

# Black wattle

(*Acacia mearnsii*)

for farm forestry



by Suzette Searle



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# Black wattle

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### Background

Over the last decade there has been a growing interest in southern Australia in the commercial potential of black wattle (*Acacia mearnsii*) for farm forestry. This has arisen from black wattle's long-term commercial use overseas; its proven ability to grow a wide range of products; its successful use in environmental plantings in south-eastern Australia, and preliminary findings from Australian field trials.

The Central Victorian Farm Plantations Inc., one of Australia's Regional Plantation Committees, initiated two studies to critically examine the commercial potential for black wattle in central Victoria. These were 'Feasibility of black wattle for farm forestry in central Victoria, Australia' and 'Critical appraisal of black wattle feasibility study & additional information'. This report draws together and summarises the main findings of the two studies and is intended to assist all those interested in this versatile acacia.

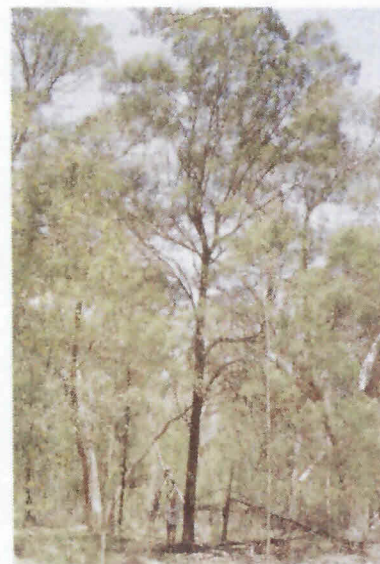


Figure 1. Black wattle with excellent size and form growing in the Grampians, Vic.

Photo: S. Searle





Figure 2. Black wattle foliage. Photo: S. Searle.

Black wattle (*A. mearnsii*) is typically a large shrub or small tree and grows 6–20 m in height. Of the c. 950 acacia species naturally occurring in Australia, it is one of only 81 that have adult bipinnate foliage. Of the c. 950 acacia species naturally occurring in Australia, it is one of only 81 that have adult bipinnate foliage (Phillip Kodela Royal Botanic Gardens Sydney pers. comm. 2000). Often described as short-lived (15–20 years), black wattle has been reported to live more than 40 years on favourable sites.

Natural stands of black wattle are found only in south-eastern Australia. Although once common and widespread, its distribution has been significantly reduced by land clearing for agriculture and urban development. Records place its most northerly occurrence west of Sydney NSW; most southerly, south of Hobart Tasmania; and most westerly, northwest of Mt Gambier South Australia (Figure 3). Black wattle is found at altitudes from just above sea level at several coastal locations, to 1 070 m near Cooma NSW. Climatically black wattle has the potential to grow successfully in Australia outside its area of natural occurrence; for example, in south-west Western Australia and parts of Queensland (Trevor Booth CSIRO Forestry and Forest Products pers. comm. 1998).

Black wattle has been widely planted overseas—an estimated 500 000 ha of plantation have been established in countries such as Brazil, China, India, Indonesia, Kenya, South Africa, Sri Lanka and Zimbabwe (Tumbull et al. 1998).

This temperate acacia is a native hardwood that can provide a very wide range of high quality wood products: from woodchip for paper and rayon, to fuelwood, charcoal, composite boards, posts and sawn timber for furniture, parquet flooring and lining boards.

This woody legume is widely cultivated overseas because it is adaptable, easy to propagate and useful as a short-rotation, nitrogen-fixing, multipurpose tree. Black wattle has the potential to grow in monocultures or species mixtures to produce many different environmental benefits and products within a rotation.



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Figure 3. Map showing the natural distribution of black wattle as indicated by collection locations of herbarium specimens and seed.  
Source: The Rise and Demise of the Black Wattle Bark Industry in Australia. Technical Paper No 1. Suzette Searle, CSIRO, Division of Forestry 1991.



