous, valvate, white or pink coloured.

Fruits: Fruits are schizocarpic, made up of four nutlets. Seeds are four and non endospermic.

*Fruiting season commonly throughout the year.*

**Medicinal Uses of the Plant:**

Plant of the *Ocimum sanctum* is bitter, acrid, aromatic, stomachic, blood purifier and beneficial in cough, painful conditions, digestive disorders, spermatic disorders, intermitted fever and in urinary tract problems. Oil of the *Ocimum sanctum* is rich with anti-tubercular properties. Seeds are energetic and useful in genito-urinary disorders, ringworm, verminosis and skin diseases.

**Method of Propagation:**

*Ocimum sanctum* propagated by seeds and also by vegetative method.
**Papaver somniferum L.**

**Taxonomical Description:**
- **Name of the Family:** Papaveraceae
- **Botanical name of the Plant:** *Papaver somniferum* L.
- **Common name of the Plant:** 'Afim'
- **Occurrence and Distribution:** *Papaver somniferum* occasionally found in waste places and village areas around Kanpur.

**Habit and Habitat:** An erect annual herb height approximately 60-120 cm.

**Stem:** Stem is slender, rarely branched and glabrous.

**Leaves:** Leaves are alternate, sessile, amplexicaul, irregularly lobed and toothed.

**Flowers:** Flowers are large, handsome with various shades, usually bluish white with a purple base or white, purple or variegated, approximately 7-18 cm. long.

**Fruits:** Capsule globular, longitudinally grooved, seeds numerous, small and black.

**Fruiting season from April to June.**

**Medicinal Uses of the Plant:**

Opium (the inspissated milky juice from immature capsules) is a soporific drug, given either alone or as an adjunct, in the preparation of various medicines. The latex of the *Papaver somniferum* possesses hypotonic, analgesic, antitussive and antidiarrhoeal properties. It is also effective in dyspnoea consequent upon heart failure. Seeds are demulcent, nutritive and mildly astringent, beneficial in cough and asthma. However, it is contraindicated for people suffering from asthma, cardiac diseases and urinary disorder. Seed oil, freed from narcotic principles, is useful in diarrhoea and dysentery.

**Method of Propagation:**

*Papaver somniferum* propagated by seeds and also by vegetative method.
**Pisum sativum L.**

**Taxonomical Description:**

Name of the Family: Papilionoideae

Botanical name of the Plant: *Pisum sativum* L.

Common name of the Plant: 'Matar'

Occurrence and Distribution: *Pisum sativum* commonly cultivated in gardens, fields by farmers around Kanpur.

Habit and Habitat: An annual climbing herb.

Stem: Stem is herbaceous, aerial, weak, branched, flattened, green and glabrous.

Leaves: Leaves are ramal and cauline, alternate, petiolate, stipules leafy, pinnately compound, imparipinnate, leaflet opposite, sessile, ovate, entire, acute. Upper leaflets modify into tendrils.

Flowers: Flowers are purple or white in colour, bracteate, pedicillate, complete, hermaphrodite, zygomorphic, pentamerous, perigynous, cyclic. Calyx sepals 5, gamosepalous, campanulate, odd sepal anterior, hairy and green. Corolla petals 5, polypetalous, papilionaceous, descending imbricate.

Fruits: Legumes (Pods), pods curved or straight, blunt or pointed, 5-10 cm long with a thin or thick wall. Seeds 6-9, smooth and rounded or wrinkled, green, white-grey, brown or mottled.

**Fruiting season from November to December.**

**Medicinal Uses of the Plant:**

Crude extract of seeds of *Pisum sativum* shows affects in the digestive system and in ciliary movements and suppresses cough reflex.

**Method of Propagation:**

*Pisum sativum* propagated by seeds in the month of July-August.
**Raphanus sativus L.**

**Taxonomical Description:**

- **Name of the Family:** Brassicaceae
- **Botanical name of the Plant:** *Raphanus sativus* L.
- **Common Name of the Plant:** 'Muli'
- **Occurrence and Distribution:** *Raphanus sativus* commonly cultivated in village areas around Kanpur.

**Habit and Habitat:** An annual or biennial bristly herb.

**Stem:** Stem is simple or branched and erect.

**Leaves:** Leaves are pinnatisect or pinnate, coarsely toothed.

**Flowers:** Flowers are usually white or lilac with purple veins, borne in long terminal racemes.

**Fruits:** Fruits are inflated, hardly or irregularly constricted, with a long tapering beak and filled inside with white pith between the seeds. Seeds 2-8, globose and brownish or yellowish in colour.

**Fruiting season from September to March.**

**Medicinal Uses of the Plant:**

Extract of dry root of the *Raphanus sativus* is a remedy for cough, influenza, dysentery, urinary troubles and in colic problems. Seeds are considered as expectorant, diuretic and mild purgative. Decoction of dry radish is useful orally either alone or mixed with meat juice in piles. Green leaves of the tender radish are considered diuretic and useful in constipation and flowers are cholagogue.

**Method of Propagation:**

*Raphanus sativus* propagated by seeds and also by vegetative method.
**Solanum melongena** L.

**Taxonomical Description:**

Name of the Family: Solanaceae

Botanical name of the Plant: *Solanum melongena* L.

Common Name of the Plant: 'Baigun'

Occurrence and Distribution: *Solanum melongena* very commonly cultivated by local farmers around Kanpur.

Habit and Habitat: An erect, branched herb or under shrub.

Stem: Stem is branched, light woody.

Leaves: Leaves are ovate, lobed, woody, hairy smooth in upper.

Flowers: Flowers are cymes, blue in colour, bell shaped. Calyx lobes are unshaped, lanceolate. Corolla are shortly lobed, lanceolate.

Fruits: Fruits are cylindrical, round in shape with blue-purple in colour, Poly seeds, which are monocotyledons.

*Fruiting season through out the year.*

**Medicinal Uses of the Plant:**

Fruits of *Solanum melongena* are rich with Riboflavine content, very useful in hepatic complaints. The unripe fruits are bitter, acrid, sweet, aphrodisiac, cardiotonic and haematinic. Seeds are useful in the digestion problems. Leaves are sialagogue, narcotic, antitherpetic and beneficial in asthma and bronchitis. Roots are also shows antiasthmatic properties used commonly in nasal ulcers and in otitis.

**Method of Propagation:**

*Solanum melongena* propagated by seeds in wet field and it develops, then developed small sized plant is planted in the field with gap of 1-2 ft. with each other.
Solanum nigrum L.

Taxonomical Description:

Name of the Family: Solanaceae
Botanical name of the Plant: Solanum nigrum L.
Common Name of the Plant: 'Makoi'
Occurrence and Distribution: Solanum nigrum commonly found in the waste places such as road sides and field sides of cultivated areas around Kanpur.

Habit and Habitat: An annual, glabrous or pubescent herb.
Stem: Stem is erect, branched, herbaceous, cylindrical and green in colour.
Leaves: Leaves are ovate or oblong, simple, toothed, glabrous and acute.
Flowers: Flowers are complete, white in colour. Calyx are petaloid, gamosepalous, bell shaped obtuse. Corolla white, nearly glabrous.
Fruits: Fruits are berry green in young stage and in ripening conditions fruits are red-black in colour. Seeds are berry and smooth.

Fruiting season almost throughout year but chiefly from February to July.

Medicinal Uses of the Plant:

The plant of Solanum nigrum is bitter, acrid, emollient, cardiotonic, diuretic, laxative with alterative properties. Leaves and young stem of Solanum nigrum are useful in the abatement of various diseases such as cough, liver, skin and in spleen disorders and fruits are anti-diarrhoeal and antipyretic. Hot leaves are very beneficial in painful and swollen testicles, paste used in rheumatic joints, skin diseases. The root bark is useful in otopathy, opthalmopathy, rhinopathy and hepatitis.

Method of Propagation:

Solanum nigrum propagated by seeds in month of April and grows in month of July.
**Solanum surattense** Burn. F.

**Taxonomical Description:**

Name of the Family: Solanaceae
Botanical name of the Plant: *Solanum surattense* Burn. F.
Common name of the Plant: 'Kateli'
Occurrence and Distribution: *Solanum surattense* commonly found in the waste places around road sides and in field sides as a waste weeds around Kanpur.

Habit and Habitat: An annual diffused herb.

Stem: Stem is thorny glabrous, chlorophyllous, cylindrical and small in size.

Leaves: Leaves are straight, ovate or elliptic sinuate or subpinnatifid glabrescent with many straight spines.

Flowers: Flowers are blue in colour. Corolla blue, lobes shallow.

Fruits: Fruits are berry, globose, glabrous, green in colour at young stage and in ripening conditions fruits are yellow in colour. Seeds are endospermic.

**Fruiting season from March to July.**

**Medicinal Uses of the Plant:**

*Solanum surattense* plant is bitter, acrid, thermogenic, anthelmintic, anti-inflammatory, andodyne, antiasthmatic, aperient, astringent, digestive with diuretic properties. Leaves and young stem are very useful for medicinal purposes such as in cough, constipation, dropsy, asthma and in fever disorders. Roots are beneficial in catarrhal affections, pain in chest etc.

**Method of Propagation:**

*Solanum surattense* propagated by seeds in rainy season around the road sides and waste sides.
**Solanum tuberosum L.**

**Taxonomical Description:**

Name of the Family: Solanaceae

Botanical name of the Plant: *Solanum tuberosum* L.

Common name of the Plant: 'Alu'

Occurrence and Distribution: *Solanum tuberosum* commonly cultivated around Kanpur.

Habit and Habitat: A branched seasonal herb.

Stem: An underground, tuberal, aerial stem generally locked.

Leaves: Leaves are odd, compound, pinnate, leaflets are 5 to 9, ovate oblong.

Flowers: Flowers are cymosed type, whitish to bluish in colour. Calyx valvate, lobes linear. Corolla gamopetalous, whitish or bluish in colour.

Fruits: Fruits are globose, berry 2-4 cm in diameter. Seeds are oval.

*Fruiting season from October to February.*

**Medicinal Uses of the Plant:**

Leaves and tubers of *Solanum tuberosum* are commonly used as in medicinal purposes. Leaves extract are beneficial in cough problems, stomachic pains while paste of tubers are used in the abatement of skin burning. Fruits are useful as the source of glucose.

**Method of Propagation:**

As crop production budding is the common method of propagation of *Solanum tuberosum*. Buds are shown in the month of October and cultivated in the month of February.
Trapa natans L.

**Taxonomical Description:**

**Name of the Family:** Trapa natans L.

**Botanical name of the Plant:** Trapa natans L.

**Common name of the Plant:** 'Singhara'

**Occurrence and Distribution:** Trapa natans commonly cultivated in ponds and lakes in different parts of Kanpur.

**Habit and Habitat:** An aquatic floating herb.

**Stem:** Stem of the herb is long, flexuous ascending in water.

**Leaf:** Leaves are petiolate having truncate base, entire, acute glaucous floating as rosettes.

**Flowers:** Flowers are white in colour.

**Fruits:** Fruits are obovoid, triangular having 2 horns, single seeded, fruit seeds white starchy.

**Fruiting season from July to October.**

**Medicinal Uses of the Plant:**

Fruits of *Trapa natans* are used as nutritive tonic, antidiarrhoeal and as a refrigerant. Generally Physicians advised its fruits with milk in general and nervous debility, in female reproductive organs disorders and in seminal weakness also. Stem juice of *Trapa natans* is beneficial in eye diseases.

**Method of Propagation:**

*Trapa natans* are generally cultivated in village ponds and lakes in month of June- July by vegetative propagation. Vegetative propagation is very common for the *Trapa natans* beside this it is also propagated by seeds.
Tribulus lanuginosus L.

**Taxonomical Description:**

- **Name of the Family:** Zygophyllaceae
- **Botanical name of the Plant:** Tribulus lanuginosus L.
- **Common name of the Plant:** ‘Gokshura’

**Occurrence and Distribution:** Tribulus lanuginosus commonly found in various parts chiefly in waste and dry places around Kanpur.

Habit and Habitat: A small prostate, silky hairy herb.

Stem: Stem is usually solitary, corybosely branched above, striate.

Leaves: Leaves are stipulate, opposite, usually unequal, abruptly pinnate, leaflets approximately 4-7 pairs, oblong, mucronate.

Flowers: Flowers are solitary, axillary or leaf-opposed, yellow or white in colour.

Fruits: Fruits are globose, hairy, 5-angled, spinous with 2-long and 2 short spines on each cocci. Seeds obliquely pendulous.

Fruiting season from April to August.

**Medicinal Uses of the Plant:**

Dried fruits of the *Tribulus lanuginosus* are aphrodisiac, demulcent, diuretic and used as a tonic. Decoction or infusion of dried fruits are very effective in chronic cystitis, gonorrhoea, gout, gravel, impotence, kidney diseases and painful micturition. Leaves are useful in stomach disorders. Stem is commonly used as an astringent. Root of the *Tribulus lanuginosus* is aperient, demulcent and useful as a tonic. The seeds are astringent, strengthening and are useful in epistaxis, haemorrhages and ulcerative stomatitis. The ash of the whole plant is good for external application in rheumarthritis.

**Method of Propagation:**

*Tribulus lanuginosus* commonly propagated by seeds.
**Trigonella foenum-graceum L.**

**Taxonomical Description:**

Name of the Family: Papilionoideae

Botanical name of the Plant: *Trigonella foenum-graceum* L.

Common name of the Plant: 'Methi'

Occurrence and Distribution: *Trigonella foenum-graceum* commonly cultivated as a crop around Kanpur.

Habit and Habitat: An aromatic approximately 30-60 cm. long annual herb.

Stem: An erect herbaceous, green cylindrical stem.

Leaves: Leaves are trifoliate, pinnately compound, leaflets broadly ovate, oblong-oblong, approximately 2.0-2.5 cm. long.

Flowers: Flowers are triangular, racemose, complete, bisexual, bracteate, perigynous, axillary. Calyx gamosepalous, valvate aestivation. Corolla papilionaceous, standard aestivation and white or yellowish white in colour.

Fruits: Legumes (Pods), pods thin jointed, turgid, approximately 3-15 cm. long, Seeds 10-20 oblong and greenish-brown.

*Fruiting season during March.*

**Medicinal Uses of the Plant:**

Mucilaginous seeds of the *Trigonella foenum-graceum* are used in dysentery, diarrhoea, anorexia, cough and in hepatic disorders. Seed powder is also very useful in anaemia and in diabetes. Green leaves are useful in external swellings, burn and used as anti pyretic.

**Method of Propagation:**

*Trigonella foenum-graceum* propagated by the seeds in the month of September-October and germination takes place in the month of March-April.
**Vigna mungo** (L.) Hepper.

**Taxonomical Description:**
- **Name of the Family:** Papilionoideae
- **Botanical name of the Plant:** *Vigna mungo* (L.) Hepper.
- **Common name of the Plant:** 'Urd'
- **Occurrence and Distribution:** *Vigna mungo* commonly cultivated as a pulse crop around Kanpur.

**Habit and Habitat:** An erect pubescent approximately 35-85 cm. long, twinning herb.

**Stem:** Stem is long, twinning, glabrous and hairy.

**Leaf:** Leaves are trifoliate, leaflets entire, acuminate, ovate to rhombic-ovate, approximately 5-10 cm. long.

**Flower:** Flowers are yellow coloured, complete, small, borne in short but later elongating peduncles. Calyx sepals gamosepalous, valvate aestivation. Corolla papilionaceous, standard aestivation, yellow coloured.

