

Faidherbia albida

(Del.) A. Chev.

Fabaceae - Mimosoideae

LOCAL NAMES

Afrikaans (anaboom); Amharic (grar); Arabic (haraz); Bambara (casala); English (white-thorn, white acacia, apple ring acacia, apple ring tree, gao, ana tree, winter thorn); French (arbre blanc, cad, kad); Ndebele (umpumbu, umtungabayeni); Shona (mutsangu); Swahili (mkababu, mgunga); Tigrigna (garsha, momona, aqba); Tongan (mujagwe, mutsangu); Tswana (mokosho); Wolof (cad); Zulu (umHlalankwazi)

BOTANIC DESCRIPTION

Faidherbia albida is one of the largest thorn trees, reaching 30 m in height, with spreading branches and a rounded crown. Bark rough and dark brown, or smooth and greenish-grey; young branches white to ashy grey and characteristically zigzag in shape. Stipules spinescent, straight, about 2 cm long, creamy coloured with brown tips. Slash fibrous, pink to light brown. The roots can grow to 40 m deep.

Leaves with 3-10 pairs of pinnae, each bearing 6-23 pairs of leaflets; leaflets quite large, 3.5-9 x 0.7-3 mm, grey-green. Modified spiny stipules at the base of the leaves, thickened at the base, straight and robust. (The basal thickening is a characteristic distinguishing this species from the acacias with long thorns like *A. tortilis* ssp. *raddiana*, *A. nilotica* and *A. seyal*).

Flowers in slender, creamy white spikes, 4-14 cm long. Calyx 1-1.7 mm long, glabrous to pubescent with 5 sepals. Corolla 3-3.5 mm long with 5 free petals.

Fruit is an unusual pod, bright orange to reddish-brown, thick, indehiscent, characteristically and conspicuously curled and twisted; large, up to 25 x 5 cm. Each pod contains 10-29 dark brown, ovoid, shiny seeds each measuring 10 x 6.0 mm and separated by thin septum. The seed coat is tough, leathery and waterproof.

The specific epithet 'albida' means somewhat whitish, referring to the colour of the stem. The generic name honours Major LLC Faidberbe, governor of Senegal around 1854.

BIOLOGY

The flowering of individual trees is often not uniform. Principle pollinators are the Scoliidae, Eumonidae (Hymenoptera) and the Lycanidae (Lepidoptera). Observed production of seed by isolated trees is an indication that there is no strict self-incompatibility. The plant has an 'inverted phenology'--deciduous in the wet season and foliated in the dry season. First flowering occurs in the seventh year and subsequent flowerings occur 1-2 months after the start of the dry season for up to 5 months. Ripe fruit falls towards the end of the dry season. The seeds are dispersed by animals, which eat the pods.



(David Boshier)



Provenance trial in Zimbabwe (Richard Barnes)



F. albida intercropped with maize. (Anthony Njenga)

ECOLOGY

F. albida grows on the banks of seasonal and perennial rivers and streams on sandy alluvial soils or on flat land where Vertisols predominate. It thrives in climates characterized by long summers, or a dry season with long days. It tolerates seasonal waterlogging and salinity but cannot withstand heavy clayey soils.

BIOPHYSICAL LIMITS

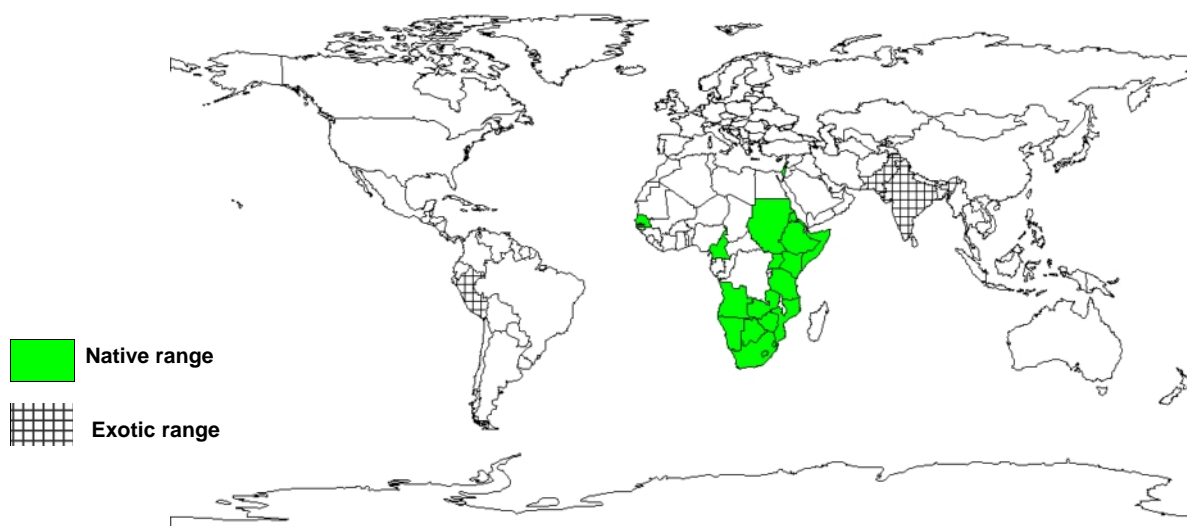
Altitude: -270-2700 m, Mean annual temperature: 18-30 deg. C, Mean annual rainfall: 250-1200 mm

