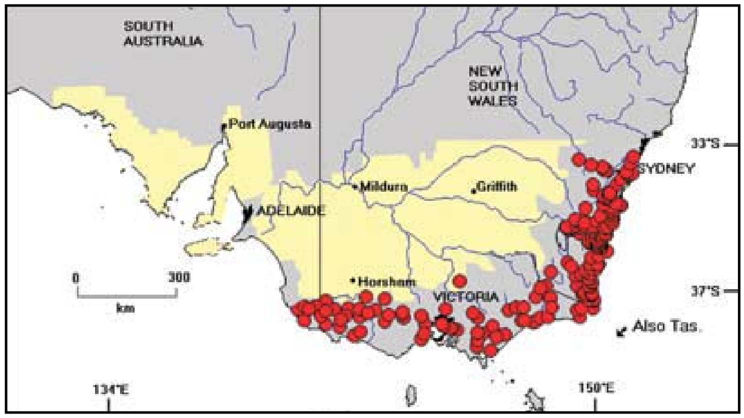
Acacia mearnsii De Wild.

Common Name

Black Wattle (Standard Trade Name).



Map 37. Distribution of *A. mearnsii*.

Habit

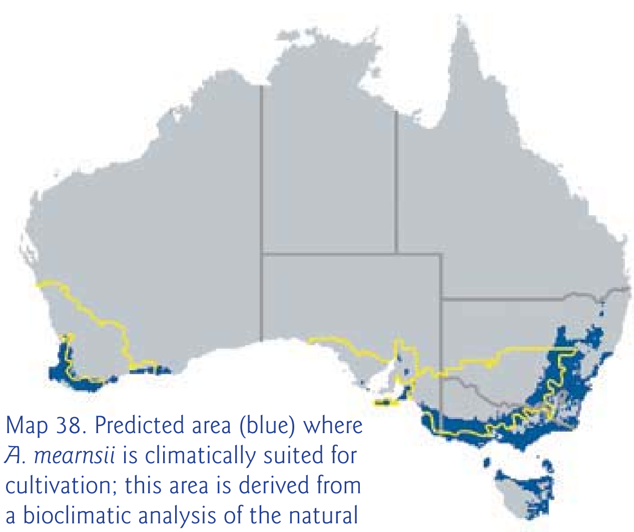
Large spreading shrubs or small trees typically 5–10 m with dbh 10–35 cm but at times reaching 20 m with dbh to 45 cm. Open-grown specimens are freely-branched from near ground level and with a crooked main stem. In forest stands the stem is usually straighter and may be dominant for up to three-quarters of the tree height. It can form dense thickets especially where it has recolonised cleared land. Bark on old trees is brownish-black, hard and fissured but on younger stems and the upper parts of old trees it is grey-brown and smooth. The root system develops mainly in the soil surface layer and tap roots are short so that in plantations the species it is not very windfirm. This description is adapted from Doran & Turnbull (1997) and CAB International (2000).

Botanical descriptions and illustrations/photographs are provided in Costermans (1981), Boland *et al*. (1984), Turnbull (1986), Fairley & Moore (1989), Whibley & Symon (1992), Tame (1992), Entwistle (1996), Tindale & Kodela (2001 & 2001a) and Kodela (2002).

There is a large body of literature concerning *A. mearnsii* and recent comprehensive reviews are provided in Wiersum (1991), Brown & Ho (1997), Doran & Turnbull (1997), Searle (2000) and CAB International (2000).

Taxonomy

This species belongs to *Acacia* section *Botrycephalae*, a group of 44 mostly arborescent species characterized by having bipinnate adult foliage and flower heads normally arranged in elongated racemes (Orchard & Wilson 2001). These species predominate in temperate areas of eastern and southeastern Australia (Hnatiuk & Maslin 1988, Maslin & Pedley 1988). There are seven species of *Botrycephalae* detailed in this report, namely, *A. baileyana, A. dealbata* subsp. *dealbata, A. decurrens, A. filicifolia, A. leucoclada* subsp. *leucoclada, A. mearnsii* and *A. parramattensis*. A number of recent studies have suggested that species of section *Botrycephalae* are most closely related to certain racemose species of section *Phyllodineae* (foliage phyllodinous) from eastern Australia, see Maslin & Stirton (1998) and Maslin *et al*. (2003) for reviews. Of the phyllodinous species included in this report those having presumed closest affinities to species of *Botrycephalae* include *A. linearifolia, A. neriifolia* and *A. pycnantha*; members of the '*Acacia microbotrya* group' are not far removed from these species.



