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Published in:
Seed Leaflet

Publication date:
2023

Document version
Publisher's PDF, also known as Version of record

Document license:
Unspecified

Citation for published version (APA):
Schmidt, L. (Ed.), & Kundu, M. (2023). Chloroxylon swietenia DC. *Seed Leaflet*, *177*.

Download date: 17. Nov. 2026

No. 177, September 2023

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Chloroxylon swietenia DC.

Taxonomy and nomenclature

Species name: *Chloroxylon swietenia* DC. *Chloroxylon swietenia* is the sole species in the genus *Chloroxylon*

Family name: Rutaceae (formerly placed in Meliaceae)

Synonyms: *Swietenia chloroxylon* Roxb.

Vernacular (common name): Ceylon Satinwood, East Indian Satinwood, Bhirra,

Distribution and habitat

The tree is native to India, Sri Lanka, and Madagascar. In India, it is found in the dry deciduous forests of the peninsular region extending as far north as Satpura hills and Chota Nagpur, southern moist deciduous forests, and southern thorn forests. It is found at an altitude up to 1100. It grows on metamorphic rocks and baren rocky ground on poor, well-drained, sandy or gravel-rich soils, The absolute maximum shade temperature of its habitat varies from 35°-47.5°C and the absolute minimum from 2.5°-17.5°C. The annual rainfall varies from 750-1500 mm. It grows in black cotton soil but attains a larger size in sandy loam soil. It is found mixed with a variety of species, depending upon the locality, but typically in association with *Soymida febrifuga*. The tree is a strong light demander, but the seedlings require some protection against direct sun. The seedlings are frost sensitive.

Use

The wood is cream-colored to golden yellow, the inner wood being darker. It is heavy, strong, hard, fragrant, smooth, durable, even, and fine-textured. The timber is valued for its beautiful finish, together with satin-like luster, and silver-grain on the quarter coupled with light and dark stripes on the radial surface. The wood is resistant to decay, termites, fire, and water. It is used for decorative cabinet work, picture frames, furniture, carving, turnery, flooring, toys, musical instruments etc. Due to its strength and durability, it is used as poles, posts, bridge and house construction, boats, planks, tool handles, and agricultural implements. The wood yields unbleached pulp for the paper industry. It is also good for making charcoal. The decoction of the bark is used in contusions and for painful joints. The leaves have anti-fungal and anti-bacterial properties and are also used in snakebite and rheumatism. Oil extracted from the leaf and stem of the plant has mosquito larvicidal, insecticidal, and antimicrobial properties.

Botanical description

Up to 18-25m tall, deciduous tree with a short and crooked stem and a spreading light feathery crown. Girth up to 1.5 m and a clean bole of about 3m. Bark surface yellowish or pale greyish brown, thick, fissured, and corky; branchlets greyish hairy. Leaves alternate, paripinnately compound, up to 24 cm long with 10-20 pairs leaflets, hairy when young; stipules absent; petiole up to 3 cm long; petiolules short; leaflets alternate, obliquely oblong, 1.5–3 cm × 0.5–1.5 cm. Base very asymmetrical, one side cuneate, the other side slightly cordate, apex acute, margins entire, gland-dotted, pinnately veined with up to 5 pairs of lateral veins. Inflorescence is a terminal or axillary pyramid-shaped panicle clustered at the end of the branches, short-hairy.

Flowers creamy-white, bisexual, regular, small; pedicel c. 5 mm long; calyx short with deltoid lobes; petals free, elliptical, slightly clawed, fringed, white, spreading, short-hairy on both sides; stamens 10, free, c. 2 mm long; disk fleshy, 10-lobed, thick, densely short-hairy; ovary

superior, ovoid, slightly 3-lobed, sparsely to densely short-hairy, 3-celled, immersed in the disk, style short, slender, stigma head-shaped, small.

Fruit and seed description

Fruit an ellipsoid capsule 2.5–4.4 cm × c. 1.5 cm, dark brown when ripe, leathery, dehiscing with 3 woody valves, containing 1-4 seeds in each valve. Seeds are imbricate, brown, ellipsoid, laterally flattened, 15-18 mm long, with an oblong wing on one side. 1,300-3,100 seeds weigh one kg. Cotyledons are fleshy, flattened, and radical short.

Flowering and fruiting habit

The panicles of flowers appear in March-April and the fruits ripen from May-August. A second irregular season starts during the month of December. The petal color is white initially, and after one to three hours, it turns into light yellow. Bisexual. Bees, ants, beetles, wasps, butterflies, and flies are all observed as pollinators, but bees, ants, and butterflies are the major ones.

Seed collection

Fresh fruits should be collected from the tree before the capsules split open by lopping the branches or plucking. Collection can be done as early as when the fruits turn a yellowish green and the color of the seed is light green to whitish brown. The moisture content of the seeds is 30-35% at this stage of maturity.

Processing and handling

Fruits are dried under shade, and they split naturally to release the seeds. Seeds are collected from the dry ripe fruits manually. Wings are removed by rubbing between hands and then cleaning can be done either by winnowing or by a seed blower.

Dormancy and pretreatment

Seeds are not dormant and do not need any pre-treatment.

Storage and viability

Seeds are desiccation tolerant to 3-6% and storable at freezing temperatures. Under ambient conditions (15°-37°C), the seeds can be stored for up to one year, if stored at very low moisture content (3%). Viability can be extended for more than two years if stored at low temperatures (-20°C to 5°C) with low moisture content (3-5%).

Sowing and germination

The species can be raised either by direct sowing or transplantation. In direct sowing, seeds are sown mixed with ash either in patches or lines or on ridges about 5m apart and 30 cm high and covered with a fine layer of sand. Seedlings should be protected from the sun in the hot season. In transplantation, seeds are sown in June-July in the shaded beds, and they are covered with pulverized soil. Germination starts within a fortnight and is completed in 2 months. As the seedlings are delicate, they are sparingly watered and regular weeding is essential. Seedlings are transplanted when 2 to 4 cm in height to poly pots having soil mixture of soil, sand, and Farmyard manure (FYM) in a proportion of 1:1:1. One or two-year-old seedlings are planted out in the field at the start of rain.

Pest and Diseases

Some insects bore into the pith of the young shoots. Trees sometimes die due to the attack of borers and beetles which tunnel between the bark and the wood. *Dendrophthoe falcate* parasitizes the tree.

Selected readings

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Seed Leaflets are a series of species wise extension leaflets for tropical forest species with special emphasis on seed technology. Leaflets are compiled from existing literature and research available at the time of writing. In order to currently improve recommendations, IGN encourages feedback from users and researchers who have experience with the species. Comments, corrections, improvements and amendments will be incorporated into future edited leaflets. Please write your comments to lsc@ign.ku.dk