

## Botanical name

*Acacia acuminata* Benth., London J. Bot. 1: 373 (1842)

The botanical name is derived from the Latin *acuminatus* (drawn out to a long, narrow point) and refers to the phyllode apices which are characteristically narrowed to delicate, curved points.

## Common name

Jam, Raspberry Jam, Jam Wattle. These common names allude to the raspberry jam odour that is emitted from the wood when first cut.

## Characteristic features

Tall *shrubs* or small *trees* with 2-6 main stems arising from or near ground level. *Branchlets* light grey. *New shoots* invested with a dense, yellow, appressed silky hairs. *Phyllodes* rather long and narrow, flat, dark green, finely multi-nerved on each surface, margins fringed with minute white hairs (especially on the upper half of the phyllodes), narrowed at the apices into delicate, curved points; *pulvinus* distinct and orange. *Spikes* sessile. *Flowers* 4-merous.

## Description

*Note.* This is a somewhat variable species and is in need of critical revision. The description here applies only to plants occurring within the Kalannie region.

**Habit.** Bushy, obconic tall *shrubs* or small *trees* commonly 2-5 m tall and 1.5-3 m wide, sometimes (e.g. around granite rocks) occurs as trees to 6 m tall and spreading to 7 m across, with 2-6 main stems arising from (or up to 0.5 m above) ground level, the main stems straight, slender (1.5-3 cm at breast height), ascending to erect and moderately- to much-divided into ascending branches, the crowns rounded to sub-rounded, spreading and occupying 20-40% of the total plant height.

**Bark.** Light grey or dark grey, smooth except finely fissured at base of main trunks on oldest plants.

**New shoots.** Invested with a dense, yellow, appressed silky hairs.

**Branchlets.** Glabrous, light grey.

**Phyllodes.** Linear to very narrowly elliptic, flat, (5-)7-12(-15) cm long, mostly 2-5 mm wide, rather thin and flexible, straight or very slightly recurved, dark green, shiny; *longitudinal nerves* numerous, fine and close together; *margins* fringed with minute white hairs, especially on the upper half of the phyllode; *apices* acuminate with delicate, curved, innocuous points; *pulvinus* distinct and orange.

**Spikes.** 1 or 2 within axil of phyllodes, +/- sessile, 15-20 mm long and 7 mm wide when fresh, golden.

**Flowers.** 4-merous; *sepals* united for 1/2 or less their length.

**Pods.** Linear, flat but obviously rounded over the seeds, straight-edged or slightly constricted between the seeds, mostly 3-6 cm long, (3-)4-5 mm wide, pendulous, papery, thin, smooth, glabrous or almost so, slightly shiny, light brown or yellow-brown.

**Seeds.** Longitudinal in the pods, (2-)3-4 mm long, (1.5-)2-2.5 mm wide, shiny or slightly shiny, very dark brown to black, often dull yellowish at the centre just prior to maturity; *aril* white or creamy white, tinged greenish at the hilar end when fresh.

## Taxonomy

**Related species.** The relationship between *A. acuminata* and its very close Arid Zone relative, *A. burkittii*, needs to be reviewed and studies are required to clarify the relationship between the two taxa.. Current knowledge suggests that these two

species are (rather arbitrarily) distinguished by the transverse sectional shape and width of their phyllodes: terete to sub-terete and not above 1 mm wide in *A. burkittii*, flat and more than 1 mm wide in *A. acuminata*. In the geographical zone of overlap between the two species (which occurs just to the east of the Kalannie region) it is often difficult to confidently place specimens in one species or the other. *Acacia burkittii* is common in the southern Arid Zone, extending from around Lake Moore eastward to South Australia and New South Wales; *A. acuminata* is more or less confined to the wheatbelt region of south-west Western Australia. Although the forthcoming Flora of Australia volume is likely to treat these two species as subspecies of a single species, in the present work they are treated as separate species. Only *A. acuminata* occurs in the Kalannie region.

*Acacia acuminata* is also closely allied to *A. oldfieldii* which occurs on sandy soils in a small area from near Eradu (east of Geraldton) north to the Murchison River.

**Variants.** It appears that plants *A. acuminata* from the southern central and southern wheatbelt regions differ from those in the north (including the Kalannie region) in often having a clearly defined bole which can measure 1-2.5 m in length.