Map 38. Predicted area (blue) where *A. mearnsii* is climatically suited for cultivation; this area is derived from a bioclimatic analysis of the natural distribution (red circles, Map 37), see also Table 5. Target area shown in yellow.

Figure 18. *Acacia mearnsii*

A – Mature stand in forest site showing plants with straight, single, erect stems. (Photo: J. Simmons)

B – Adult plant in open site showing spreading crown & stems dividing near base. (Photo: D. Boland)

C – Stem core from 5 year old plant in trial at Kowen, Australian Capital Territory. (Photo: P. Macdonell)

D – Branches showing bipinnate leaves & heads in racemes. (Photo: J. Plaza)

E – Plants in trial near Mt Gambier, S.A. (note straight, unbranched boles). (Photo: B.R. Maslin)

Acacia mearnsii is most closely related to *A. parramattensis* and *A. loroloba* (see *A. parramattensis* for further details). If hybridity is an indicator of close relationship then *A. mearnsii* has affinities to a number of other species in section *Botrycephalae* (see under **Genetics** below). A study by Tindale & Roux (1969) of flavonoid and condensed-tannin contents of the heartwood and bark of *Acacia* recognized four groups within section *Botrycephalae*; in this study *A. mearnsii* was placed in a group containing *A. constablei, A. decurrens, A. irrorata* subsp. *velutinella, A. parramattensis* and *A. trachyphloia.*

In the past the name *A. mollissima* was often erroneously applied to plants of this species.

Distribution and habitat

Occurs in south eastern Australia where it extends from near Sydney, New South Wales, southwards along the coast and tablelands (including the Australian Capital Territory) to Victoria and Tasmania, and extending west to near Naracoorte in South Australia. The main area of occurrence of this species is to the south and east of the target area but it reaches the temperate periphery of the region in Victoria. There are naturalized occurrences in New South Wales, the Mount Lofty Range, South Australia, and southwest Western Australia. Tindale & Kodela (2001) provide maps of both the natural and naturalized distributions in Australia. Searle (1997, 2000) provides details of the the occurrence of *A. mearnsii* in Australia.

Acacia mearnsii has been widely cultivated in a number of countries throughout the world (see under **Cultivation** below).

Acacia mearnsii grows in wet sclerophyll forest, woodland and coastal scrub, on hillsides, ridgetops and creekbanks (Kodela 2002). As summarised by Doran & Turnbull (1997) Black Wattle has been recorded on basalt, dolerite, granite and sandstone but is common on soils derived from metamorphic shales and slates (mainly loams, sandy loams, and deep forest podzols of moderate to low fertility with pH 5–6. 5). The best soils for Black Wattle are those which are moist, relatively deep, light-textured and well-drained; it is not common on poorly-drained or very infertile sites. The 50 percentile rainfall within its natural area of occurrence is 440–1600 mm.

Comprehensive summaries of habitat characteristics are given in Boland *et al.* (1984), Turnbull (1986), Doran & Turnbull (1997) and CAB International (2000). There are several papers providing climatic profiles for the species combining information from both natural and planted occurrences; the most recent of these are Booth & Hong (1991), Booth (1992; 1997) and Yan *et al.* (1996).

Flowering and fruiting

Flowers from October to December in Australia (Searle 1997), September to October in Brazil (Stein & Tonietto 1997) and late August to early October in South Africa (Sherry 1971). Plants commence flowering when about two years old. Seed matures about 12–14 months after flowering and is not retained on the tree for longer than two to three weeks, making the timing of collection critical (Searle 1997). In plantations appreciable quantities of seed are seldom produced before the fifth or sixth year (Sherry 1971). The above information is taken primarily from CAB International (2000).