## A bit of history – black wattle and bark tannin in Australia

Natural stands of black wattle were harvested from the 1820s to supply tannin-rich bark to Australian and European tanneries. This once large bark industry all but disappeared, with a couple of exceptions, by the 1970s (Searle 1991). Today the Greenhalgh Tannery (Haddon, Victoria) is the last tannery in Australia to use bark stripped from natural stands of black wattle. This family-owned tannery has been in continuous operation since 1865 and now uses about 80 tonnes of bone-dry bark per year. The bark is used to tan Hereford bullock hides for saddlery (Jack Greenhalgh pers. comm. 1996). Joshua Pitt Pty Ltd (Northcote Melbourne Victoria) is another family-owned tannery and has been in continuous operation since 1892. It produces sole leather, football shoe leather, cricket-ball and waste-belt leather using imported tannin extract (Robert Pitt pers. comm. 1996). Elsewhere in Australia, tanneries use chrome tannins.



Figure 4. Black wattle bark stacked for drying near Woolpoor, Stawell Forest District, Victoria in 1965.  
Courtesy of the Department of Conservation and Environment, Victoria.

Attempts to establish black wattle plantations for bark tannin in south-eastern Australia failed between the 1880s and 1930s for a number of reasons including prevalence of fires, lack of a market for the wood, high freights, high stripping costs and the lack of tannin extract factories. In Victoria, damage caused by the fireblight beetle and rabbits was also a disincentive (Searle 1991). Today Australia imports black wattle extract from South African black wattle plantations and it is principally used to make waterproof adhesives for particleboard flooring (Searle 1996).



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### Wood products

Black wattle is a medium-density hardwood with a basic density of around 530–598 kg/m<sup>3</sup> and air-dry density of 550–750 kg/m<sup>3</sup> (Hillis 1997). According to Bootle (1998), its green and seasoned timber has the same medium strength qualities as blackwood (*A. melanoxylon*).

Black wattle wood can be used for many different purposes. For example, in South Africa fuelwood, charcoal, mine timber, creosote-treated fencing material, paper, hardboard (Masonite), chipboard, rayon and parquet flooring have been made from black wattle (Hillis 1997). It has also been used in Africa for structural timber, furniture, joinery, tool handles, toys, boxes, crates and agricultural equipment (Hillis 1997). In Australia it has been used for furniture, lining boards, oyster cultivation posts and cask staves.

Experience with growing and processing black wattle for sawnwood is very limited in Australia. However those few who have grown, felled, milled, dried and worked black wattle are enthusiastic about its ease of processing and its suitability for specialty timber purposes.

#### *Specialty timber*

Black wattle is an attractive specialty timber. Its heartwood is lighter brown in colour but similar in grain to blackwood (*A. melanoxylon*) and can have the same features such as birdseye and fiddleback. The heartwood is light brown with reddish markings, of medium durability and is susceptible to termite attack (Hillis 1997). The sapwood is very pale brown, lyctus-susceptible and absorbs preservatives readily. The timber must be seasoned slowly to avoid checking.

Black wattle timber is hard (less prone to scratching and denting) and tough, moderately easy to work and finishes very well. Black wattle can split when being nailed, so preboring is necessary (Hillis 1997). Anecdotal evidence suggests black wattle has good timber stability, and good machining, sanding, gluing and finishing properties (Neil Williams Tumut NSW pers. comm. 2000).

The larger, straighter, fault-free stems will attract the highest prices and it is possible to grow single-stemmed black wattle trees 30–40 cm in diameter at breast height with stem lengths of 3–4 m. Black wattle may be worth \$1 000 to 1 500/m<sup>3</sup> for dry, select short boards (say 1–3 m long and 150 mm wide) (Dimitriadis 1999). Black wattle has the potential to produce specialty timber in less than 15 years on favourable sites (Denis Brown Corsair Sustainable Timbers Yackandandah Vic. pers. comm. 2000).



Figure 5. Denis Brown with black wattle table (made from 13-year-old trees he grew in a windbreak) between two *A. melanoxylon* (blackwood) tables. Photo: S. Searle



### *Craftwood*

The existing market for black wattle as a craftwood is very small, as it is only tried now and again by woodcrafters (Dimitriadis 1999). However black wattle is suitable for a range of craftwood items: turnings (bowls, platters, vases); small furniture such as coffee tables, stools, small cabinets, bed frames, shelves and chest of drawers; panels and lining boards; canes and walking sticks, clocks, boxes, tool handles, bread boards, slats for venetian blinds and lamp stands (Dimitriadis 1999).

