APPENDIX

Importance of the selected host plants in the study:

Plants have anchored to the mother earth long before man has set his feet and it is said that, god had endowed them with materials for survival of man and animal long before these creatures were made by him (Mazumdar and Mukhopadhyay, 2006). The world health organization (WHO) estimates that, about 80% of the population still depends upon these herbal medicines for treatment of various diseases due to easy availability, economic and less side effects when compared to allopathic system of medicines. Nearly 2000 of natural drugs are mentioned in Indian Materia Medica that, have reported various pharmacological activities, out of these 1600 are from plant origin (Mukherji, 2008). Medicinal herbs have given their potential to produce significant therapeutic effect, they can be useful as drug or supplement in the treatment/management of various diseases. Herbal drugs or medicinal plants, their extracts and their isolated compound(s) have demonstrated spectrum of biological activities (Sharma et al., 2001). Such have been used and continued to be used as medicine in folklore or food supplement for various disorders. Ethno pharmacological studies on such herbs/medicinally important plants continue to interest investigators throughout the world (Das, 2003 and Galani et al., 2011).

There are a few records of ants disturbing cultivation of medicinal plants. Small red ground nesting ants loosen soil at the roots and disturb the plant growth of Cephaelis ipacacuana (Panda, 1999)

Plants play an important role in the human life as the main source of food, medicine, wood, oxygen producer and many more (Cowan, 1999). Plant contribution to the medicinal field is largely owing to the activity of plant derived drugs. Plant derived drugs term can be defined as biological active substances which are isolated or purified from plants (Mosihuzzaman and Iqbal, 2008).

Farnsworth in 1994 defined the use of plants by man in medicine as ‘ethno-medicine”. Ethno-pharmacology is a highly diversified approach to drug discovery involving the observation, description, and experimental investigations of drugs. It is based on botany, chemistry, biochemistry, pharmacology and many other disciplines (anthropology, archaeology, history,
and linguistics) that, contribute to the discovery of natural products with biologic activity (Rivier and Bruhn, 1979).

Climbers

1. Scientific name: *Abrus precatorius*
   Synonyms: *Abrus abrus, Glycine abrus*
   Family: Fabaceae
   Common names: Coral bead plant, Rosary pea, Crab's eye,
   Type: Climber
   Regional name: Gulaganji
   Occurrence: Native
   Flowering: Perennial

   *Abrus precatorius* a legume, and a nitrogen fixer and where present in large stands and can alter soil nutrient status. It is a high-climbing, twining, or trailing woody vine, indigenous to India (Das, 2003). It is also suspected to have allelopathic effects that, could alter native species recruitment (Akhtar, 1992).

2. Scientific name: *Argyreia nervosa*
   Family: Convolvulaceae
   Common names: Elephant Creeper, Morning glory
   Type: Climber
   Synonyms: *Argyreia speciosa, Convolvulus nervosus*
   Regional name: Samudra haaley
   Occurrence: Native
   Flowering: Perennial

   Elephant creeper is a vigorous vine native to India, introduced world-wide. It has large, leathery heart-shaped leaves, which are white on the underside due to hairs (Ashish et al., 2010). It is called the elephant creeper because of the large leaves which look like elephant ears. The toxic seeds should not be eaten as they contain alkaloids (Ashish et al., 2010). The plant appears to have a broad spectrum of activity on several ailments (Sunil et al., 2011). Various parts of the plant have been explored for central nervous depressant activity, no tropic activity, aphrodisiac activity (Mitra et al., 1996); anticonvulsant activity (Ashish et al., 2010); immunomodulatory activity, antioxidant activity, analgesic activity, anti-inflammatory activity, hypoglycaemic activity, hepatoprotective activity,
antibacterial activity, antifungal activity (Galani et al., 2011) and many other activities (Aman et al., 2011). Flowering is usually from July-December, March-April.

3. Scientific name: *Aristolachia ornithocephala*,
   Family: Convolvulaceae
   Common names: Bird’s head birthwort
   Type: Climber
   Regional name: *Eesha beru, Sunanda mara*.
   Occurrence: Introduced
   Flowering: Perennial

   Bird’s head birthwort is a climber with large alternate, long stalked leaves. The flowers are singly borne on stalks. It flowers in rainy season and hold water in the flowers which serves as source of water for foraging insects.

4. Scientific name: *Artabotrys zeylanicus*
   Family: Annonaceae
   Common names: Ceylon green
   Type: Climber
   Regional name: *Champa*
   Occurrence: Native
   Flowering: Perennial

   Ceylon green is a woody climber that, is grown for its tough fibre. It flowers in the months of December and January. Information on this plant is scare. The leaves and fresh shoots are susceptible to sucking insect pests (Karthikeyan et al., 2009)

5. Scientific name: *Asparagus racemosus*
   Family: Asparagaceae
   Common names: Satavari/ Shatavari
   Type: Climber
   Regional name: *Shatavari*
   Occurrence: Native
   Flowering: Perennial
Shatawari is a woody climber growing to 1-2 m in height, with leaves like pine needles, small and uniform and the flowers white, in small spikes. Flowering begins from October upto November. In Ayurvedic medicine, the root of Shatavari is used in the form of juice, paste, decoction and powder to treat intrinsic haemorrhage, diarrhoea (Kirtikar and Basu, 1981); piles, hoarseness of voice, cough, arthritis, poisoning, diseases of female genital tract, erysipelas, fever, as aphrodisiac and as rejuvenant (Mitra et al., 1996).