Within the Kalannie region a few plants of *A. acuminata* have smaller fruits than normal (i.e. pods 3 mm wide and seeds 2-2.5 x 1.5 mm), but the significance of this variation has not been ascertained.

### **Distribution**

*Acacia acuminata* occurs in the wheatbelt and the western periphery of the adjacent goldfield region of south-west Western Australia where it extends from the Murchison River north of Geraldton, south to Ravensthorpe and Salmon Gums. Its northern and eastern limits of distribution are not easy to define because of the difficulty in separating this species from *A. burkittii*.

*Acacia acuminata* is common in the Kalannie region where it is frequently found along many road verges and around the base of granite rocks. It often forms rather dense populations in the places where it grows.

### **Habitat**

Over its geographic range this species is commonly found on red-brown earths or on lateritic gravels, however, it also occurs on clays, red sands and granitic soils (Barrett 1995: this paper provides a comprehensive review of the ecological preferences of this species).

In the Kalannie region *A. acuminata* occurs on a range of soil types, favouring loam to sandy clay; the species is slightly to moderately salt-tolerant.

**Recorded from the following Kalannie region Land Management Units.** Colluvial Flat-Earth; Red Brown Earth; Shallow Soil over Granite; Colluvial Flat-Solodic; Sandy Loam over Clay.

### **Conservation status**

Not considered rare or endangered.

### **Flowering**

Over its rather wide geographic range *A. acuminata* flowers from July to October, with local conditions (presumably the timing and/or intensity of rainfall) influencing the onset of flowering.

In the Kalannie region in 1996 and 1997 plants of this species flowered in August and September.

### **Fruiting**

Over the geographic range of this species pods with mature seeds have been collected from October to early January. However, *A. acuminata* is variable with regard to pod production. Not all trees in a single area necessarily produce fruit and those that do commonly display considerable differences with regard to the amount of fruit set. It is not known what factors cause this variation but it is likely that the timing and/or intensity of rainfall events play a role.

In December 1996 many plants in the Kalannie region sterile or had light pod crops; a few were heavily in fruit.

Manually shaking or gently beating the branches and collecting the pods and seeds on a ground sheet is an efficient way of collecting large quantities of seed. The seeds are easily separated from the pods, either manually or with commercially available equipment, by threshing and winnowing.

Based on two samples counted by Angela Waters (Kalannie Tree Supplies) there are about 115 000 seeds per kilogram (this figure would most probably have included both viable and non-viable seeds). Hall and Turnbull (1976) reported 50 000 - 70 000 viable seeds per kilogram.

### **Biological features**

**Longevity.** *Acacia acuminata* is reported as being a "long-lived" species but there is no hard data regarding its longevity. Its very close relative, *A. burkittii*, is reported by Crisp and Lange (1976) to reach a maximum age of 250 years, however, most plants studied by these authors were much younger than this.

**Growth characteristics.** Appears to have a moderately fast growth rate. It is drought and frost tolerant but will not tolerate waterlogging (Barrett 1995); it is killed by fire (Hussey, pers. comm.).

**Pests and diseases.** In the Kalannie region *A. acuminata* it is sometimes lightly infected with Gall Rust while in the southern part of its range the species is commonly infected by the aerial parasite, *Amyema preissii*. As summarized by Barrett (1995) larvae of the Bag-Shelter Moth can cause severe defoliation, and eventually death; also, locusts, wingless grasshoppers, rabbits, native and feral animals can also cause severe grazing damage. However, it is not known to what extent, if at all, these problems occur in the Kalannie region.

**Response to grazing.** In *A. burkittii* from the Eyre Peninsula, South Australia, Crisp and Lange (1976) showed that grazing by sheep and rabbits seriously affected the recruitment of plants of this species; in areas where both sheep and rabbits occur together it was predicted that *A. burkittii* would be close to extinction within a century. It is probable that the same could be said for *A. acuminata* in Western Australia.

**Rhizobia.** Roughly (1987) noted that *A. acuminata* is a promiscuous host with nodulation by 75-100% of the 20 *Rhizobium* strains tested.

**Sandalwood host.** An important host for the Western Australian Sandalwood (*Santalum spicatum*), see Struthers *et al.* (1986) and Casson (1992).

