

## Commiphora wightii

Engl.

Burseraceae

### LOCAL NAMES

English (Indian bdellium tree,false Myrrh); Hindi (guggulu,guggul)

### BOTANIC DESCRIPTION

*Commiphora wightii* is a small tree indigenous to India, growing wild in the semi-arid states of Rajasthan, Gujarat, and Karnataka.

It is much-branched, dioecious, up to 6 m tall with brown coloured, spine scented knotty, crooked and spirally ascending branches ending in sharp spines. Bark shiny, ash to yellowish white coming off in rough flakes exposing the greenish underbark, which also peels off in thin papery rolls.

Leaves small, sessile, rhomboid-(ob)ovate, 1-3 leaflets, highly aromatic, leathery, shining green on top and greyish below with irregularly toothed edges.

Flowers small, unisexual, sessile, brownish red, occurring singly or in groups of 2-3, 8-10 lobed disc and an oblong-ovoid ovary; stamen 8-10.

Fruit an ovoid green berry like drupe, reddish, 6-8 mm in diameter.

Seed generally contain an under developed embryo.

The generic name is derived from Greek 'kommis' and 'phora' meaning gum bearer.

This is a threatened and vulnerable species due to its over-exploitation.

### BIOLOGY

In a field examination in India, a predominantly large number of isolated and groups of female individuals were found. Only one andromonoecious and two exclusively male plants were recorded. It was also revealed that female plants set seed irrespective of the presence or absence of pollen. Hand-pollination experiments and embryological studies have confirmed the occurrence of non-pseudogamous apomixis, nucellar polyembryony and autonomous endosperm formation for the first time in this plant, which is presently threatened by over-exploitation (Gupta Promila et.al. 1996).

In its natural range in India, the tree drops its leaves during rainy season. This is followed by flowering (October to December) and fruit set (October to January). The young leaves appear towards the end of the dry season.



*Commiphora wightii* in a protected catchment of a water shed. (Sharma A.K)



*Commiphora wightii* in arid zone agroforestry. (Sharma A.K)

**ECOLOGY**

The tree is found in rocky and open hilly areas or rough terrain and sandy tracts in warm and semiarid to arid areas. It is also found in *Anogeissus pendula* and ravine thorn forest types associated with *Anogeissus* spp, *Acacia* spp, *Dichrostachys cinerea*, *Rhus mysorensis*, *Grewia* spp, *Euphorbia* sp and *Secirunega* sp.

**BIOPHYSICAL LIMITS**

Altitude: 250-1800 m

Mean Annual rainfall: 225-500 mm

Temperature range: 20-35 deg.C

Soil type: Found in rocky and sandy soil

**DOCUMENTED SPECIES DISTRIBUTION**

Native: China, India, Nepal, Sri Lanka

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 frequently a component of grazing lands on the desert fringes where it contributes significantly to the fodder for camels and goats.

**Gum and resin:** In winter, the thick branches are selected and their bark incised to extract an oleo resin gum called guggul. The plant generally takes ten years to reach tapping maturity under the dry climatic conditions. The yields are in the order of 200-500 gm of dry guggulu/tree/season. The commercial product of the oleo-gum resin contains 58% resin along with mineral matter, 32.3% gum, 4.65% foreign organic matter and 1.45% aromatic essential oil.

**Guggul** has been used extensively by Ayurvedic (Indian medical system) physicians for centuries to treat a wide variety of disorders, besides its use in pharmaceutical and perfumery industries.

**Medicine:** Gugulipid is a natural health product used primarily to reduce elevated blood cholesterol levels. It has been used for many years as a hypocholesterolemic agent in India, where it is has received prescription drug status, due to its high level of efficacy as determined by clinical trials.

Some health care products from this gum include Abana (Heart Care), Diabecon (Glucoc Care), Diakof (Cough Care Sfree), Koflet (Cough Care), Lukol, Pilex (Vein Care), Reosto, Rumalaya forte and Septilin (Immuno Care)

**Poison:** Some adverse side-effects reported on taking guggul are mild diarrhea and nausea. It may possibly raise bilirubin levels, cause hemolysis of blood, hepatitis, and obstruction of the biliary tract. But these side effects need to be confirmed.

**Other products:** Young branches are used as a tooth-brush.

**SERVICES**

**Hedge:** Hedges of guggul are preferred by farmers.

**TREE MANAGEMENT**

Weeding and irrigation is necessary for 2-3 years after planting. For commercial cultivation a spacing of 4 m x 4 m is recommended resulting to 250 plants per acre. It is a slow growing plant and takes 8 to 10 years to come to a height of 3 to 3.5 m. Pruning or removal of branches in early stages helps to achieve better growth, increase in girth of growing branch and thereby better gum yield.

**PESTS AND DISEASES**

Disease: Root rot is frequent in rainy season.

Pests: *Odontotermes obesus* (Ramb.) termites attack the roots of the young plants (2-3 years old) in drier months.

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**SUGGESTED CITATION**

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