6. Scientific name: **Combretum indicum**
   
   Family: Combretaceae  
   Common names: Rangoon creeper  
   Type: Climber  
   Regional name: *Burma creeper, Burma balli.*  
   Occurrence: Native  
   Flowering: Perennial  
   
   Rangoon creeper is the most common vine. It is not uncommon to see the creeper rooted only in a small hole even in cemented ground, but the vine thriving and climbing high. Clusters of fragrant white pendulous trumpets open white then change to pink, red and finally a deep maroon (FOI, 2015).

7. Scientific name: **Gymnema sylvestre**
   
   Family: Asclepiadaceae  
   Common names: Gurmar  
   Type: Climber  
   Regional name: *Kadhasige, Sannagera*  
   Occurrence: Native  
   Flowering: Perennial  
   
   Gurmar is a famed plant, revered for its use in treatment of diabetes for nearly two millennia (Sandhya et al., 2011). The Hindi name *Gurmar* actually means diabetes killer. It is a large climber, rooting at nodes. One of the alternative medicines to both diabetes (Jaytilak et al., 1976) and obesity could be Gurmar plant preparation, as it known to have a good effect for curbing of diabetes by blocking sugar binding sites and hence not allowing the sugar molecules to accumulate in the body (Akhtar, 1992).
8. Scientific name: *Hiptage benghalensis*
   - Family: Malpighiaceae
   - Common names: Madhavi lata
   - Type: Climber
   - Regional name: Madhvi
   - Occurrence: Native
   - Flowering: Perennial

   Madhavi lata, native from India to the Philippines, is a vine like plant that, is often cultivated in the tropics for its attractive and fragrant flowers (Das, 2003). A woody climbing shrub with clusters of pink to white and yellow fragrant flowers and three-winged, helicopter-like fruits. Flowers have a very interesting shape and look like a decorative accessory, with fluffy-toothed edges. The fragrance is very strong and pleasant (Kamboj, 2000); resembles fruity perfume. The bark, leaves and flowers are aromatic, bitter, acrid, astringent, refrigerant, vulnerary, expectorant, cardiotonic, anti-inflammatory and insecticidal. They are useful in burning sensation, wounds, ulcers, cough and asthma (FOI; 2015).

9. Scientific name: *Ipomoea mauritiana*
   - Family: Convolvulaceae
   - Synonyms: Batatas paniculata, Convulvulus paniculatus
   - Common names: Giant potato
   - Type: Climber
   - Regional name: Kiribadu
   - Occurrence: Native
   - Flowering: Perennial

   Giant potato is a type of morning glory plant. Like the sweet potato, it belongs to the Ipomoea genera. The leaves and roots are used externally to treat tuberculosis and for the treatment of external and breast infections (CSIR, 1988). In Ayurveda, a decoction of the tuberous roots is used for the preparation of medicinal wine (Akhtar, 1992). The Ayurvedic name is Kiribadu Ala, and it is also an ingredient in Chyavanprash (Kala and Sajwan, 2007).

10. Scientific name: *Ipomoea pes-caprae*
   - Family: Convolvulaceae
   - Common names: Goat Foot Vine
   - Type: Climber
Regional name: *Bangadivalli, Aadambaballi.*
Occurrence: Native
Flowering: Perennial

Goat’s foot vine is so named because of its interesting leaves. The leaves are notched at the apex, creating two equal lobes which look like the imprint of a goat’s foot. It grows on mostly sand dunes and beaches above the high tide line in tropical and subtropical regions throughout the world. It is very fast growing, and thrives in some of the worst soils imaginable (FOI, 2015).

11. Scientific name: *Jacquemontia violacea*
   Family: Convolvulaceae
   Common names: Skyblue Clustervine
   Synonyms: *Jacquemontia pentantha, J. pentanthos*
   Type: Climber
   Regional name: *Neeli hooballi.*
   Occurrence: Introduced
   Flowering: Perennial
   Skyblue Clustervine is a handsome light climber. Native to tropical America, it has spread to many tropical countries because of the ease with which it can be grown and for its beautiful appearance that, attracts pollinators.

12. Scientific name: *Mansoa alliacea*
   Family: Bignoniaceae
   Common names: Garlic vine
   Synonyms: *Bignonia alliacea, Pseudocalymma alliaceum*
   Type: Climber,
   Regional name: *Bellulli balli*
   Occurrence: Introduced
   Flowering: Perennial
   Native to South America, garlic vine is one of the most rewarding, flowering vines. Interestingly enough it smells like garlic. However, it doesn’t smell if the plant is left alone, but only when the leaves are crushed. It can either be described as a shrub or a vine since it produces numerous woody vines (FOI, 2015). It is a very common and considered remedy in the Amazon for the pain and inflammation of arthritis and rheumatism, as well as, colds, flu, and fever
Appendix

(Das, 2003). Some capsule products of the leaves are sold in stores in Brazil and Peru, and it can be found as an ingredient in other various multi-Herb formulas for cold and flu, pain, inflammation and arthritis in general (William et al., 2007). The uses of this plant are high in the U.S. market; a few products are now available and it is showing up in several formulas for colds and arthritis here as well (Sandhya et al., 2011).

