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SEED LEAFLET

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Acacia senegal (L.) Willd.

Taxonomy and nomenclature

Family: Fabaceae (Mimosoideae)

Varieties: *Acacia senegal* var. ***rostrata*** Brenan, *A. senegal* var. ***kerensis*** Schweinf., *A. senegal* var. ***leiorhachis*** Brenan, *A. senegal* var. ***senegal***.

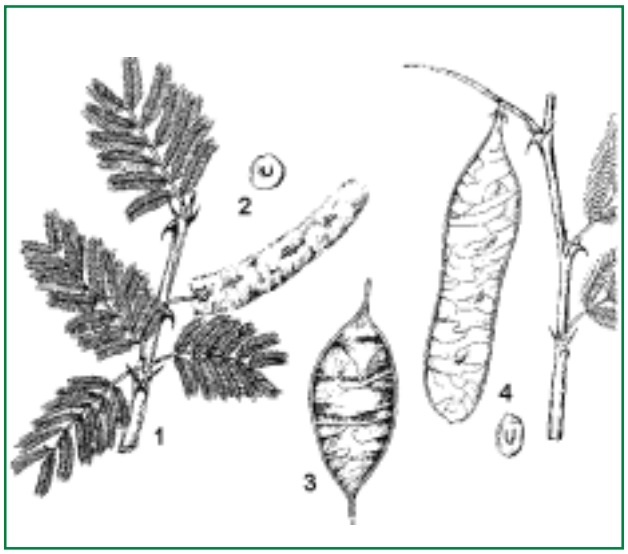
Synonyms: *Acacia circummarginata* Chiov., *A. oxyosprion* Chiov., *A. rostrata* Sim., *A. rupestris* Stocks ex Boiss., *A. spinosa* Marloth & Engl., *A. verek* Guill. & Perr., *A. volkii* Suesseng., *Mimosa senegal* L., *M. senegalensis* Houtt.

Vernacular/common names: three-thorned acacia, gum arabic tree (Eng.); gommier blanc, verek (Fr.); gummibaum (Ger.); goma arábica (Sp.).

Distribution and habitat

Widespread in tropical Africa from Senegal in the west to Ethiopia and Somalia in the north-east, southwards to Natal; also extends into India.

It is most common in areas with 300-400 mm rain/year but can grow in areas with as little as 100 mm, and a dry period of 8-11 months. Altitude range of 100-1700 m. Very drought-resistant and tolerant of high daily temperatures but sensitive to frost. Prefers well-drained, sandy soils but can grow on slightly loamy sands.



1, Foliage and inflorescence of *A. senegal* var *rostrata*; 2 and 3, Seed and pod from same. 4, Pod and seed of *A. senegal* var *leiorhachis*. From: J.H. Ross 1979. A conspectus of the African *Acacia* species.

Uses

A pioneer, nitrogen-fixing tree that is mainly grown for production of gum arabic but also used for fuelwood, fodder, rope, dune stabilisation and soil improvement.

Leaves and pods are browsed by sheep, goats, camels, impala, and giraffe. The leaves contain 10%-13% digestible protein and 0.12%-0.15% phosphorus, while the pods contain 15% digestible protein and 0.12%-0.14% phosphorus. Dried seeds are also used for human consumption.

It is highly suitable in agroforestry systems in combination with watermelon, millet, forage grasses and others. In Sudan it is grown in "gum gardens" for gum production as well as to restore soil fertility.

Botanical description

Variable species. Deciduous tree or shrub up to 15 m tall but usually less; umbrella-shaped crown; bark variable. Short, black prickles, normally in threes, the central curved downwards.

Leaves small, 1-10 cm long, 3-8 pairs of pinnae, each with 7-25 pairs of leaflets. Flowers white and fragrant, in 3-12 cm long spikes, 2-3 together in the leaf axils.

Fruit and seed description

Fruit: yellow to brown, papery, dehiscent pod, 2-19 cm long, 1-3.5 cm wide, flat and thin with either rounded or pointed end. There are 1-8 seeds per pod.

Seed: round and flat, 8-12 mm in diameter, olive brown. There are 10,000-30,000 seeds/kg.

Flowering and fruiting habit

In general, flowering begins just before or at the beginning of the rainy season when the leaves emerge and the seeds mature in the dry season. In areas with more than one variety there can be large variations in flowering and fruiting time. Pollination is probably by insects.

Harvest

Before they open, the pods are harvested by shaking the branches over a tarpaulin on the ground. To minimise insect attack the pods are often collected early when they are still green.

Processing and handling

After collection the pods are dried in the sun until they open and the seeds are extracted by beating the pods in a sack before cleaning.

Storage and viability

The seeds are orthodox and store well in a cool, dry, insect-free place. At 10°C and moisture content of 5-7%, viability can be maintained for several years.

Dormancy and pretreatment

Unlike other acacias, the seed coat of *A. senegal* is not impermeable to water even after storage, and scarification is normally not necessary. Germination is improved if the seeds are soaked in cold water for 12-24 hours before sowing.

Sowing and germination

As a typical pioneer species it is easy to propagate from seed and germination is fast and uniform.

The seeds are sown polypots or in 30 cm long tubes, 2-4 seeds per tube, thinned to one seedling after 4-6 weeks. Frequent root pruning is necessary in container plants as the tap root is fast growing. Planting out can take place after 4-6 months. Weeding is necessary the first two years.

For intercropping, 10 x 10 m spacing is suitable. For gum production, plants can be raised in the nursery or in direct seeded plantations spaced at about 4 x 4 m.

Phytosanitary problems

The seed is very susceptible to insect attacks. The buffalo treehopper (*Stictocephala bubalus*) may destroy seed crops. Larval stage of *Coleoptera* (bruchids), *Lepidoptera*, and *Hymenoptera* damage the seed.

Selected readings

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Habit of fruiting tree of *A. senegal* var. *senegal*, growing at Arba Nosa ranch, Ethiopian highlands. Photo: Chris Fagg, OFI.

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