

Acacia aneura

mulga

LOCAL NAMES

English (mulga,dark heartwood); Trade name (mulga)

BOTANIC DESCRIPTION

Acacia aneura is a perennial, evergreen, often single-stemmed tree, 10-15 m tall in high rainfall areas. Trunk brown, short, fissured and sometimes twisted. Bark at base of trunk fissured, greyish, 1 cm thick; upper parts thinner, smoother and often light grey. Branches ascending; branchlets angular, covered with dense, silvery hairs; young shoots brown, scaly and occasionally resinous. Tree develops a long taproot and an extensive lateral root system in the top 30-cm of the soil.

Phyllodes flat, silvery grey-green, thick, leathery, narrow, lanceolate-shaped, 2-25 cm long, 1-10 mm wide, with many faint parallel nerves obscured by a dense covering of short hairs; margins usually lighter, tips blunt, curved or oblique with a small basal gland.

Flowers bright yellow, slender, short, dense, 1-3 cm long, 5-7 mm wide, and borne on dense, axillary, cylindrical spikes; stalks 3-8 mm long.

Pods light brown, 2-5 cm long, 7-15 mm wide, very obtuse, oblong, flat, membranous, thin, usually with a narrow but prominent membranous winged margin as wide as 2 mm. Seeds oval, flat, 3-5 x 2-4 mm, a shiny dark brown, oblique or transverse in the pod, with a hard testa; veins netlike; base narrow; tip very blunt; stalk thin and short, with 2 or 3 folds thickening into a small basal aril.

The generic name 'acacia' comes from the Greek word 'akis', meaning point or barb.

The species name was first published in *Linnaea* 26:627 (1855) and comes from the Greek word 'a' (not) and 'neuron' (a nerve), in allusion to the absence of conspicuous veins on the phyllodes. The standard trade name (Mulga) is an Aboriginal word for a long narrow shield made from *Acacia* wood.

BIOLOGY

Flowering is induced by rainfall in spring and late summer but not at other times of the year. To set viable seed, *A. aneura* requires both winter and summer rainfall; only late summer flowering results in seed production, whereas winter rain stimulates the quantity of fruit produced after summer flowering. Seeds do not set every year and take about 10 months to mature. Years with good critical flowering occur only about twice in a decade.

F. Muell. ex. Benth.

Fabaceae - Mimosoideae



Acacia aneura wood has very high density in southwestern Queensland. (Shelton H.M.)



(Fagg, M. (ANBG Photo No.: a.9917))



(Fagg, M. (ANBG Photo No.: a.9918))

Acacia aneura

F. Muell. ex. Benth.

Fabaceae - Mimosoideae

mulga

ECOLOGY

Mulga is the one of the dominant species in Australian shrub woodlands. Natural populations extend over an area of 1.5 million km sq, chiefly in climates where the annual rainfall is 200-250 mm. Mulga ranges in elevation from sea level to 300 m. In many of the drier parts of its distribution mulga occurs as the only species in groves up to 50 m wide and 400 m long with intergrove areas acting as water catchments to provide substantial run-on water. In the eastern part of its range in northern New South Wales and Queensland mulga is found in semiarid conditions with a mean annual rainfall of 300-500 mm. It experiences hot summers and cool winters with light frosts. Soils supporting mulga are usually acidic sands or sandy loams, which permit easy filtration of water into the upper horizons, but are usually very low in nitrogen and available phosphorus. *A. aneura* can live for more than 50 years, it is drought-tolerant, but very fire sensitive.