13. Scientific name: **Passiflora edulis**
   - Family: Passifloraceae
   - Common names: Passion fruit
   - Type: Climber
   - Regional name: Fashion hannu, Passion hannu.
   - Occurrence: Introduced
   - Flowering: Perennial

   The passion fruit is a vigorous, climbing vine that, clings by tendrils to almost any support. It can grow 15 to 20 ft. per year once established and must have strong support. It is generally short-lived (5 to 7 years). Occurrences of ants have been recorded on the extra floral nectarines of passion fruit plant while the plant gets protection from herbivores. They also pick and feed on lepidopteran eggs laid on the plant (Blankespoor, 2015).

14. Scientific name: **Piper longum**
   - Family: Piperaceae
   - Common names: Pippali, Long pepper, Indian long pepper
   - Type: Climber
   - Regional name: Kandan, Lippili, Ippali, Pippali
   - Occurrence: Native
   - Flowering: Perennial

   Pippali is certainly one of the most widely used of all Ayurvedic herbs. It is one of the best herbs for enhancing digestion, assimilation and metabolism of the foods we eat. (Aiyer and Kolammal, 1964). It is also highly prized for its ability to enhance assimilation and potency of other herbs in a synergistic formula (this is called the Yogavahi effect) (FOI, 2015). Long pepper is a climber, of South Asian origin (Deccan peninsula); cultivated for its fruit, which is usually
dried and used as a spice and seasoning. Long pepper is a close relative of the black pepper (*Piper nigrum*). *Pippali* is certainly one of the most widely used of all Ayurvedic herbs. It is one of the best herbs for enhancing digestion, assimilation and metabolism of the foods we eat (Aiyer and Kolammal, 1964). It is also highly prized for its ability to enhance assimilation and potency of herbs in a synergistic formula (this is called the Yogavahi effect).

15. Scientific name: **Tinospora cordifolia**
   - Family: Menispermaceae
   - Common names: Gulbel
   - Type: Climber
   - Regional name: *Amrutha balli*
   - Occurrence: Native
   - Flowering: Perennial

   Gulbel is a native plant from India, also known to be found in far east, primarily in rainforests. The plant is climbing shrub with heart-shaped leaves. It has stems about 6 cm in diameter, with light grey, papery bark (FOI, 2015). The herb has a long history in use by practitioners of Ayurveda. Known by its practitioners to treat convalescence from severe illness (Kirtikar and Basu, 1981); arthritis (or joint diseases); liver disease, eye diseases, urinary problems, anemia, cancer, diarrhea, and diabetes (Sandhya *et al.*, 2011). Also, help remove toxins from the body. The plant is cultivated by stem cutting in the month of May–June and used in Tibetan medicine. The herb is known to have a sweet, bitter and acid taste. Extracted from the stem and root is a nutrient starch used to treat chronic diarrhea and dysentery. According to a legend, the herb is known locally as *giloya* or “heavenly elixir”. It is believed to have kept the angels eternally young.

16. Scientific name: **Vallaris solanacea**
   - Family: Apocynaceae
   - Common names: Bread flower
   - Type: Climber
   - Synonyms: *Peltanthera solanacea, Vallaris heynei*
   - Regional name: --
   - Occurrence: Native
Flowering: Perennial

This plant was earlier names in honour of Frederick Adolf Heyne, a German botanist. Native to India and Burma, bread flower is a hairy, climbing shrub. Stems are covered with a gray, spotted bark, emitting white latex when wounded.

Bread flower is an essential ingredient of the ‘bunga rampai’, the decorated arrangement of finely sliced, fragrant leaves used for Malay weddings. Bread flower vine can be trained as a compact bush and is good for container culture. Attracts butterflies and hummingbirds. Flowering occurs between December and April (FOI, 2015).

**Herbs**

17. Scientific name: *Acorus calamus*
   - Family: Araceae
   - Common names: Sweet flag
   - Type: Herbs
   - Regional name:
   - Occurrence: Native
   - Flowering: Perennial
   
   Sweet flag is a perennial herb. Both the crushed foliage and rootstocks have a pleasant aromatic fragrance. The leaves, stems, and roots are used in various Siddha and Ayurvedic medicines (Mukherjee et al., 2007). It is widely employed in modern herbal medicine as it has sedative, laxative, diuretic and carminative properties. It is used in Ayurveda to counter the side effects of all hallucinogens (Gualtieri, 1990).

18. Scientific name: *Bacopa monnieri*
   - Family: Scrophulariaceae
   - Common names: *Bramia indica, Herpestis monnieri*
   - Type: Herbs
   - Regional name: Brahmi
   - Occurrence: Native
   - Flowering: Perennial
The blooming period occurs from late spring to early summer and lasts for about a month. Both the crushed foliage and rootstocks have a pleasant aromatic fragrance. Sweet flag is a perennial herb 1-4 ft tall, consisting of tufts of basal leaves that emerge directly from a spreading rootstock (Rao et al., 2003). Brahmi is a perennial, creeping herb whose habitat includes wetlands and muddy shores. The leaves of this plant are succulent and relatively thick (Rao et al., 2003). Famed in Ayurvedic medicine, Brahmi has antioxidant properties (CSIR, 1956). It has been reported to reduce oxidation of fats in the blood stream, which is a risk factor for cardiovascular diseases (Das, 2003). It has been used for centuries to help benefit epilepsy, memory capacity, increase concentration, and reduce stress-induced anxiety. It is listed as a nootropic drug (a drug that, enhances cognitive ability). According to Ayurveda, it is bitter, pungent, heating, emetic, laxative and useful in bad ulcers, tumours, ascites, enlargement of spleen, indigestion, inflammations, leprosy, anaemia, biliousness etc (Sandhya et al., 2011). According to Unani system of medicine, it is a bitter, aphrodisiac, good in scabies, leucoderma, syphilis etc. It is promising blood purifier and useful in diarrhea and fevers (Mazumdar and Mukhopadhyay, 2006).