**Fruits:** Legumes (Pods), pods erect or spreading, cylindrical, provided with a very short hooked beak and long hairs. Seeds 1-4, oblong with square ends.

**Fruiting season from November to December.**

**Medicinal Uses of the Plant:**

Seeds of *Vigna mungo* are cooling, astringent with diuretic properties. Seeds are very beneficial in rheumatism, dropsy, nervous and hepatic diseases. Seeds are also used as a diet in fever. Roots of *Vigna mungo* are narcotic and are used for ostalgia, abscess and inflammations.

**Method of Propagation:**

*Vigna mungo* propagated by seeds in the month of July-August and germination takes place in the month of November -December.
**Withania somnifera** (L.) Dunal

**Taxonomical Description:**

Name of the Family: Solanaceae  
Botanical name of the Plant: *Withania somnifera* (L.) Dunal  
Common name of the Plant: 'Ashwagandha'  
Occurrence and Distribution: *Withania somnifera* commonly found as ground weed in the waste land, cultivated field and open grounds around Kanpur.

Habit and Habitat: An erect under shrub or annual herb.

Stem: Stem is high, long woody, erect, cylindrical and glabrous.

Leaves: Leaves are entire ovate, acute.

Flower: Flowers are axillary, sessile and solitary. Calyx acutely 5-6 toothed. Corolla campanulate lobed, 3 to 6 short greenish. Stamens are attached near the base of the corolla.

Fruits: Fruits are berry, seeds are endospermic.

*Fruiting season from November to February.*

**Medicinal Uses of the Plant:**

Roots, leaves and seeds of *Withania somnifera* are commonly used as medicinal purposes. Fruits and seeds are useful in the urinal problem. Bitter leaves are very useful in the painful swellings and ulcers. Tuberous and roots are used as a nervous tonic to improve the memory and also beneficial in cough, dropsy, leucorrhoea and menstrual troubles, impotency or in seminal disability. *Withania somnifera* is very useful medicinal plant due to its various medicinal properties.

**Method of Propagation:**

*Withania somnifera* commonly propagated by seeds.
Figures of Herb species

Fig. 4.1:1 *Abelmoschus esculentus*

Fig. 4.1:2 *Allium sativum*

Fig. 4.1:3 *Anethum graveolens*

Fig. 4.1:4 *Arachis hypogaea*

Fig. 4.1:5 *Brassica compestis*

Fig. 4.1:6 *Cannabis sativa*
Fig. 4.1:7 *Cassia tora*

Fig. 4.1:8 *Capsicum annuum*

Fig. 4.1:9 *Catharanthus roseus*

Fig. 4.1:10 *Cicer arietinum*

Fig. 4.1:11 *Coriandrum sativum*
Fig. 4.1:12 Crotalaria juncea

Fig. 4.1:13 Curcuma amada

Fig. 4.1:14 Daucus carota

Fig. 4.1:15 Datura stramonium

Fig. 4.1:16 Foeniculum vulgare

Fig. 4.1:17 Lathyrus sativus
Fig. 4.1:18 Linum usitatissimum

Fig. 4.1:19 Mucuna pruriens

Fig. 4.1:20 Mimosa pudica

Fig. 4.1:21 Ocimum sanctum

Fig. 4.1:22 Papaver somniferum

Fig. 4.1:23 Pisum sativum
Fig. 4.1:24 *Raphanus sativus*

Fig. 4.1:25 *Solanum melongena*

Fig. 4.1:26 *Solanum nigrum*

Fig. 4.1:27 *Solanum surrentense*

Fig. 4.1:28 *Solanum tuberosum*

Fig. 4.1:29 *Trapa natans*
Figures of Herb species

Fig. 4.1:30 Tribulus lanuginosus

Fig. 4.1:31 Trigonella foenum-graecum

Fig. 4.1:32 Vigna mungo

Fig. 4.1:33 Withania somnifera
Taxonomy, Propagation methods and Medicinal uses of selected medicinal shrub species.
Cajanus cajan (L.) Millsp.

**Taxonomical Description:**

Name of the Family: Papilonoideae

Botanical name of the Plant: Cajanus cajan (L.) Millsp.

Common name of the Plant: 'Arhar'

Occurrence and Distribution: Cajanus cajan commonly cultivated as a crop around Kanpur.

Habit and Habitat: An annual shrub or perennial shrub.

Stem: An erect, cylindrical, 1.0-2.5 meter long, well branched stem.

Leaves: Leaves are green, grey coloured, trifolialate, compound, acute.

Flowers: Flowers are yellow complete, short peduncled, actinomorphic. Calyx gamopetalous, tubular, valvate aestivation. Corolla polypetalous, valvate tubular aestivation.

Fruits: Fruits are compressed bristly, lomentum with separately jones. Fruit pod has 3-5 seeds. Seeds are dicotyledons.

**Fruiting season from November to March.**

**Medicinal Uses of the Plant:**

Leaf juices of Cajanus cajan are used commonly in the treatment of jaundice. The leaves are astringent, sweet, diuretic, laxative, cooling, anti-inflammatory and andodyne and are useful in oral ulcers, odontalgia, gingivitis, strangury and inflammations.

The seeds are acrid, sweet, cooling, anthelmintic, resolvent, pectoral, constipating and expectorant. Seeds are highly rich with protein sources. The leaves and seeds when applied as a poultice over the breast may induce lactation.

**Method of Propagation:**

Cajanus cajan cultivated by seeds as a main source of pulse crop.
**Callicarpa nudiflora** Hook. & A.

**Taxonomical Description:**

- **Name of the Family:** Verbenaceae
- **Botanical name of the Plant:** *Callicarpa nudiflora* Hook. & A.
- **Common name of the Plant:** 'Daya'
- **Occurrence and Distribution:** *Callicarpa nudiflora* commonly found in waste places, roadsides and in gardens around Kanpur.

**Habit and Habitat:** A perennial shrub.

**Stem:** An erect, long, branched, cylindrical, solid, herbaceous but woody.

**Leaves:** Leaves are simple, ramal and cauline, opposite decussate, exstipulate, petiolate, ovate, crenate or serrate and 10-20 cm. long.

**Flowers:** Flowers are small, pale-purple in colour, borne in axillary cymes. Calyx sepals 5, gamosepalous, valvate, green. Corolla petals 5, gamopetalous, imbricate or quincuncial, purple.

**Fruits:** Globose, pyrenes usually 4.

**Fruiting season from July to September.**

**Medicinal Uses of the Plant:**

Leaves of the plant *Callicarpa nudiflora* are very beneficial in rheumatic joints. Root oil is aromatic and useful in stomach problems. The flowers and fruits are bitter, sweet, astringent, acrid, cooling, andodyne, deodorant, digestive, constipating, depurative, styptic, alexeteric and febrifirge.

**Method of Propagation:**

*Callicarpa nudiflora* propagated by seeds and also by vegetative method.
**Calotropis procera (Ait.) R. Br.**

**Taxonomical Description:**

Name of the Family: Asclepiadaceae  
Botanical name of the Plant: *Calotropis procera* (Ait.) R. Br.  
Common name of the Plant: ‘Akada’  
Occurrence and Distribution: *Calotropis procera* commonly found in waste places and road sides around Kanpur.

Habit and Habitat: A shrubby weed.

Stem: An erect, branched, cylindrical, solid, herbaceous, but soft and woody lower portion, covered with white soft wooly tomentum, contains milky latex.

Leaves: Leaves are simple, ramal and cauline, opposite decussate, exstipulate, sessile or subsessile, ovate to oblong, base auriculate, entire, acute, under surface covered with wooly tomentum, contains milky latex, unicostate reticulate.

Flowers: Flowers are purplish red to white, bracteate, bracteoles 2, pedicillate, complete, hermaphrodite, actinomorphic, pentameric, hypogynous, large, smell very strong. Calyx sepals 5, polysepalous, slightly fused at the based, quincunical, greenish white. Corolla petals 5, gamopetalous, campanulate, valvate sometimes twisted, pink or whitish with purplish spots.

Fruits: Follicles, 10-14 cm. long. Seeds numerous, ovoid.

*Fruiting season from February to September.*

**Medicinal Uses of the Plant:**

Flowers of the plant *Calotropis procera* are digestive, stomachic and tonic, very beneficial in anorexia, asthma, cold and cough. Roasted leaves applied to painful joints or swellings, eczima, skin eruptions, toothache, ulcers and wounds. Latex is irritant and purgative used externally in uterine contractions. Root bark is antidysenteric, antispasmodic, emetic, expectorant and useful in piles, paste of root bark is useful in elephantiasis and hydrocele.

**Method of Propagation:**

*Calotropis procera* commonly propagated by seeds.
**Cassia occidentalis L.**

**Taxonomical Description:**

Name of the Family: Caesalpinioideae  
Botanical name of the Plant: *Cassia occidentalis* L.  
Common name of the Plant: 'Kasondi'  
Occurrence and Distribution: *Cassia occidentalis* commonly found as ground weed in the waste land or as a some part of heages and in open grounds around Kanpur.

Habit and Habitat: An erect under shrub or shrub.

Stem: Cylindrical, young stem is green due to presence of chlorophyll, old stem is whitish brown in colour.

Leaves: Leaves are paripinnate, sessile and small with a foetid smell.

Flowers: Flowers are paplionaceous, yellow with reddish tinge.

Fruits: Fruits are legume, each legume have 25-30 seeds.  
*Fruiting season almost throughout the year mainly from July to November.*

**Medicinal Uses of the Plant:**

Roots of *Cassia occidentalis* are used as antiperiodic and in urinary problems also. The leaves are laxative, antiperiodic and depurative, and are useful in skin diseases, leprosy, ulcers and intermittent levers. The flowers are bitter, acrid, cooling, emollient, expectorant and demulcent and are useful dry cough and bronchitis.

The fruits are antipyretic, abortifacient, diueretic, ophthalmic and are useful in general debility.

**Method of Propagation:**

*Cassia occidentalis* commonly propagated by seeds.
**Carissa carandas L.**

**Taxonomical Description:**

Name of the Family: Apocynaceae

Botanical name of the Plant: *Carissa carandas* L.

Common name of the Plant: 'Karaunda'

Occurrence and Distribution: *Carissa carandas* commonly found in gardens and in some agricultural areas around Kanpur.

Habit and Habitat: A large evergreen shrub.

Stem: Stem is short, herbaceous, erect, branched, cylindrical, solid, green with milky latex.

Leaves: Leaves are coriaceous, glabrous and shining on both surfaces, elliptic-ovate or obovate, sometimes elliptic-oblong, obtuse or mucronate.

Flowers: Flowers are white or pale pink, bracteate, bracteolate or ebracteolate, pedicellate, complete, hermaphrodite, actinomorphic, pentameric, hypogynous.

Fruits: Fruits are ovoid or globose berries, first red then black, 4-8 seeded.

*Fruiting season from June to July.*

**Medicinal Uses of the Plant:**

Unripe fruits of the *Carissa carandas* are nutritive and demulcent. Leaves are useful in fever while roots are considered as antihelmintic, bitter and purgative, useful in stomach pains. Roots are also useful externally in skin diseases such as scabies.

**Method of Propagation:**

*Carissa carandas* commonly propagated by vegetative method.
Citrus aurantifolia (Christm.) Swingle

Taxonomical Description:
Name of the Family: Rutaceae
Botanical name of the Plant: Citrus aurantifolia (Christm.) Swingle
Common name of the Plant: 'Kaghzinimbu'
Occurrence and Distribution: Citrus aurantifolia commonly found in agricultural areas, farmhouses, lawns and in gardens around Kanpur.

Habit and Habitat: A thorny shrub or small bushy tree.

Stem: Stem is woody, erect, branched, cylindrical, solid, green with straight, strong, axillary spines.

Leaves: Leaves are coriaceous, persistent with winged petioles, leaflets elliptic-oblong or ovate-lanceolate, acute or obtuse.

Flowers: Flowers are small, white or pinkish in colour, 5-10 in a raceme.

Fruits: Fruits are globular, ovoid or oblong, often mamillate at the apex, rind thin, tightly attached, green or spotted with yellow when ripe, pulp yellow-green, acidic and aromatic.

Fruiting season from May to June.

Medicinal Uses of the Plant:
Fruits of the Citrus aurantifolia are antiscorbutic, antiseptic, appetizing, astringent, digestive and stomachic, also beneficial for liver disorders and in vomiting. Juice is commonly used as a refrigerant drink in allaying thirst and burning sensation. Headaches are treated with tea made from the leaves or the bark of the plant. The bark is used to treat sunstroke. The bark or leaves are boiled and taken to treat urinary tract infections.

Method of Propagation:
Citrus aurantifolia commonly propagated by seeds and also by vegetative method.
**Clerodendrum indicum** (L.) O. Kuntze

**Taxonomical Description:**

Name of the Family: Verbenaceae

Botanical name of the Plant: *Clerodendrum indicum* (L.) O. Kuntze

Common name of the Plant: 'Bharangi'

Occurrence and Distribution: *Clerodendrum indicum* commonly found in waste places, hedges and road sides around Kanpur.

Habit and Habitat: A shrub about 1.5-3 meter high.

Stem: Stem is herbaceous but woody below, erect, branched, solid and green.

Leaves: Leaves are ramal and cauline, simple, 3-4 nate or opposite, narrowly lanceolate.

Flowers: Flowers are borne in terminal, elongate panicle. Bracts linear or linear-lanceolate. Calyx campanulate, cleft half way into 5 ovate segments. Corolla glabrous, white.

Fruits: Fruits are drupes, blue seated on the reddish accrescent. Seeds oblong.

_Fruiting season from May to October._

**Medicinal Uses of the Plant:**

Leaves of the *Clerodendrum indicum* are vermifuge, bitter tonic and leaf juice mixed with butter fat applied externally to herpetic eruptions and pemphigus. The roots are bitter, acrid, thermogenic, anti-inflammatory, digestive, carminative, stomachic, anthelmintic, depurative, expectorant, sudorific, stimulant and febrifuge.

**Method of Propagation:**

*Clerodendrum indicum* commonly propagated by seeds and also by vegetative method.
Clerodendrum viscosum Vent.

Taxonomical Description:
Name of the Family: Verbenaceae
Botanical name of the Plant: Clerodendrum viscosum Vent.
Common name of the Plant: 'Bhant'
Occurrence and Distribution: Clerodendrum viscosum commonly found in waste places, hedges and road sides around Kanpur.

Habit and Habitat: A shrub about 1.-3 meter high.

Stem: Stem is herbaceous often gregarious, branched and underside of leaves soft tomentose.

Leaves: Leaves are ovate-cordate, acuminate, entire or serrulate.

Flowers: Flowers are white, tinged with red, borne in terminal trichotomous panicles. Corolla tube exceeding the glandular calyx-lobes.

Fruits: Fruits are globose drupes, borne within the enlarged-pinkish or reddish calyx, black when ripe. Seeds oblong.

Fruiting season almost through out the year but chiefly from August to December.

Medicinal Uses of the Plant:
Leaves of the Clerodendrum viscosum are vermifuge, bitter tonic and antiperiodic. Leaf juice is laxative, antihelmintic and useful in malarial fever. Leaves and roots of the plant commonly applied externally for tumours and in skin diseases. Paste of roots is useful in colic disorders with butter milk.