Biological features

Acacia mearnsii is a fast-growing species, attaining up to 3 m/year after 3–5 years according to Wiersum (1991). It is relatively short-lived with a life-span of about 10–20 years; however, according to Searle (2000) under very favourable growing conditions it can live for more than 40 years. It reproduces by seed and is not known to sucker or coppice. *Acacia mearnsii* is sensitive to severe drought, strong winds, and frosts of –5°C or lower. Some flowers, usually near the base of the flower head, may be wholly male and trees bearing only male flowers have been observed (Sherry 1971). In a study of a population in New South Wales, Australia, Grant *et al.* (1994) reported that 90% of flowers were wholly male. A detailed review of the flowering biology of *A. mearnsii* is provided by Raymond (1997).

Genetics

Chromosome number: $2n = 26$ (Tindale & Kodela 2001).

Acacia mearnsii is regarded as an outcrossing species with partial self-compatibility. Estimates of out-crossing rates are variable, ranging from 48 to 100% (see review in Raymond 1997). A study of the breeding behaviour of *A. decurrens* and *A. mearnsii* showed that self-fertilization in both these species leads to a decrease in fertility and general vigour (Moffett & Nixon 1974). See also Midgley & Turnbull (2003) for summary of breeding systems in relation to the silviculture of *A. mearnsii*.

Searle *et al.* (2000) assessed genetic diversity in 19 natural populations of *A. mearnsii* using allozymes. Relatively moderate levels of diversity were detected at species level. Highest levels were detected in populations from New South Wales compared to those from Victoria, South Australia or Tasmania. Genetic differentiation was not concordant with natural distribution patterns, which the authors suggested could be due to the diffusion of seeds by humans. Provenance trials established for assessing the crop potential of this species should be mindful of this potential problem when conducting seed collections.

In an earlier allozyme study by P. Brain (pers. comm. in Boland 1987) a major difference between south-east Victorian and New South Wales provenances was detected for the leaf peroxidase enzyme.

As summarised by CAB International (2000) naturally-occurring interspecific hybrids involving *A. mearnsii* are uncommon; a hybrid with *A. parramattensis* is known while in South Africa hybridization, either spontaneous or induced, with *A. baileyana*, *A. dealbata*, *A. decurrens* and *A. irrorata* is recorded in cultivation (Moffett & Nixon 1958, Moffett 1965a & b, Sherry 1971, Li 1997).

Cultivation

Black Wattle is widely cultivated in a number of countries throughout the world. Principal growing areas include Brazil, China, India, Indonesia, South Africa and eastern Africa. South African plantations cover 124 000 ha (Li 1997), Brazil has over 200 000 ha (Higa & Resende 1994) and China 30 000 ha (Midgley & Turnbull, 2003). See CAB International (2000) for full list of countries where this species is planted.

As noted by Midgley & Turnbull (2003) variation within *A. mearnsii* for important characters such as bark thickness, wood density, tannin content, some pulp properties, stem diameter, stem form and the incidence of gummosis are currently not well defined but there are indications that improvements can be expected through selection (Fang *et al.* 1994, Dunlop *et al.* 2000).

Turnbull (1986), Doran & Turnbull (1997) and CAB International (2000) provide comprehensive summaries of the silvicultural characteristics, practice and management of *A. mearnsii*, and these sources provide additional information to that which is given here. See also Searle (2000) and Midgley & Turnbull (2003) .

Acacia mearnsii is a fast-growing pioneer species which reaches its maximum growth rate 3–5 years after planting. Deaths in plantations due to over-maturity are frequent after 10 years in South Africa. It is a light-demanding species, which is sensitive to fire when young (< 3 yr) and to temperatures below about –5°C. Being a nitrogen fixer, it will tolerate relatively infertile sites but requires a good supply of phosphorus for rapid growth.