19. Scientific name: *Cissus quadrangularis*

- Family: Vitaceae
- Common names: Veldt grape
- Type: Herb
- Synonyms: *Cissus tetraptera, Vitis quadrangularis*
- Occurrence: Native
- Flowering: Perennial

Veldt grape is a perennial shrub reaching a height of 1.5 m and has quadrangular-sectioned branches with internodes 8 to 10 cm long and 1.2 to 1.5 cm wide. Veldt grape has been used as a medicinal plant since antiquity. In Siddha medicine it is considered a tonic and analgesic, and is believed to help heal broken bones, thus its name *asthisamharaka* (that, which prevents the destruction of bones). It is said to have antibacterial, antifungal, antioxidant, anthelminthic, antihemorrhoidal and analgesic activities. It is one of the most commonly used medicinal plants in Thailand (William et al., 2007).
20. Scientific name: *Crotalaria retusa*
   Family: Fabaceae
   Common names: Rattleweed
   Type: Herb
   Regional name: Guluguluppahalli
   Occurrence: Native
   Flowering: Annual

   Common plant in gardens and in the wild. Attracts butterflies. (FOI, 2015)

21. Scientific name: *Hedychium coronarium*
   Family: Zingiberaceae
   Common names: Butterfly ginger Lily, Garland flower,
   Type: Herbs
   Regional name: Suruli sugandhi
   Occurrence: Native
   Flowering: Perennial

   Butterfly ginger lily is beautiful and fragrant flower native to east India. It is a robust, attractive plant. Two or three flowers of this flower are inserted inside the lily and the combination of the two flowers is regarded as divine. This ornamental flower combination is usually worn behind the ear by womenfolk (FOI, 2015).

22. Scientific name: *Ruta graveolens*
   Family: Rutaceae
   Common names: Fringed rue
   Type: Herb
   Synonyms: *Ruta bracteosa, Ruta fumariifolia*
   Regional name: Haavunanjina gida
   Occurrence: Introduced
   Flowering: Perennial

   According to Ayurveda, the plant pacifies vitiated vata, kapha, epilepsy, convulsions, insanity, hysteria, fever, febrile fits, indigestion, colic and poison stings (Kirtikar and Basu, 1981). The plant is a nervine stimulant. It cause uterine contraction in higher dose; hence it is contraindicated in pregnancy (Mitra *et al.*, 1996).
23. Scientific name: **Withania somnifera**
   - Family: Solanaceae
   - Common names: Winter cherry
   - Type: Herb
   - Regional name: Ashwagandha, Kanchuki
   - Occurrence: Native
   - Flowering: Annual/perennial

   Ashwagandha, is native to drier parts of India. It has been a prized top notch adaptogenic tonic in India for 3000 - 4000 years (CSIR, 1956). The plants contain the alkaloids Withanine and Somniferine, which are used to treat nervous disorders, intestinal infections and leprosy (Das, 2003), hence the name all plant parts are used including the roots, bark, leaves, fruit and seed (CSIR, 1956).

24. Scientific name: **Zingiber zerumbet**
   - Family: Zingiberaceae
   - Common names: Shampoo ginger
   - Type: Herb
   - Synonyms: *Amomum zerumbet, Amomum silvestre*
   - Regional name:
   - Occurrence: Native
   - Flowering: Perennial

   Shampoo ginger is a perennial herb characterized by pinecone-like heads of bracts from which white flowers emerge. On maturity the heads turns bright red and exudes a wonderfully thick liquid with an equally wonderful fragrance. And, in fact, the liquid makes an excellent shampoo, thus its common name Shampoo ginger. In Hawaii the spicy-smelling fresh rhizomes were pounded and used as medicine for indigestion and other ailments (Mohammed *et al.*, 2009). In traditional use, the rhizome was ground in a stone mortar with a stone pestle, was mixed with a ripe Noni fruit and then used to treat severe sprains (Nadkarni, 1976). The pulp was placed in a cloth and loosely bound around the injured area. For a toothache or a cavity, the cooked and softened rhizome was pressed into the hollow and left for as long as was needed (Mohammed *et al.*, 2009). To ease a stomach ache, the ground and strained rhizome material is mixed with water and drunk (CSIR, 1956).
Shrubs

25. Scientific name: *Adhatoda zeylanica*
   
   Family: Acanthaceae
   
   Common names: Malabar nut
   
   Type: Shrub
   
   Synonyms: *Adhatoda vasica, Justicia adhatoda*
   
   Regional name:
   
   Occurrence: Native
   
   Flowering: Evergreen

Malabar nut is a small evergreen, sub-herbaceous bush which grows commonly in open plains, especially in the lower Himalayas. This plant requires very little watering and is an extremely hardy plant. If there is one herbal plant that, needs to be singled out for propagation and planting on a large scale, it would be this one. *Adhatoda* is useful for curing coughs, colds and asthma and is easy to administer (Nadkarni, 1976, 1995). It has been used for centuries, and is mentioned in Sanskrit scriptures.