Method of Propagation:
Clerodendrum viscosum commonly propagated by seeds and also by vegetative method.
**Embelia ribes Burm. f.**

**Taxonomical Description:**
- **Name of the Family:** Myrsinaceae
- **Botanical name of the Plant:** *Embelia ribes* Burm. f.
- **Common name of the Plant:** 'Baberang'
- **Occurrence and Distribution:** *Embelia ribes* commonly found in agricultural areas around Kanpur.

**Habit and Habitat:** A large scandent shrub.

**Stem:** Stem is herbaceous, erect, branched, cylindrical, solid and green. **Leaves:** Leaves are simple, elliptic-oblong, coriaceous narrowed at both ends, entire, shining above, paler beneath, glabrous, petiole often margined or glandular.

**Flowers:** Flowers are polygamous, greenish-yellow in colour, borne in panicles, grey-pubescent, pedicels longer than the flower and fruits. Calyx-lobes acute. Petals elliptic, acute. Stamens on short filaments.

**Fruits:** Berries, succulent, wrinkled when dry, black. Seeds solitary, globose, aromatic and somewhat pungent. **Fruiting season from October to December.**

**Medicinal Uses of the Plant:**

Fruits and dried seeds of the *Embelia ribes* are alterative, antidiarrhoeal, antidysenteric, antihaemorrhagic, antihelmintic and used as a astringent, carminative and stimulant in combination with Iron for cure of Anaemia and Jaundice. Pulp of the *Embelia ribes* is purgative while laxative and diuretic juice of the plant shows cooling effect.

Young leaves in combination with ginger used as a gargle for aphthnane and indolent ulcers in the mouth as well as sore throat.

Root bark paste of the *Embelia ribes* are commonly applied to chest in pneumonia, powder is a good remedy for toothache. Infusion of root is beneficial in cough and diarrhoea.

**Method of Propagation:**

*Embelia ribes* commonly propagated by seeds and also by vegetative method.
Shrub species

_Gossypium herbaceum_ L.

**Taxonomical Description:**

Name of the Family: Malvaceae

Botanical name of the Plant: _Gossypium herbaceum_ L.

Common name of the Plant: 'Rui'

Occurrence and Distribution: _Gossypium herbaceum_ commonly cultivated in the fields in some parts of Kanpur.

Habit and Habitat: A small annual or perennial, approximately 50 cm to 2.44 meter long shrub.

Stem: Stem is shrubby, branched, cylindrical, solid, glabrous, green and white brown in colour.

Leaves: Leaves are simple, ramal and cauline, stipulate, alternate and flat with 3-7 lobes, lobes ovate rounded, slightly constricted at base. Young leaves sparsely hairy.

Flowers: Flowers are yellow with purple center, rarely white, medium sized, bisexual and actinomorphic. Calyx sepals 5, gamosepalous, valvate aestivation. Corolla petals 5, polypetalous, yellow, twisted aestivation.

Fruits: 3-5 valved capsule, Capsules beaked with smooth surface and very few oil-glands, rounded, opening slightly when ripe. Seeds generally with two coats of hairs, lint hairs grey, red-brown or white.

_Fruiting season almost through out the year._

**Medicinal Uses of the Plant:**

Seeds of the plant _Gossypium herbaceum_ are demulcent, mild laxative, galactagogue, abortifacient and useful in headache. Leaf juices are beneficial in dysentery, fever and in diarrhoea. Root is diuretic and commonly paste of the root used in leucorrhoea. Root bark is emmenagogue and galactagogue.

**Method of Propagation:**

_Gossypium herbaceum_ propagated by seeds in the rainy season.
Hibiscus rosa-sinensis L.

Taxonomical Description:

Name of the Family: Malvaceae

Botanical name of the Plant: Hibiscus rosa-sinensis L.

Common name of the Plant: 'Gurhal'

Occurrence and Distribution: Hibiscus rosa-sinensis commonly found in the gardens around Kanpur.

Habit and Habitat: An ornamental evergreen shrub.

Stem: Stem is woody and solid but herbaceous at upper portion, aerial, erect, cylindrical, branched, solid and glabrous.

Leaves: Leaves are ramal and cauline, stipulate, petiolate, simple, alternate, ovate, serrate, acute, glabrous, bright green.

Flowers: Flowers are red or variously coloured, ebracteate, pedicellate, complete, hermaphrodite, actinomorphic, pentamerous, hypogynous, cyclic and large approximately 10-15 cm. in diameter.

Fruits: 5-valved, loculicidal capsule. Seed small, endospermic.

Flowering season almost throughout the year.

Medicinal Uses of the Plant:

Flowers of the plant Hibiscus rosa-sinensis are refrigerant, emollient and emmenagogue. Fusion of petals is a refrigerant drink in fever and also given in cystitis and other genito-urinary troubles. Buds are used in seminal weakness. Leaves are emollient and aperient while juice of leaves is beneficial in gonorrhoea and also used in blackening of hairs. Roots of the Hibiscus rosa-sinensis shows anti-cough properties.

Method of Propagation:

Commonly Hibiscus rosa-sinensis commonly propagated by vegetative methods but propagation may takes place by seeds also.
Ichnocarpus frutescens (L.) R. Br.

Taxonomical Description:

Name of the Family: Apocynaceae
Botanical name of the Plant: Ichnocarpus frutescens (L.) R.Br.
Common name of the Plant: 'Kalidudhi'
Occurrence and Distribution: Ichnocarpus frutescens commonly found in roadsides of village area around Kanpur.

Habit and Habitat: A climbing shrub.

Stem: Stem is branched, climbing and rusty in colour.

Leaves: Leaves are opposite, variable, elliptic-oblong, beneath glabrous.

Flowers: Flowers are purple, stem born, long terminal, axillary and cymose.

Fruits: Fruits are slender cylindrical follicles. Seeds are white.

Fruiting season from September to April.

Medicinal Uses of the Plant:

Leaves and stem of the Ichnocarpus frutescens are used in fever, dysentery, cough, bleeding gums and in skin eruption. The roots are sweet, refrigerant, febrifuge, aphrodisiac, alterant, diaphoretic, diuretic, demulcent and tonic. Some physicians used Ichnocarpus frutescens plant in the abatement of anorexia, leucorrhoea, seminal weakness and diabetes.

Method of Propagation:

Ichnocarpus frutescens propagated by seeds through wind in the surroundings of the roadside of the wasteland around Kanpur. Propagation may also take place by vegetative method.
Jasminum arborescens Roxb.

Taxonomical Description:

Name of the Family: Oleaceae
Botanical name of the Plant: Jasminum arborescens Roxb.
Common name of the Plant: 'Chameli'

Occurrence and Distribution: Jasminum arborescens commonly found in agricultural areas and also in garden around Kanpur.

Habit and Habitat: A large shrub or scrubby tree, more or less pubescent.

Stem: Stem is herbaceous, erect, branched, cylindrical, solid and green.
Leaves: Leaves are opposite, ovate from a broadly rounded, rarely cordate base, acuminate, soft-tomentose on both sides when young.

Flowers: Flowers are white, fragrant, borne in lax terminal trichotomous compound cymes. Calyx lobes 5 or 6, linear, as long as calyx-tube or twice its length but always shorter than corolla tube, corolla-lobes 10 or 12, inner acute or cuspidate.

Fruits: Fruits are berries 1 or 2, ovoid or oblong, often oblique.

Fruiting season: from April to July.

Medicinal Uses of the Plant:

Leaves of the Jasminum arborescens are slightly bitter in taste used as a tonic and in stomach pains. Leaves are also in obstruction of the bronchial tubes, menstrual disorders, cough and general debility. Leaf juice is used in combination with pepper and garlic as an expectorant while fruits are commonly used as a tonic.

Method of Propagation:

Jasminum arborescens commonly propagated vegetative method.
**Lawsonia inermis** L.

**Taxonomical Description:**

**Name of the Family:** Lythraceae  
**Botanical name of the Plant:** *Lawsonia inermis* L.  
**Common name of the Plant:** ‘Mehendi’  
**Occurrence and Distribution:** *Lawsonia inermis* commonly found as a hedge plant in gardens, lawns and in farhouses around Kanpur.

**Habit and Habitat:** A glabrous shrub.

**Stem:** Stem is herbaceous, aerial, erect, cylindrical, much branched with angular branchlets, sometimes spinescent.

**Leaves:** Leaves are coriaceous, elliptic or ovate-elliptic from a cuneate base.

**Flowers:** Flowers are greenish-yellow, cream coloured or white, very fragrant, borne in terminal paniculate cymes.

**Fruits:** Fruits are depressed capsules, globose, irregularly dehiscent with numerous angular seeds.

**Fruiting season from April to July.**

**Medicinal Uses of the Plant:**

Whole plant of the *Lawsonia inermis* is very useful in headache and in muscle pain also. Seeds are effective in leucorrhoea, menorrhagia and in vaginal disorders. Flowers are refrigerant and leaves are commonly useful in leucorrhoea, menorrhagia, spermatic disorders, in wounds and ulcers. Root bark of the *Lawsonia inermis* is alterative and sedative and infusion commonly used in liver, spleen disorders, jaundice and in skin diseases.

**Method of Propagation:**

*Lawsonia inermis* commonly propagated by seeds and also by vegetative method.
Nerium indicum Mill.

**Taxonomical Description:**

Name of the Family: Apocynaceae

Botanical name of the Plant: *Nerium indicum* Mill.

Common name of the Plant: 'Kaner'

Occurrence and Distribution: *Nerium indicum* commonly cultivated as ornamental shrub in gardens around Kanpur.

Habit and Habitat: An evergreen perennial shrub.

Stem: An erect well branched, cylindrical, solid, lower portion woody but upper one is herbaceous, green, lower portion is covered with white grey bark, white latex is present.

Leaves: Leaves are simple, ramal and cauline, alternate or in whorls of 3, exstipulate, subsessile or petiolate, linear to lanceolate, thickly coriaceous, entire, acute, dark green, mid rib well developed with many parallel lateral veins.

Flowers: Flowers are white, pink or red in colour, ebracteate, pedicillate, complete, hermaphrodite, actinomorphic, pentamerous, hypogynous, cyclic. Calyx sepals 5, gamosepalous, campanulate, quincuncial. Corolla petals 5, gamopetalous, twisted, white, pink or red.

Fruits: Cylindric, straight, hard follicles. Seeds many, hairy and endospermic.

Fruiting season from April to June.

**Medicinal Uses of the Plant:**

All parts of the plant *Nerium indicum* are applied externally. Leaves are used as an inflammatory agent, juices of leaves are commonly applied in the syphilitic ulcers. Paste of leaves and oil of root bark used in the ring worm and other skin diseases. Roots are bitter, acrid, astringent, anthelmintic, thermogenic, aphrodisiac, stomachic, febrifuge and diuretic.

**Method of Propagation:**

*Nerium indicum* propagated by vegetative methods.
**Nyctanthes arbor tritis** L.

**Taxonomical Description:**

Name of the Family: Oleaceae

Botanical name of the Plant: *Nyctanthes arbor tritis* L.

Common Name of the Plant: 'Harsingar'

Occurrence and Distribution: *Nyctanthes arbor tritis* commonly found as an ornamental plant in gardens, lawns and in farmhouses around Kanpur.

Habit and Habitat: A large shrub or small tree.

Stem: Stem is erect, woody, herbaceous, aromatic and green in colour.

Leaves: Leaves are opposite, ovate, entire or with a few large, dentate, acute, base rounded or cuneate.

Flowers: Flowers are small, sessile, bracteate heads disposed in terminal, trichotomous cymes, sweet scented. Calyx ovoid-cylindric, subtruncate. Corolla salver-shaped, tube cylindric, orange, lobes 4-8, imbricated in bud, patent and white in colour.

Fruits: Fruits are orbicular compressed capsule. Seeds are erect, orbicular and flattened.

**Fruiting season from August to December.**

**Medicinal Uses of the Plant:**

Plant of the *Nyctanthes arbor tritis* is beneficial in dysentery, menorrhagia, sores and ulcers. Paste of seeds are used in the treatment of dandruff. Leaves are used as an astringent, antirheumatic, expectorant and laxative. Leaf juice is anthelmintic, diaphoretic, diuretic and mild bitter tonic. Decoction of leaves used as a specific remedy for sciatica.

**Method of Propagation:**

*Nyctanthes arbor tritis* is generally propagated by seeds and also by vegetative method.
Opuntia dillenii Haw.

Taxonomical Description:

Name of the Family: Cactaceae
Botanical name of the Plant: Opuntia dillenii Haw.
Common Name of the Plant: 'Nagphana'
Occurrence and Distribution: Opuntia dillenii commonly found in gardens, farmhouses and in waste places around Kanpur.

Habit and Habitat: An erect shrub approximately 2 meters in height.

Stem: Stem is simple, soft, branched and erect with broadly ovate dull bluish green joints, bearing 4-6 pale yellow or light horn coloured spines on each areolae. Spines generally more or less curved, the largest very stout and approximately 2-3 cm. in length.

Leaves: Leaves are very few, pinnatisect or pinnate, coarsely toothed.

Flowers: Flowers are solitary, bisexual, yellow, tinged with orange at the base.

Fruits: Fruits are pyriform, truncate, depressed at the apex, deep reddish purple when ripe.

Fruiting season from June to August.

Medicinal Uses of the Plant:

Nutritious fruit of the Opuntia dillenii is a remedy for whooping cough, spasmodic cough and very useful in gonorrhoea. Milky juice is purgative. Paste of the leaves is beneficial in inflammatory conditions while leaf juice is useful in eyes in opthalmia. The flowers are also taken to treat an enlarged prostate gland.

Method of Propagation:

Opuntia dillenii generally propagated by vegetative method around the Kanpur.
**Plumbago zeylanica L.**

**Taxonomical Description:**

Name of the Family: Myrsinaceae

Botanical name of the Plant: *Plumbago zeylanica* L.

Common name of the Plant: 'Chitraka'

Occurrence and Distribution: *Plumbago zeylanica* commonly found in agricultural areas and also in gardens around Kanpur.

Habit and Habitat: A sub-scandent, perennial shrub.

Stem: Stem is herbaceous, erect, branched, cylindrical, solid and green.

Leaves: Leaves are alternate, ovate, narrowed into the petiole.

Flowers: Flowers are borne in spikes, rachis of the spike pubescent or glandular. Corolla white, tube long and slender. Base of the style glabrous.

Fruits: Fruits are oblong and pointed capsules, enclosed by persistent viscid calyx.

*Fruiting season from October to December.*

**Medicinal Uses of the Plant:**

Root bark tincture of the *Plumbago zeylanica* is antiperiodic and sudorific, milky juice applied with benefit in scabies and ulcers. Roots are abortifacient, antidiarrhoeal, digestive and vesicant, useful in anasarca, intermitted fevers and in skin diseases. Root paste is useful in open abscesses, in combination with other ingredients prescribed for dyspepsia, epilepsy and in hysteria. In Indian herbal medicine, the leaves are used to treat infections and digestive problems such as dysentery.

**Method of Propagation:**

Commonly *Plumbago zeylanica* propagated by seeds and also by vegetative method.
Punica granatum L.