### *Fuelwood and charcoal*

Black wattle is a moderately dense wood, which splits easily and burns well. It makes excellent fuelwood and charcoal. Charcoal yields of 25% by weight or 50% by volume of good quality charcoal can be obtained from black wattle using proper kiln control (Sherry 1971). It has also been used to make activated carbon for use in pollution control (Doran & Turnbull 1997).

As early as 1843 it was introduced to India to provide cheap and fast-growing fuel for the army (Sherry 1971). In Australia, when bakers' ovens were wood-fired, many bakers preferred to use wattle wood, such as black wattle. In more recent times, there are a number of artists using wood-burning kilns to make ceramics. The surface of the clay is affected by a number of factors including the wood ash, and different woods produce different effects. Black wattle is used because it has very hot burning characteristics that produce a green and shiny finish (Dr Owen Rye pers. comm. 1996).

A limitation of black wattle for fuelwood plantations is that it coppices poorly after about three years of age and therefore could not be managed as a coppice crop after the first rotation. It would have to be resown or replanted.

### *Farm timbers*

Black wattle logs have been used in South Africa for posts, poles and mine timbers (Hillis 1997). In Australia it has been suggested that black wattle poles could be used for vineyard posts, after the green wood has been treated with preservative (e.g. creosote or copper-chromium-arsenic (CCA)). To be used in vineyards, black wattle, as with other hardwoods, would have to compete with the widely-used treated pine posts. Bird (1997) reports that black wattle posts have greater strength than treated pine posts of the same diameter.

### *Pulp, paper and composite board products*

Black wattle produces good pulpwood and has high Kraft pulp yield, low pulping chemical usage and good paper strength properties (Fang Guigan et al. 1991). Plantation-grown black wattle is used commercially in South Africa and Japan for a wide range of paper and paperboard products. Since the late 1990s, Japanese pulp and paper producers have paid more for South African black wattle woodchips than South African eucalypt or Australian native eucalypt woodchips. Black wattle has also been used in South Africa to make rayon and composite boards such as hardboard (Masonite) and particleboard.



Figure 6. John McKay shows black wattle ready for use as posts in oyster cultivation. Pambula NSW. Photo: S. Searle



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### Bark tannin

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Black wattle bark produces the world's most important vegetable tanning material (Doran & Turnbull 1997). It contains large amounts (31–51% dry weight of bark) of water-soluble wattle tannins and these are used for many different purposes in addition to tanning leather. For example, wattle tannin extract is used to make water-resistant resins or adhesives for reconstituted wood products such as particleboard, plywood, medium-density fibreboard (MDF), finger jointing, laminated timber and corrugated cardboard (Yazaki & Collins 1997). Phenol-formaldehyde fortified black wattle tannin adhesives have been in continuous use for plywood and particleboard since the 1960's (Yazaki & Collins 1996).

Wattle tannin extract is also used as a preservative for fishing nets, ropes and sails (Sherry 1971) and to prevent corrosion of iron (mild steel and cast iron) in radiators, water-cooling and steam boiler systems (Moresby 1996). It is used in a conditioning agent for drilling mud; as a calcite depressant in ore flotation, a surface coating for wood, and in combination with ethanolamine and formaldehyde, as a flocculent to purify water supplies (Wu Zaisong 1997).



Figure 7. Neville Gray strips black wattle for bark near Elmhurst, Victoria. Photo: S. Searle.

### Environmental plantings

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Black wattle is a nitrogen-fixing, pioneer species. It establishes well from direct seeding and is noted for its early, rapid growth. In south-eastern Australia, black wattle is commonly used in plantings on sites that receive rainfall down to about 600 mm/annum, for shelter, shade, salinity and erosion control, landscape enhancement, soil amelioration and wildlife habitat. In Victoria, direct seeded plantings of black wattle are being tested to control serrated tussock (Graeme Anderson, DNRE Geelong Victoria pers. comm. 2000).

#### *Mixed plantings*

Mixed plantings with black wattle and non-acacias can be mutually beneficial. For example, Australian researchers believe that mixing acacias with eucalypts would greatly reduce the need for nitrogen fertilisation. This would lower costs and reduce the risk of nitrogen leaching into waterways and acidifying soil (Khanna 1998).

