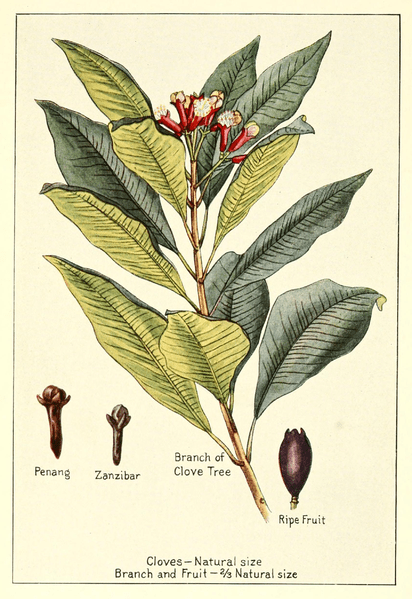
**CLOVE**  Vernacular name :- Laung Botanical name :- Syzygium aromaticum/Eugenia aromaticum **CLASSIFICATION** Class :- Eudicots Order :- Myrtales Family :- [Myrtaceae](https://en.wikipedia.org/wiki/Myrtaceae) Genus :- Syzygium species :- aromaticum

1. Cloves are the aromatic [flower](https://en.wikipedia.org/wiki/Flower) [buds](https://en.wikipedia.org/wiki/Bud) of a tree. 2. They are available throughout the year. 3. It is one of the most valuable spices that has been used for centuries as food preservative and for many medicinal purposes. 4. A major component of clove taste is due to the chemical [eugenol](https://en.wikipedia.org/wiki/Eugenol). 5. [Eugenol](https://en.wikipedia.org/wiki/Eugenol) composes 72 – 90% of the [essential oil](https://en.wikipedia.org/wiki/Essential_oil).

**DISTRIBUTION/OCCURRENCE** 1. Clove is native to the [Maluku islands](https://en.wikipedia.org/wiki/Maluku_Islands) (or Moluccas) in Indonesia. 2. Nowadays it is cultured in several parts of the world . 3. Cloves are available throughout the year due to different harvest seasons in different countries. 4. The clove growing countries are Indonesia, Brazil, India, Pakistan, Africa, Malaysia, [Madagascar](https://www.britannica.com/place/Madagascar), Mauritius, West Indies, Bangladesh, [Tanzania](https://www.britannica.com/place/Tanzania), [Sri Lanka](https://www.britannica.com/place/Sri-Lanka) etc. 5. Tanzania produces about 90% of total world production. 6. In India, it is mostly grown in the hilly tracts (land) of Tamil Nadu, Kerala and Karnataka.

**NUTRITION** 1. The clove contains a good amount of Protein, Carbohydrate and Minerals like potassium, manganese, iron, selenium and magnesium etc. 2. It also contain very good amounts of  vitamin – A ,vitamin – K, vitamin – B6 (pyridoxine), thiamin (vitamin B – 1), vitamin – C  and riboflavin.

**BOTANICAL DESCRIPTION/STRUCTURE** The clove tree is an [evergreen](https://en.wikipedia.org/wiki/Evergreen) tree.  **Root** :- 1. The seedlings produces a pronounced tap root. 2. It remains relatively short and is fairly quickly replaced by 2 – 3 primary sinkers which develop from it. **Stem** :- 1. It grows up to 8 – 12 mt. (26 – 39 ft.) tall, but the wild ones may attain a height of up to 70 ft. 2. In younger stage conical in shape, later become roughly cylindrical. 3. It is up to 30 cm. in diameter and is composed of very hard wood. 4. It is often very much branched into forks near the base into 2 – 3 main erect branches in an upward direction. 5. Externally, they are brownish, rough, and irregularly wrinkled longitudinally with short fracture and dry, woody texture. 6. The whole tree gives a conical appearance. 

**Leaves** :- 1. It has large leaves, which borne in opposite manner. 2. The leaves are simple, opposite, glabrous and aromatic due to presence of oil glands-. 3. The petiole is slender 2 – 3 cm. long, Somewhat swollen and pinkish at the base. 4. The lamina is lanceolate or narrowly elliptical. 5. The apex is shortly or broadly blunt acuminate and the base is cuneate (wedge shape). **Inflorescence/Flower** :- 1. The inflorescence is a terminal cyme, and branched from the base. 2. The flower is hermaphrodite with a fleshy hypanthium which is surmounted by the sepals. 3. The flowers are [crimson](https://en.wikipedia.org/wiki/Crimson) (dark red colour). 4. They are grouped (mainly three) in terminal clusters. 5. The flowers have cylindrical bases. 6. The buds are pale hue (peculiar colour) at initial stage, but gradually turn green, and at the time of harvest becomes bright red colour. 7. The four calyx lobes are fleshy, triangular, slightly incurved. 8. The four petals are imbricate, tinged red, rounded. **Fruit** :- 1. The fruits called mother of  cloves. 2. The clove fruit consist of a long [calyx](https://en.wikipedia.org/wiki/Calyx_(botany)) that terminates in four spreading [sepals](https://en.wikipedia.org/wiki/Sepal). 3. It has four unopened petals that form a small central ball. 3. The ripe fruits of cloves are ovoid, brown, [unilocular](https://en.wikipedia.org/wiki/Locule) and one – seeded. 4. Cloves vary in length from about 13 – 19 mm. **Seed** :- 1. The seeds should be collected from fully ripe fruits for raising seedlings. 2. Fruits for seed collection, known popularly as mother of clove.’ 3. They are allowed to ripe on the tree and drop down naturally. 4. Such fruits are collected and sown directly in the nursery or soaked in water overnight. 5. The pericarp is removed before sowing.