Establishment

Acacia mearnsii has usually been propagated by seeds as propagation by cuttings has been difficult (Midgley & Turnbull, 2003). These authors note, however, that clonal plantations are now a possibility as vegetative propagation techniques in the past three years have improved markedly (Beck & Dunlop 1999). Raymond (1997) provides a summary of the results achieved with the various methods tried over many years. In environmental plantings in Australia Black Wattle has been shown to establish well using direct seeding techniques (Searle 2000).

To ensure rapid and complete germination, seed coat dormancy must be broken before sowing. Mechanical scarification can be very effective (Hendry & van Staden 1982) but the seed is more commonly treated by immersion in very hot water (90°C) for 30–60 seconds (Poggenpoel 1978) or in boiling water for 1 minute (Doran & Gunn 1987). Treated seed may be surfaced dried and stored safely for at least one year.

Nursery establishment is generally by sowing pre-treated seeds directly into the containers (Doran & Turnbull 1997) or into beds to produce bare-rooted seedlings (Gao 1997). Seedlings can reach plantable size (20 cm in height) in 4 months. Inoculation with appropriate rhizobium and mycorrhiza strains is rarely necessary but may be beneficial especially when seedlings are raised in sterilized media or planted on highly degraded soils. Rhizobium is applied routinely in Brazil (Stein & Tonietto 1997). When sowing directly in the field, the seed is sown in rows 1.8–2.7 m apart in well-cultivated and weed-free ground. Seeding rate is 1.2–2.4 kg/ha. Seedlings are thinned at regular intervals until routine spacings are achieved.

Yield

Typical yields for well-managed South African plantations 10–11 years old in Natal are 21 t/ha of bark (dry) and 112 t/ha of wood (air-dry) and in the colder southeastern Transvaal 16.6 t/ha and 74.8 t/ha, respectively. At this age, the trees are 17 m tall and 14 cm diameter in Natal, and 14 m tall and 13 cm diameter in Transvaal (Stubbings & Schonau 1982). On appropriate sites and where the trees are fertilized, a mean annual increment (MAI) over 7–10 years of 15–25 cubic metres/ha of wood is feasible. Brown & Ho (1997) report similar yields in other countries in Africa and in China. In Indonesia MAIs for wood and bark yields are 14–21 cubic metres/ha and 1.2–2 t/ha dry bark at 8 years and 11–16 cubic metres/ha and 0.9–1.5 t/ha dry bark at 12 years from planting (Wiersum 1991).

In trials involving 12 bipinnate acacias at three sites in Western Australia (Busselton, Darkan and Mt Barker), Barbour (2000) ranked *A. mearnsii* as the best species for wood production across all sites at 5.5 years of age. The study identified this species as having the most potential to be developed commercially for bark tannin (for wood adhesives) and fuelwood in Western Australia. The best volume per hectare yield was at the Busselton site which yielded nearly twice that of other provenances and other species. Differences in performance between natural provenances were not conclusive in these trials.

In trials involving 16 acacias at two sites in Victoria, *A. mearnsii* was the best performing species in terms of mean stem volume (Bird *et al.* 1998). These sites occured in the 700 mm mean annual rainfall zone.

Provenance

Trials in Brazil, southern China, South Africa and Australia have shown significant variation within and between provenances in growth performance and form, frost tolerance and tannin production. A breeding strategy to make optimum use of natural provenance variation within *A. mearnsii* for commercial characteristics such as volume and tannin yield, and to produce seed for plantations is described by Raymond (1987, 1997).

Pests and diseases

The following information is largely taken from the summaries provided in Doran & Turnbull (1997) and CAB International (2000).

Acacia mearnsii is susceptible to various pathogens, some of which are responsible for economic losses in plantations. Diseases of *A. mearnsii* have been reviewed by a number of authors (e.g. Lenné 1992 & Lee 1993) with the most recent reviews of Roux *et al*. (1995) and Wang (1997) listing a range of stem and foliar diseases, rusts and root diseases. In the list is an apparent physiological disorder known as 'gummosis', in which gum is exuded in the absence of any obvious injury. Gummosis is a serious problem in commercial plantations outside of the natural climatic range of *A. mearnsii* because it reduces bark quality and hinders its stripping. In South Africa this term has been applied to a complex of diseases associated with *A. mearnsii* (Roux *et al.* 1995). The most successful control of gummosis has been by selecting and breeding trees resistant to the disease (Wang 1997).

