

## Acacia crassicarpa

A. Cunn. ex Benth.

Fabaceae - Mimosoideae

### LOCAL NAMES

English (thick-podded salwood, red wattle, Papua New Guinea red wattle, northern wattle, brown salwood)

### BOTANIC DESCRIPTION

*Acacia crassicarpa* is a small- to medium-sized tree 25 m (max. 30) tall; bole often straight and branchless for about 13-18 m; up to 50-60 cm in diameter; crown heavily branched and spreading. Bark dark or grey brown, hard with deep vertical furrows; inner bark is red and fibrous.

Phyllodes falcate, 8-27 x 1-4.5 cm, greyish-green, glabrous; primary veins 3-5, prominent, longitudinal, tending to run into the lower margin at the base; secondary veins parallel, not anastomosing, crowded; pulvinus, 4-20 mm long with a circular gland at the top.

Inflorescence a bright yellow spike, 4-7 cm long, clustered in groups of about 2-6 in the upper axils; peduncle 5-10 mm long, rachis thick; flowers pentamerous, bisexual; calyx broadly cupular, 0.5-0.7 mm long, lobes concave, lobed to about halfway down; corolla widely spreading, glabrous, 1.3-1.6 mm long, 2-3 times as long as the calyx; stamens 2-3 mm long; ovary shortly pubescent, more densely hairy at the top.

Pod woody, ovoid-oblong, flat, 5-8 x 2-4 cm, glabrous, dull brown, transversely veined but hardly reticulate. Seed oblongoid, 5-6 x 2-3 mm, black, arranged separately in separate compartments; areole large and almost closed; funicle folded and thickened, forming a long, pale creamy-yellow aril below the seed.

The generic name *acacia* comes from the Greek word 'akis' meaning a point or a barb, and the specific epithet is from Latin, 'crassus' (thick) and 'carpus' (fruit), in reference to its thick pod.

### BIOLOGY

Flowering starts as early as 18 months after planting, while seed is produced in abundance after 4 years. Seeds mature 5-6 months after flowering. In its native range, the main flowering season is May-June, but light flowering may occur as late as September. The peak fruiting season is October-November, however there is variation between locations and from year to year.



Flowers, leaves, whole plant. (Wrigley J.)



Flowers and foliage on trees near Tabora, Tanzania (Anthony Simons)

**ECOLOGY**

The species is found in warm to hot humid and sub-humid zones in the lowland tropics. In Australia, it is commonly found immediately behind beaches, on coastal plains and foothills. It appears to be tolerant of salt spray and soil salinity. In Papua New Guinea and Irian Jaya, Indonesia, *A. crassicarpa* is found on the gently undulating terrains on well-drained, strongly acid soils, and on imperfectly drained soils that flood in the wet season. On former rainforest wetlands with a sandy loam soil it is superior in growth to *Acacia mangium*. In the southern coastal lowlands of Queensland the species occurs in the understorey of open forest and in open woodland dominated by *Eucalyptus pellita*, *E. tereticornis* or *E. tessellaris*. On frontal sand dunes it is found as a wind-sheared shrub or small tree, behind *Casuarina equisetifolia* and associated with *Alphitonia exelsa*. On Cape York Peninsula, it is associated with *Eucalyptus tetradonta*, *Allocasuarina littoralis* and *Melaleuca* spp. In Papua New Guinea, northern wattle occurs frequently with *Acacia aulacocarpa*, *A. auriculiformis* and *A. mangium*.

**BIOPHYSICAL LIMITS**

Altitude: 0-200 m (max. 450), Mean annual temperature: 15-22 to 31-34 deg. C, Mean annual rainfall: 500-3 500 mm

Soil type: Red wattle occurs on a wide variety of soil types, from calcareous beach sands, yellow earths derived from granite, red earths on basic volcanic rock to alluvial and colluvial soils derived from a variety of parent materials.

**DOCUMENTED SPECIES DISTRIBUTION**

Native: Australia, Indonesia, Papua New Guinea

Exotic: China, Fiji, Malaysia, Tanzania, Thailand



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**

**Fuel:** The wood dries out moderately rapidly, burns well and is useful for firewood and charcoal, although it sparks at ignition and produces some fly ash and smoke during flaming. Its energy value is 22 600 kJ/kg.

**Fibre:** *A. crassicarpa* is suitable for kraft pulping, with a moderate screened pulp yield of 47%, and excellent pulpwood productivity (300 kg per cubic metre). Fast-grown plantation wood of lower density may prove more suitable for pulp production than wood from native trees.

**Timber:** The sapwood is pale yellowish-brown and heartwood golden-brown. The wood is strong and durable with a density of 670-710 kg/cubic metre. It is suitable for a wide range of sawn timber end-uses including light structural and decorative purposes. Examples include construction, furniture, flooring, board and boat building and tobacco curing firewood as is the case in Tanzania.

**SERVICES**

**Shade or shelter:** *A. crassicarpa* provides suitable shade.

**Reclamation:** The tree can be planted for weed control and is often cited as an effective species for the rehabilitation of land infested with *Imperata cylindrica*. In Papua New Guinea, it is reported to be a very vigorous colonizer of degraded soils following shifting cultivation. Although suitable for planting for land reclamation, it is too competitive to grow in combination with annual crops.

**Nitrogen fixing:** *A. crassicarpa* is a vigorous atmospheric nitrogen fixer and nodulates well with a group of related *Rhizobium* strains.

**Soil improver:** Leaves decompose slowly and are useful as mulch.

**TREE MANAGEMENT**

Under favourable conditions seedlings grow rapidly reaching 25-30 cm in 3-4 months. *A. crassicarpa* is one of the fastest growing tropical *Acacia* species. It appears to maintain active shoot growth almost the year round, although a few months of stagnation may occur in the dry season. On sites dominated by *Imperata cylindrica* or other weedy plants, weed control is necessary in the first 1-2 years to ensure establishment. Coppicing ability varies with cutting height and provenance, but is not a suitable method of regeneration, since trees do not coppice well. In open situations, the crown is strongly branched and casts a moderate shade. Preliminary observations indicate that *A. crassicarpa* is resistant to low intensity fires. An aboveground dry biomass of 207 t/ha can be obtained in 3 years with mean annual rainfall of 1 500 mm, and 40 t/ha in 3 years on poorer sites.

Spacing of 3 x 3 m (1 100 trees/ha) to 4 x 4 m (625 trees/ha) is suitable for land reclamation, fuelwood and pulpwood plantations.

**GERMPLASM MANAGEMENT**

The seeds of *A. crassicarpa* have a hard seed coat, low moisture content and are well-suited to storage in an air-tight container at room temperature (24°C). The seeds weigh about 36 400 seeds/kg.

**PESTS AND DISEASES**

Three pests and diseases of economic value have been reported. They include *Platypus* spp., an ambrosia beetle (*Xyleborus* spp.) and pinhole borer. The tunnels and associated bacterial staining destroy the appearance of the wood, may lower the strength properties and may contribute to a greater bleaching agent requirement during paper making. *Sinoxylon* spp., a twig- and branch-boring beetle, may girdle and break stems of young trees.

An unknown fungus sometimes causes severe spotted chlorosis and premature senescence of older phyllodes, while the narrow creamy yellow sapwood is susceptible to rapid fungal decay. *Cercospora* can affect productivity, particularly during prolonged periods of drought.

**FURTHER READING**

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**SUGGESTED CITATION**

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