BIOPHYSICAL LIMITS

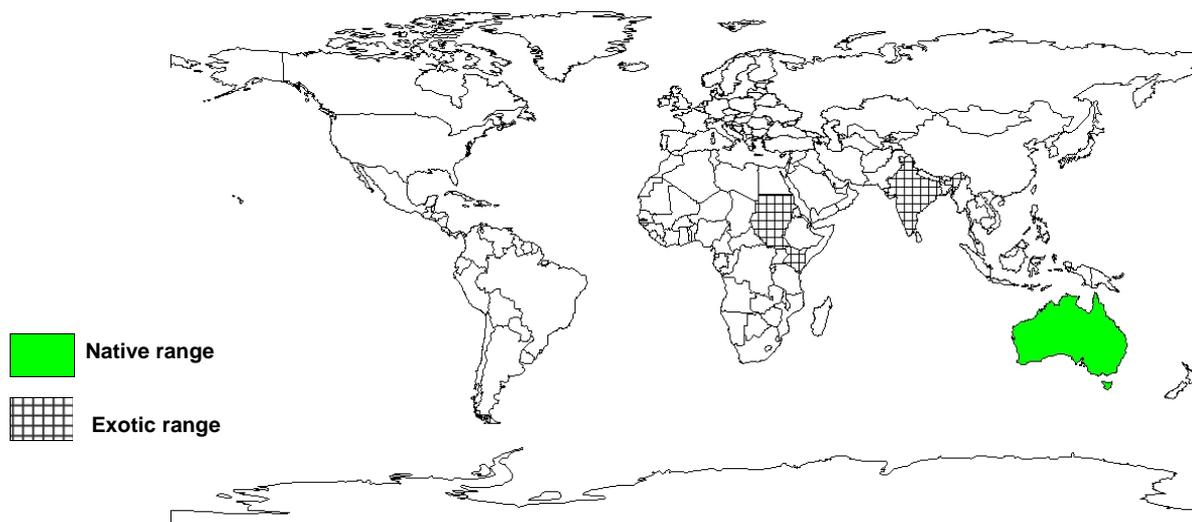
Altitude: 0-300 m, Mean annual temperature: -6 to 46 deg. C, Mean annual rainfall: 100-500 mm

Soil type: *A. aneura* occurs on shallow, light, low-fertility, well-drained, deep sands, stabilized laterite sand dunes, heavy clays, laterite podsols, hard gravelly clays and the humus loams of rainforests. The species prefers soil of acid to neutral pH.

DOCUMENTED SPECIES DISTRIBUTION

Native: Australia

Exotic: India, Kenya, Sudan



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.

Acacia aneura

F. Muell. ex. Benth.

Fabaceae - Mimosoideae

mulga

PRODUCTS

Food: The Australian Aborigines ground the mulga seed for flour. The seeds have a protein content comparable to dried split peas or peanuts.

Fodder: In many parts of Australia the drought-resistant mulga forms a significant part of a sheep's diet at all times of the year but without supplementary high quality feed it supplies protein and energy barely sufficient for maintenance of dry-range sheep. Phyllodes have a high crude protein level (11-16%), low phosphorus content (0.05-0.1-2%) and good palatability. Excessive grazing may result in the death of mulga.

Apiculture: Good supplies of pollen are provided when there is adequate moisture. It is an important pollen producing species, important to beekeepers.

Fuel: The wood is excellent for firewood and charcoal.

Timber: The heartwood of mulga is dark brown with contrasting markings of golden yellow; the sapwood is white. The wood is very hard, heavy (850-1100 kg/cum) and durable in the ground; it turns well and takes a high polish. The aborigine people of Australia use the wood to make weapons and small ornaments.

Gum or resin: Australian aborigines use the resinous phyllodes of *A. aneura* as an adhesive resin.

SERVICES

Shade or shelter: *A. aneura* can be used in the arid areas to provide shelter and shade.

Nitrogen fixing: It forms nodules with *Rhizobium* with which it exhibits a degree of specificity. Ectomycorrhizal associations have been observed and there is almost certainly VA mycorrhizal symbiosis. The nitrogen-fixing capacity of the tree contributes significantly to the nitrogen economy of the soil.

Ornamental: *A. aneura* has attractive silvery grey foliage, making it a popular choice for amenity plantings.

