



Sterculia setigera Delile

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Taxonomy and nomenclature

Family: Sterculiaceae

Synonyms: *Sterculia tomentosa* Guill. & Perr., *S. cinerea* A. Rich.

Vernacular/common names: English name: karaya gum tree; Local names: tartar, faider and telieh, posemporgo (Mooré), kongosira (Bambara).

Distribution and habitat

The species is widespread in tropical Africa and is common locally. The natural distribution range stretches from Senegal to Cameroon in West Africa, eastwards to Eritrea, and southwards to Angola. It grows in Savannah type vegetation on a variety of soil types, thriving on poor soils as well as on hilly/stony sites. Not classified on the IUCN Red list of threatened species.

Uses

The wood is white and very soft, which makes it unsuitable for fuel wood and charcoal. It is therefore used for non timber forest products (NTFP). It is used for insulation and concealed items in carpentry. The tree produces a water-soluble gum (karaya). This can be tapped and used in cooking as an emulsifier, stabiliser and viscosifier; the gum is used medically as a laxative, diuretic and tranquilliser, and technically as an adhesive and for glazing pottery. The bark is used for rope making and the bark sap can be made into a refreshing drink. In local medicine the bark is also used to treat snake bites, leprosy, syphilis, coughs, bronchitis, rickets and insanity. The seeds can be eaten and contain an edible oil, while the leaves are used as fodder for cattle.

Botanical description

A deciduous tree, growing to c.16 m, with a spreading open crown and large twisted branches. The bark is grey to purple in colour and flakes to reveal a greenish-yellow smooth bark beneath. If the bark is cut it reveals a red inside and exudes a white gum and watery sap. The leaves are simple, alternate, 6-20 cm long and 6-20 cm wide, with 3-5 triangular lobes. They are covered with stellate hairs on both sides, but more densely on the underside.

The flowers are unisexual, apetalous, pedicellate, with 5-lobed conical calyx. They are green or yellowish in colour, and striped or tinged red inside.

The flowers are c. 12 mm in diameter, and are produced on shoots from the previous year.



Sterculia setigera. From Berhaut, J. Flore Illustrée du Sénégal, Direction des Eaux et Forêts, Government du Sénégal, 1975

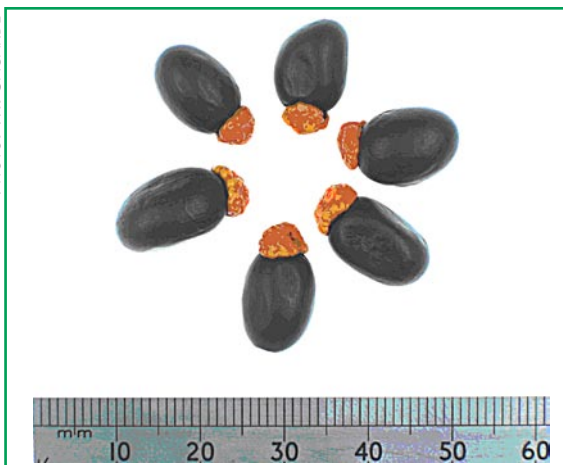
Flowering and fruiting habit

Dioecious. Flowering usually occurs during the second half of the dry season, either before or in connection with leaf flushing. The tree flowers in the Sahelian region between February and April with fruit maturation in December.

Fruit and seed description

Fruit: Compound dry fruits composed of 3-5 separate boat-shaped follicles, which are arranged to form a star shape. Each follicle is 6-10 cm long and 4-5 cm across, with a pointed apex. They are velvety outside and inside with pungent bristles along the placenta line where the seeds attach. They have a thin wall, under 5 mm thick, and are greenish or brown when ripe. Each part of the fruit contains c. 12 seeds.

Seed: The deep-purple coloured ellipsoid seeds are 10-14 mm in length, and have a mean thousand seed weight of 350 g. Each seed has a small yellow-brown aril at the base where it attaches to the fruit. The seed contains c. 26% oil.



Cleaned arilated seeds of *S. setigera*

Harvest and processing

The pods are harvested from the trees when they have started opening but seeds are still attached to the rim of the fruit. Sun drying and mild mechanical impact will detach the seeds. The aril may be removed during seed processing or in connection with sowing.

Storage and viability

The seeds of this species show 'orthodox' seed storage behaviour, and are under long-term storage conditions at RBG, Kew (i.e. -18°C in air-tight containers at a seed MC of 5±1%) since 1991. X-ray analysis indicated viability of 90-100%.

Dormancy and pretreatment

Physical dormancy caused by hard seed coat is overcome by scarification e.g. using a scalpel, knife, file or hot wire. The aril ostensibly imposes both physical restriction to water absorption and chemical inhibitors. Removal of the aril is easiest when softened after soaking in water.

Sowing and germination

Seeds germinate 95% when the covering structure is removed and the seed coat then chipped, and incubated at 25°C, 8/16 h photoperiod. The seeds germinate optimally at temperatures between 20-30°C. Germination is epigeal, and under optimal conditions takes c. 2 weeks to complete.



Germinating *S. setigera* seeds on agar

Selected readings

Seed Information Database (SID). 2004. <http://www.rbgkew.org.uk/data/sid> (release 6.0, October 2004).

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