26. Scientific name: *Alpinia calcarata*
   
   Family: Zingiberaceae
   
   Common names: Snap ginger
   
   Type: Herb
   
   Regional name: *Chikkadumparaasme*
   
   Occurrence: Native
   
   Flowering: Perennial

This plant bears white with yellow and red variegated fragrant flowers resembling snapdragons. *Alpinia calcarata* is a very easy and vigorous species to grow.

27. Scientific name: *Alternanthera sessilis*
   
   Family: Amaranthaceae
   
   Common names: Sessile joyweed
   
   Type: Herb
   
   Regional name: *Honagonne*
   
   Occurrence: Native
   
   Flowering: Perennial
The stems and leaves are useful medicines in eye trouble. Decoction is taken with little salt drunk to check vomiting of blood (Kala and Sajwan, 2007). Shoot with other ingredients used to restore virility. Poultice used for boils. The young shoots and leaves are cooked and eaten as green leafy vegetables and are recommended for lactating mothers (Sandhya et al., 2011).

28. Scientific name: *Andrographis paniculata*
   
   Family: Acanthaceae
   
   Common names: Kariyat
   
   Type: Herb
   
   Synonyms: *Justicia paniculata*
   
   Regional name: Nelabevu
   
   Occurrence: Native
   
   Flowering: Annual

   Kariyat is an erect annual herb extremely bitter in taste in all parts of the plant (Jaytilak et al., 1976). Since ancient times, Kariyat is used as a wonder drug in traditional Siddha and Ayurvedic systems of medicine as well as in tribal medicine in India and some other countries for multiple clinical applications. The therapeutic value of this plant is due to its mechanism of action which is perhaps by enzyme induction (Guhabakshi et al., 1999). The plants extract exhibits antityphoid and antifungal activities.

29. Scientific name: *Bambusa vulgaris var. striata*
   
   Family: Poaceae
   
   Common names: Golden bamboo, Bamboo
   
   Type: Shrub
   
   Regional name: Bidiru
   
   Occurrence: Native
   
   Flowering: Perennial

   Golden bamboo is a mutation of the common bamboo (*Bambusa vulgaris*); and has golden colored stems. There are narrow green stripes on the stems. It is the typical bamboo for ornamental plantation in the world at present.

30. Scientific name: *Buddleja asiatica*
   
   Family: Buddlejaceae
   
   Common names: White butterfly bush
Type: Shrub
Regional name: Chittey podaru
Occurrence: Native
Flowering: Perennial

A native of eastern Asia, this butterfly bush is one of the largest shrubs. It is a moderately succulent caned, large, arching shrub. The butterfly bush has a luscious honey aroma, but it doesn’t waft through the air. Beautiful butterflies feed on its nectar and are pleasant to watch. White butterfly bush is also a source of perfume. Flowering is from January to October (FOI, 2015).

31. Scientific name: *Cinnamomum camphora*
   - Family: Lauraceae
   - Common names: Camphor tree
   - Type: Tree
   - Synonyms: *Camphora officinarum, Laurus camphora*
   - Regional name: Chandara, Davala, Kappara, Kapura
   - Occurrence: Introduced
   - Flowering: Evergreen

Camphor tree is a large evergreen tree that, grows up to 20-30 m tall. The leaves have a glossy, waxy appearance and smell of camphor when crushed. The inconspicuous tiny cream coloured flowers are borne in the spring on branching in flower stalks. They are followed by large crops of fruit, camphor tree is native to China, Japan, Korea, Taiwan, and adjacent parts of east Asia. It is used in treatments related to nasal blockages and cough (Malahotra 1996). It is now cultivated in many parts of the world.

32. Scientific name: *Clerodendrum viscosum*
   - Family: Verbenaceae
   - Common names: Hill glory bower
   - Type: Shrub
   - Synonyms: *Clerodendrum infortunatum, Clerodendrum calycinum*
   - Regional name: Ibbane
   - Occurrence: Native
   - Flowering: Perennial
Appendix

Hill glory bower is a gregarious shrub, 1-2 m high. Extract of the leaves is given orally in fever and bowel troubles in the Kuki and Rongmei tribes in the north-east India. Fresh leaf-juice is introduced in the rectum for removal of Ascarids (CSIR, 1956). Leaves and flowers are used to cure scorpion sting.

33. Scientific name: **Elaeocarpus floribundus**
   - Family: Elaeocarpaceae
   - Common names: Indian olive
   - Type: Tree
   - Regional name: Rudhrakshi mara
   - Occurrence: Native

Flowering: Evergreen leaves are used in rheumatism. Fruits are prescribed in dysentery and diarrhoea (Mohammed et al., 2009). Infusion of the bark and leaves are used as a mouth-wash for inflammed gums (Yusuf et al. 2009). Flowering begins from July-August. The seeds (Rudraksh) of the fruit have aesthetic value in Hindu deity worship (CSIR, 1956).

