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Kundu, Maitreyee; Schmidt, Lars Holger

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SEED LEAFLET

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Sapindus trifoliatus L.

Taxonomy and nomenclature

Species name: *Sapindus trifoliatus* L.
Family: Sapindaceae
Synonyms: *Sapindus emarginatus* Vahl. and *Sapindus laurifolius* Vahl.
Vernacular (Common name): Soap nut tree of south India (Eng), Ritha, Pevam kottai, Pasakotta (India).

Distribution and habitat

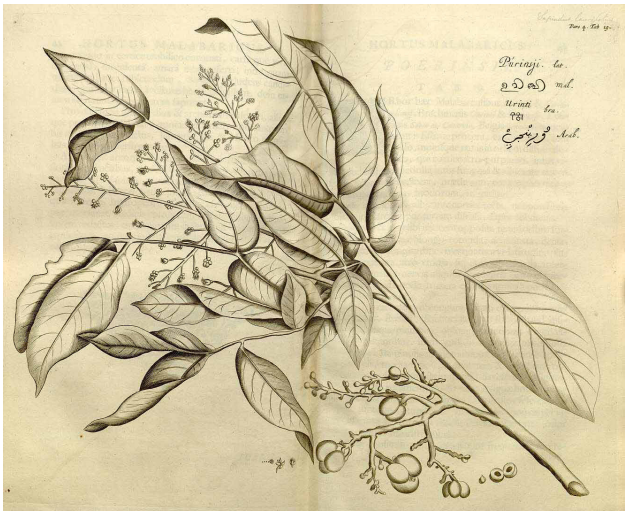
The species is native to the tropical wet and dry evergreen forests and dry deciduous forests of southern India. The tree is cultivated in northern and eastern India. The mean maximum temperature of its natural habitat varies from 40-48°C and minimum is 2.5- 15°C, annual rainfall ranges from 500 to 2000 mm. It can grow in a wide range of well-drained soils, including those that are dry, stony and nutrient-deficient.

Use

The wood is bright yellow in colour, diffuse porous without district heartwood. It is hard and heavy, but not durable. It is locally used for building construction, carts and oil-mills and making small articles. It is also used as fuel wood. The tree is chiefly cultivated for its fruits used as detergent for washing woollen and silk cloth, and also for washing hair. Soap nut is used by jewellers to increase brightness of tarnished ornaments. Seeds produce oil used in soap industry and seed shell yields a dye used for colouring cloth, leather and wood. Fruits bark and roots have medicinal value. Fruits are used is asthma, colic for indigestion, diarrhoea, paralysis of limbs etc. Roots and bark are used as cough medicine. Fruits and root-bark are used as fish-poison.

Botanical description

Sapindus laurifolius is a medium to large deciduous tree with a spreading crown; reaching a height of 20 m and girth of 1.5 m (≈ 45 cm DBH). Bark is rough, grey, peeling off in oblong plates. Young parts, inflorescence and rachis are tomentose. Leaves are alternate, 12-30 cm long, paripinnate; leaflets elliptic, 2-3 pairs, those of the terminal pair largest, 10-20 cm long, 2.5-4 cm wide; apex generally obtuse, at times acute and sometimes even emarginate, Inflorescence a terminal, rusty-pubescent panicle or cyme, having many male and few bisexual flowers. Flowers are pale white or greenish yellow, 0.4-0.5 cm long. Sepals 4-5, petals 4-5, oblong,



lanceolate, usually with two scales attached at each side of the petal, ferruginous-tomentose; anthers apiculate; ovary 3-lobed.

Fruit and seed description

Fruits are drupes, usually 2 or 3 lobed, 1-3 to 2.0 cm in diameter, consisting of 2-3 indehiscent carpels which are partially joined, having saponaceous flesh covered with reddish hairs when young, hairless, glabrous, wrinkled, yellowish brown after maturation. Seeds are of the size of a large pea, blackish, hard, smooth, one in each carpel of the fruit. The seed weight varies from 1000-2500 seeds per kg with large variation among provenances.

Flowering and fruiting habit

Flowering occurs from October to December and fruits ripen in the hot season from February to May.

Seed collection

The fruits are collected from the trees by looping the fruit bearing branches or plucking the fruits. The optimum time of collection is when fruits are fully mature. At that time fruits turn greenish yellow or yellow and seed turns black and the moisture content of fruit is 30-40% and seed is less than 10%.

Processing and handling

Fruits are spread and dried in the sun without depulping. Seeds are then extracted by gentle cracking of the fruits; that will separate the partially fused carpels, after which seeds can be extracted.

Dormancy and pretreatment

Dormancy is not observed in fresh seeds and no pretreatment is required. However, soaking of seeds overnight in water gives better germination, typically- 60-70% germination.

Storage and viability

Seeds are orthodox. Viability can be maintained high when dried to 3-5% moisture content and freezing temperature (0 to -20°C). Seed stored at 8% moisture content at ambient temperature (15-35°C) can retain viability up to two years. Viability can be extended for more than five years, if stored at low temperature (0 to -20°C) and 4-5% moisture content.

Sowing and germination

Trees can be raised from direct sowing or from nursery raised seedlings. In direct sowing, seeds are sown after the commencement of rains. In nursery seeds are sown in February-March in well-irrigated and weeded beds. Germination is epigeal. The seedlings attain a height of 40 cm in one growing season. One meter tall seedlings are planted after keeping in the nursery for two seasons. Entire plants with ball of earth are planted during monsoon.

Pest and Diseases

The most destructive pest for the species is Blossom webber (*Cydia* spp.) that attacks and causes damage to flowers, young fruits and twigs during October-April. *Virachola* spp., *Serinatha auger* and *Antilochus coqueberti* cause damage of fruits from January to April. The larvae of *Deudorix epijarbas* and *Rapala varuna* defoliate the leaves. *Fiorinia sapindi* feeds on the sap of shoots. *Phyllosticta* spp. and *Alternaria sapindi* causes leaf spot disease. The nymphs and adults of red cotton bug *Dysdercus cingulatus* damages the fruits.

Selected readings

Luna, R.K. (1996). Plantation trees. International Book Distributors. Dehra Dun, India.

Sudhakara, K. Online manual for the forest tree seeds of Kerala. College of Forestry, Kerala Agricultural University, Thrissur.

Author: Maitreyee Kundu, E-mail: spalliwest@yahoo.co.in
Ed: Lars Schmidt
For further information: Director, Tropical Forest Research Institute, P.O. R.F.R.C., Mandla Road, Jabalpur 482021, India.

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