Research has also shown that productivity in mixed acacia-eucalypt plantations can be higher than in monocultures. In a study involving black wattle and blue gum (*E. globulus*), it was found that a mixture of 50% black wattle and 50% blue gum maximised short-term wood productivity. Researchers concluded that decomposition of the fine acacia roots could be a major source of nitrogen for eucalypts in the early phases of growth (Khanna 1997).



However Bauhus et al. (manuscript) state that such mixed plantations should not be planted on marginal sites where below-ground competition for water and nutrients, especially phosphorus, could outweigh any advantages from nitrogen fixation. Short-rotation mixed-species plantations might also still need to be fertilised with phosphorus to maintain high levels of productivity (Khanna 1997).

In Australia more research is required to show how mixed plantings with acacias and other genera can be managed profitably to provide a number of products and environmental benefits over time.

## Requirements for commercial growth

In Australia, experience using black wattle, with a few exceptions, has been limited to the harvesting of bark for tannin, and wood for fuelwood and poles, from natural stands. However in South Africa there are clear guidelines for all aspects of growing black wattle plantations from seedlings or direct seeding. These have been developed by the Institute for Commercial Forestry Research (formerly the Wattle Research Institute) over the last 40 years. The applicability of these to growing black wattle under Australian conditions and for different products, such as specialty timber, has yet to be explored.

The latest Australian research effort on black wattle was initiated by CSIRO Forestry and Forest Products and began in the mid-1980s. CSIRO research focused on aspects of tannin quality and Kraft pulping properties, understanding genetic variation within the species, climatic requirements, selecting effective strains of root-nodule bacteria (rhizobia), developing a reliable means of rhizobial inoculation and understanding the threat posed by insects, especially the fireblight beetle. In WA, CALM established a number of temperate acacia field trials, including two black wattle seed orchards, and conducted research on aspects of tannin and fuelwood utilisation (Barbour 2000). However, research to determine the best methods for growing black wattle for different products under Australian conditions in terms of initial spacing, fertiliser, thinning and pruning techniques and regimes has yet to occur.

### *Site conditions*

Black Wattle is an adaptable, moderately drought and frost tolerant species (down to about  $-5^{\circ}\text{C}$ ) that grows well across a range of soil types, from the temperate and subtropical lowlands to tropical highlands. However it does not grow well on waterlogged or



Figure 8. Black wattle (Omeo Highway Provenance) growing in CSIRO Scrimber trial near Mt Gambier South Australia (782mm/annum rainfall). Planted May 1991 and photographed in September 2000. Photo: J. Owen CSIRO Forestry and Forest Products.



Figure 9. Black wattle (Bodalla Provenance) in trial at Kowen ACT—5.6 m tall at 34 months. Photo: S. Beattie.



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Although black wattle has been recorded naturally growing in areas where average annual rainfall is about 440 mm/annum, it is not grown in successful plantations where the average rainfall is less than 700 mm/annum (Booth & Hong 1991). If there are environmental niches for black wattle on sites that are marginal for say, blue gum pulp plantations, such as those with less rainfall or heavier clay soils, this has yet to be proven.

Under very favourable growing conditions black wattle can grow for more than 40 years and reach heights of 20 m and diameters (dbh) of more than 50 cm. Generally the size of black wattle increases and its form improves with increased soil moisture. A description of climatic requirements based on successful plantations and trial sites is presented in Table 1.

*Table 1. Climatic requirements for black wattle (Booth & Hong 1991)*

Mean annual precipitation	700–2 300 mm
Mean annual temperature	14–22°C
Min. temp. coldest month	0–17°C
Max. temp. hottest month	21–35°C
Absolute min. temperature	>–5°C

### *Seed source and rhizobia strains*

Australian farmers are currently planting unimproved black wattle—they use seed collected from natural stands. However, all black wattle research indicates there is significant genetic variation within the species and therefore opportunity to select better provenances, and trees within provenances for characteristics such as growth, form, branching density and size, frost tolerance and drought tolerance.