34. Scientific name: **Euphorbia tirucalli**
   - Family: Euphorbiaceae
   - Common names: Pencil tree
   - Type: Shrub
   - Synonyms: E. media, Tirucalia indica, E. scoparia
   - Regional name: Bonta-kalli, Kalli-kaddi.
   - Occurrence: Naturalised
   - Flowering: Perennial

Pencil tree is a plant that, grows with single or multiple trunks which support a tangle of light green, pencil thick, succulent branches with almost no leaves. All parts of *Euphorbia tirucalli* ooze a milky sap when damaged or cut. Contact with this sap may cause dermatitis in some people, and in the eyes the sap can cause temporary blindness which may last for several days (Das, 2003). Pencil Tree is native to Africa, cultivated and naturalized elsewhere.

35. Scientific name: **Gardenia gummifera**
   - Family: Rubiaceae
   - Common names: Gummy gardenia
   - Type: Shrub
Appendix

Synonyms:
Regional name: *Kaad bikke*
Occurrence: Native
Flowering: Perennial

Native to India, Gummy gardenia is a small tree like shrub which grows up to 3 meters. This species can be helpful in treating digestive problems, including dyspepsia and diarrhoea (Yusuf *et al.*, 2009) or used as an astringent and expectorant for nervous conditions and spasms (Sharma *et al.*, 2001).

36. Scientific name: *Sauropus androgynus*

Family: Phyllanthaceae
Common names: Star gooseberry, or Sweet leaf,
Type: Shrub
Synonyms: *Aalius androgyna*, *A. lanceolata*
Regional name: *Chakramuni*
Occurrence: Native
Flowering: Perennial

It is one of the most popular leaf vegetables in south Asia and southeast Asia and is notable for high yields and palatability (Khao, 1999). The shoot tips have been sold as tropical asparagus. It is a good source of vitamin K. However, a study has suggested that, excessive consumption of juiced *Katuk* (common name in the southeast of Asia) leaves (due to its popularity for body weight control in Taiwan in the mid ‘90s) can cause lung damage, due to its high concentrations of the alkaloid papaverine (Khao, 1999). It also has high level of carotenoids, especially in freshly picked leaves, as well as high levels of vitamins B and C, proteins and minerals. The more the leaves mature, the higher the nutrient content of the leaves (Nandkarni, 1995).

37. Scientific name: *Scaveola taccada*

Family: Goodeniaceae
Common names: Half flower
Type: Shrub
Synonyms: *Lobelia taccada*, *S. frutescens*, *S. sericea*
Regional name: *Bhadraak, Ardha hoova.*
Occurrence: Native
Flowering: Evergreen
Half flower is a large evergreen shrub, found on tropical beaches of the Indian Ocean. The flowers are composed of five white to pale purple petals in a distinctive fan shape, hence the common name half-flower. The flowers are produced throughout the year (FOI, 2015).

38. Scientific name: **Strobilanthes hamiltoniana**  
   - Family: Acanthaceae  
   - Common names: Chinese rain bell, Assam indigo  
   - Type: Shrub  
   - Synonyms: *Strobilanthes colorata*, *Ruellia hamiltoniana*  
   - Regional name:  
   - Occurrence: Native  
   - Flowering: Perennial  

   The whole plant of the Chinese rain bell is used for the treatment for itching due to spider poisoning.

39. Scientific name: **Tecoma capensis**  
   - Family: Bignoniaceae  
   - Common names:  
   - Type: Shrub  
   - Synonyms: *Tecomaria capensis*, *Cape Honeysuckle*, *Bignonia capensis*  
   - Regional name: *Nandi battalu*  
   - Occurrence: Introduced  
   - Flowering: Perennial  

   *Tecoma capensis* is an ornamental garden plant commonly used for screening and decorative purposes. It can also be trimmed to form a hedge. It is often planted specifically to attract birds and butterflies. The powdered bark of this attractive garden plant is used as a traditional medicine to relieve pain and sleeplessness (Mazumdar and Mukhopadhyay, 2006).

40. Scientific name: **Woodfordia fruticosa**  
   - Family: Lythraceae  
   - Common names: Fire flame bush  
   - Type: Shrub  
   - Synonyms: *Woodfordia floribunda*  
   - Regional name: *Tamrapuspi*
Occurrence: Native
Flowering: Perennial
Fire flame bush is a spreading, leafy shrub, small in size but very conspicuous on dry, rocky hillsides from December to May, when the masses of little fiery bells give a bright touch of colour to the dry terrain.
This is a drug largely used in native medicine (Sharma et al., 2001 and CSIR, 1956). This enters into the composition of many preparations, decoctions, churnas and ghritas for various diseases, but chiefly dysentery and diarrhoea by reason of it being highly astringent (Das, 2003). From the flowers, which contain much tannin, a red dye is obtained which is used to dye silks. The leaves also contain a large proportion of tannin and makes it the commonest tan in India.

Trees

41. Scientific name: **Araucaria excelsa**
   Family: Araucariaceae
   Common names: Christmas tree
   Type: Tree
   Synonyms: *Araucaria columnaris*
   Regional name: *Christmas mara*
   Occurrence: Introduced
   Flowering: Evergreen

42. Scientific name: **Cannanga odorata**
   Family: Annonaceae
   Common names: *Ylang Ylang*
   Type: Tree
   Synonyms: *Uvaria odorata*
   Regional name: *Apurva champaka*
   Occurrence: Introduced
   Flowering: Evergreen
   The essential oil of the flower is obtained through steam distillation of the flowers and separated into different grades according to when the distillates are obtained (CSIR, 1956).

