

## *Acacia hakeoides* Cunn. ex Benth.

### Common Names

Western Black Wattle, Hakea Wattle.

### Habit

Bushy, multi-stemmed (2 to many stems) shrubs or small trees to 1–4 (–6) m high, rarely single-stemmed, reported as ‘occasionally up to 40 feet’ by Anderson (1968), but this is undoubtedly an error, main stems normally straight to sub-straight, commonly 4–9 cm dbh and moderately branched, it suckers freely and commonly forms thickets; crowns rather spreading. Bark smooth, thin.

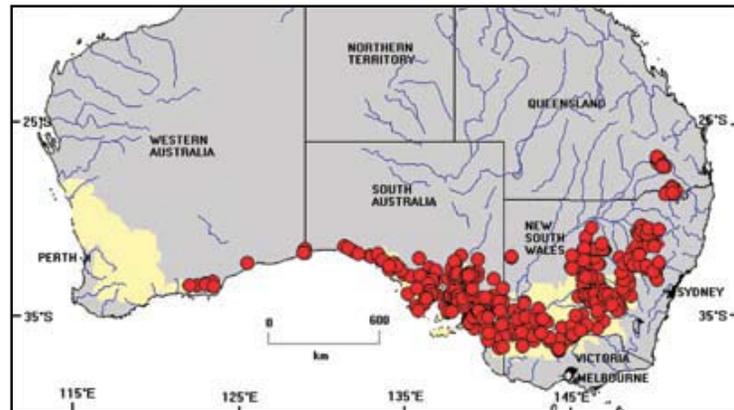
Botanical descriptions and illustrations/photographs are provided by Cunningham *et al.* (1981), Costermans (1981), Simmons (1987), Fairley & Moore (1989), Whibley & Symon (1992), Tame (1992), Maslin *et al.* (1998) Maslin (2001 & 2001a) and Kodela (2002).

### Taxonomy

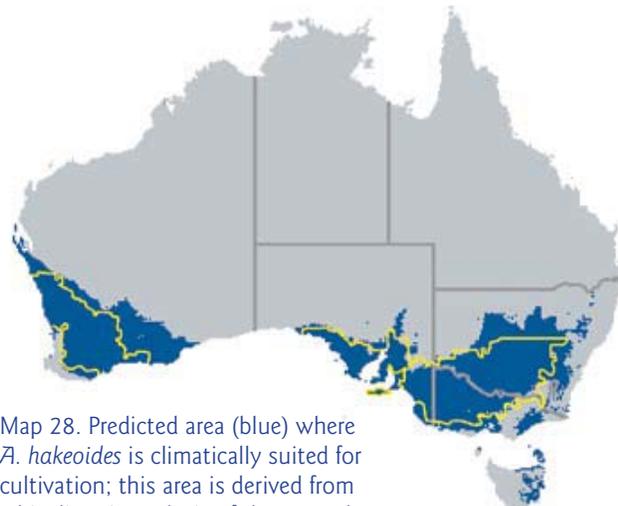
*Acacia hakeoides* is referable to *Acacia* section *Phyllodineae*, a diverse, and probably artificial, group of about 408 species (Maslin 2001) which are characterized by having ‘1-nerved’ phyllodes and flowers arranged in globular heads (see Maslin & Stirton 1998 and Maslin 2001 for discussion). Species of section *Phyllodineae* are widespread in Australia with the main centres of richness located in temperate and adjacent semiarid areas of eastern, southeastern and southwestern Australia; species number greatly decline in the arid zone and in northern tropical/subtropical areas (Hnatiuk & Maslin 1988 and Maslin & Pedley 1988).

*Acacia hakeoides* is related to *A. williamsonii* and *A. difformis* (not included in this report) and not far removed taxonomically from *A. pycnantha* (see species profile below). Other species detailed in this report which are not far removed taxonomically from *A. hakeoides* include *A. linearifolia* and *A. neriifolia*; members of the ‘*Acacia microbotrya* group’ are related to these taxa.