**Taxonomical Description:**

Name of the Family: Punicaceae
Botanical name of the Plant: Punica granatum L.
Common name of the Plant: 'Anar'
Occurrence and Distribution: Punica granatum commonly found in gardens, lawns and in farmhouses around Kanpur.

Habit and Habitat: A shrub or small deciduous, glabrous tree.

Stem: Stem is herbaceous, aerial, erect, cylindrical, pubescent, branched often with spinescent branchlets.

Leaves: Leaves are opposite or subopposite, often fascicled on short petioles, oblong or obovate.

Flowers: Flowers are terminal or axillary, solitary, large, showy, scarlet or orange-red, calyx coriaceous, persistent, prolonged above the ovary, ovary inferior.

Fruits: Fruits are large globose, crowned by the somewhat tubular limb of the calyx, indehiscent, with a coriaceous rind, pulp red and juicy, sometimes white. Seeds are angular and testa coriaceous.

**Fruiting season from June to August.**

**Medicinal Uses of the Plant:**

Fruits of the *Punica granatum* are cooling and refrigerant, decoction of the rind is beneficial in chronic diarrhoea and dysentery. Fruit, pulp and seeds are stomachic while flower buds are useful in diarrhoea and dysentery. Stem and root bark is anthelmintic, especially against tapeworm, antidysenteric and astringent. Paste of green leaves is useful in eye diseases especially in conjunctivitis.

**Method of Propagation:**

*Punica granatum* commonly propagated by seeds and also by vegetative method.
**Rauvolfia serpentina** (L.) Benth. Ex Kurz

**Taxonomical Description:**

**Name of the Family:** Apocynaceae  
**Botanical name of the Plant:** *Rauvolfia serpentina* (L.) Benth. Ex Kurz  
**Common name of the Plant:** 'Sarpagandha'  
**Occurrence and Distribution:** *Punica granatum* commonly found in waste places and shady forests around Kanpur.

**Habit and Habitat:** A glabrous under shrub.

**Stem:** Stem is erect, cylindrical, branched, solid, purple red with milky latex, pubescent.

**Leaves:** Leaves are simple, exstipulate, in whorls of 3 or 4, rarely opposite, shining green above, pale beneath, elliptic-lanceolate or obovate acute or acuminate.

**Flowers:** Flowers are ebracteate, pedicellate, complete, actinomorphic, bisexual, hypogynous, pentamerous and cyclic. Inflorescence many flowered cymes. Corolla salver shaped, tube cylindrical, white with red tinge, mouth constricted, throat usually hairy within.

**Fruits:** Fruits are obliquely ovoid drupes, purple-black when ripe. Seeds are ovoid.

**Fruiting season from February to May.**

**Medicinal Uses of the Plant:**

The chief use of the *Rauvolfia serpentina* is as a sedative and hypotonic and for reducing blood pressure. Leaf juices are commonly applied to remove corneal opacities. Root decoction is very useful to increase uterine contractions and for expulsion of foetus in difficult cases and also beneficial in intestinal disorders.

**Method of Propagation:**

*Rauvolfia serpentina* commonly propagated by seeds and also by vegetative method.
Ricinus communis L.

**Taxonomical Description:**

**Name of the Family:** Euphorbiaceae  
**Botanical name of the Plant:** Ricinus communis L.  
**Common name of the Plant:** 'Castor Oil or Arand Plant'

**Occurrence and Distribution:** Ricinus communis commonly found throughout Kanpur.

Habit and Habitat: An annual or perennial tall shrub.

**Stem:** Stem is herbaceous but woody below, erect, branched, cylindrical, solid, glabrous, green with presence of latex.

**Leaves:** Leaves are cauline and ramal, simple, alternate, stipulate, petiolate, palmately lobed and veined, lobes 7 to 11, serrate, acute or acuminate, multicostate reticulate with presence of latex.

**Flowers:** Flowers are bracteate or sometimes ebracteate, pedicellate, incomplete, actinomorphic, unisexual, male flowers are staminate while female flowers are pistillate, female flowers are hypogynous.

**Calyx sepals 5,** gamosepalous, valvate aestivation. Corolla absent.

**Fruits:** Schizocarpic capsule or regma.

**Flowering season from July to February.**

**Medicinal Uses of the Plant:**

Seed oil of the *Ricinus communis* is used as purgative. An infusion of the bark is used to treat skin inflammations and rashes. A drink of the juice in water is taken to treat breast tumours and boils.

**Method of Propagation:**

Commonly *Ricinus communis* propagated by seeds and also by vegetative method.
**Rosa damascena** Mill.

**Taxonomical Description:**

- **Name of the Family:** Rosaceae
- **Botanical name of the Plant:** *Rosa damascena* Mill.
- **Common name of the Plant:** ‘Gulab’
- **Occurrence and Distribution:** *Rosa damascena* commonly found in waste places, roadsides and in gardens around Kanpur.

**Habit and Habitat:** A perennial shrub.

**Stem:** An erect, branched, woody but herbaceous at upper portions, prickly, solid, green and aerial stem.

**Leaves:** Leaves are ramal and cauline, alternate, petiolate, stipulate, compound, imparipinnate, leaflets 3-7, stipules adnate.

**Flowers:** Flowers are variously coloured, arranged in a corymb, borne on glandular-hips and prickly pedicles, sweet scented. Calyx sepals 5, gamosepalous, lanceolate, hairy. Corolla petals 5, polypetalous, rosaceous, imbricate showy and fragrant.

**Fruits:** Obovate or ovoid, bristly, pulpy, bright red. Seeds non endospermic.

*Fruits rare in June - July extending over several months.*

**Medicinal Uses of the Plant:**

Flowers of the plant *Rosa damascena* are used as astringent and tonic, rose water derived from the flowers used as a vehicle for medicine. Buds are used for its astringent, cardiotonic, expectorant and laxative properties. The roots are astringent and vulnerary and are useful in intestinal ulcers, rickets, haemorrhages and diarrhoea. The rose water is cooling, fragrant, emollient and ophthalmic and is good for hyperhidrosis, halitosis and ophthalmopathy.

**Method of Propagation:**

*Rosa damascena* propagated by vegetative methods by the part of mature stem usually in the rainy season.
Shrub species

*Sida cordifolia* L.

**Taxonomical Description:**

Name of the Family: Malvaceae  
Botanical name of the Plant: *Sida cordifolia* L.  
Common name of the Plant: ‘Kungyi’  
Occurrence and Distribution: *Sida cordifolia* commonly found in the waste places, roadsides around Kanpur.

Habit and Habitat: A perennial herb or undershrub.

Stem: Stem is erect, branched, cylindrical, woody, solid, glabrous and brown in colour.

Leaves: Leaves are simple, alternate, petiolate, stipulate, cordate, pubescent, entire or serrate, acute, multicostate reticulate.

Flowers: Flowers are small, tawny-yellow or white in colour, bracteate, pedicellate, complete, hermaphrodite, actinomorphic, hypogynous with no epicalyx. Calyx sepals 5, gamosepalous, valvate aestivation. Corolla petals 5, polypetalous, but connate at the base, twisted aestivation.

Fruits: Capsule

*Flowering season from July to February.*

**Medicinal Uses of the Plant:**

In Ayurvedic system *Sida cordifolia* is considered as one of the most important medicinal herbs and finds various applications either alone or in combination.

Plant juice of the *Sida cordifolia* is beneficial in spermatorrhoea. Seeds are aphrodisiac and useful in colic symptoms and in gonorrhoea. Roots are used as astringent, diuretic and tonic also useful in urinary diseases, cystitis, strangury, haematuria, bleeding piles, chronic dysentery, leucorrhoea, gonorrhoea and in asthma as cordiac tonic. The bark of the plant is effective in curing facial paralysis and sciatica.

**Method of Propagation:**

Commonly *Sida cordifolia* propagated by seeds in rainy season.
**Solanum anguivi Lam.**

**Taxonomical Description:**

Name of the Family: Solanaceae

Botanical name of the Plant: *Solanum anguivi* Lam.

Common name of the Plant: 'Barhanta'

Occurrence and Distribution: *Solanum anguivi* commonly found in agricultural areas and also in garden around Kanpur.

Habit and Habitat: A shrub or undershrub.

Stem: Stem is herbaceous, erect, branched, cylindrical, solid and green. Leaves:

Leaves are ovate sinuate or lobed, stellately woolly beneath, nerves prickly.

Flowers: Flowers are blue, borne in lateral many flowered recemes.

Fruits: Fruits are globose berry, much exceeding the triangular-oblong calyx-lobes, yellow when ripe. Seeds discoid, minutely pitted.

*Fruiting season almost throughout the year.*

**Medicinal Uses of the Plant:**

Whole plant with root of the *Solanum anguivi* is carminative and used as a expectorant also beneficial in asthma, dry cough; chronic fever and in painful conditions. Leaves and fruits are rich with digestive and laxative properties and juice of the fruits is beneficial in alopecia. Roots of the plant *Solanum anguivi* are bitter acrid, astringent, thermogenic and considered as a diaphoretic and stimulant, very useful in catarrhal affections, dropsy and toothache.

**Method of Propagation:**

*Solanum anguivi* commonly propagated by seeds.
**Thevetia peruviana** (Pers.) Merr.

**Taxonomical Description:**

Name of the Family: Apocynaceae  
Botanical name of the Plant: *Thevetia peruviana* (Pers.) Merr.  
Common name of the Plant: ‘Pile- Kaner’  
Occurrence and Distribution: *Thevetia peruviana* commonly cultivated as garden plant and found also in roadside around Kanpur.

Habit and Habitat: A perennial shrub.

Stem: An erect well branched, cylindrical, solid, lower portion woody but upper one is herbaceous green or blackish brown with milky latex.

Leaves: Leaves are simple, ramal and cauline, alternate or sub opposite, exstipulate, sessile or subsessile, tapering at both the ends, linear to lanceolate, entire, acute, dark green and shining, unicostate reticulate with milky latex.

Flowers: Flowers are yellow in colour, bracteate, bracteolate, pedicillate, complete, hermaphrodite, actinomorphic, pentameric, hypogynous, large ans fragrant. Calyx sepals 5, polysepalous, imbricate, green. Corolla petals 5, gamopetalous, twisted or imbricate, yellow.

Fruits: Laterally compressed drupe. Seeds are stony and tapered at both ends.

**Fruiting season from March to July but sometimes through out the year.**

**Medicinal Uses of the Plant:**

Seeds of the *Thevetia peruviana* are used as purgative in dropsy and rheumatism. The crushed seeds can be used as an insecticide. Caution is needed because of their high toxicity. Leaves and bark shows antipyretic properties used widely in the fever and roots in the form of plaster applied in the tumour. All parts of the plant including latex are poisonous. The cardiac glycosides obtained from the kernels, bark and flowers are useful for heart diseases.

**Method of Propagation:**

*Thevetia peruviana* propagated by seeds.
Vitex negundo L.

**Taxonomical Description:**

Name of the Family: Verbenaceae

Botanical name of the Plant: Vitex negundo L.

Common name of the Plant: 'Shambhalu'

Occurrence and Distribution: Vitex negundo commonly found in road sides and in forest areas around Kanpur.

Habit and Habitat: A dark green shrub or small tree.

Stem: Stem is herbaceous but woody below, erect, branched, quadrangular, solid, hairy, hairs are very prominent and well developed.

Leaves: Leaves are cauline and ramal, simple, 3-5 foliolate, leaflets lanceolate, entire or crenate, glabrate, dark-green above, pale greenish-tomentose beneath, central leaflets larger.

Flowers: Flowers are small, bluish purple, in lateral cymes, forming an elongated, terminal thyrsus, often compound at the base. Alyx teeth triangular.

Fruits: Drupaceous and black when ripe. Seeds obovate or ob'ong.

*Fruiting season from March to August.*

**Medicinal Uses of the Plant:**

In Ayurvedic system Vitex negundo is considered as one of the most important medicinal shrub and finds various applications in rheumatism.

Plant of the Vitex negundo is used as astringent, cephalic and promotes growth of hair also useful in asthma, bronchitis, consumption, eye diseases, inflammations, leucoderma, spleen enlargement and in painful teething.
Shrub species

Fruits are cephalic and used as nervine tonic. Seeds shows cooling properties and also useful in cutaneous diseases and in leprosy. Leaves of the *Vitex negundo* are powerful discutient, alterative, antiparasitic, antiinflammatory, antirheumatic and rheumatic patients are also benefited by bathing in water boiled with the leaves. Root bark tincture is irritable bladder and useful in rheumatism. Roots are anodyne, diuretic, expectorant, febrifuge, anthelmintic, tonic, and beneficial in boils, colic, dyspepsia, leprosy.

**Method of Propagation:**

Commonly *Vitex negundo* propagated by seeds and also by vegetative method.
**Woodfordia fruticosa (L.) Kurz**

**Taxonomical Description:**

- **Name of the Family:** Lythraceae
- **Botanical name of the Plant:** *Woodfordia fruticosa* (L.) Kurz
- **Common name of the Plant:** ‘Dhai’
- **Occurrence and Distribution:** *Woodfordia fruticosa* occasionally found in gardens, lawns and in farmhouses around Kanpur.

**Habit and Habitat:** A bushy shrub.

**Stem:** Stem is herbaceous, aerial, erect, cylindrical, pubescent with spreading branches.

**Leaves:** Leaves are opposite or subopposite, grey-pubescent beneath, ovate or linear-lanceolate with numerous small black glands.

**Flowers:** Flowers are scarlet, showy, tubular on slender pedicles dilated above, borne in axillary clusters.

**Fruits:** Fruits are ellipsoid capsules, membranous, included in the calyx. Seeds are cuneate-obovate and smooth.

**Fruiting season from April to June.**

**Medicinal Uses of the Plant:**

Dried flowers of the *Woodfordia fruticosa* are commonly used as an astringent, refrigerant, stimulant, depurative, styptic, uterine sedative and also beneficial in dysentery, haemorrhoids, impaired hepatic function, leucorrhoea, menorrhagia haemoptysis and considered as a safe stimulant in pregnancy.

**Method of Propagation:**

*Woodfordia fruticosa* commonly propagated by seeds and also by vegetative method.
Figures of Shrub species

Fig. 4.2:1 Cajanus cajan

Fig. 4.2:2 Callicarpa nudiflora

Fig. 4.2:3 Calotropis procera

Fig. 4.2:4 Cassia occidentalis

Fig. 4.2:5 Carissa carandas

Fig. 4.2:6 Citrus aurantifolia
Figures of Shrub species

Fig. 4.2:7 Clerodendrum indicum

Fig. 4.2:8 Clerodendrum viscosum

Fig. 4.2:9 Embelia ribes

Fig. 4.2:10 Gossypium herbaceum

Fig. 4.2:11 Hibiscus rosa-sinensis

Fig. 4.2:12 Ichnocarpus frutescens
Figures of Shrub species

Fig. 4.2:13 *Jasminum arborescens*

Fig. 4.2:14 *Lawsonia inermis*

Fig. 4.2:15 *Murraya koenigii*

Fig. 4.2:16 *Nerium indicum*

Fig. 4.2:17 *Nyctanthes arbor tritis*

Fig. 4.2:18 *Opuntia dillenii*

Fig. 4.2:19 *Plumbago zeylanica*

Fig. 4.2:20 *Punica granatum*
Figures of Shrub species

Fig. 4.2:27 *Vitex negundo*

Fig. 4.2:28 *Woodfordia fruticosa*
Taxonomy, Propagation methods and Medicinal uses of selected medicinal tree species.
Acacia nilotica Benth.