**Wood.** The wood of *A. acuminata* has the odour of Raspberry Jam when freshly cut. The heartwood is dark chocolate brown and the sapwood pale yellowish. The wood is finely textured with an attractive grain (often with fiddleback); it has an air dry density of 1 214 kg/m<sup>3</sup>, based on 1 sample tested (G. Pronk, pers. comm.). For further details regarding wood characteristics see Bootle (1983: 290).

## Propagation

Informal germination tests on seed from some Kalannie region plants, using various hot water treatments, were conducted by Angela Waters (Kalannie Tree Supplies). Good results were achieved by either soaking the seed overnight in just-boiled water prior to sowing, or by boiling the seed for 1 or 3 minutes prior to soaking. Untreated seed either failed to germinate or showed low a germination response. These results are similar to those of Rusbridge *et al.* (1996) who manually nicked seed prior to germination tests under controlled conditions.

A detailed review of germination techniques for *A. acuminata* is provided in Barrett (1995). This work illustrates that there is considerable variation in germination response, depending upon what pre-treatment method is used; some of the results reported by Barrett are at variance with the information provided above for Kalannie region plants.

## Revegetation

In the Kalannie region *A. acuminata* is considered to well-suited for revegetation, particularly for well-drained loamy soils. The species occurs generally throughout the landscape on a range of soil types but is particularly common on the Colluvial Flat Earth land management unit. On account of its growth form and edaphic tolerances the species has potential for salinity control (of slightly to moderately saline soils), erosion control (particularly the aprons of granite rocks), for windbreaks and shelter belts (especially as mixed plantings with *Eucalyptus loxophleba*), and as a wildlife refuge. Under natural conditions the species regenerates very well (from seed) in areas where grazing has been excluded, even on land that had previously been cropped for 20 years.

Notwithstanding the above, Newbey (1982) considered the southern wheatbelt form of *A. acuminata* to be unsuited for water and wind erosion control, waterlogging control and salinity control.

*Acacia acuminata* is one of the species recommended as being suitable for revegetation on a variety of soil types in the Midlands and northern wheatbelt region (Wilcox *et al.* 1996) and central wheatbelt region (Lefroy *et al.* 1991) of Western Australia. It is currently being used in direct seeding regeneration programs on deep, red loams and on shallow soils over granite or gneiss in the northern wheatbelt region of Western Australia (P. Ryan, pers. comm.). According to Rusbridge *et al.* (1996) the success of *A. acuminata* in rehabilitation is variable and depends upon factors such as seed viability, location and seasonal conditions. [Note: It is possible that the taxon to which these authors were referring was *A. burkittii*.]

## Utilisation

**Salinity control.** See Revegetation above.

**Erosion control.** See Revegetation above.

**Windbreak.** Most effective as a windbreak if included in mixed plantings.

**Shade, shelter and visual screen.** Its growth form makes it suited to these purposes.

**Wildlife.** Seeds of this species provide an important source of food for birds (Hussey, pers. comm.).

**Fodder.** Although Streets (1962) regards Jam as an excellent fodder other sources place little value on it for this purpose (see Hall and Turnbull 1976). In the Kalannie region both goats and sheep ignore young plants of this species unless there is absolutely nothing else to eat.

**Wood products.** The wood is suitable for turnery and decorative woodware and small items of furniture. Jam is excellent for making fence posts on account of the straight stems and termite-resistant wood. Skowronek (1996) reported that Jam wood is suitable for the manufacture of headjoints (i.e. "mouthpieces") of concert flutes but complete-instrument manufacture would likely be better with other species.

**Ornamental and amenity plantings.** On account of this being a long-lived species with a pleasing growth form Jam has potential as an ornamental and for amenity plantings.

**Seed for human food.** There are reports of the seeds of this species having been consumed by traditional aborigines (Cribb and Cribb 1984; Cherikoff and Isaacs 1989; P. Bindon pers. comm.); however, *A. acuminata* is not one of the species highly recommended by Maslin *et al.* (1998) for trialling in southern Australia as a "human food".

**Aboriginal useage.** Apart from consuming the seeds (see above) traditional aborigines are reported to have consumed the gum and used the wood for making throwing clubs and spears.

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