In Australia, the total number of insects associated with *A. mearnsii* is large. The leaf-eating Fireblight Beetle, *Pyrgoides orphana* (Coleoptera), is a serious pest (Elliott & de Little 1984) and was one of the early disincentives for planting the species in Victoria (Searle 1991). African Black Beetle can cause severe damage in cultivation trials in Western Australia (Barbour 1995).

In South Africa some 200 species of insects have been noted damaging trees of *A. mearnsii*, with about 30 of these of economic significance. The nature of the damage caused by the most serious pests and control measures are outlined by Wang (1997). Luyt *et al.* (1987) list white grub (*Lepidioto mashona*), grasshoppers, cutworms as problems in the nursery and a sap sucker, wattle mirid (*Lygidolon laevigatum*), amongst the most serious of pests in young plantations in Zimbabwe. The plant parasite *Loranthus* sp., as well as termites and a number of other insects cause problems in Tanzania (Kessy 1987). In southern Brazil heavy damage is caused by beetles (*Oncideres* spp.) which girdle twigs and branches (Vulcano & Pereira 1978, Stein & Tonietto 1997), and various stem borers can cause severe damage. In China some trees have been attacked by scarab insects, scale insects and termites (Zhiang & Minquan 1987).

Weed potential

Although *A. mearnsii* does not root sucker it does produce very large amounts of hard-coated seed which provide the means for the species to spread. The seed can remain viable in the soil for decades (Searle 2000) and following disturbance (e.g. fire) it can germinate prolifically. Although the species is not commonly recorded as being a serious environmental weed in Australia there are naturalized occurrences in the wetter areas of southern South Australia and southwest Western Australia (Tindale & Kodela 2001). Outside Australia, however, *A. mearnsii* is invasive and has become a weed in some countries where it has been introduced. It has become naturalized in South Africa where it is widespread in parts of the Transvaal, Swaziland, Natal and the Cape Province (Ross 1975) where it is a Declared Invader (category 2) species (Henderson 2001). *Acacia mearnsii* is locally established in southern Europe (Whibley & Symon 1992) and is naturalized in New Zealand (Webb *et al.* 1988). In South Africa there have been attempts at biological control the species (using seed-feeding weevils and mycoherbicides), however, this has provoked conflict with those who use *A. mearnsii* for commercial purposes (Selincourt 1992, Dennill *et al.* 1999).

Wood

The wood is fine-textured and has indistinct growth rings. Sapwood is very pale brown and the heartwood light brown with reddish markings. The basic density is around 530–608 kg/m^3 (Fang *et al.* 1991, Hillis 1997) and the air-dry density 550–750 kg/m^3 (Bootle 1983). Physical and mechanical properties of plantation-grown wood are described by Gupta & Kukreti (1983), Fang *et al.* (1991) and Clark *et al.* (1994). Green and seasoned timber has the same medium strength qualities as Blackwood (*A. melanoxylon*) (Searle 2000).

Utilisation

The following information on the utilisation of *A. mearnsii* is taken largely from the summary provided in Doran & Turnbull (1997).

Wood

The wood is hard but is moderately easy to work and takes a good polish. Preboring is necessary before nailing. Susceptible to termite and *Lyctus* attack. The sapwood absorbs preservatives readily but the heart wood is moderately resistant. The wood is used for house poles, mine timbers, tool handles, cabinetwork, joinery, flooring, construction timber, matchwood, and hardboard (Masonite). It is suitable for a wide range of paper and paperboard products (Logan 1987, Nicholson 1991, Guigan *et al.* 1991). Kraft pulps using 13% active alkali yielded about 53% of screened pulp of Kappa number 20. A cubic metre of *A. mearnsii* wood produces about 320 kg of pulp. Plantation-grown *A. mearnsii* is currently being used commercially in South Africa as a component of a wood furnish for kraft and soda-AQ pulp production, and *A. mearnsii* woodchips are exported from that country to Japan for use in the manufacture of kraft pulps (Logan 1987). In both South Africa (Sherry 1971) and India (Nilgiris area) it is used in the production of rayon.