**Taxonomical Description:**

Name of the Family: Mimosoideae

Botanical name of the Plant: *Acacia nilotica* Benth.

Common name of the Plant: 'Babul'

Occurrence and Distribution: *Acacia nilotica* commonly found in roadsides and in forest areas around Kanpur.

Habit and Habitat: A medium-sized tree.

Stem: Stem is woody but herbaceous at upper portions, aerial, erect, solid and branched with deeply cracked or longitudinally fissured dark brown or black bark, a gum is secreted by the bark called gum arabica.

Leaves: Leaves are ramal and cauline, alternate, stipulate, stipules modified into ½ to 2 inches long straight thorns, petiolate, compound, bipinnate and paripinnate, pinnae 5-7 pairs.

Flowers: Flowers are bracteate, ebracteolate, sessile or subsessile, complete, actinomorphic, hermaphrodite, hypogynous, pentamemorous, small and yellow in colour.

Fruits: Fruits are white pods flat containing 8-12 seeds approximately 8-15 cm. long.

**Fruiting season from September to February.**

**Medicinal Uses of the Plant:**

Pods decoction of the *Acacia nilotica* is beneficial in urogenital diseases. Infusion of tender leaves is used as an astringent and remedy for diarrhoea and dysentery. Bark decoction is used as a gargle in sore throat and toothache while dry powder is commonly useful externally in ulcers. Gum is considered as an astringent and a styptic.

**Method of Propagation:**

*Acacia nilotica* commonly propagated by seeds.
Aegle marmelos Corr. ex Roxb.

Taxonomical Description:

Name of the Family: Rutaceae
Botanical name of the Plant: Aegle marmelos Corr. ex Roxb.
Common name of the Plant: 'Bel'
Occurrence and Distribution: Aegle marmelos commonly found in agricultural areas, farmhouses, road sides, forest areas and in gardens around Kanpur.

Habit and Habitat: A spinous, deciduous, aromatic tree height up to approximately 13 meters.

Stem: Stem is woody, erect, branched, cylindrical, solid, green with straight, strong, axillary spines.

Leaves: Leaves are ramal and cauline, alternate, usually 3-foliolate, sometimes 5-foliolate, leaflets ovate-lanceolate, lateral sessile, terminal long-petioled, acuminate, cuneate to obtuse at base.

Flowers: Flowers are greenish-white in colour, sweet-scented, ebracteate, pedicillate, complete, hermaphrodite, pentamerous, hypogynous and cyclic.

Fruits: Fruits are large approximately 15 cm. in diameter, globose, ovoid or pyriform, 8-15 celled, rind grey or grayish-yellow, woody, pulp orange, sweet. Seeds numerous in aromatic pulp, oblong, compressed, testa woolly and mucilaginous.

Fruiting season from March to April.

Medicinal Uses of the Plant:

Ripe fruits of the Aegle marmelos are alterative, cooling, laxative and nutritive, also useful in habitual constipation, chronic dysentery and dyspepsia. Flowers of the Aegle marmelos are used commonly for its anti diarrhoeal and antiemetic properties. Leaves are expectorant, and febrifuge, fresh ones are useful in dropsy, efficacious in bronchial asthma. Stem and root bark are beneficial in intermittent fever, melancholia and palpitation of heart.

Method of Propagation:

Aegle marmelos commonly propagated by seeds and also by air-layering.
Tree species

*Albizia lebbek* (L.) Benth.

**Taxonomical Description:**

Name of the Family: **Mimosoideae**  
Botanical name of the Plant: *Albizia lebbek* (L.) Benth.  
Common name of the Plant: 'Sirisha'  
Occurrence and Distribution: *Albizia lebbek* commonly found in roadsides and in forest areas around Kanpur.

Habit and Habitat: A deciduous, erect, spreading tree approximately 16-19 meter in height.

Stem: Stem is woody, herbaceous, erect, solid and branched. Bark rough, dark brown to greenish-black with transverse and longitudinal fissures outside and whitish with fine longitudinal striations inside. Leaves: Leaves are ramal and cauline, alternate, stipulate, bipinnate with 8-18 leaflets.

Flowers: Flowers are bracteate, ebracteolate, sessile or subsessile, complete, actinomorphic, hermaphrodite, hypogynous, pentamerous, small and greenish-yellow in colour.

Fruits: Fruits are yellowish-brown pods, strap-shaped with 6-10 seeds.

*Fruiting season from September to February.*

**Medicinal Uses of the Plant:**

Seeds and bark of the *Albizia lebbek* is used as an astringent and a tonic. The seeds are useful in inflammations, skin diseases, leprosy, leucoderma, chronic catarrh, seminal weakness, ophthalmopathy and poisoning. Leaves are useful in the treatment of night blindness. Root bark powder is used to strengthen gums, applied externally as plaster in leprous ulcers. The flowers are useful in chronic cough and bronchitis.

**Method of Propagation:**

*Albizia lebbek* commonly propagated by seeds.
Artocarpus heterophyllus Lam.

Taxonomical Description:

Name of the Family: Moraceae
Botanical name of the Plant: Artocarpus heterophyllus Lam.
Common Name of the Plant: 'Kathal'
Occurrence and Distribution: Artocarpus heterophyllus commonly found and cultivated in village areas around Kanpur.

Habit and Habitat: A large evergreen tree height approximately up to 9-13 meter.

Stem: Stem is hard, woody, cylindrical, straight, covered with slightly rough or smooth bark. Bark is black or green in colour with a milky latex.

Leaves: Leaves are entire thick, glabrous, elliptic to obovate-elliptic, having veins in 8 pairs and green in colour.

Flowers: Flowers are axillary, solitary, cauliflorous, male sessile, female borne on ovoid-ovoid receptacle.

Fruits: Fruits are syncarp, clavate or cylindric and yellow in colour.

Fruiting season from June to September.

Medicinal Uses of the Plant:

Latex of Artocarpus heterophyllus is very useful in glandular swellings and in abscesses. Leaves are useful in skin diseases and decoction of roots is beneficial in diarrhoea. Unripe fruit of Artocarpus heterophyllus is considered as an astringent while ripe one is laxative, demulcent and rich with nutritive properties. The ripe fruits are sweet cooling, oleaginous, laxative, aphrodisiac and tonic. The roots are credited with antidiarrhoeal property. The seeds are sweet, diuretic, aphrodisiac and constipating.

Method of Propagation:

Artocarpus heterophyllus generally propagated by seeds around Kanpur.
Anacardium occidentale L.

Taxonomical Description:

Name of the Family: Anacardiaceae
Botanical name of the Plant: *Anacardium occidentale* L.
Common name of the Plant: 'Kajubadam'
Occurrence and Distribution: *Anacardium occidentale* commonly found in gardens, lawns, in farmhouses and occasionally found in villages around Kanpur.

Habit and Habitat: A small evergreen tree.

Stem: Stem is woody, herbaceous, erect, branched, cylindrical, solid and green.

Leaves: Leaves are simple, alternate, obovate-oblong, glabrous, retuse or rounded at apex, cuneate at base.

Flowers: Flowers are small, yellow with pinkish stripes, both staminate and bisexual flowers borne in terminal panicles.

Fruits: Fruits are kidney-shaped nuts, borne on long pyriform, fleshy receptacle being bright yellow or scarlet in colour, kernel curved, white, covered with a thin reddish-brown testa.

Fruiting season from February to May.

Medicinal Uses of the Plant:

Fruits of the *Anacardium occidentale* are antidiarrhoeal, antiscorbutic, diuretic and also useful in kidney troubles. Fruit juice is considered as a counter irritant. Kernel is demulcent, emollient and nutritious Bark is alterative and astringent also applied externally in leprosy and ulcers. The gum from the bark is recommended in leprosy, ringworm, corns and obstinate ulcers. Leaves are useful in odontalgia and ulitis. Root of the *Anacardium occidentale* is purgative.

Method of Propagation:

*Anacardium occidentale* commonly propagated by seeds.
Azadirachta indica A. Juss.

Taxonomical Description:

Name of the Family: Meliaceae
Botanical name of the Plant: Azadirachta indica A. Juss.
Common name of the Plant: 'Neem'
Occurrence and Distribution: Azadirachta indica commonly found in agricultural areas, farm houses, roadsides and forest areas around Kanpur.

Habit and Habitat: A large tree height up to approximately 18 meters.
Stem: Stem is woody, erect, branched, cylindrical, solid, green with almost a straight trunk.
Leaves: Leaves are ramal and cauline, alternate, pinnate, crowded at the ends of branches, leaflets 5-15, opposite or subopposite or alternate, lanceolate, acuminate, serrate or dentate, glabrous.
Flowers: Flowers are bracteate, bracteolate, pedicillate, complete, white in colour, honey-scented.
Fruits: Fruits are 1-seeded drupes, oblong yellow in colour when ripe. Seeds contains oil. 
Fruiting season commonly June to August.

Medicinal Uses of the Plant:

Fruits of the Azadirachta indica are anthelmintic, antiperiodic, astringent, emollient, purgative and tonic, beneficial in piles and in urinary diseases. Seeds oil possesses antifertility, antifungal, antimicrobial with antiseptic properties. Seed oil is very effective against both gram-positive and gram-negative organisms, useful in chronic skin diseases, leprosy, ulcers, rheumatism and sprains. Flowers are stomachic and tonic while leaves are used its antifungal, antiperiodic, antiseptic and antiviral properties. Carminative and digestive twigs are widely used as tooth-brush for its antipyrrhoeal properties. Stem and root bark are antiemetic, antiperiodic, anthelmintic, hypoglycemic and tonic also useful in anorexia, colic, liver disorders and in malaria.

Method of Propagation:

Azadirachta indica commonly propagated by seeds.
**Bauhinia racemosa** Lam.

**Taxonomical Description:**

Name of the Family: Caesalpinioideae  
Botanical name of the Plant: *Bauhinia racemosa* Lam.  
Common name of the Plant: 'Ashta'  
Occurrence and Distribution: *Bauhinia racemosa* commonly found in gardens, road sides and in farm houses around Kanpur.

Habit and Habitat: A small, crooked, bushy tree.

Stem: Stem is woody, herbaceous, erect, thick, aerial, solid and branched.

Leaves: Leaves are broader than long, rigidly coriaceous approximately 3.8-5.1 cm. long.

Flowers: Flowers are whitish-yellow, short peduncled, in lax, terminal and leaf opposed racemes. Calyx with a short tube. Fertile stamens approximately 10.

Fruits: Fruits are pods, neither beaked nor venulose, indehiscent approximately 2.5 cm. Wide. Seeds 12-20, dark reddish-brown.

*Fruiting season from October to February.*

**Medicinal Uses of the Plant:**

Leaves of the *Bauhinia racemosa* are very effective in Malaria. Bark is considered as an astringent and beneficial in dysentery.

**Method of Propagation:**

*Bauhinia racemosa* commonly propagated by seeds.
Taxonomical Description:

Name of the Family: Caesalpinioideae
Botanical name of the Plant: Bauhinia variegata L.
Common name of the Plant: 'Kachanar'
Occurrence and Distribution: Bauhinia variegata commonly found in gardens, road sides and in farm houses around Kanpur.

Habit and Habitat: A medium sized erect, deciduous tree.

Stem: Stem is woody, herbaceous, erect, thick, aerial, solid and branched with grey bark and longitudinal cracks, light-pink inside. Wood moderately hard, greyish-brown.

Leaves: Leaves are alternate, stipulate, 1-foliolate, 2-lobed, not deeply cleft, rigidly subcoriaceous, deeply cordate.

Flowers: Flowers are variously coloured, sessile or borne in short peduncled corymbs. Calyx tube elongated, limb entire, spathaceous.


Fruiting season from July to October.

Medicinal Uses of the Plant:

Flowers and dried buds of the Bauhinia variegata are anthelmintic and efficacious in diarrhoea, piles and in dysentery. The root and bark are astringent, acrid, cvoling, consitipating, depurative, anthelmintic, vulnerary, anti-inflammatory and styptic. Decoction of root shows carminative properties and used in dyspepsia and flatulence.

Method of Propagation:

Bauhinia variegata commonly propagated by seeds.
**Bombax ceiba** L.

**Taxonomical Description:**

Name of the Family: Bombacaceae  
Botanical name of the Plant: *Bombax ceiba* L.  
Common name of the Plant: 'Semul'  
Occurrence and Distribution: *Bombax ceiba* commonly cultivated in agricultural areas, farm houses and forest areas around Kanpur.

Habit and Habitat: A large deciduous tree.

Stem: Stem is herbaceous, woody, erect, branched, cylindrical, solid, glabrous, green-grey bark, armed with prickles.

Leaves: Leaves are digitately compound and deciduous.

Flowers: Flowers are crimson in colour, axillary or subterminal, solitary or clustered, appearing before the leaves. Stamens many.

Fruits: Fruits are 5-valved capsules, valves woody. Seeds many, globose, pale black in colour.

*Fruiting season from September to March.*

**Medicinal Uses of the Plant:**

Fruits of the *Bombax ceiba* are used as a diuretic, expectorant, invigorating and also useful in urinary calculi, chronic inflammation of bladder and kidney. Seeds are beneficial in catarrhal affections, cystitis and gonorrhoea. Flowers and fruits are used as an astringent, cooling, diuretic, cooling, and as a laxative. Paste of the flowers and fruits are applied commonly externally in cutaneous troubles and also very beneficial in the weakness of genital organs. Leaves are anti-inflammatory and stem-bark is demulcent, emetic, styptic and tonic. Roots of the *Bombax ceiba* are antidysenteric, aphrodisiac and used as a main ingredient for various Ayurvedic formulations prescribed for impotency. The gum is astringent, cooling, stimulant, aphrodisiac, tonic, styptic and demulcent.

**Method of Propagation:**

*Bombax ceiba* commonly propagated by seeds.
**Butea monosperma (Lam.) Taub.**

**Taxonomical Description:**

Name of the Family: Papilioideae  
Botanical name of the Plant: *Butea monosperma* (Lam.) Taub.  
Common name of the Plant: 'Palash'  
Occurrence and Distribution: *Butea monosperma* commonly found in road sides and in forest areas around Kanpur.

Habit and Habitat: A deciduous tree approximately 15-17 meter in height and 1.5-1.8 meter in girth.

Stem: Stem is woody, herbaceous, erect, solid and branched with light brown or bluish-grey bark, yielding a ruby red vitreous gum called butea gum. Wood white or yellowish-brown, often becoming grey or grayish-brown.

Leaves: Leaves are ramal and cauline, alternate, petiolate, 3 foliolate, large, unequal approximately 10.5-20.5 cm. long.

Flowers: Flowers are bracteate, pedicellate, complete, hermaphrodite borne in racemes, brilliant orange-red in colour approximately 3.8-5.1 cm. long. Lower calyx teeth deltoid.

Fruits: Fruits are silvery-white pods, broad, dehiscing by one suture. Seeds flat, elliptic, reddish-grey in colour.  
*Fruiting season from May to June.*

**Medicinal Uses of the Plant:**

Seeds of the *Butea monosperma* are anthelmintic and useful in flatulence and in piles. Flowers are diuretic, depurative, astringent and aphrodisiac. The bark is acrid, bitter, astringent, thermogenic, emollient, aphrodisiac, appetiser, digestive, constipating, anthelmintic and tonic. The leaves are astringent, anti-inflammatory, andodyne and aphrodisiac and are useful in pimples, flatulence, colic, worm infestations and haemorrhoids. Butea gum derived from the bark is used as an astringent and also beneficial in diarrhoea and in dysentery.