For example, black wattle from Blackhill Reserve (Kyneton Victoria) grew well in the Ballarat Victoria region (Trish Kevin NRE Creswick Vic. pers. comm. 2000). In terms of volume at c. 5 years of age, seed from Tuross River, Bodalla NSW grew well in a trial near Hamilton in south-west Victoria (Bird et al. 2000). Near Canberra ACT, provenances from Bungendore NSW and Tarpeena SA grew best at a 630 mm/annum rainfall site, and a Blackhill Reserve (Kyneton Victoria) seedlot grew best at a 824 mm/annum site (Brioni Brammall CSIRO Forestry and Forest Products pers. comm. 2000).

In the absence of recommendations based on the long-term performance of black wattle provenances on similar sites, farmers could identify better seed sources by planting their own provenance trials. These should include at least two different seed sources, not overlooking local provenances if available. Ideally successful seed sources from other plantings or trials should be included for comparison, and their respective performances monitored for at least half a rotation of the final product.

In a study of 19 natural populations, most (89% on average) of the genetic variation within black wattle was found to exist within each population rather than between populations. Therefore any steps towards tree improvement should focus on sampling more individual trees within a few populations (Searle et al. 2000).

There are also select rhizobia strains and a proven method of inoculation for commercial nurseries that can produce black wattle seedlings with better survival and growth in the nursery and field (Brockwell et al. 1999a, 1999b). CSIRO Plant Industry (Canberra) has conducted this research and effective strains are expected to be commercially available by 2002 (John Brockwell pers. comm. 2000).



### *Seed treatment*

Black wattle has proved an excellent species for direct seeding in both South Africa and Australia, and like most acacias, it must be treated before sowing to ensure rapid and even germination. This can be done by manually damaging the seed coat, with sandpaper for example, or by using hot water. The following method is used in South Africa to treat large amounts of seed:

Boil 40 litres of water and allow to cool for five minutes i.e. until the water temperature is about 90°C. Immerse 2 kg of seed for up to five minutes, stirring constantly. Remove the seed and wash in clean cold water having discarded any floating seed. Dry seed in shade on sacking or canvas. The best germination is obtained after two to four weeks of storage, but the seed can be sown immediately after drying or even be stored for up to two years.

*Institute for Commercial Forestry Research and South African Wattle Growers' Union 1993*

### *Site preparation*

Strip cultivation using a ripper and offset discs to produce low mounds running with the contour is recommended for sites planted with trees for the first time (Jaakko Pöyry Consulting 2000). For general information about site preparation see 'Farm forestry in southern Australia: a focus on clearwood production of specialty timbers' (Bird 2000).

### *Spacing and thinning*

Initial spacing and thinning regimes will vary with the purpose of the planting. However closer initial spacing, say 1.5–2.0 m between trees within rows, will minimise branch development. The trees will need to be thinned out before competition for water and nutrients become limiting and the trees become stressed. A spacing of 4.0 m between rows is being adopted on drier sites. This also allows vehicle access for any weeding, thinning, and pruning activities.

### *Weed control*

South African research has shown that effective weeding must be carried out before crown closure. Areas prone to frost must be kept completely free of grasses and weeds during the first two winters after planting. Roundup® (three litres per hectare) is used in South African black wattle plantations to chemically control all weeds within rows; Fusilade® (three litres per hectare) is used to control grasses between rows (ICFR 1993).

### *Fertilisation*

Black wattle fertiliser trials have not been conducted in Australia. Thus, in the absence of any documented evidence to support the optimum fertiliser regime, Jaakko Pöyry Consulting (1999) recommended that a combination of 60 kg phosphorus and 100 kg of potassium be applied per hectare at the time of planting.

In South Africa, fertilisation of black wattle is regarded as a highly profitable operation (ICFR 1993). At planting the fertiliser is placed just underneath the soil surface in a circle (15 cm from the seedling) or in two slots 25 cm long on either side. It was found that while black wattle responded positively to applications of phosphorus, seedlings were able to take up additional amounts of phosphorus after potassium was applied. This could result in an additional 1–2 tonnes of bark and 5–10 tonnes of timber per hectare at age 10 years (ICFR 1993).



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### *Pruning*

Stem pruning to produce high value timber involves the pruning of branches early enough to eliminate, or at least reduce, the size of the knots. The conventional method for pines and natives such as blackwood and eucalypts is to prune 'on the collar'—cut the branch as close to the stem as possible, without cutting the swollen zone at the branch base.

