

Acacia aulacocarpa

brown salwood

A. Cunn. ex Benth

Fabaceae - Mimosoideae

LOCAL NAMES

English (Papua New Guinea brown wattle, New Guinea wattle, New Guinea brown wattle, hickory wattle, brush iron bark wattle, brown wattle, brown salwood, black wattle); Trade name (brown salwood)

BOTANIC DESCRIPTION

Acacia aulacocarpa is a shrub to a slender, large tree, 3-40 m tall; trunk up to 1 m in diameter, sometimes fluted. Bark hard, sometimes brownish, about 1 cm thick, longitudinally fissured, peeling in long strips.

Phyllodes straight or falcate, acute or subacute, 5-15 x 0.6-3.5 cm, 3-12 times as long as wide, glabrous, greyish-green or dull grey, with 3 prominent longitudinal veins somewhat crowded towards lower margin at base, usually not yellowish, and with many parallel, not anastomosing, secondary veins, pulvinus, 4-6 mm long, with an ellipsoid basal gland.

Inflorescence a spike, 2-6 cm long, yellow, 1-3 together, peduncle 2-8 mm long, scurfy; flowers pentamerous, bisexual, calyx broadly cupular, 0.5-1 mm long, membranous, with broad, obtuse, scurfy lobes 0.2-0.3 mm long, lobed to the middle, glabrous, 2-3 times as long as the calyx; stamens many, 2.5-3 mm long; ovary 0.5 mm long, shortly pubescent or scurfy.

Pod oblong, up to 10 x 2 cm, light brown, coriaceous to subwoody, with prominent obliquely transverse, dark brown veins, glabrous, often twisted when old. Seed elliptical-oblong, 5-8 x 2.5-3.5 mm, shiny black, transverse or oblique in pod, with pale terminal aril.

Two varieties are recognised. *Var fruticosa*, a bushy shrub to 3 m tall and *var aulacocarpa*, usually a tree 10-20 m tall but ranges from a shrub of 4 m on xeric sites to a large tree to 40 m tall in tropical rainforest.

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

The species name 'aulacocarpa' is derived from the Greek 'aulakos' (a furrow) and 'carpos' (fruit), referring to the prominent furrowing and thickened transverse bands on the pods.

BIOLOGY

Trees generally start to flower after 3 years. Insects, especially bees, are believed to be the main pollinating agent. Seeds mature 4-5 months after flowering; it is not unusual for *A. aulacocarpa* to produce 2 seed crops a year.

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ECOLOGY

The main occurrence of *A. aulacocarpa* is in warm to hot humid and sub-humid zones of the tropics and subtropics, at the latitudinal range 6-31 deg. C. It can tolerate only very mild frost.

Found in a diverse range of vegetation associations, mainly open forest, and is one of the few acacia species extending into rainforest. The species has been described as an early secondary species, 'proclimax' species or secondary species dominating disturbed or successional forests and 'permanent gap' conditions such as steep, unstable slopes and watercourse margins. It grows in a wide topographical range including undulating highlands, ridges, and steep rocky slopes, as well as on the flat and gently undulating terrain of coastal plains and foothills. The soils are freely to imperfectly drained, usually acid or very acid and of low fertility.

BIOPHYSICAL LIMITS

Altitude: 0-1000 m, Mean annual temperature: 10-21 to 29-38 ° C, Mean annual rainfall: 500-3000 mm

Soil type: Found frequently on yellow soils, red or yellow podzolics that are usually acidic or very acid (pH 3.5-6) and of low fertility, and on sandy clay soils; tolerates a wide pH range.

DOCUMENTED SPECIES DISTRIBUTION

Native: Australia, Indonesia, Papua New Guinea

Exotic: China, Costa Rica, Fiji, Guyana, Malaysia, Puerto Rico, Thailand, Vietnam



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.

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PRODUCTS

Fodder: The potential for fodder production is limited; the phyllodes are rather unpalatable to stock, being eaten only during very dry periods, and the predicted in vivo digestibility is low, 33%.

Fuel: The wood has an energy value of 21600 kJ/kg and is suitable for firewood. Charcoal made from *A. aulacocarpa* wood has a density of 500 kg/cubic metre at 12.5% moisture and an energy value of 37 100 kJ/kg.

Fibre: Excellent potential as a source of fibre for pulping and paper-making industries, producing one of the strongest bleached kraft pulps among acacias.

Timber: The sapwood of *A. aulacocarpa* is narrow, creamy yellow to straw-coloured, distinct; heartwood pale olive-brown to grey-brown, often attractively streaked with grey bands. The heartwood is reddish-brown, hard, heavy (600-800 kg/cubic metre basic density), moderately durable and tough. Used as a construction timber, for furniture and cabinetwork, flooring, boat building, tool handles, boxes and crates, joinery and turnery.

Tannin or dyestuff: The inner bark may be used for tannin production.

SERVICES

Shade or shelter: The light to moderate crown makes *A. aulacocarpa* useful for shade planting.

Reclamation: A popular tree species in the reforestation of poor soils.

Nitrogen fixing: *A. aulacocarpa* is an evergreen species that fixes atmospheric nitrogen.

Ornamental: The tree is occasionally planted as an ornamental.

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TREE MANAGEMENT

In general, the seedlings are ready for transplanting 3-4 months after sowing. A spacing of 3-4 x 3-4 m is considered suitable for firewood and pulpwood plantations. *A. aulacocarpa* competes well with weeds, including *Imperata cylindrica*. In plantations with 2-3 x 2-3 m spacing, it will totally suppress the weed within 2-3 years. However, weed control is necessary in the first 2 years to help establishment. An 8-10-year rotation is recommended for pulpwood plantations, and a 15-20-year rotation for saw logs. Trees attain 12-16 m in height and 11-14 cm in diameter in 4 years. An evergreen species, the main and lateral shoots grow almost throughout the year, but growth may stagnate during the very hot and dry season.

The tendency of *A. aulacocarpa* to have a fluted stem may reduce its value for purposes such as veneer. Selection of a suitable provenance will be necessary to obtain optimum results.

GERMPLASM MANAGEMENT

Seed storage behaviour is orthodox. There are 40 000-80 000 viable seeds/kg.

PESTS AND DISEASES

Apart from infestation by powdery mildew in the nursery, trees are sometimes attacked by *Sinoxylon* spp., which girdles small stems and branches less than 2 cm in diameter, causing them to break at the point of attack. Attack by a stem pinhole borer (*Lyctus* spp.) has been reported in Sabah, Malaysia.

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FURTHER READING

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

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.

Faridah Hanum I, van der Maesen LJG (eds.). 1997. Plant Resources of South-East Asia No 11. Auxillary Plants. Backhuys Publishers, Leiden, the Netherlands.

Lemmens RHMJ, Soerianegara I, Wong WC (eds.). 1995. Plant Resources of South-east Asia. No 5(2). Timber trees: minor commercial timbers. Backhuys Publishers, Leiden.

Thomson LAJ. 1994. *Acacia aulacocarpa*, *A. cincinnata*, *A. crassicarpa* and *A. wetarensis*: an annotated bibliography. CSIRO.

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

SUGGESTED CITATION

Orwa C, A Mutua, Kindt R, Jamnadass R, S Anthony. 2009 Agroforestry Database: a tree reference and selection guide version 4.0 (<http://www.worldagroforestry.org/sites/treedbs/treedatabases.asp>)