**Method of Propagation:**

*Butea monosperma* commonly propagated by seeds and also by vegetative method.
Carica papaya L.

**Taxonomical Description:**

Name of the Family: Caricaceae  
Botanical name of the Plant: *Carica papaya* L.  
Common name of the Plant: 'Papita'  
Occurrence and Distribution: *Carica papaya* commonly found in agricultural areas, gardens and in lawns around Kanpur.

Habit and Habitat: An erect tree approximately 6-7.5 meter in height.

Stem: Stem is herbaceous, erect with spongy trunk and milky sap.

Leaves: Leaves are ramal and cauline, alternate, petiolate, palmipartite, long-petioled, petiole approximately 91 cm. long.

Flowers: Flowers are dioecious or monoecious, fascicled, males laxly panicled and females fascicled.

Fruits: Fruits are cylindrical or spherical, borne near the top of the trunk, closely packed at the base of leaves. Seeds many, grey and black in colour.

Fruiting season commonly throughout the year.

**Medicinal Uses of the Plant:**

Fruits of the *Carica papaya* are bitter, acrid, thermogenic, andodyne, aphrodisiac, laxative, digestive, stomachic, carminative, diuretic and alterative. Latex of green fruit is anthelmintic particularly effective in expulsion of lubricoids, also beneficial in liver enlargement, ringworm infections, skin diseases, psoriasis, urinary calculus and injuries of the urinary tract and diarrhoea. Seeds are vermifuge and anthelmintic. Leaf juice is useful as febrifuge and in cardiac diseases.

**Method of Propagation:**

*Carica papaya* commonly propagated by seeds.
**Cassia fistula** L.

**Taxonomical Description:**

Name of the Family:
Caesalpinioideae

Botanical name of the Plant:
*Cassia fistula* L.

Common name of the Plant:
'Amaltas'

Occurrence and Distribution:
*Cassia fistula* commonly found as an ornamental tree in gardens, roadsides, and in lawns around Kanpur.

Habit and Habitat: A moderate-sized tree approximately 3.7 meter in height and 0.9-1.2 meter in girth.

Stem: Stem is woody, herbaceous at upper portions, aerial, cylindrical, solid and branched with greenish-grey or brick red bark.

Leaves: Leaves are ramal and cauline, stipulate, stipules minute and caduceus, petiole compound, unpinnate and parapinnate, leaf base swollen. Leaflets 8-16, acuminated, ovate-lanceolate.

Flowers: Flowers are bracteate, pedicillate, complete, irregular, zygomorphic, hermaphrodite, pentamerous, hypogynous or slightly perigynous, large, showy and yellow.

Fruits: Fruits are cylindrical pods, pendulous, indehiscent approximately 25-30 cm. long and 1.5-3.0 cm. in diameter. Seeds numerous, small, flat, smooth, yellowish-grey. Seeds in ripe pods entirely surrounded by a black pulp. *Fruiting from May to June.*

**Medicinal Uses of the Plant:**

Pods, seeds, leaves and root-bark of the *Cassia fistula* are laxative and commonly used as a tonic also. The roots are astringent, cooling, purgative, febrifuge and tonic and are useful in skin diseases, tuberculces glands, syphilis and burning sensation. Juice of leaves are beneficial in skin diseases and in leprosy.

**Method of Propagation:**

*Cassia fistula* commonly propagated by seeds.
**Citrus limon** (L.) Burm. f.

**Taxonomical Description:**

Name of the Family: Rutaceae

Botanical name of the Plant: *Citrus limon* (L.) Burm. f.

Common name of the Plant: 'Nimbu'

Occurrence and Distribution: *Citrus limon* commonly found in agricultural areas, farmhouses, and lawns and in gardens around Kanpur.

Habit and Habitat: A straggling, bushy small tree approximately 3-4 meters in height.

Stem: Stem is woody, pubescent, erect, branched, cylindrical, solid, green with straight, strong, axillary spines.

Leaves: Leaves are ramal and cauline, alternate, dark green, ovate, petiole margined or winged.

Flowers: Flowers are small, white or pinkish in colour, sweet-scented, ebracteate, pedicillate, complete, hermaphrodite, pentamerous, hypogynous and cyclic.

Fruits: Fruits are oblong or ovoid, usually with a nipple-shaped extremity, bright yellow, rind thick, pulp acidic, pale yellow.

*Fruiting season from May to June.*

**Medicinal Uses of the Plant:**

Ripe fruits of the *Citrus limon* are alterative, cooling, antiscorbutic, antidysenteric, antidiarrhoeal cardiotonic and rich with nutritive properties, also very beneficial in the treatment of rheumatism, scurvy and gout. Rind of the *Citrus limon* is carminative and very beneficial in spasmodic disorders.

**Method of Propagation:**

*Citrus limon* commonly propagated by seeds and also by vegetative method.
Citrus maxima (Burm.) Merr.

Taxonomical Description:

Name of the Family: Rutaceae
Botanical name of the Plant: Citrus maxima (Burm.) Merr.
Common name of the Plant: ‘Chakotra’
Occurrence and Distribution: Citrus maxima commonly found in agricultural areas, farmhouses, and lawns and in gardens around Kanpur.

Habit and Habitat: A medium-sized bushy tree.

Stem: Stem is woody, pubescent, erect, branched, cylindrical, solid, green with straight, strong, axillary spines.

Leaves: Leaves are ramal and cauline, alternate, dark green, large with broadly winged petiole, ovate-oblong, frequently emarginated pubescent beneath.

Flowers: Flowers are large, white in colour, sweet-scented, ebracteate, pedicillate, complete, hermaphrodite, pentamorous, hypogynous and cyclic.

Fruits: Fruits are globose, oval or broadly pyriform approximately 15-20 cm. in diameter, yellow when ripe, rind thick, pulp white or reddish, sweet or acrid.

Fruiting season from September to November.

Medicinal Uses of the Plant:

Fruits of the Citrus maxima are alterative, cooling, antiscorbutic, cardiotonic and rich with nutritive properties. Grape fruit oil has a sweet, pleasant odour intermediate between orange and lemon. It is largely employed in flavours for soft-drinks, ice-cream, candy, baked goods, gelatins and puddings, chewing gum and toppings. Leaves are very beneficial in spasmodic cough.

Method of Propagation:

Citrus maxima commonly propagated by seeds and also by vegetative method.
**Citrus reticulata** Blanco.

**Taxonomical Description:**

Name of the Family: Rutaceae
Botanical name of the Plant: *Citrus reticulata* Blanco.
Common name of the Plant: ‘Santara’
Occurrence and Distribution: *Citrus reticulata* commonly found in agricultural areas, farm houses, lawns and in gardens around Kanpur.

Habit and Habitat: A moderate sized, bushy, evergreen, glabrous tree.

Stem: Stem is woody, erect, branched, cylindrical, solid, green with straight, strong, axillary spines.

Leaves: Leaves are slender, petiole short, naked or winged, leaflet elliptic or ovate, acute or obtuse.

Flowers: Flowers are white in colour, sweet-scented, ebracteate, pedicillate, complete, hermaphrodite, pentamerous, hypogynous and cyclic.

Fruits: Fruits are sub-globose, flattened on the top, rind loose, thin, easily separable, bright orange or scarlet orange in colour when ripe, pulp juicy, sweet subacid.

**Fruiting season from September to October.**

**Medicinal Uses of the Plant:**

Fruit juice of the *Citrus reticulata* is antiemetic, antiscorbutic, astringent, laxative and stimulating. Dried peels are antidyspeptic, antiscorbutic, astringent, carminative and tonic. External application of a poultice made of heated fresh leaves and a decoction of dried leaves taken by mouth are prescribed for the treatment of colic and mastitis. Flowers of the *Citrus reticulata* are stimulating.

**Method of Propagation:**

*Citrus reticulata* commonly propagated by seeds and also by vegetative method.
**Dalbergia sissoo Roxb.**

**Taxonomical Description:**

Name of the Family: Papilionoideae
Botanical name of the Plant: *Dalbergia sissoo* Roxb.
Common name of the Plant: ‘Sissoo’
Occurrence and Distribution: *Dalbergia sissoo* commonly found in roadsides and in forest areas around Kanpur.

Habit and Habitat: A tall deciduous tree approximately 15-17 meter in height.

Stem: Stem is woody, erect, solid and branched with extremely hard wood. Branches grey, downy, spreading.

Leaves: Leaves are ramal and cauline, alternate, petiolate, imparipinnate, leaflets roundish, 3-5 pairs.

Flowers: Flowers are bracteate, pedicellate, complete, hermaphrodite borne in axillary panicles, yellowish white in colour.

Fruits: Fruits are thin pods, strap shaped, 6-8 times as long as broad, pale grey in colour.

_Fruiting season from September to February._

**Medicinal Uses of the Plant:**

Leaves of the *Dalbergia sissoo* are bitter, ophthalmic, styptic, digestive constipating, anthelmintic, diuretic, stimulant and decoction of leaves are beneficial in gonorrhoea and menorrhagia. Bark is alterative while dried bark is haemostatic, efficacious in bleeding piles, menorrhagia and in varicose veins. Wood is alterative and antiemetic, oil derived from the wood applied externally in skin diseases. Roots of the *Dalbergia sissoo* are astringent and constipating and are useful in diarrhoea and dysentery.

**Method of Propagation:**

*Dalbergia sissoo* commonly propagated by seeds and also by vegetative method.
Emblica officinalis Gaertn.

Taxonomical Description:

Name of the Family: Euphorbiaceae
Botanical name of the Plant: Emblica officinalis Gaertn.
Common name of the Plant: 'Amla'
Occurrence and Distribution: Emblica officinalis commonly cultivated in agricultural areas, farm houses and found in gardens and lawns around Kanpur.

Habit and Habitat: A large deciduous tree.

Stem: Stem is herbaceous, woody, erect, branched, cylindrical, solid, glabrous, green with greenish-grey or red bark, peeling off in scales and long strips.

Leaves: Leaves are ramal and cauline, pinnate, distichously close-set, linear-oblong, obtuse.

Flowers: Flowers are densely fascicled along the branchlets, yellowish in colour, males on slender pedicles, females sub-sessile, few.

Fruits: Fruits are depressed-globose, succulent, yellow or pink in colour when ripe, obscurely 6-lobed. Seeds are trigonous.

Fruiting season from October to April.

Medicinal Uses of the Plant:

Fruits of the Emblica officinalis are good source of Vitamin C, commonly used as an astringent, antisympathetic, antidiarrhoeal, carminative, cooling, stomachic and as a tonic, also beneficial in urinary troubles, anaemia, jaundice and in dyspepsia. Seeds are used, as a collyrium in eye complaints while infusion of seeds is very useful in asthma, bronchitis and in fevers. Flowers are aperient and refrigerant and leaf juices are applied externally to ulcers. Root and bark of the Emblica officinalis are considered as an astringent.

Method of Propagation:

Emblica officinalis commonly propagated by seeds and also by vegetative method.
**Eucalyptus globules** Labill.

**Taxonomical Description:**

Name of the Family: Myrtaceae  
Botanical name of the Plant: *Eucalyptus globules* Labill.  
Common name of the Plant: 'Eucalyptus'  
Occurrence and Distribution: *Eucalyptus globules* commonly found in road sides, forest areas, in lawns and gardens around Kanpur.

Habit and Habitat: A tall tree.

Stem: Stem is woody but upper portions herbaceous, erect, cylindrical, upper portion well branched, smooth, shining, white.

Leaves: Leaves are ramal and cauline, simple, alternate, exstipulate, petiolate, lanceolate or falcate, entire, acute, gland dotted, unicostate reticulate.

Flowers: Flowers are large, ebracteate, pedicellate, complete, hermaprodite, axillary, solitary or 2-3 together.


**Fruiting season from April to December.**

**Medicinal Uses of the Plant:**

Leaves of the *Eucalyptus globules* are considered as febrifuge, carminative, stimulant, expectorant and diaphoretic. Inhalation of the hot infusion is beneficial in respiratory affections. Tincture is very useful in asthma, chronic bronchitis, whooping cough, dyspnoea and in fever. Leaf oil of the *Eucalyptus globules* is considered as a powerful antiseptic and disinfectant and also useful in digestive disorders and catarrhal affections, but internal use of the oil in excess will cause cardiac debility, vomiting and diarrhoea. Roots are purgative.

**Method of Propagation:**

*Eucalyptus globules* commonly propagated by seeds and also by vegetative method.
**Feronia limonia**

**Taxonomical Description:**

Name of the Family: Rutaceae

Botanical name of the Plant: *Feronia limonia*

Common name of the Plant: 'Kaitha'

Occurrence and Distribution: *Feronia limonia* commonly found in village areas, roadsides around Kanpur.

Habit and Habitat: A small deciduous tree.

Stem: Stem is short, erect, cylindrical with thorny branches.

Leaves: Leaves are pinnate with small ovate or obovate leaflets.

Flowers: Flowers are found in panicles.

Fruits: Fruits are large, globose, seeds numerous.

*Fruiting season from September to March.*

**Medicinal Uses of the Plant:**

Wood apple fruit of the *Feronia limonia* is used mainly to stimulate the digestive system. The fruit forms part of a paste applied to tone the breasts. The astringent leaves are used to treat indigestion, flatulence, diarrhoea, dysentery and haemorrhoids.

**Method of Propagation:**

*Feronia limonia* commonly propagated by seeds and also by vegetative method.
Ficus bengalensis L.

Taxonomical Description:

Name of the Family: Moraceae
Botanical name of the Plant: Ficus bengalensis L.
Common Name of the Plant: 'Bargad'
Occurrence and Distribution: Ficus bengalensis commonly found in village areas and road sides around Kanpur.

Habit and Habitat: A large evergreen tree height approximately upto 9-13 meter.
Stem: Stem is hard, woody, cylindrical, straight, covered with smooth bark. Bark is light grey-white in colour.
Leaves: Leaves are coriaceous, ovate to elliptic with subcordate or rounded base.
Flowers: Flowers are axillary, solitary and cauliflorous.
Fruits: Fruits are sessile in pairs and subglobose, scarlet in colour when ripe.

Fruiting season from June to September.

Medicinal Uses of the Plant:

All parts of the plant Ficus bengalensis are astringent, acrid, sweet, refrigerant, andodyne, vulnerary, depurative, anti-inflammatory, ophthalmic, styptic, antiarthritic, antidiarrhoeal, antiemetic and tonic. Seeds are cooling and beneficial in local application to pain, sores and ulcers and in rheumatism. Infusion of the bark is considered to be a good tonic, very effective in diabetes, dysentery, gonorrhoea and in seminal weakness. Heated leaves are useful in abscesses. Tender ends of the aerial hanging roots are antiemetic.

Method of Propagation:

Ficus bengalensis generally propagated by seeds and also by vegetative method.
*Ficus glomerata* Roxb.

**Taxonomical Description:**

Name of the Family: Moraceae  
Botanical name of the Plant: *Ficus glomerata* Roxb.  
Common Name of the Plant: 'Gular'  
Occurrence and Distribution: *Ficus glomerata* commonly found in village areas and road sides around Kanpur.

