Cinnamomum verum

Presl.

Lauraceae

cinnamon

LOCAL NAMES
Creole (kanèl); English (cinnamon tree,true cinnamon,ceylon cinnamon); French (cannelle,cannellier,cennellier de Ceylon); Hindi (elavagnum,vayana,karu va,karuwa,twak); Indonesian (kayu manis); Luganda (budalasini); Malay (kayu manis); Spanish (canelero,canela legítima,canela); Trade name (cinnamon)

BOTANIC DESCRIPTION
Cinnamomum verum is an evergreen tree that reaches a height of 8-17 m in the wild. In an unharvested state, the trunk is stout, 30-60 cm in diameter, with a thick, grey bark and the branches set low down.

Leaves stiff, extipulate, opposite, somewhat variable in form and size. Petiole 1-2 cm long, grooved on the upper surface. Lamina usually 5-18 x 3-10 cm, ovate or elliptic; base more or less rounded and the tip tends to be somewhat acuminate. There are 3, sometimes 5, conspicuous longitudinal veins found at the base of the lamina and running almost to the tip. The young leaves of the flush are reddish, later turning dark green above with paler veins and pale glaucous beneath.

Flowers borne in lax axillary and terminal panicles on the ends of twigs. Peduncles creamy white, softly hairy, 5-7 cm long. Individual flowers very small, about 3 mm in diameter, pale yellow, with a foetid smell, each subtended by a small, ovate, hairy bract. The calyx is campanulate and pubescent with 6 acutely pointed segments. Corolla absent.

Fruit a fleshy ovoid drupe, black, 1.5-2 cm long when ripe, with the enlarged calyx at the base.

The etymology of cinnamon is derived from the Greek word ‘kinnamomon’ (meaning spice). The Greeks borrowed the word from the Phoenicians, indicating trade with the East from early times. Cinnamon is recorded in Sanskrit, the Old Testament, and in Greek medicinal works and was employed by the Egyptians for embalming purposes as early as 1485 BC. A species synonym, ‘zeylanicum’, refers to the place of origin, the island of Ceylon (Sri Lanka).

BIOLOGY
The method of pollination is not known with certainty, but insects probably pollinate the very small bisexual flowers, while birds disperse the fruit berries. In Sri Lanka, the trees flower in January and the fruits ripen 6 months later.

Habit at Kepaniwai, Maui, Hawaii (Forest and Kim Starr)

Branch at Kula San Keokea
Maui, Hawaii (Forest and Kim Starr)

ECOLOGY
C. verum requires a warm and wet climate with no extremes of heat and cold. Although there can be months in which there is less rain, no prolonged dry season should occur and rain received on about 150 days per year. Rocky and stony ground is unsuitable. Waterlogged and marshy areas should be avoided, as they result in an undesirable, bitter product, which is much less aromatic. C. verum is indigenous to Sri Lanka, with smaller areas of wild trees found in southwestern parts of India.

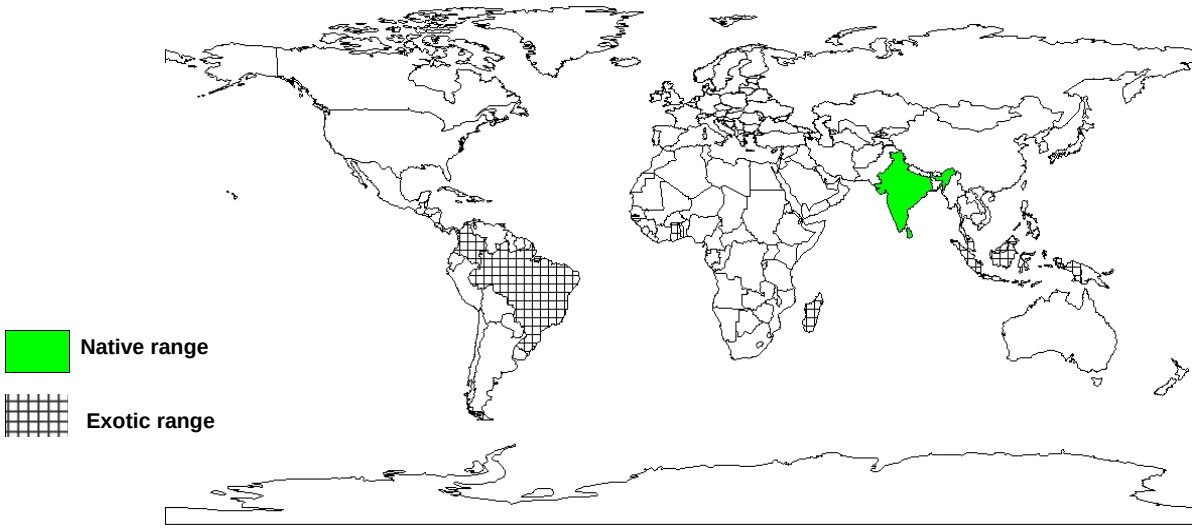
BIOPHYSICAL LIMITS
Altitude: Below 500 m, Mean annual temperature: 27 deg. C, Mean annual rainfall: Over 2 000 mm

Soil type: Tolerant of a wide range of soils.

DOCUMENTED SPECIES DISTRIBUTION

Native: India, Sri Lanka

Exotic: Brazil, Colombia, Comoros, Dominica, Fiji, Ghana, Haiti, Indonesia, Jamaica, Madagascar, Malaysia, Mauritius, Mexico, Nicaragua, Nigeria, Philippines, Puerto Rico, Seychelles, Sierra Leone, Tanzania, Uganda



The map above shows countries where the species has been planted. It does neither suggest that the species can be planted in every ecological zone within that country, nor that the species can not be planted in other countries than those depicted. Since some tree species are invasive, you need to follow biosafety procedures that apply to your planting site.