Boundary or barrier or support: Wood is used for fence posts in Australia.

TREE MANAGEMENT

Nursery growth is slow with seedlings often taking 6-8 months to reach 20 cm tall. When transplanted to the field the seedlings usually require several months without severe moisture stress to survive and in some areas may need supplementary irrigation. Established seedlings have the ability to survive severe drought. They develop a long taproot and an extensive lateral root system in the top 30 cm of the soil. *A. aneura* needs to be protected from browsing animals while young. In short-term management, grazing needs to be controlled to maintain ground cover, which reduces rainfall runoff and soil erosion. Chemical control of weeds, which is costly, is practiced for special cases and small areas. Lopping is practiced to provide animal feed during the dry season. Regular periods of rest from browsing of trees by livestock are essential for seeding, re-growth and fodder accumulation. Growth rate is generally slow but is related to moisture conditions. In central Australia planted specimens receiving an average of 370 mm of rainfall a year grew in ten years into multi-stemmed shrubs 3 m tall and 2-4 cm dbh with a crown diameter of 2 m. Cultivated specimens receiving regular irrigation have reached 10 m tall and 10 cm dbh in 10 years. In trials where rainfall is relatively high, the Charleville, Queensland provenance, a broad phyllode form, has grown more rapidly than provenances from central Australia. Trees with different phyllode forms have been observed to have different growth rates.

GERMPLASM MANAGEMENT

Seed storage behaviour is orthodox with 13% germination following 20 years of open storage at room temperature. Viability is maintained for 13 years with air-dried seeds stored at room temperature and increases with seed age up to 3 years. Dormancy is evident in fresh seed but disappears after 1 year. On average, there are 50 000-110 000 seeds/kg.

PESTS AND DISEASES

In its natural habitat *A. aneura* is subject to partial defoliation by a range of insects and root damage by termites. Termite damage was light (4% mortality) to moderate (30% mortality) to two provenances aged 18 months in a trial in Zimbabwe.

Acacia aneura

F. Muell. ex. Benth.

Fabaceae - Mimosoideae

mulga

FURTHER READING

Boland DJ. et. al. 1985. Forest trees of Australia. CSIRO. Australia

Clemson A. 1985. Honey and pollen flora. Inkata Press, Melbourne.

Doran CJ, Turnbull JW (eds.). 1997. Australian trees and shrubs: species for land rehabilitation and farm planting in the tropics. ACIAR monograph No. 24, 384 p.

Gutteridge RC and Shelton HM (eds.). 1994. Forage Tree Legumes in Tropical Agriculture. CAB International, Wallingford, UK.

Hocking D. 1993. Trees for Drylands. Oxford & IBH Publishing Co. New Delhi.

Hong TD, Linington S, Ellis RH. 1996. Seed storage behaviour: a compendium. Handbooks for Genebanks: No. 4. IPGRI.

MacDicken GK. 1994. Selection and management of nitrogen fixing trees. Winrock International, and Bangkok: FAO.

NFTA. 1990. Acacia aneura- a desert fodder tree. NFTA 90-03. Waimanalo.

Preece PB. 1970. Contributions to the biology of mulga. Australian Journal of Botany. 19:21-38.

Turnbull JW. 1986. Multipurpose Australian trees and shrubs: lesser-known species for fuelwood and agroforestry. ACIAR Monograph No. 1.

Vogt K. 1995. A field guide to the identification, propagation and uses of common trees and shrubs of dryland Sudan. SOS Sahel International (UK).

Winkworth RE. 1973. Eco-physiology of mulga (*Acacia aneura*). Tropical Grasslands. 7(1).

SUGGESTED CITATION

Orwa C, Mutua A, Kindt R, Jamnadass R, Simons A. 2009. Agroforestry Database: a tree reference and selection guide version 4.0 (<http://www.worldagroforestry.org/af/treedb/>)