



Farm Forestry Species for the Cardinia Shire

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This Agriculture Note is a listing of some of the tree species indigenous to the Cardinia shire, and their potential as a farm forestry species.

What is farm forestry?

Farm forestry is the management of trees for a commercial purpose. Typically, this is timber plantations on private land. However it can be applied to a range of enterprises utilising different parts of the tree (eg. seed or honey production, or essential oils) and managed in a variety of ways. A commercial outcome may not be the only product of the trees; farm forestry can also have benefits in managing erosion and salinity and preventing the spread of weeds, as well as providing shelter for stock and crops from damaging weather.

Farm forestry plantings can also be managed to maximise biodiversity outcomes by using local species and including under storey species to provide habitat and food for native fauna.

Species information

Establishment and management practices for the production of sawlogs for all the listed species are as given in the following Agriculture Notes (unless otherwise stated):

AG0771: *Eucalypt plantation establishment - site preparation*

AG0770: *Site preparation for farm forestry*

AG0776: *A suggested stand management regime for eucalypt sawlog rotation*

Acacia melanoxylon

(Blackwood)

Blackwood is a small to large tree, 6-30 m.

Natural occurrence

Blackwood is from the Atherton tablelands in north Queensland, down the east coast and across to the south-east of South Australia and Tasmania.

Site requirements

Blackwood prefers a cool to temperate climate with mean temperatures from less than 10°C to 17°C, and average

annual rainfall of 700 mm to 1500 mm per year. It grows best on deep fertile soils such as podsols (acidic sandy soils with strongly differentiated horizons), alluvial soils, sandy loams and krasnozems (well structured deep red clays with poor horizon definition). Preferred sites are lower valley slopes, higher hill slopes and tablelands, and lowland swampy areas.

Blackwood can tolerate some frost, usually experiencing between 1 to 40 frosts a year, but is largely intolerant of other factors such as drought, fire, dry wind, salty soil and poor drainage.

Establishment

Special care should be taken when selecting the provenance, as there is considerable variation in both height and form between seedlings from different localities.

Thorough site preparation and complete grass control is essential to ensure good survival and early growth. Better early growth and form can be achieved through the use of a faster growing nurse crop to provide shelter and discourage lateral branching.

Growth rate

Blackwoods have a medium growth rate, taking 30-35 years to produce a sawlog.

Management

To ensure high-grade timber both form pruning and clear wood pruning, and thinning must be done on time. Form pruning is recommended from planting until a single straight trunk of 4-6 m is achieved. It is recommended that clear-wood pruning be done 3-6 times until the tree is 12-15 years old.

Thinning can be done by felling or poisoning the unwanted trees. As Blackwoods are shallow rooted the latter method will reduce windthrow by leaving standing, dead trees to help protect the selected crop trees from strong winds.

Timber

Blackwood is renowned as one of the best cabinet and furniture woods in the world. The heartwood is golden brown to darker brown, sometimes with reddish tints and streaks. The grain is usually straight, but is sometimes

wavy and has a high sheen. It is of moderately low density and not tough.

Other benefits

Open-grown specimens of this long-lived species retain their lower branches for many years, and form excellent single-row shelterbelts. Other uses include fuel wood, and sometimes as a shade tree.

See Agriculture Note AG1149: *Blackwood for farm forestry*

Acacia dealbata

(Silver wattle)

In ideal conditions Silver wattle is a tall tree, 25-30 m in height.

Natural occurrence

Silver wattle is widespread in Victoria and eastern New South Wales, especially near streams.

Site requirements

Silver wattle prefers a cool to temperate climate (<10°C - 17°C average temperature), and rainfall between 750 mm - 1000 mm pa, although it will still grow in areas where rainfall drops to 500 mm/yr. Best growth occurs on moderately deep and fertile forest podsols and loams, but the species will tolerate clays if there is adequate drainage. It achieves best growth in sheltered valley sites especially along streams.

Silver wattle has a high tolerance of frost, with its natural range experiencing between 20 and 80 frosts a year. Silver wattle does not tolerate salt, poor drainage or drought.

Growth rate

Silver wattle is a fast growing species that can be short lived in exposed sites reaching a harvestable size in 20 to 25 years.

Timber

The timber is low in density for an acacia. The colour varies from light brown to pinkish; it is used for veneers and furniture and has been used for pulp production in Tasmania and Victoria when harvested from native forest.

Other benefits

Excellent for use as a windbreak because of its very fast early growth, shade, fuel wood, bees, and ornamental plantings

Acacia mearnsii

(Black wattle)

Black wattle is a small to medium-sized tree, ranging in height from 5-15 m it has dark green foliage, with soft yellowish young shoots.