As discussed by Maslin (2001) the phyllodes of *A. hakeoides* are somewhat variable in shape and size; specimens with narrow linear phyllodes are scattered throughout the range of the species. Also, a long phyllode variant occurs near Eaglehawk in the Bendigo ‘Whipstick’ forest, Victoria (Court 1973); these plants superficially resemble hybrids between *A. pycnantha* and *A. williamsonii* which also occur in the ‘Whipstick’.



Map 27. Distribution of *A. hakeoides*



Map 28. Predicted area (blue) where *A. hakeoides* is climatically suited for cultivation; this area is derived from a bioclimatic analysis of the natural distribution (red circles, Map 27), see also Table 5. Target area shown in yellow.

Figure 13. *Acacia hakeoides*



A – Adult multi-stemmed plant in roadside suckering population. (Photo: B.R. Maslin)



B – Adult single-stemmed (rare) plant in same population as A. (Photo: B.R. Maslin)



C – Adult plant showing dense crown. (Photo: B.R. Maslin)



D – Branch showing prolific flowering (heads in racemes). (Photo: comm. I.B. Armitage)



E – 4 year old plant in on-farm revegetation trial near Wagga Wagga. (Photo: B.R. Maslin)



F – Section of stem (of plant in A) showing dense, pale wood. (Photo: B.R. Maslin)

## Distribution and habitat

Widespread but scattered in southern Australia where it extends from near Esperance, Western Australia, eastwards through South Australia (southern regions) and western Victoria, north on the Great Divide, it occurs on inland slopes and adjacent plains in New South Wales to the Tara area in southeast Queensland; there is an occurrence near Broken Hill, New South Wales. *Acacia hakeoides* is often locally common in the places where it occurs (often due to its aggressive suckering habit). This species is common in the easatern target area but rare in the west. It is one of only four species in this report that occur in both the eastern and westen target areas (the other three are *A. cyclops*, *A. murrayana* and *A. victoriae*). Grows mainly on gently undulating plains in a variety of soils but commonly in sand or loam, often in mallee communities. In South Australia it grows mainly on brown calcareous earths (Whibley & Symon 1992) while in New South Wales it sometimes occurs on rocky ranges (Costermans 1981).

## Flowering and fruiting

Main flowering period is July to September but individual plants may flower as early as June or as late as October (Maslin *et al.* 1998) or November (Stelling 1998). Mature pods occur in December and January in South Australia (Bonney 1994) or February in Queensland (Pedley 1980). It flowers heavily in most years and regularly sets moderate to heavy seed crops (Maslin *et al.* 1998).

## Biological features

Moderate to fast growth rate (Whibley & Symon 1992, Stelling 1998), drought resistant and moderately frost tolerant (Simmons 1987). Although *A. hakeoides* has a strong propensity to sucker and form clumps (Anderson 1968) it can also occur as scattered, individual plants (eg. in western New South Wales, fide Cunningham *et al.* 1981). It has a moderate life-span (up to several decades according to Stelling 1998); its coppicing ability is unknown.

## Cultivation

It can be grown from both cuttings and seeds (Simmons 1987). It establishes readily when direct seeded (Stelling 1998).

There is no field trial data available for this species (Maslin *et al.* 1998), however, we did inspect *A. hakeoides* in cultivation (for on-farm revegetation work near Wagga Wagga) during this project. The site was located within the 450 mm rainfall zone and experienced occasional frosts; the land was ripped and controlled for weeds prior to planting. Plants were direct seeded and in 4 years had attained 2 m in height; they divided just above ground level into a number of straight to sub-straight, rather branched main stems about 1 cm dbh. *Acacia pycnantha* in this same plot showed better performance.

## Pests and diseases

There are no major pests or diseases known for this species (Maslin *et al.* 1998).