There is a little uncertainty about how best to prune black wattle for high value timber, although on a small scale it has been successfully 'collar-pruned' in south-west Victoria (Rod Bird NRE pers. comm. 2000). However, Darren Doherty (Australia Felix Bendigo Vic. pers. comm. 2000) stem prunes black wattle differently. He prunes branches to about 3–4 cm from the stem to prevent any gum exudation—the branch stubs then wither and die to leave a clean prune wound. This is similar to the standard pruning method used in South Africa where black wattle is pruned before the trees reach 2 m in height, to improve the form of badly shaped trees. A stub of 15–20 cm long is always left to prevent the entry of any disease such as wood-rotting fungi or gummosis into the main stem, and the pruning is conducted during winter when the incidence of gummosis is lower (ICFR 1993).

## Constraints

### *Browsing animals, insect pests and diseases*

Black wattle seedlings need to be protected from browsing by rabbits, hares and wallabies with tree guards or vermin-proof fencing.

Many insects feed on black wattle and a number cause serious, sporadic damage that affects its survival or growth and form. However, there is one beetle in particular, the fireblight beetle (*Acacicola orphana* syn. *Pyrgoides orphana*), that causes very obvious damage—after a severe outbreak, the acacias have a reddish-brown, scorched appearance because they have been completely defoliated (Elliott & deLittle 1984). This leaf-eating beetle is restricted to Tasmania, Victoria and the south-east of NSW and both adults and larvae can regularly defoliate black wattle and other bipinnate wattles during winter and spring.

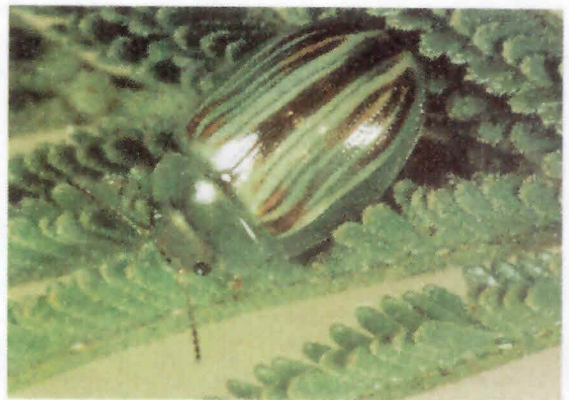


Figure 10. Fireblight beetle. Photo: R. Farrow.



Elliott and deLittle (1984) describe the fireblight beetle and its life cycle as follows:

The adults are small, greenish, dome-shaped beetles about 6 mm long, with cream and brown longitudinal stripes on the wing covers. They lay pale green, oblong-ovoid eggs in rows on the undersides of the wattle leaves during late autumn and early winter. The larvae hatch after about 10 days and disperse over the wattle. They are green with dark lateral stripes. They develop slowly through the winter months and are usually not obvious until the spring when they develop rapidly, and cause noticeable defoliation. The larvae pass through four stages of development (instars) and when fully fed, drop to the soil where they pupate. Adults emerge in large numbers in infested areas in early summer, but then disappear to sheltered sites such as bark crevices during the peak of summer. They reappear in autumn with the cooler weather and feed voraciously on the wattle foliage before laying eggs.

Biological controls of the fireblight beetle have yet to be developed. Spraying with chemical controls such as carbaryl, malathion or pyrethrum may be effective (Jones & Elliott 1995). However these insecticides will also limit natural enemy (predators and parasites) control of any low-level insect outbreaks.

Perhaps the most obvious disease on black wattle is the rust gall fungus (*Uromycladium tepperianum*). This causes large, hard, brown, irregular knobs to form on the small outer stems of the crown and developing fruits. In severe attacks the whole canopy may be covered with these galls. Such heavy infestations weaken the plant, reduce its leaf canopy, inhibit seed production or may even kill a tree (Jones & Elliott 1995).



Figure 11. Rust gall fungus (*Uromycladium tepperianum*) on black wattle. Photo: S. Searle.

There is no known natural or other control, other than removal of the galls to prevent disease spread. Fertiliser applications may improve the vigour of the trees (Jones & Elliott 1995).