Soil type: Coarse-textured well-drained alluvial soils. It tolerates seasonal waterlogging and salinity but cannot withstand heavy clayey soils.

DOCUMENTED SPECIES DISTRIBUTION

Native: Angola, Botswana, Cameroon, Eritrea, Ethiopia, Israel, Kenya, Lebanon, Lesotho, Mozambique, Namibia, Senegal, Somalia, South Africa, Sudan, Swaziland, Syrian Arab Republic, Tanzania, Uganda, Yemen, Republic of, Zambia, Zimbabwe

Exotic: Cape Verde, Cyprus, India, Pakistan, Peru



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

Food: During the dry season, people eat the seeds.

Fodder: The leaves and pods are palatable to domestic animals and an important source of protein for livestock in the dry season.

Apiculture: For bee-keepers, it has the advantage of producing flowers at the end of the rains while most of the sahelian species flower just before or during the rains. It therefore becomes the main source of pollen and nectar at this time.

Fuel: The plant stems are used as fuelwood. The calorific value is estimated at 19.741 kJ/kg of dry wood. Charcoal yields are as low as 17%.

Timber: The heartwood (specific gravity 0.56-0.71) is pale and creamy, brown sapwood slightly paler than the heartwood. The wood is susceptible to staining fungi and pinhole borer when green; therefore, it is left to soak for several months to remove sap and minimize attack by fungi, borers and termites. Even after the most careful seasoning, the boards tend to spring and twist one or two hours after they are sawn. The wood works fairly easily by hand, but a smooth finish is difficult to obtain. Care must be taken when nailing, bolting and joining. It is used to make utensils, canoes, furniture, boxes, drums and oil presses.

Medicine: The use of bark and roots either externally or internally against respiratory infections, digestive disorders, malaria and other fevers is widespread. The bark is used to clean teeth, as it is believed to contain fluorine; an extract is used for toothache in humans and eye infections in livestock.

SERVICES

Shade or shelter: *F. albida* is maintained and protected on farms to shade coffee and to provide shade for livestock in the dry season.

Reclamation: The plant's spreading root system offers excellent protection to the banks of watercourses.

Soil improver: *F. albida* sheds its leaves in the rainy season; therefore, boosting the nutrient status of the soil for the new season's crops. The fact that the tree is leafless during the rainy season minimizes competition for sunlight with crops and protects them from birds until harvest time. Recommended for integration with maize as an alternative to *Leucaena leucocephala*.

Ornamental: A useful ornamental tree for gardens and avenues.

Boundary/barrier/support: Branches lopped for fencing compounds and livestock enclosures.

TREE MANAGEMENT

Pruning in the 2nd year to about half the tree height may be needed to control low branching. Repeated pruning during periods of average biomass production stimulates leaf production. Can be pruned twice a year. Resulting regrowth is especially vigorous in the 1st year but decreases as exploitation continues; trees show stress at the end of the 6th year. Regular lopping (once every 3-4 years) removing 0.4-0.5m³ of foliage (or 35% of the total volume) at the start of the growing season is recommended. However, improper methods of lopping have been observed to cause wounds, predisposing the tree to attack by pathogens. The tree responds well to coppicing.

GERMPLASM MANAGEMENT

Early seed collection is recommended to avoid heavy infestation by bruchid beetles. Seed storage behaviour is orthodox; there is no loss after 1 year in hermetic storage at 4 deg. C; viability maintained for several years in hermitic storage at 10 deg. C with 6-10% mc. When treated with insecticides and kept in simple closed containers, seed can be stored for several years. There are 11 500-20 000 seeds/kg.

PESTS AND DISEASES

Ficus thoningii and *Taphinanthus dodoneifolius* are epiphytes that kill the plant through strangulation. Nematodes and insect pests include bruchid beetles, which attack the seeds, *Kraussiana angulifera* and *Tylotropidius gracilipes* (Orthoptera), which attack young plants, and *Cypsotidia angulifera*, *C. mesonema* and *C. wollastoni* (Lepidoptera), which attack the leaves.

FURTHER READING

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SUGGESTED CITATION

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