## Weed potential

Suckers freely, especially if roots are disturbed, and frequently forms dense thickets which are often difficult to clear (Anderson 1968). The species also produces large quantity of seed which could also contribute to its weed potential. The species is not far removed taxonomically from *A. pycnantha*, a known environmental weed in some areas.

## Wood

Our anecdotal field observations show the wood to be reasonably dense and pale coloured with no dark heartwood developed. Upon drying the wood developed a pinkish tone and split due to shrinkage.

## Utilisation

### Wood

According to Anderson (1968) the timber is of little use except in a minor way for fuel (however, see **Potential for crop development** below).

### Land use and environmental

Suitable for low shelter belts and for roadside planting (Whibley & Symon 1992). Useful for broadacre sowing to help arrest erosion of coastal soils and sand dunes; sow in mid-winter (Bonney 1994).

### Fodder

Not known to be eaten by stock in western New South Wales (Cunningham *et al.* 1981).

### Human food

Regarded by Maslin *et al.* (1998) as a lesser known species that is worth considering as a source of seed for human consumption.

### Other uses

An attractive shrub suitable for ornamental uses (Cunningham *et al.* 1981). Provides a good habitat and food source for insects and birds (Stelling 1998).

## Potential for crop development

*Acacia hakeoides* is regarded as having only moderate prospects as a crop plant for high volume wood production. It is ranked as a category 3 species and its growth characteristics suggest that it has some potential for development as a phase crop (Table 6). Although there are no records of it coppicing we expect that it may regenerate if cut close to the ground. Its vigour from coppicing is not known so its potential as a coppice crop cannot be assessed. These hardy shrubs lend themselves well to direct seeding which is an attractive attribute for a phase crop plant. However, because of its prolific seed set *A. hakeoides* is likely to develop a significant soil seed bank that may lead to weed problems in adjacent or subsequent annual crops (on the other hand seedling regeneration may possibly be treated as a form of green manure). One way of avoiding soil seed build up is to harvest plants before they fruit; however, it is not known at what age fruits are first set or whether sufficient woody biomass will have been produced by that time. The propensity for *A. hakeoides* to vigorously root-sucker in nature may or may not be advantageous in cultivation, it depends whether or not this attribute is required (or expressed) for the system in which it is placed. However, successful development of this species as a phase crop may depend upon locating non-suckering provenances, if they exist. Although *A. hakeoides* is reported to have a fast growth rate it is not known how well it would perform in cultivation as soil profiles dry out.

*Acacia hakeoides* is typically multistemmed and although the stems are not overly thick a reasonable amount of woody biomass is produced (similar to a small mallee eucalypt). The wood is pale coloured but its density is unknown, although it may possibly be similar to, or slightly greater than, *A. microbotrya* (that is taxonomically not far removed from *A. hakeoides*) which averages about 830 kg/m<sup>3</sup>, and if so it lowers the species attraction for use in reconstituted wood products.

*Acacia hakeoides* has a wide natural distribution, occurring throughout much of the target area in eastern Australia, but it is uncommon in Western Australia. The area predicted to be climatically suitable for the cultivation of *A. hakeoides*, based on its natural climatic parameters, is shown in

Map 28. This analysis indicates that climatic conditions suitable for the cultivation of *A. hakeoides* occur in both the eastern and western target areas. Within these regions it would be best suited to calcareous sandy loams. However, its tolerance of a range of soil types is unknown and assessment trials are warranted. *Acacia hakeoides* is likely to be unsuited to heavy clay soils such as those of the Riverina region. In Western Australia the bioclimatic analysis indicates that it would grow well beyond its natural distribution to encompass all of the target area in that State.

This species has at least a moderate potential as an environmental weed on account of its prolific seeding and vigorous suckering. Therefore, caution is needed if any wide-scale use of *A. hakeoides* is undertaken, and such use must be accompanied by a thorough weed risk assessment.