The moderately dense wood, which splits easily and burns well, makes excellent fuelwood and charcoal. The charcoal is extensively used for cooking in Kenya and southern Brazil; a company in Brazil has developed special kilns for the production of activated carbon (for use in pollution control) from *A. mearnsii* (Boland 1987). The wood is used in Indonesia for domestic fuel and curing tobacco leaves (Berenschot *et al.* 1988).

Hillis (1997) provides a review of properties and uses of wood of Black Wattle and Searle (2000) provides a good summary of it uses.

Tannin

Acacia mearnsii produces the world 's most important vegetable tannin, especially suited for use in the manufacture of heavy leather goods. The bark is very rich in tannin (36–44% according to Midgley & Turnbull, 2003) but yields are influenced by several factors including genetic variability, age and environment. Tannin industries based on this species have been developed in Brazil (Oliviera 1968), China (Hillis 1989), Kenya (Kenya Forest Service 1971), India (Samraj & Chinnamani 1978, Gupta *et al.* 1981), South Africa (Sherry 1971), Tanzania (Kessy 1987) and Zimbabwe (Luyt *et al.* 1987). The main exporting countries of tannin are South Africa, Kenya and Tanzania and the main importers are the UK, Australia and the United States (Wiersum 1991). In addition to its use for leather tanning, the bark extract is used to prepare tannin formaldehyde adhesives for exterior grade plywood, particleboard and laminated timber (Boland 1987, Coppens *et al.* 1980). It also has a use as an anticorrosion agent of mild steel and cast iron (Moresby 1997). Other uses of wattle extract, including as a mud fluidizing agent for drilling mud, calcite depressant in ore flotation, flocculant in water treatment, ion-exchange resin and as a polyurethane-type coating for wood, are described by Wu (1997).

Hillis (1997a, 1997b) provide detailed accounts of bark properties and tannin chemistry, while Sun *et al.* (1997) describes production methods and Xiao (1997) the use of wattle extract in tanning leather.

Although once important in Australia, tannin production based on *A. mearnsii* has all but disappeared (Searle 1991, 2000).

Land use and environmental

Acacia mearnsii has been effective in controlling soil erosion on steep slopes and improving soil fertility (National Academy of Sciences 1980, Waki 1984, Boland 1987). In south eastern Australia Black Wattle is used in environmental plantings in areas receiving rainfall down to about 600 mm/annum (Searle 2000). Overseas the species has been used for shelterbelts, green firebreaks, as a shade tree in tea plantations and ornamental purposes (Wiersum 1991). *Acacia mearnsii* is regarded as a superior species in appropriate areas of China for environmental plantations, especially those for soil and water conservation (Ho & Fang 1997).

Fodder

The leaves have a high protein content (15%), but palatability trials with sheep showed milled leaves to be unpalatable on their own and were only acceptable when mixed with other feedstocks (Goodriche 1978). Goodriche considered that digestibility was probably affected by the high tannin content in the leaves and twigs (5.7% DW). Considered to be inferior stock feed in Japan but has been fed to cattle in Hawaii during drought periods.

Other uses

In central Java and in Kenya, foliage is used as a green manure to improve agricultural yield. Sawdust of black wattle has been found to be an excellent medium for growing edible mushrooms in China (Brown & Ho 1997). Poles with bark intact are used to support oyster racks in New South Wales (Searle 1996). Wool may be dyed with all parts of *A. mearnsii*; the colours may range from grey-fawn to gold depending on the mordants used (Martin 1974).