43. Scientific name: **Chrysophyllum cainito**
Family: Sapotaceae
Common names: Star apple
Type: Tree
Synonyms: *Achras cainito*
Regional name: --
Occurrence: Evergreen
Flowering: Introduced

Star apple is a moderate-sized Evergreen tree reaching 50 ft. with a dense crown. It is grown for its fruit. When the fruit is allowed to ripen on the tree the pulp is delicious and is eaten uncooked. The colour of the fruit varies from white to purple. Flowering happens from July-August (FOI, 2015).

44. Scientific name: **Ceiba pentandra**

Family: Bombacaceae
Common names: Kapok tree
Type: Tree
Synonyms: (still searching)
Regional name: *Dudi mara*
Occurrence: Naturalised
Flowering: Deciduous

Kapok tree is an emergent tree of the tropical rainforests, and is often described as majestic (FOI, 2015). Their odour is unpleasant, but is probably meant to attract the bats that, pollinate them. The brown seeds are round like peas and are found in pods (Krishnaraju *et al.*, 2005).

45. Scientific name: **Citharexylum spinosum**

Family: Verbenaceae
Common names: Fiddlewood
Type: Tree
Synonyms: *Citharexylum fruticosum*
Regional name: *Kolu sampige, Parijatha*
Occurrence: Introduced
Flowering: Evergreen

Fiddlewood is a beautiful shrub or a small tree with long tassels of richly scented white flowers. Flowers are pendant like and cover the tree from spring to
fall. Foliage is dark green, shiny, ornamental. Normally seen as a large shrub (FOI, 2015). The tiny flowers are a favourite to the bees and butterflies. The wood of this tree is said to be useful for making musical instruments - that, could perhaps be the reason for its common name, fiddlewood.

46. Scientific name: **Crecentia cujete**
   
   Family: Bignoniaceae
   
   Common names: Beggars bowl, Calabash tree
   
   Type: Tree
   
   Synonyms: *Crecentia acuminata*
   
   Regional name: *Burudey mara, Sokeburudey hannu*.
   
   Occurrence: Introduced
   
   Flowering: Evergreen
   
   Extracts of leaves and fruits are used in healing coughs of high intensity (FOI, 2015).

47. Scientific name: **Dracaena fragrans**
   
   Family: Agavaceae
   
   Common names: Corn Plant
   
   Type: Shrub
   
   Synonyms: *Aletris fragrans*
   
   Regional name: *Manjinaaru*
   
   Occurrence: Native
   
   Flowering: Perennial
   
   Corn Plant has white flowers that, are highly fragrant, hence the species name fragans. The buds can sometimes be pinkish. It is a popular houseplant with several cultivars available with the leaves variegated with white or yellow stripes.

48. Scientific name: **Garcinia gummi-gutta**
   
   Family: Clusiaceae
   
   Common names: Cambodge tree, Malabar-tamarind
   
   Type: Tree
   
   Synonyms: *G. cambogia, Cambogia gemmi-gutta, G. sulcata*
   
   Regional name: *Manda huli, Mantulli, Punara huli*
Appendix

Occurrence: Native
Flowering: Evergreen

Plant is used in Ayurveda to pacify vitiated phlegm, obesity, hypercholesteremia, diarrhoea (Das, 2003), colic, ulcers, inflammations and hyperperspiration. Useful parts are leaves and dried fruits (Asolkar et al., 1992).

49. Scientific name: *Kalanchoe pinnata*
   Family: Crassulaceae
   Common names: Air plant
   Type: Herb
   Synonyms: *Cotyledon pinnata, Bryophyllum pinnatum*
   Regional name: Kaadu basale, Gandu kaalinga.
   Occurrence: Introduced
   Flowering: Perennial

These plants are cultivated as ornamental houseplants and rock or 'cactus' garden plants. They are popular because of their ease of propagation, low water requirements, and wide variety of flower colors typically borne in clusters well above the vegetative growth. The "air plant", *Kalanchoe pinnata* is a curiosity because new individuals develop vegetatively at indents along the leaf, usually after the leaf has broken off the plant and is lying on the ground, where the new plant can take root. In the Bahamas it is mostly used for Asthma or shortness of breath (Rastogi and Mehrotra, 1995).

50. Scientific name: *Kigelia pinnata*
   Family: Bignoniaceae
   Common names: Sausage tree
   Type: Tree
   Synonyms: *Kigelia africana, Crescentia pinnata*,
   Regional name: Mara sawathey, Aaneythoradu kaayi.
   Occurrence: Naturalised
   Flowering: Deciduous

The fragrant, nectar-rich blossoms are pollinated by bats, insects and sunbirds in their native habitat. The mature fruits dangle from the long stalks like giant sausages. They may be up to two feet long and weigh up to 6.8 kg. The flowers are seen hanging from the tree while they haven’t opened. After they
open, they fall off quite soon. The fruit, while not palatable for humans, is
popular with (the hippopotomus) hippos, baboons, and giraffes. It is mainly
grown as an ornamental tree, both for its beautiful deep red flowers and strange
fruit. There are also a range of traditional uses for the fruit, varying from topical
treatments for skin afflictions, to treatment for intestinal worms (Dikshit and
Dutt, 1930). There are some steroid chemicals found in the sausage tree that,
are currently added to commercially available shampoos and facial creams
(Nadkarni, 1976).

