Boswellia serrata

Roxb.

Burseraceae

salai

LOCAL NAMES
Arabic (kuurdur); Bemba (kundur); Bengali (luban,salai); English (Indian frankincense tree,Indian olibanum tree); Gujarati (gugal,saleda,dhup); Hindi (madi,salai,saler,salga,salhe,sali); Sanskrit (sallaki,kunduru); Tamil (parangisambrani,kungli,kundrikam,gugulu,morada); Trade name (salai)

BOTANIC DESCRIPTION
Boswellia serrata is a moderate-sized to large, deciduous tree with a light, spreading crown and somewhat drooping branches. It usually has a short bole, 3-5 m in length, sometimes longer if grown in a fully stocked forest. Ordinarily, it attains a girth of 1.2-1.8 m and a height of 9-15 m. Bark is very thin, greyish-green, ashy or reddish with a chlorophyll layer beneath the thin outer layer, which peels off in thin, papery flakes.

Leaves alternate, exstipulate, imparipinnate, 20-45 cm in length, crowded towards the ends of the branches; leaflets 17-31 cm, opposite, 2.5-8 cm x 0.8-1.5 cm, basal pairs often smallest, sessile, lanceolate, ovate-lanceolate, crenate, very variable in size.

Flowers white, in stout racemes, 10-20 cm long, shorter than the leaves, crowded towards the ends of branches, but not terminal. Calyx persistent, pubescent outside, 5 to 7-toothed; teeth small, deltoid. Petals 5-7 erect, free, 0.5 cm long.

Fruits 1.3 cm long, trigonous, with three valves and three heart-shaped, 1-seeded pyrenes, winged, along with the margins.

The specific name, serrata, comes from serra (a saw) referring to the toothed leaf-margins.

BIOLOGY
In India, the white flowers appear in stout racemes at the ends of branches from the end of January to March-April; sometimes flowers may appear before the fall of old leaves or after the appearance of new leaves. The drupes ripen in May-June. The leaves turn yellowish to light brown before they nearly all fall in December; the new leaves appear in May-June.

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ECOLOGY
B. serrata is a species characteristic of the tropical dry deciduous forests and occurs in very dry teak forests or in dry mixed deciduous forests in association with species such as Terminalia spp., Anogeissus latifolia and Acacia leucophloea. It is characteristically found on the slopes and ridges of hills, as well as on flat terrain, attaining a larger size on fertile soils. It is resistant to drought and resists fire better than other species in its zone of occurrence. The tree is also frost hardy and serves as a nurse tree for other species.

BIOPHYSICAL LIMITS
Altitude: up to 1 150 m, Mean annual temperature: 0-45 deg. C, Mean annual rainfall: 500-2 000 mm

Soil type: Typically grows on rocky ridges; it does well on neutral soils above gneiss, schist, quartzite, limestone and sandstone. The species has the ability to thrive in the poorest and the shallowest soils where most of its associates remain stunted.

DOCUMENTED SPECIES DISTRIBUTION

Native: India, Pakistan
Exotic:

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
Fodder: It is not readily browsed by cattle, although in India, it is considered a substitute fodder for buffaloes.

Fuel: The wood is a good fuel. Charcoal made from it is particularly favoured for iron smelting.

Fibre: B. serrata has recently come into prominence as a raw material for pulp paper and newsprint. Experiments show that writing and printing papers of suitable strength can be prepared when 25-40% long-fibred bamboo pulp is mixed in the finish. The bark can also be used for cordage.

Timber: It is used in cheap furniture, ammunition boxes, mica boxes, packing cases, cement barrels, well construction, water pipes, matches, plywood and veneers.

Gum or resin: The tree yields a yellowish-green gum-oleoresin known as ‘salai guggal’ from wounds in the bark. This gum has an agreeable scent when burnt. A mature tree yields about 1-1.5 kg of gum a year. It is said to be a good substitute for imported Canada balsam. It is also tapped for resin called ‘lobal’, which is used as incense.

Medicine: The salai guggal gum is used as a diaphoretic and astringent.

Other products: B. serrata has been recorded in West Bengal as a new lac host.

SERVICES
Reclamation: The tree is a suitable species for afforestation on poorer soils in areas with a mean annual rainfall of 500-1 250 mm. It is valuable for reclothing dry sandstone hills which have been denuded of vegetation, where soil is markedly ferruginous and where complete protection against biotic factors is not always feasible. Under such circumstances, its ability to withstand the adverse effects of forest fires, its immunity to being browsed or lopped for fodder, its power of resisting the effects of insolation and drought, and its capacity for reproduction by seed, coppice and root suckers are great assets.

Ornamental: It is popular for avenue planting in India.

TREE MANAGEMENT
The mixed forests in which B. serrata occurs are worked under selection-cum-improvement or under one of the coppice systems such as the coppice with standards, with a rotation of 40 years, or the coppice with reserve system, with the same rotation age. It produces root suckers, coppices and pollards well. The power to produce these vegetative shoots depends upon the climate and edaphic factors.

GERMPLASM MANAGEMENT
Seeds have poor viability; however, they can be stored dry in tins for not more than 6-9 months. There are 13 400-25 600 seeds/kg.

PESTS AND DISEASES
The bark of the felled log has the property of maintaining its green and healthy condition for some months. During this period, there is little liability to insect attack; but when decay sets in, larvae of the beetle Atractocerus reversus bore the wood. The alternative is to debark the logs and free them from attack by Atractocerus, but the peeled logs are freely attacked by Platypus, and Xyleborus spp. while the surface is moist and by powder post beetle when the surface has dried slightly. White spongy sap rot is known to attack trees in avenues and forests. The tree is also subject to attack by other fungi that cause spongy heart rot, mottled sap rot, spongy root and butt rot, and white fibrous rot.

FURTHER READNG

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SUGGESTED CITATION

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