The incidence of pests and diseases on black wattle is likely to increase markedly on more marginal sites. Therefore, one method of control is to choose appropriate sites for black wattle and to maintain the trees in good health, as stressed trees are usually more susceptible to insect and disease attack. Also, the combination of two plant genera or different species within a genus on a site may provide some protection against pests and diseases.

### Weediness

Black wattle does not root sucker but it can produce prolific amounts of seed over time. Like most acacias, it has a hard seed coat that is impervious to water. Germination depends on the breakdown of the seed coat, usually over a period of years. Thus germination of seed from one tree can be spread over a long period. Heat treatment destroys the impermeability of the seed coat and thus fires can cause a mass germination of seed. Severe fires will kill all but the largest trees but promote rapid regeneration (Searle 1997). If undisturbed by fire or cultivation, black wattle seed can remain viable for decades in the soil. As a result of this long-term seed viability, black wattle in South Africa is both a weed as well as a profitable plantation species.



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### Market information

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There is an Australian market for imported black wattle tannin. The powdered extract is principally used to improve water resistance in adhesive resins used for particleboard flooring. A particleboard plant at Oberon NSW is the largest user. In the last decade, extract imports, principally from South Africa, almost doubled from c. 4000 tonnes in 1989 to a peak of c. 8000 tonnes in 1994, and dropped dramatically in 1998 to a low of c. 1670 tonnes in 1999 (Australian Bureau of Statistics 2000). This recent decrease occurred because the prices of substitute raw materials (e.g. melamine and phenol) were lower than wattle extract at the time. However, tannin prices have dropped as a result of the lower demand and the price cycle for melamine and phenol is rising. Therefore it is possible that tannin usage in Australia will increase but there is some doubt it will return to the volumes imported in the past (Rodney Darke CSR Timber Products pers. comm. 2000).

South Africa is the largest international supplier of black wattle tannin extract and its largest market is Italy. However fibre, not tannin, is now the driving force behind the South African black wattle industry (Dunlop 1999). The world price of black wattle tannin extract has decreased and South African shipments of tannin extract to leading world markets have fallen (Jaakko Pöyry Consulting 2000).

The woodchip export market is the only Australian market, with one or two small-scale exceptions, that recognises black wattle as a good-quality source of wood. This Japanese market has a minimum requirement of c. 30 000 bone dry metric tonnes (sufficient for a ship-load) (Don Jowett GPFL Victoria pers. comm. 2000).

There is a lack of markets for many hardwood species planted for farm forestry purposes, and despite its extensive use overseas, black wattle is in a similar situation. There is as yet, no market acceptance in Australia of black wattle for fuelwood, charcoal, composite boards, posts and specialty timber. Further research and marketing would be required to raise awareness of the comparative quality of these products and to distinguish black wattle from other acacias such as blackwood or those commonly called black wattle.

The economics of growing black wattle for woodchip in central Victoria were examined using growth forecasts because relevant, long-term growth rate data is not yet available. It was concluded that black wattle, growing on sites in rainfall zones that receive on average, higher than 800 mm/annum, would not produce as much wood over a pulp rotation as eucalypts such as blue gum (Jaakko Pöyry Consulting 2000).

On 'non-arable' land, economic analysis suggests it would only be profitable to sell black wattle fuelwood, established at relatively low cost, if the environmental benefits (such as weed control, shelter, shade, salinity control, landscape rehabilitation and soil improvement) were costed as well (Searle 2000).

Black wattle has potential to be a valuable sawn timber species on good quality sites, in half the rotation length of species such as blackwood. For example, in a higher rainfall area (1 040 mm/annum) in Victoria, black wattle has been grown for furniture, on a very small scale, in 12–13 years. If markets can be secured, this rapid growth rate and the very good drying, sawing, working and appearance characteristics of the heartwood for high-value, appearance-grade timber, could make black wattle a valuable tree for farm forestry. The best returns are to be made if the landholder mills and dries the timber to manufacturer specifications.



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*For copies of 'Feasibility of Black Wattle for Farm Forestry in Central Victoria, Australia' by Jaakko Pöyry Consulting 1999 or 'Black wattle (Acacia mearnsii) – critical appraisal of feasibility study and additional information' by Suzette Searle Forestry Consulting 2000, contact:*

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# Black wattle

(*Acacia mearnsii*)

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