Potential for crop development

The optimal areas for successful cultivation of *A. meansii* are those receiving greater than 700 mm annual rainfall (Booth & Hong 1991), therefore this species is not likely to have wide application in the present target area (see below). Nevertheless, this is a versatile species that has had a long history of commercial use abroad and prospects for its cultivation within Australia are promising (see Searle 2000 for review). This species has a range of options for both industrial and environmental purposes. As summarised by Doran & Turnbull (1997) *A. mearnsii* yields high quality condensed tannin, paper pulp, rayon, charcoal and fuelwood. The use of *A. mearnsii* tannin in waterproof wood adhesives for the production of reconstituted wood is expanding. A useful species for erosion control, windbreaks and soil improvement. It is therefore appropriate to include it here to ensure that any prospects it may have for drier areas are not overlooked (despite the fact that it only just reaches the periphery of the target area).

Acacia mearnsii is ranked as a category 2 species and would be best suited to development as a phase crop (see Table 6). The absence of root suckering is regarded as a significant advantage for the management of this species as a phase crop. Development as a coppice crop is not an option for this species. *Acacia mearnsii* is a fast-growing species that has the ability to produce good quantities of wood biomass. It is adapted to a wide range of acidic soils (pH 5–6.5) and prefers areas where the minimum temperature does not fall below about –5˚C. For the purposes of this project the most critical limiting climatic parameter for *A. mearnsii* is its intolerance of dryland conditions. For example, natural populations do not occur in the less than 500 mm rainfall zone. This will limit its potential for cultivation throughout major parts of the target areas (see below). Apart from water availability the maximum temperature in summer might be a limiting factor for effective growth (Barbour 1995). This species has a variable growth form. In good sites it usually develops strong, straight, sparingly branched main stems but on open sites it may branch freely from near ground level and the stems may become crooked. Poor stem form could limit the species utilisaton for timber from plantations. Therefore, appropriate selection of provenances and careful selection of sites for cultivation are likely to be important in developing this species as a crop. The wood is pale coloured and of relatively low density.

Acacia mearnsii produces prolific quantities of seed which would result in the creation of a soil seed bank that could lead to weed problems in adjacent or subsequent annual crops. (Alternatively young seedlings may possibly be treated as a form of green manure.) Harvesting plants before they reach biological maturity is one way of avoiding seed set. Although plants of this species can commence to flower when about two years old they apparently seldom produce appreciable quantities of seed before year five or six.

Many insects feed on black wattle and some cause serious, sporadic damage that affects its survival or growth and form; the Fireblight Beetle and perhaps Gall Rust fungus are particular problems. For further discussion see under **Pests and diseases** above.

The area predicted to be climatically suitable for the cultivation of *A. mearnsii,* based on its natural climatic parameters, is shown in Map 38 . This analysis indicates that in the New South Wales region of its natural distribution, *A. mearnsii* is well suited to climatic conditions as far west as the 500 mm rainfall isohyet. Best performance in the target area, however, will probably be achieved in areas that receive 600 mm or greater mean annual rainfall. Similarly in Western Australia suitable climatic conditions for growth fringe the target area and do not suggest that this species will have a major role to play in this region. The best prospects for *A. mearnsii* are in the 500–650 mm rainfall zone of New South Wales on valley soils, on sites where water from supplementary run-on from rainfall occurs. In Victoria, South Australia and (as already noted) Western Australia the prediction from bioclimatic analyses is less favourable and indicates that *A. mearnsii* is best suited to higher rainfall areas peripheral to the target area.

Acacia mearnsii has demonstrable weed potential both within Australia and abroad. However, it is not known if this will be a major problem in the drier environments of the present target area. Nevertheless, caution is needed if any wide-scale use of this species is undertaken, and such use must be accompanied by a thorough weed risk assessment (see also discussion on possible weed reduction strategies under **Weed potential of *Acacia* in target area** in the introduction to this report).

Because *A. mearnsii* has been so extensively cultivated (mainly abroad) there exists a large body of knowledge which should greatly facilitate any attempt to develop it as a crop plant in Australia. Searle (2000) provides a good overview of the agro-forestry potential of this species within this country but notes that further research is still needed to develop appropriate silvicultural techniques to facilitate its widescale planting.