**CULTIVATION/PLANTING** 1. The clove tree is cultivated in coastal areas at maximum altitudes of 200 mt. above the sea level. 2. The trees are usually [propagated](https://www.merriam-webster.com/dictionary/propagated) from seeds. 3. After cultivation the seed are provided shade for seedlings. 4. The production of flower buds, starts after 4 – 5 years of plantation. 5. Flower buds are collected in the maturation phase before flowering. 6. Flower buds are found optimum in June – December. 7. Seeds are extracted from ripe fruits and sown immediately. 8. The seeds are soaked before sowing. 9. Best time for clove plantation is at the onset of South – West monsoon in June – July. 10. The seeds germinate in 5 – 6 weeks. 11. Two year old seedlings are planted in pits of 30 cm. x 30 cm. x 30 cm. size filled with soil. 12. The sowing is done at a spacing of 6 mt. either way. 13. Frequent watering is essential in the initial stages in the absence of rains.  14. Irrigation should be given during summer months.

**HARVESTING** 1. Cloves are harvested at 1.5 – 2 cm. long. 2. A tree may annually yield up to 34 kg. of dried buds. 3. The buds are removed while they are still dull (light) green in colour. 4. The buds are hand – picked in late summer and again in winter and are then sun – dried. 5. The collection of flower bud could be done manually or chemically –mediated using a natural phytohormone which liberates ethylene in the vegetal tissue, for maturation. 6. The fruit bearing starts from sixth year onwards. 7. The flower buds should be harvested when they are fully mature but before opening. 8. The buds are harvested as clusters and separated and dried in the sun for 5 – 7 days.

**ECOLOGICAL FACTOR Climate** :- 1. Clove, are tropical [evergreen](https://www.britannica.com/plant/evergreen-plant) tree. 2. The humid tropical climate with an annual rainfall of 150 - 250 cm. and a mean temperature range of 20°C. – 30°C. is suitable for clove. **Soil** :- 1. The deep rich loams with high humus content and laterite soils are the best for clove cultivation. 2. It grows best in loamy soil and heavier red soil. 3. In India, the western ghats and the red soil of Kerala are best and suitable for clove cultivation.

**SOME VARIETIES OF CLOVE**  1. Several varieties of clove are cultivated throughout the world. 2. Local cultivers are used. 3. Some of the varieties are :- Afo, Posi – posi, Siputih, and Zanzibar etc.

**USES** 1. It is commonly used as a culinary (connecting with cooking) [spice](https://en.wikipedia.org/wiki/Spice). 2. It is used for flavouring a number of vegetarian or non – vegetarian preperations. 3. They are used in pickles and sauces.4. Cloves are used for flavour to meats, [curries](https://en.wikipedia.org/wiki/Curry), and [marinades](https://en.wikipedia.org/wiki/Marinade) (mixture of oil). 5. Cloves may be used to give aromatic and flavour qualities to hot beverages, often combined with other ingredients. Such as lemon and sugar. 6. They are also used in wide variety of dishes. 7. It pairs well with cinnamon (dal – chini), [allspice](https://en.wikipedia.org/wiki/Allspice), [basil](https://en.wikipedia.org/wiki/Basil), [onion](https://en.wikipedia.org/wiki/Onion), [citrus peel](https://en.wikipedia.org/wiki/Citrus_peel),  [anise](https://en.wikipedia.org/wiki/Star_anise), and [peppercorns](https://en.wikipedia.org/wiki/Peppercorn). 8. Due to bioactive chemicals of clove, the spice may be used as an ant repellent (pestcide). 9. Clove oil is effective for [toothache](https://en.wikipedia.org/wiki/Toothache) pain. 10. Cloves use to fresh the breath. 11. It is also used in perfumery in soap etc. 12. It is taken in beetle. 13. It is also used to control nausea and vomiting, cough, diarrhea etc.

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