

Bursera the Fragrance of Forest

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INTRODUCTION

The Indian lavender is Botanically named as *Bursera delpechiana* belongs to the family Burseraceae. Other names are Mexican Linaloe tree, Tree of Fragrance etc. Economic part is Fruit husk and wood. It contain active principle called Linalool.



Bursera is an important essential oil yielding plant. The genus Bursera is named after Joachim Bursera, a famous Dutch botanist. linaloe berry has some similarity to Bergamont mint and Lavender. This tree is known as linaloe and Indian lavender tree and the oil as linaloe oil.

THE USES

It is a highly valued perfumery material and is used in numerous perfumes, cosmetics and in scenting of soaps. It is also used in flavoring food and beverages. The Indian oil is superior in quality compared to the Mexican oil.

ABOUT PLANT

Bursera is a large deciduous tree. Male tree is medium, has a longer trunk and grows to about 7.5 m. Inflorescence is a paniculate cyme with pubescent axis upto 10 cm long and contains 40-50 staminate flowers. The female tree attains about 6 m height and has larger leaves and some of them are 18 cm long. Leaves are pinnate, serrate. Fruit is a fleshy berry, a little larger than a pea, about 1 cm in diameter, dark green in colour turning to a reddish brown as they mature and fall off. The pericarp of the fruit contains resiniferous ducts surrounded by a large layer of thick walled cells. The inflorescence contains 8-20 pistillate flowers. Flowers are pale green-pale yellow, pentamerous; calyx small, lobes rounded, petals valvate in bud, stamens 10, nearly equal, ovary hairy surrounded by a broad crenate disk.

ORIGIN, HABITAT AND DISTRIBUTION

- The plant is originally native to Mexico and South America and

introduced to India from Mexico in 1920.

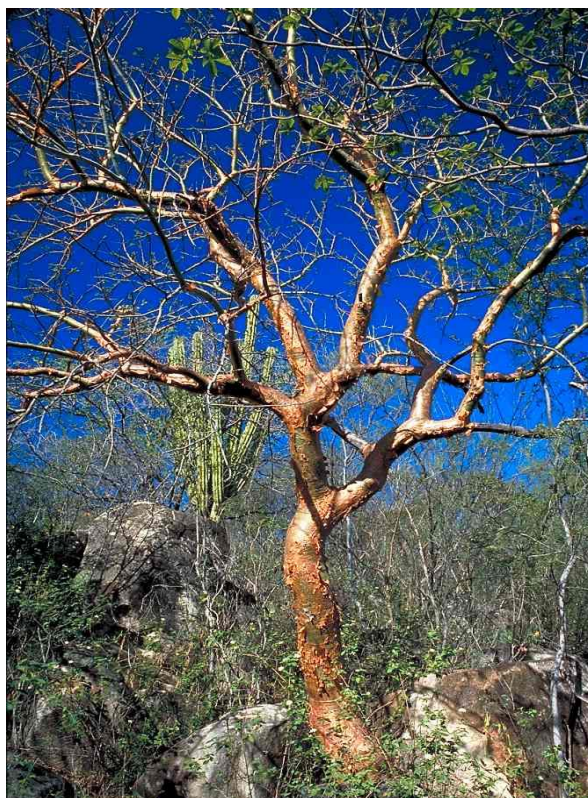
- In India Bursera is grown in Karnataka, Maharashtra and Andhra Pradesh.
- The area under the crop in India, is around 800 ha, out of which 450 ha, is government owned.
- The Thatguni estate in Karnataka which is 19 km, away from Bangalore in Karnataka is perhaps the only place in the whole world where linaloe trees were cultivated as full-time regular crop.

CHEMICAL COMPOSITION

Linalool (60-70%). The other constituents of the oil are linalyl-acetate, geraniol, -terpineol, methyl heptanol, linalool monoxide etc.

SPECIES/VARIETIES

Linalool tree belongs to the tropical American genus '*Bursera*' of the family *Burseraceae* under natural order *Geraniales*. The genus has 45 species. The important species are as follows.



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- *Bursera gumifera* - American gum tree' or Indian birch or birds tree. An infusion of leaves is used as a substitute for tea
- *Bursera icilarita*- Tree bears edible aromatic fruits.
- *Bursera leptopholes*- Mature fruits are edible
- *Bursera serrate-pulp* is edible and also yield essential
- *Busera simaruba*- Commonly called Rumb or 'West Indian birch' ,leaves are used as substitute for tea.
- *Bursera penicilliata*- Every plant part contains essential oil.
- *Bursera kluggis*-Yield triterpenes which have anticancer activity.