PRODUCTS
Food: Cinnamon bark oil is used in meat and fast-food seasoning, sauces and pickles, baked goods, confectionery and cola-type drinks. The leaf oil is also used as a flavouring agent for seasonings and savoury snacks. The oil's high eugenol content makes it valuable as a source of this chemical for subsequent conversion into iso-eugenol, another flavouring agent. In Mexico, the bark is used to enhance the flavour of coffee.

Timber: Sapwood is light brown, slightly soft; heartwood is brownish-yellow with green cast, or olive to light olive brown to blackish-brown, medium to coarse texture, satiny or silky lustre, straight and often rosy grain, spicy odour. Excellent working qualities.

Gum or resin: The oleoresin may be prepared by extracting cinnamon bark with a variety of organic solvents. It contains the steam-volatile oil, fixed oil and other extractives of the spice soluble in the particular solvent employed. Little published information is available on the detailed composition of cinnamon oleoresins, but the volatile oil content has been reported to range upwards from 16%.

Essential oil: Cinnamon bark oil possesses the delicate aroma of the spice and a sweet pungent taste. Its major constituent is cinnamaldehyde but other, minor components impart the characteristic odour and flavour. It is employed mainly in the food flavouring industry but is also used in tobacco flavours and for incense. It has limited use in some perfumes. In Sri Lanka, cinnamon bark oil is produced by distillation of chips and variable amounts of featherings (pieces of inner bark from twigs and twisted shoots) and quillings (broken fragments of quills). In many cases, the older form of hydro-distillation is used, in which chips and water are placed together in the distillation vessel, which is heated by direct fire. Modern methods involve steam distillation.

Cinnamon leaf oil has a warm, spicy, but rather harsh odour, lacking the rich body of the bark oil. Its major constituent is eugenol rather than cinnamaldehyde. As a cheap fragrance, it is added to soaps and insecticides. The leaves left after trimming, cut stems, and prunings provide the raw material for production of cinnamon leaf oil.

Medicine: Cinnamon bark oil is employed in dental and pharmaceutical preparations. Historically, cinnamon drops were regarded as a tonic, a sedative in childbirth, and a remedy for many common disorders. Cinnamon served as a breath sweetener in the past. In medieval times, cinnamon was distilled to produce cordials, ostensibly to aid in digestion. In the Orient, cinnamon and its near relatives are still widely used for local remedies, particularly for gastrointestinal and respiratory disorders and as an aphrodisiac. In the Philippines and the Pacific, it is taken to relieve headache. In Colombia, cinnamon sticks are chewed to speed parturition. In Ghana, bark of young shoots are used as a carminative and to treat catarrh (coryza), and the bark extract is an intestinal astringent. In Haiti, the essence is used as a poultice for rheumatism and is taken orally for spasms and for stomach and intestinal gas.

TREE MANAGEMENT
C. verum usually coppices well. Commercial production of cinnamon bark entails cutting the stems down low after an initial establishment period and harvesting the bushy regrowth stems at regular intervals thereafter. Stems are cut during the rainy season to facilitate peeling of the bark in 2 longitudinal strips. Details of harvesting practice differ slightly from country to country, but the basic principles are the same. The bark strips are packed together in heaps for a day or 2, and then the outer bark is scraped off. The inner bark curls to form the cinnamon quill of commerce. Poor quality quills are used for oil extraction. Smaller pieces, from twigs and broken bark sections, are mixed together as 'quillings' and are ground up and steamed to extract the essential oil.
In Sri Lanka, a 1st harvest may be obtained after 3-4 years, although quality and yield improve with subsequent cuttings.

Under cultivation, the continual removal of shoots by cropping almost to ground level results in the formation of a dense bush 2-2.5 m high with a number of leafy, coppiced shoots. Wild trees reach 20 m in height. On plantations, cinnamon is cut every 2 years, and the flush of straight shoots generated by coppicing produces the bark that is peeled for cinnamon quills.

The local conditions, particularly the type of soil under which the crop is grown, have a profound effect on the quality of the bark produced.

GERMPLASM MANAGEMENT
Recalcitrant seed storage behaviour; short lived at ambient temperature; viability is reduced to 80% after 7 days; and complete loss in viability after 40 days storage in polythene bags at room temperature. P50 = 6 days when stored at 25 deg. C with 80-91% r.h. for 2 weeks, then at 4 deg. C with 80% r.h.

PESTS AND DISEASES
A large number of insects have been recorded on cinnamon, but they usually represent single records in the early years of the century and none appears to have caused serious widespread damage.

Stripe canker, Phytophthora cinnamomi, is found on the trunks and branches, particularly of young trees and under badly drained conditions, for example, in higher rainfall areas of Hawaii, the fungus attacks the bark. Vertical strips of dead bark occur, particularly near ground level. Root rots are caused by Rosellinia spp., a brown rot by Phellinus lamaenis, and a white rot by Leptoporus lignosus. Pink disease, Corticium salmonicolor, has been found on cinnamon as well as on Cinnamonum javanicum. It causes pink encrusted areas on the stem with death of the smaller shoots. A rust, Aecidium cinnamomi, and leaf diseases caused by Leptosphaeria spp. and Exobasidium spp. have also been recorded.

FURTHER READNG

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SUGGESTED CITATION

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