Habit and Habitat: A moderate sized to large deciduous spreading tree height upto approximately 8-11 meter.

Stem: Stem is hard, woody, cylindrical, straight, covered with smooth bark. Bark is light grey-white in colour.

Leaves: Leaves are 3-veined, elliptic, ovate or ovate-lanceolate, blade approximately 9-17 cm. long and petiole 2-5.5 cm. long.

Flowers: Flowers are axillary, solitary and cauliflorous.

Fruits: Fruits are subglobose or pyriform, borne in large clusters on short leafless branches derived from the trunk and main branches, red in colour when ripe. Fruits resemble cider apples when fully ripe and possess a pleasant aroma, but unfit for eating being infested with maggots of the fertilizing wasp.  

*Fruiting season from June to September.*

**Medicinal Uses of the Plant:**

Fruits of the *Ficus glomerata* are astringent, carminative, stomachic and useful in menorrhoea and haemoptysis. Root and fruit are considered to have hypoglycaemic activity in diabetes, root juice is effective in dysentery. Powdered leaves with honey are useful in bilious affections. Milky juice of the plant is useful in piles and diarrhoea. Fruit and bark are commonly very useful in the preparation of various Ayurvedic formulations. It is a good remedy for excessive appetite, external burning skin inflammation, diarrhoea, dysentery and leucoderma.

**Method of Propagation:**

*Ficus glomerata* generally propagated by seeds and also by vegetative method.
Tree species

*Ficus religiosa* L.

**Taxonomical Description:**

- **Name of the Family:** Moraceae
- **Botanical name of the Plant:** *Ficus religiosa* L.
- **Common Name of the Plant:** 'Pipal'
- **Occurrence and Distribution:** *Ficus religiosa* commonly found in village areas and road sides around Kanpur.

**Habit and Habitat:** A large spreading tree height up to approximately 8-11 meter.

**Stem:** Stem is hard, woody, cylindrical, straight, covered with smooth bark. Bark is light greyish in colour and approximately 1.5 cm. thick.

**Leaves:** Leaves are membranous, broadly ovate or rotund, caudate, somewhat pendulous, upper surface glaucous, 5-7 veined, long-petioled.

**Flowers:** Flowers are axillary, solitary and cauliflorous.

**Fruits:** Fruits are globose, sessile in axillary pairs, black or purple in colour and approximately 1.5 cm. thick.

*Fruiting season from June to September.*

**Medicinal Uses of the Plant:**

Leaves and twigs of the *Ficus religiosa* are laxative while fruit is mild laxative and digestive. Bark is found efficacious in gonorrhoea while pulverized bark is applied externally on unhealthy ulcer and wounds. Infusion of bark is considered as an astringent. Tender and fresh leaves are beneficial with butterfat to cover the inflammatory areas of ulcer while medicated oil with leaves is effective in the ear ache. Fruits are laxative and digestive while the dried fruit pulverized and taken in water cures asthma. The latex is good for neuralgia, inflammations and haemorrhages.

**Method of Propagation:**

*Ficus religiosa* generally propagated by seeds and also by vegetative method.
**Limonia elephantum** (Correa) Panigarhi

**Taxonomic Description:**

Name of the Family: Rutaceae  
Botanical name of the Plant: *Limonia elephantum* (Correa) Panigarhi  
Common name of the Plant: 'Kathbel'  
Occurrence and Distribution: *Limonia elephantum* commonly found in agricultural areas, farmlands and forest areas and in gardens around Kanpur.

Habit and Habitat: A spinous, deciduous, glabrous tree.

Stem: Stem is woody, pubescent, erect, branched, cylindrical, solid, green with bark shallowly.

Leaves: Leaves are ramal and cauline, alternate, imparipinnate, spines axillary, strong, straight, leaflets opposite, 3-9, obovate, cuneate, petiole usually winged.

Flowers: Flowers are polygamous, dull-red in colour, borne in terminal or lateral, loose panicles or racemes, ebracteate, pedicillate, complete, hermaphrodite, pentamaurous, and cyclic.

Fruits: Fruits are large, approximately 4-7.5 cm. in diameter, globose, 1-celled, many seeded. Seeds buried in edible pulp, oblong, compressed.  
*Fruiting season from September to March.*

**Medicinal Uses of the Plant:**

Fruits of the *Limonia elephantum* are appetizing, astringent, stimulant and stomachic. Ripe fruits are beneficial in scurvy and sore throat while unripe fruits are beneficial in whooping cough. The bark is aromatic and cooling and is useful in liver disorders. Pulp is externally useful for relief from bites of venomous insects and reptiles. Leaves are aromatic, astringent, carminative purgative, sudorific, constipating, antiemetic, expectorant and cardiotonic.

**Method of Propagation:**

*Limonia elephantum* commonly propagated by seeds and also by vegetative method.
**Litchi chinensis** (Gaertn.) Sonn.

**Taxonomical Description:**

Name of the Family: Sapindaceae

Botanical name of the Plant: *Litchi chinensis* (Gaertn.) Sonn.

Common name of the Plant: 'Litchi'

Occurrence and Distribution: *Litchi chinensis* commonly found in gardens, farmhouses, lawns and occasionally found in village road sides around Kanpur.

Habit and Habitat: A glabrous tree.

Stem: Stem is woody, herbaceous, erect, branched, cylindrical, solid, green with spreading branches.

Leaves: Leaves are pinnate, leaflets approximately 2-8, opposite or alternate, oblong-lanceolate or ovate, acuminate, shining above, glaucous beneath.

Flowers: Flowers are greenish-white, tawny-puberulent, borne in terminal panicles.

Fruits: Fruits are globose, tubercled, aril white, fleshy, edible. Seeds globular or ovoid, dark brown, shining.

*Fruiting season commonly in May-June.*

**Medicinal Uses of the Plant:**

Fruits of the *Litchi chinensis* are aphrodisiac, cooling, demulcent and useful as atonic. Seeds are useful in nervous system disorders and in orchitis. Paste of leaves is externally useful in bites of poisonous insects and animals.

**Method of Propagation:**

*Litchi chinensis* commonly propagated by seeds.
Madhuca indica (Koenig) Macbride

Taxonomical Description:

Name of the Family: Sapotaceae
Botanical name of the Plant: Madhuca indica (Koenig) Macbride
Common name of the Plant: 'Mahua'
Occurrence and Distribution: Madhuca indica commonly found in forest areas, gardens and in farm houses around Kanpur.

Habit and Habitat: A large tree, approximately 18 meter high with a large top.

Stem: Stem is woody, erect, thick, solid and branched.
Leaves: Leaves are coriaceous, elliptic or oblong-elliptic, shortly acuminate, base cuneate and clustered at the ends of branches, young branches, leaves and petiole pubescent or tomentose.
Flowers: Flowers are numerous, near the ends of branches, drooping on pedicles. Calyx coriaceous, densely clothed rusty tomentum. Corolla yellowish-white, tube fleshy. Stamens 20-30, usually 24 to 26, anthers hispid at the back with stiff hairs.
Fruits: Fruits are fleshy, green, berries and ovoid. Seeds 1-4.
Fruiting season from April to May.

Medicinal Uses of the Plant:

Seeds of the Madhuca indica are laxative in habitual constipation and piles. Seed juice is useful in rheumatism and skin affections while seed oil is useful in skin diseases. Flowers of the Madhuca indica are considered as anthelmintic, demulcent, laxative, stimulant and tonic and also very useful with milk in general debility. The bark is sweet, bitter, astringent and emollient and is good for inflammations, sprains and pruritus.

Method of Propagation:

Madhuca indica commonly propagated by seeds and also by vegetative method.
**Mangifera indica L.**

**Taxonomical Description:**

Name of the Family: Anacardiaceae  
Botanical name of the Plant: *Mangifera indica* L.  
Common name of the Plant: 'Aam'  
Occurrence and Distribution: *Mangifera indica* commonly found in gardens, lawns, farmhouses and roadsides and in villages around Kanpur.

Habit and Habitat: An evergreen tree height approximately upto 8-12 meter.

Stem: Stem is woody, herbaceous, erect, branched, cylindrical, solid, green, branches widely spreading.

Leaves: Leaves are crowded at the ends of branches, oblong, linear-oblong, elliptic or ovate-lanceolate, acute or acuminate, petiole swollen at the base.

Flowers: Flowers are greenish-yellow in colour, odorous, borne in pubescent panicles, male and female on the same panicles, bracts elliptic, concave with pinkish stripes, both staminate and bisexual flowers borne in terminal panicles.

Fruits: Fruits are large drupes, approximately 5-15 cm. long, fleshy, stone compressed and fibrous. Seeds are large, compressed, testa papery, cotyledons plano-convex, often unequal and lobed.  
*Fruiting season commonly in April to July.***

**Medicinal Uses of the Plant:**

Ripe fruits of the *Mangifera indica* are antidiarrhoeal, antidiysenteric, diaphoretic, diuretic, laxative, invigorating, nutritious and refreshing. Kernel is anthelmintic and astringent, powder of seeds and kernel is very useful in asthma, diarrhoea, dysentery, haemorrhage and leucorrhoea, menorrhagia and in bleeding piles. Flowers decoction is beneficial in diarrhoea, chronic dysentery and in gleet. Leaf juice is very useful in dysentery. The ash of burnt leaves is useful in burns and scalds. Bark is used as an astringent, antidiarrhoeal and also useful in haemoptysis.

**Method of Propagation:**

*Mangifera indica* commonly propagated by seeds and also by vegetative method.
**Morus alba L.**

**Taxonomical Description:**

Name of the Family: Moraceae  
Botanical name of the Plant: *Morus alba* L.  
Common name of the Plant: 'Sahtoot'  
Occurrence and Distribution: *Morus alba* commonly found in gardens, farmhouses and villages areas around Kanpur.

Habit and Habitat: A deciduous tree.

Stem: Stem is large, bark brown and rough, fissures mostly vertical.

Leaves: Leaves are alternate, very variable in size and shape, usually broadly oval, approximately 6-18 cm long with 2.0-4.5 cm wide, apex acuminate, base rounded or cordate, margin irregularly dentate or incised-lobate, glabrous or slightly present along the nerves beneath, petiole approximately 1.8-2.5 cm long.

Flowers: Flowers are monoecious or dioecious, greenish in colour, grouped in stalked.

Fruits: Fruits are aggregate, consisting of all the ovaries of the catkin forming a crustaceous achene.

*Fruiting season from April to July.*

**Medicinal Uses of the Plant:**  
Plant of the *Morus alba* is very useful in cough, dyspnea, facial dropsy, oedema, oliguria and injury.

**Method of Propagation:**  
*Morus alba* commonly propagated by vegetative method.
**Tree species**

*Pongamia pinnata* (L.) Pierre

**Taxonomical Description:**

- **Name of the Family:** Papilionoideae
- **Botanical name of the Plant:** *Pongamia pinnata* (L.) Pierre
- **Common name of the Plant:** 'Karanja'
- **Occurrence and Distribution:** *Pongamia pinnata* commonly found in forest areas of Kanpur.

**Habit and Habitat:** A medium sized glabrous tree.

**Stem:** A medium sized, well developed, branched, glabrous stem.

**Leaves:** Leaves are imparipinnate, leaflets 5-7, elliptic or ovate, approximately 5-18 cm. long.

**Flowers:** Flowers are complete, borne in axillary racemes, fragrant, lilac or white, tinged with pink or violet. Calyx sepals 5, polysepalous, fused at the base only, valvate aestivation. Corolla petals 5, polypetalous, papilionaceous, descending imbricate, variously coloured.

**Fruits:** Legumes (Pods), pods compressed, woody, glabrous, indehiscent, approximately 4.0-7.5 cm. long. Seeds 1-2, elliptic or reniform, wrinkled with reddish-brown leathery testa.

*Fruiting season from May to June.*

**Medicinal Uses of the Plant:**

Flowers of the plant *Pongamia pinnata* are used in diabetic patients. Seeds powder is very effective in whooping and irritating coughs, oil of seeds are applied externally for skin diseases such as in sores, scabies, herpes and eczema and internally in digestive system disorders. Leaf juices are effective in cough, flatulence, dyspepsia and diarrhoea. Bark of the plant *Pongamia pinnata* are used externally in bleeding piles and root juice is useful for external application to destroy maggots in foul ulcers, cleaning teeth and strengthening gums.

**Method of Propagation:**

*Pongamia pinnata* propagated by seeds and also by vegetative method.
Psidium guajava Linn.

Taxonomical Description:
Name of the Family: Myrtaceae
Botanical name of the Plant: Psidium guajava Linn.
Common name of the Plant: 'Amrud'
Occurrence and Distribution: Psidium guajava commonly found in forest areas, in lawns and gardens around Kanpur.

Habit and Habitat: A small tree or large shrub.
Stem: Stem is woody but upper portions herbaceous, erect, cylindrical, upper portion well branched, shining, almost greenish white.
Leaves: Leaves are oblong or elliptic-oblong, approximately 10-16 cm. Long, pubescent beneath, nearly glabrous above.
Flowers: Flowers are fragrant, ebracteate, pedicellate, complete, hermaprodite, axillary, solitary or 2-3 together.
Fruits: Globose or obovoid, green or yellowish, white or red inside.
Fruiting season from July to October.

Medicinal Uses of the Plant:
Fruits of the Psidium guajava are considered as cooling, laxative and tonic, also beneficial for colic problems and for bleeding gums. Leaves show astringent and antiemetic properties and very useful in bowel complaints and as a gargle for mouthwash. Juice from the leaves is used for treating diarrhoea, coughs, stomachache and dysentery. Bark of the Psidium guajava is antiseptic while root bark decoction is beneficial in infantile diarrhoea.

Method of Propagation:
Psidium guajava commonly propagated by seeds and also by vegetative method.
Saraca indica auct. non L.

Taxonomical Description:

Name of the Family: Caesalpinioideae
Botanical name of the Plant: Saraca indica auct. non L.
Common name of the Plant: 'Ashoka'
Occurrence and Distribution: Saraca indica commonly found as an ornamental tree in gardens, roadsides, and in lawns around Kanpur.

Habit and Habitat: A small evergreen tree approximately 6-9 meter in height.
Stem: Stem is woody, herbaceous, cylindrical, solid and branched with warty surface and dark brown to grey or almost black bark.
Leaves: Leaves are ramal and cauline, stipulate, stipules minute and caduceus, petiole compound, unpinnae and parapinnate, approximately 15-20 cm. long. Leaflets approximately 6-12, rigidly subcoriaceous, oblong or oblong-lanceolate.
Flowers: Flowers are bracteate, pedicillate, complete, irregular, zygomorphic, hermaphrodite, borne in dense axillary corymbs, very fragrant, orange or orange-yellow, finally turning in vermillion red in colour.
Fruits: Fruits are cylindrical pods, flat, oblong, woody, approximately 7.6-25.4x3.9-5.2 cm. in size. Seeds 4-8, ellipsoid-oblong, compressed.
Fruiting season from August to September.