SOIL AND CLIMATE

Sandy or loamy soils, Soil pH = Neutral – alkaline Well drained soils are required. It is drought and salt tolerant and also very fast growing in nature. It can be grown Worldwide, tropical dry forests and woodlands , Annual precipitation between (250 and 2,000 mm) , frost-free conditions year round .Annual temperature of 62.6 °F (17°C).Evaporation rate that exceeds precipitation i.e they grown in subtropical.

METHODS OF PROPAGATION

NATURAL REGENERATION

It is mainly by seeds which are carried by birds, for a short distance. The natural regeneration is also found underneath the tree which is probably due, to fallen fruits. The other means of natural regeneration is by means of coppicing. It coppices well but is not encouraged because of spreading nature of coppices. It rarely produces suckers.

OTHER METHODS

1. SEEDS

The seed gemination is very low (5-10%). Hence, seeds are sown immediately after collection in the months of February to May. The seeds germinate only during June-July. Nursery raised seedling when they are 15 cm

in height have to be picked out and planted into container for few months till they attain an average height of 45 cm.

2. VEGETATIVE PROPAGATION

AIR LAYERING

This gives 80-100 per cent success. The best season for air layering was found to be October-January. In this case root-initiation was noted in 26 days and the layers were ready for separation in 2 months.

CLEFT-GRAFTING

This method of grafting was tried with a view to increase the fruit yield of the species. When male branches are grafted on to a female tree, the pollen produced will certainly facilitate easy pollination. The grafts establish well in 3-4 weeks. About 60-100 per cent success was obtained by this method.

CUTTINGS

Cuttings are the best means of production of new plants, A mother plant of above 5 years age is good for selection of cuttings. Cuttings taken in early February and March have proved best. Cuttings of 0.5 to 1.0 m length, 1-3 cm in diameter with clean cut are taken from a well established mother plant, inverted for 12-24 hours and then planted in polythene bag of 20 cm x 30 cm or earthen pots of 12 cm diameter and 25 cm height filled with sand, FYM and red earth in 1:1:1 ratio. Sprouting takes place in 30-40 days while healthy root system develops in about 4-6 months. The rooted cuttings ar maintained in nursery till planting time i.e. August-September.

PLANTING METHOD

Pits of 0.5 m cube will be dug at 6 m x 6 m interval and the rooted cuttings will be planted during rains. The pits are refilled with a mixture of FYM, red earth and sand in the ratio of 1:2:3 prior to planting. A pinch of gramaxone is added to the soil to keep off termites. About 300 cuttings can be accomodated in one hectare land. Planting is done in such a way that a male tree will be surrounded by 6-8 female plants to meet the pollination requirements. The plants are staked and watered after planting.

PLANT PROTECTION

PESTS

➤ **Stem borer**

Burrows into the young stem and feeds on tissue and dries up the plant. Stem with an exudation and the stem dries up with a dirty film on the surface. The growth of the stem is arrested at this point the growth of the plant tips arrested

Control: No control measures are recommended

➤ **White ants:** Cause damage to the plant.

Control: Aldrin or Heptachlor may be applied to the soil at the rate of 25 kg/ha.

Diseases

➤ **Leaf blight:** Burnt appearance on the leaves Control: Spray copper fungicides

➤ **Downy mildew**

Water lesion on down side of the leaves and later they turn dark spots

Control: Spraying of fungicides like bordeaux mixture at 1%

➤ **Dieback**

Death of terminal growing point and cracking of stem

Control: Spraying of copper fungicides.

HARVESTING METHOD AND YIELD

In India linaloe oil is mainly extracted from air dried husks, matured or ripe berries. Whereas in Mexico, it is mostly from heart wood of 50-

60 years old trees. The plant bears first crop of fruits during the 3rd or 4th year. Occasionally few fruits set in earlier but it is better to remove them to allow adequate vegetative development in the first instance. They are allowed to bear the crop only after about 5-6 years. The ripe berries have to be hand picked, or ripe fallen fruits have to be collected. On an average the trees come to economical bearing after 10 years of planting

i) Hand picking – The ripe fruits are individually picked from the trees with the help of ladder and then dried. The only advantage of this method is that it could be followed even in adverse climatic conditions such as during rainy days also.

The disadvantages are:

The husk of fruits require more time for drying It is costly, as a number of labourers are engaged and Quality of husk with reference to oil content is poor.

ii) Collection of fallen fruits - The ripe and dehusked fruits fall the ground. The ground is kept clean so that dehusked fruits are not lost and thus collected by sweeping the floor of the plantation.

YIELD

300 plants/ha (10 years old) yield about 1500 kg of berries. The yield of husk is 18 per cent of the berry weight accounting for 255 kg/ha. The oil content of the husk is 10 per cent thus yielding about 25 kg oil/ha.