51. Scientific name: Lagerstroemia indica
   Family: Lythraceae
   Common names: Pride of India, Common crape myrtle
   Type: Tree
   Synonyms: Lagerstroemia flos-reginae
   Regional name: Holey matti, Bili nandi
   Occurrence: Native
   Flowering: Deciduous
   Flowers are borne in summer in big showy clusters and come in white and
many shades of pink, purple, lavender and red. Seeds are narcotic. In Manipur,
flowers and leaves are used as purgatives (Rastogi and Mehrotra, 1995). Bark is
used as a stimulant and as febrifuge (fever removing). Roots are used to make an
astringent and used for mouth-gargle (Dikshit and Dutt, 1930).

52. Scientific name: Madhuca longifolia var. Longifolia
   Family: Sapotaceae
   Common names: South Indian Mahua
   Type: Tree
   Synonyms: Madhuca indica
   Regional name: Ippey mara
   Occurrence: Native
   Flowering: Deciduous
   It differs from the usual Mahua where leaves are narrower. Mahua is one
of the most important of Indian forest trees, not because it may possess valuable
timber - and it is hardly ever cut for this purpose, but because of its delicious
and nutritive flowers. It is a tree of abundant growth and, to the people of central
India; it provides their most important article of food as the flowers can be stored
almost indefinitely (CSIR, 1988). Medicinally the tree is very valuable. The bark is used to cure leprosy and heal wounds; the flowers are prepared into a decoction to relieve coughs, biliousness and heart-trouble while the fruit is given for consumption in cases of blood diseases (Basha and Sudarshanam, 2011).

53. Scientific name: *Magnolia champaca*

- Family: Magnoliaceae
- Common names: Champa
- Type: Tree
- Synonyms: *Michelia champaca, Champaca michelia*
- Regional name: Sampige
- Occurrence: Native
- Flowering: Evergreen

This plant is of high aesthetic and ethnic value. Wood is also used in the timber and flowers in perfume industry (Das, 2003).

54. Scientific name: *Muntingia calabura*

- Family: Muntingiaceae
- Common names: Singapore cherry, Jamaica cherry
- Type: Tree
- Synonyms: *Muntingia rosea*
- Regional name: *Gasagase hannina mara*
- Occurrence: Introduced
- Flowering: Evergreen

The tree has the reputation of thriving with no care in poor soils. It is drought-resistant but not salt-tolerant. Wherever it grows, fruits are borne nearly all year. The leaf infusion is drunk as a tea-like beverage. Fruits contain hundreds of tiny seeds. The flowers are said to possess antiseptic properties. An infusion of the flowers is valued as an antispasmodic (Chatterjee and Pakrashi, 1994). It is taken to relieve headache and the first symptoms of a cold (Asolkar, 1992).

55. Scientific name: *Nyctanthes arbor-tristis*

- Family: Oleaceae
- Common names: Har singar
Appendix

Type: Tree
Synonyms: *Nyctanthes dentata*
Regional name:
Occurrence: Native
Flowering: Evergreen

The flower of this tree is also called queen of the night. *Nyctanthes arbor-tristis* literally means, ‘night-blooming sad tree’. Grows as large shrub or small tree (depending on how it is trimmed). The large attractive leaves are rough and hairy. The sweet scented flowers are small, attractive with white petals and an orange-red tube in the centre and bloom, opening at night and drop off in the morning, thus making a carpet of flowers in the morning. The flower has lot of importance in Hindu deity worship (Das, 2003).

56. Scientific name: **Plumeria pudica**
   Family: Apocynaceae
   Common names: Wild plumeria
   Type: Tree
   Synonyms: *Plumeria caracasana, Plumeria cochleata*
   Regional name: *Go-sampigey, Govu- sampigey.*
   Occurrence: Introduced
   Flowering: Evergreen

   Wild plumeria an evergreen species of *Plumeria* is native to Panama, Colombia and Venezuela. It is a shrub which usually has one or two slender trunks that, branch close to the ground forming a dense, slightly spreading crown. The flowers are not fragrant. The plant looks attractive even when it is not flowering, because of its beautiful leaves (FOI, 2015).

57. Scientific name: **Plumeria rubra**
   Family: Apocynaceae
   Common names: Frangipani pink
   Type: Shrub/tree
   Synonyms: *Plumeria acuminate, Plumeria acutifolia*
   Regional name: *Deva gani, Deva sampigey*
   Occurrence: Introduced
   Flowering: Evergreen
They are cultivated for their pleasant appearance and beautiful flowers. In Cambodia, as with other *Plumeria* species, *P. rubra* flowers are used to make necklaces as offerings to deities or as decoration for coffins. The leaves of this species are used in the treatment of sores and made into soothing infusions. Also the flowers and bark of it are used in traditional Chinese medicine (TCM) in the treatment of fever, bacillary dysentery, pertussis and so on (Rastogi and Mehrotra, 1995).

58. Scientific name: **Schefflera actinophylla**
   Family: Araliaceae
   Common names: Octopus tree, Umbrella tree
   Type: tree
   Synonyms: *Brassaia actinophylla*
   Regional name: --
   Occurrence: Introduced
   Flowering: Evergreen

Octopus tree is an erect shrub or small tree growing up to 12 m tall. The tree grows with multiple trunks, each topped with a small crown of large showy leaves (FOI, 2015).