Medicinal Uses of the Plant:

Seeds of the Saraca indica are diuretic while flowers are very effective in blood dysentery. The bark is bitter, astringent, sweet, refrigerant, constipating, febrifuge, demulcent and is commonly used in the manufacturing of various ayurvedic medicines for cure such as colic, dysentery, dyspepsia, piles, ulcers and uterine troubles, leucorrhoea and menstrual pain. The flowers are considered to be a uterine tonic and dried flowers are very beneficial in diabetes and haemorrhagic dysentery.

Method of Propagation:

Saraca indica commonly propagated by seeds.
**Santalum album L.**

**Taxonomical Description:**

Name of the Family: Santalaceae  
Botanical name of the Plant: *Santalum album* L.  
Common Name of the Plant: 'Chandan'  
Occurrence and Distribution: *Santalum album* commonly found in village areas and sometimes in road sides around Kanpur.

Habit and Habitat: A small or medium sized evergreen semi parasitic tree height approximately upto 10-11 meter.

Stem: Stem is hard, woody, branched, straight, bark is rough, grey or nearly black or reddish in colour and with deep vertical cracks on old trees. Sapwood unscented and whitish yellow to white, but heartwood scented and light yellowish-brown to reddish brown.

Leaves: Leaves are elliptic-ovate or ovate-lanceolate, glabrous and thin.

Flowers: Flowers are brownish purple, violet or straw-coloured, unscented, borne in axillary and terminal cymes.

Fruits: Fruits are drupes, purple-black in colour, globose with hard ribbed endocarp. Seeds are globose or ovoid.

**Fruiting season from August to December.**

**Medicinal Uses of the Plant:**

Both the sandalwood and heartwood oil of the *Santalum album* are considered to be cooling, diaphoretic, aphrodisiac, cardiotonic, haemostatic, antipyretic diuretic and expectorant and also beneficial in burning sensation, skin diseases, leprosy, menorrhagia, leucorrhoea, spermatorrhoea, intermittent fever and general debility. A paste of the wood finds various applications in burns, headache, fever and in skin diseases. Sandalwood oil is valued in the treatment of gonorrhoea and also in the symptomatic treatment of dysuria and in the pimples of the nose.

**Method of Propagation:**

*Santalum album* generally propagated by seeds.
Strychnos nux-vomica L.

Taxonomical Description:

Name of the Family: Loganiaceae
Botanical name of the Plant: Strychnos nux-vomica L.
Common name of the Plant: 'Kuchla'
Occurrence and Distribution: Strychnos nux-vomica commonly found in agricultural areas, gardens and in farmhouses Kanpur.

Habit and Habitat: An evergreen, glabrous tree.

Stem: Stem is woody, herbaceous, erect, thick, solid and branched.

Leaves: Leaves are ovate, 5-nerved, glabrous, shining, base obtuse.

Flowers: Flowers are greenish-white, borne on terminal pubescent pedunculate, corymbose cymes. Corolla-tube cylindric, 4-5 times longer than calyx. Style filiform, stigma undivided.

Fruits: Fruits are large approximately 4 cm. In diameter, globose berries, yellow when ripe. Seeds many, approximately 1.25 cm. in diameter, discoid.

Fruiting season from October to February.

Medicinal Uses of the Plant:

Seeds of the Strychnos nux vomica are commonly used as antidiarrhoeal, antispasmodic, emetic, stimulant and tonic. Seeds are also beneficial in diabetes, emotional disorders, hysteria, epilepsy and in intermittent fevers. Leaves of the Strychnos nux vomica are useful in ulcers and wounds. Bark juice is useful in cholera and in acute dysentery. Roots are bitter in taste and very useful in intermittent fevers. The pulp of ripe fruit is used in treating paralytic affections of paws and foot.

Method of Propagation:

Strychnos nux vomica commonly propagated by seeds.
**Syzygium cumini** (Linn.) Skeels

**Taxonomical Description:**

Name of the Family: Myrtaceae

Botanical name of the Plant: *Syzygium cumini* (Linn.) Skeels

Common name of the Plant: 'Jamun'

Occurrence and Distribution: *Syzygium cumini* commonly found in forest areas, gardens and in farm houses around Kanpur.

Habit and Habitat: A moderate-sized, glabrous tree.

Stem: Stem is woody, erect, thick, solid and branched.

Leaves: Leaves are coriaceous, shining, entire, oval, oval-oblong or lanceolate-oblong, long-acuminate, lateral nerves numerous, parallel, confluent near the margin.

Flowers: Flowers are greenish in colour, tertramerous, in 3-flowered cymes, arranged in broad trichotomous panicles. Calyx-tube funnel shaped.

Fruits: fruits are purple or black in colour, berry oblong or subglobose, succulent, smooth when ripe.

**Fruiting season from May to July.**

**Medicinal Uses of the Plant:**

Juice of fruits of the *Syzygium cumini* is considered as carminative, diuretic and stomachic and also beneficial in chronic diarrhoea and in spleen enlargement. The fruits and seeds are sweet, acrid, sour, tonic and cooling and are used in diabetes, diarrhoea, pharyngitis, splenopathy, urethrorrhea and ringworm. The leaves are antibacterial and are used for strengthening the teeth and gums. The tender leaves are used for vomiting. Bark decoction of the *Syzygium cumini* in combination with cardmon and cinnamon is useful in chronic diarrhoea and in dysentery also useful as a gargle in sore throat and spongy gums.

**Method of Propagation:**

*Syzgium cumini* commonly propagated by seeds.
Tamarindus indica L.

**Taxonomical Description:**

- **Name of the Family:** Caesalpinioideae
- **Botanical name of the Plant:** Tamarindus indica L.
- **Common name of the Plant:** 'Imli'
- **Occurrence and Distribution:** Tamarindus indica commonly found as an ornamental tree in gardens, roadsides, and in lawns around Kanpur.

**Habit and Habitat:** A moderate-sized or large evergreen tree approximately 25 meter in height and 7 meter in girth.

**Stem:** Stem is woody but herbaceous at upper portions, cylindrical, solid and branched, lower portions is covered by longitudinally and horizontally fissured dark grey or brownish bark.

**Leaves:** Leaves are ramal and cauline, stipulate, stipules minute and caduceus, petiole compound, unpinnate and parapinnate, approximately 15-18 cm. long. Leaflets approximately 10-12 pairs, sub-sessile, oblong.

**Flowers:** Flowers are bracteate, bracts caduceus, bracteolate, bracteoles two and boat shaped, pedicellate, complete, hermaproditie, zygomorphic, hypogynous or perigynous, white to yellow in colour.

**Fruits:** Fruits are pods, flat, obovate, dehiscent, scurfy, brown ash coloured approximately 7.5-20.0 cm. long and 2-2.5 cm. broad. Eeds 3-12, obovate-oblong, compressed, with a shallow oblong pit on each side of the flat faces, smooth, lustrous, dark brown.

**Fruiting season from November to December.**

**Medicinal Uses of the Plant:**

Seeds of the Tamarindus indica are used as stimulant while ripe fruits are anthelmintic, carminative, digestive and laxative, refrigerant and used as liver tonic. The leaves are sour, astringent, thermogenic, anthelmintic, andodyne, anti-inflammatory, antifungal, diuretic, febrifuge, aperient and ophthalmic. Leaf juices are useful in bleeding piles and dysuria. Stem bark is considered as a antipyretic and astringent. The root bark is astringent, constipating, emmenagogue and tonic and is useful in diarrhoea, asthma, amenorrhoea, singivitis and ulcers.

**Method of Propagation:**

Tamarindus indica commonly propagated by seeds.
**Terminalia arjuna (Roxb.) W. & A.**

**Taxonomical Description:**

Name of the Family: Combretaceae

Botanical name of the Plant: *Terminalia arjuna* (Roxb.) W. & A.

Common name of the Plant: 'Arjun'

Occurrence and Distribution: *Terminalia arjuna* commonly found in gardens, lawns and in roadsides around Kanpur.

Habit and Habitat: A large tree height approximately upto 10-14 meter.

Stem: Stem is woody, erect, branched, solid, green with often buttressed trunk, smooth grey bark and drooping branchlets.

Leaves: Leaves are subopposite, hard, coriaceous, oblong or elliptic approximately 10-20 cm. long.

Flowers: Flowers are yellowish-white in colour, borne in shortly panicked-spikes.

Fruits: Fruits are approximately 2.5-5 cm. long, obovoid-oblong with 5-7 equal hard coriaceous thick narrow wings.

*Fruiting season from September to November.*

**Medicinal Uses of the Plant:**

Fruits of the *Terminalia arjuna* are deobstruent and useful as a tonic. Leaf juice is useful in earache, sores and in ulcers. The bark is astringent, sweet, acrid, cooling, aphrodisiac, demulcent, cardiotonic, styptic, antidysenteric, urinary astringent, expectorant, a\textsuperscript{4}\textsubscript{4}exitic, lithontriptic and tonic. Bark powder of the *Terminalia arjuna* acts as a diuretic in cirrhosis of liver and gives relief in symptomatic hypertension.

**Method of Propagation:**

*Terminalia arjuna* commonly propagated by seeds.
**Terminalia belerica** (Gaertn.) Roxb.

**Taxonomical Description:**

Name of the Family: Combretaceae

Botanical name of the Plant: *Terminalia belerica* (Gaertn.) Roxb.

Common name of the Plant: 'Bahera'

Occurrence and Distribution: *Terminalia belerica* occasionally cultivated in villages around Kanpur.

Habit and Habitat: A large tree height approximately upto 9-13 meter.

Stem: Stem is woody, erect, branched, solid, green with slight soft, rust coloured pubescence on young branchlets.

Leaves: Leaves are coriaceous, pale beneath, broad elliptic or obovate-elliptic approximately 8-20 cm. long base unequal and clustured at the ends of the branchlets. Spikes slender and interrupted.

Flowers: Flowers are dirty-grey or greenish-yellow in colour with a strong offensive smell.

Fruits: Fruits are ovoid, grey, velvety with 5 more or less indistinct furrows, nut thick and hard.

*Fruiting season from December to February.*

**Medicinal Uses of the Plant:**

Fruits of the *Terminalia belerica* are acrid, sweet, thermogenic, antidiarrhoeal, antipyretic, aperient, astringent and very effective in dyspepsia, cough, bronchitis, pharyngitis and general debility. Fruits are also useful in dropsy, cough and headache and in eye diseases and are very useful for preparation of various Ayurvedic formulations. The bark is mildly diuretic and useful in anaemia and leucoderma. The oil obtained from the seeds is trichogenous and is useful in dyspepsia, skin diseases, leucoderma and greyness of hair.

**Method of Propagation:**

*Terminalia belerica* commonly propagated by seeds.
**Terminalia chebula** Retz.

**Taxonomical Description:**

- **Name of the Family:** Combretaceae
- **Botanical name of the Plant:** *Terminalia chebula* Retz.
- **Common name of the Plant:** 'Harra'
- **Occurrence and Distribution:** *Terminalia chebula* occasionally cultivated in villages around Kanpur.

**Habit and Habitat:** A large tree height approximately up to 8-13 meter.

**Stem:** Stem is woody, erect, branched, solid, hairy and rusty.

**Leaves:** Leaves are mostly subopposite, distant, ovate or oblong-ovate, deciduous in the cold season and approximately 8-18 cm. long.

**Flowers:** Flowers are dull-white or yellowish in colour with a strong offensive smell, borne in spikes from the upper axils and in small terminal panicles.

**Fruits:** Fruits are obovoid or ellipsoidal from a broad base, glabrous, more or less 5-ribbed when dry.

*Fruiting season from November to February.*

**Medicinal Uses of the Plant:**

Fruits of the *Terminalia chebula* are alterative, astringent, laxative, stomachic and very effective as a tonic. Fruits are also useful in stomatitis, chronic ulcers, carious teeth, cough, asthma, urinary diseases and highly efficacious in chronic diarrhoea, dysentery cardiac disorders, intermittent, fever and general desility, flatulence. Fruits of the *Terminalia chebula* are widely used in preparation of various Ayurvedic formulations. Bark is used as a cardiotonic.

**Method of Propagation:**

*Terminalia chebula* commonly propagated by seeds.
**Tectona grandis** L.f.

**Taxonomical Description:**

Name of the Family: Verbenaceae  
Botanical name of the Plant: *Tectona grandis* L.f.  
Common name of the Plant: ‘Sagaun’  
Occurrence and Distribution: *Tectona grandis* commonly found in agricultural areas, gardens, road sides and in farm houses around Kanpur.

Habit and Habitat: A large deciduous tree attaining a height approximately 25-50 meter.

Stem: Stem is woody, herbaceous, erect, thick, quadrangular, solid and branched.

Leaves: Leaves are opposite, ovate, scabrous or subgiabrate, blade large approximately 30-62 cm. Long and 15-30 cm. Broad with close tomentum beneath.

Flowers: Flowers are white, bracteate, bracteolate, sub-sessile or sessile, short pedicels, borne in large erect, terminal, cross-branched cymose panicles, with short lanceolate bracts.

Fruits: Fruits are subglobose, more or less indistinctly 4-lobed, the thick spongy pericarp, consisting of a dense felt of branched hairs. The nut uneven with 1,2,3 rarely 4 seeds and a central cavity.

*Fruiting season from August to December.*

**Medicinal Uses of the Plant:**

Nuts oil of the *Tectona grandis* are useful in scabies and promotes growth of hair. Seeds are diuretic and flowers are beneficial in biliousness and in bronchitis. Wood paste is considered as an astringent, diuretic, hepatic, stimulant, sedative and local refrigerant and also beneficial in dyspepsia, toothache and in inflammatory swellings. Leaves of the *Strychnos nux vomica* are useful in ulcers and wounds. Root is useful in anuria and in retention of urine. The bark is astringent, acrid, sweet, cooling, constipating, anthelmintic and depurative.

**Method of Propagation:**

*Tectona grandis* commonly propagated by seeds.
Fig. 4.3:1 *Acacia nilotica*

Fig. 4.3:2 *Aegle marmelos*

Fig. 4.3:3 *Albizia lebbek*

Fig. 4.3:4 *Artocarpus integrfa*

Fig. 4.3:5 *Anacardium occidentale*

Fig. 4.3:6 *Azadirachta indica*
Figures of Tree species

Fig. 4.3:13 *Citrus limon*

Fig. 4.3:14 *Citrus maxima*

Fig. 4.3:15 *Citrus reticulata*

Fig. 4.3:16 *Dalbergia sissoo*

Fig. 4.3:17 *Emlica officinalis*

Fig. 4.3:18 *Eucalyptus globules*
Fig. 4.3:20 *Ficus bengalensis*

Fig. 4.3:21 *Feronia limonia*

Fig. 4.3:22 *Ficus religiosa*

Fig. 4.3:23 *Limonia elephantum*
Figures of Tree species

Fig. 4.3:24 Litchi chinensis

Fig. 4.3:25 Madhuca indica

Fig. 4.3:26 Mangifera indica

Fig. 4.3:27 Morus alba

Fig. 4.3:28 Pongamia pinnata

Fig. 4.3:29 Psidium guajava

Fig. 4.3:30 Saraca indica
Figures of Tree species

Fig. 4.3:31 Santalum album

Fig. 4.3:32 Strychnos nux-vomica

Fig. 4.3:33 Syzygium cumini

Fig. 4.3:34 Tamarindus indica

Fig. 4.3:35 Terminalia arjuna

Fig. 4.3:36 Terminalia belerica
Fig. 4.3:37 *Terminalia chebula*

Fig. 4.3:38 *Tectona grandis*