Natural occurrence

Black wattle is common in open forests, and cleared areas, especially on drier shallow soils. It occurs from near Sydney NSW, through to southern Victoria, south-eastern South Australia, and Tasmania.

Site requirements

Black wattle occurs mostly in temperate environments (10°C - 17°C average), but is also found in cooler and warmer areas where other conditions are suitable. Its natural rainfall range varies from 500-1000 mm/yr.

Best growth occurs on moderately deep forest podsols, especially on soils derived from shales and slates, but not on impermeable badly drained clays.

Black wattle can tolerate some frost, with natural populations experiencing between 1 and 40 frosts a year.

Establishment

Black wattle is easily established by direct seeding, and is regarded as a pioneer species (one of the first species to recolonise a disturbed site). Direct seeding is a suitable establishment method if total biomass production is the main objective eg. firewood. However if sawlog production is the main aim of the plantation, planting of seedlings is recommended as the planting density can be controlled and early thinning to space the seedlings is eliminated.

Growth rates

Black wattle is a short-lived (20 - 40 years but this will vary with site conditions) fast growing species, which can grow 2-3 m in height per year. These fast growth rates and capacity for nitrogen fixing in the soil (see other benefits below) have led to the species being used as a nurse crop, protecting and assisting the establishment of other slower growing species.

Management

Close initial tree spacing (2-3 m along rows) will minimise branch development. Pruning for clear wood production is advisable if specialty timber is the desired end product. Pruning should be carried out regularly as the species is prone to heavy branching.

Timber

Black wattle timber, although lighter in colour, is similar to that of Blackwood. It has light brown heartwood, with reddish markings, and distinctive pale sapwood. It is very hard and tough, with moderate strength and durability. It has fine grained texture, which is often crossed or interlocked. It has potential as a specialty timber.

Other benefits

Black wattle is an excellent hot burning firewood. It is also used in windbreaks, as a fodder tree, for honey production and as an ornamental tree. It is a useful nurse crop for eucalypts in open situations due to its fast growth rate.

Overseas Black wattle is widely grown in plantations for pulpwood. It gives high pulp yields, requires low chemical usage and provides favourable paper strength properties.

As the sapwood of Black wattle absorbs preservatives well, treated posts are another potential product.

All wattles are legumes and produce nitrogen-fixing nodules which have the potential to improve the growth of other species on the same site. There are commercial

products available to enhance the development of the nitrogen fixing abilities of wattles.

See Agriculture Note AG0808: *Black wattle for farm forestry*

Allocasuarina littoralis

(Black she-oak)

Black she-oak is an erect dark green tree 6-12 m high with hard and closely fissured bark.

Natural occurrence

Black she-oak is found on the east coast from Queensland to Victoria and in Tasmania, especially near the coast.

Site requirements

Black she-oak occurs in cool to temperate environments (<10°C to 17°C average temperature) with rainfall averaging in the range 500 - 1000 mm per year. It occurs naturally on sands, clays and rocky sites, and prefers free draining soils. Black she-oak is found on the ridges and hillsides of east coast Australia.

Black she-oak has a low tolerance of frost with natural populations being exposed to less than 20 frosts per year.

Establishment

The site should be deep ripped and the soil friable. Early spring is the optimum time for planting, this minimises the exposure of the young seedlings to frost. Attention should be given to adequate weed control as Black she-oak (like most allocasuarinas and casuarinas) does not tolerate competition from weeds.

Allocasuarinas form symbiotic relationships with mycorrhiza (a fungi) in the soil. If the mycorrhiza is not present the growth of the seedling can be affected. The soil can be inoculated with the mycorrhiza by adding soil containing the mycorrhiza to the potting mix when the seed is germinated or to the prepared planting site.

Management

Form pruning and lift pruning are required to produce high quality timber from Black she-oak.

Timber

Hard, beautiful grained red-brown in colour, was prized for small articles such as document boxes and as an inlay in fine furniture. She oak is an excellent hot burning firewood that leaves a pure white ash. Excellent honey tree.

Other benefits

Black she-oak is an excellent fuel wood, the leaves can be used as fodder for stock and the bark used in tanning. It can also be used in windbreaks and the cones are a food source for cockatoos.

Eucalyptus viminalis

(Manna gum, Ribbon gum, White gum)

Manna gum is a tall attractive tree (30-45 m high) with a wide spreading crown, and drooping branchlets.

Natural occurrence

Manna gum has a wide occurrence in Victoria, New South Wales and Tasmania. Best development is near streams and in valley bottoms in hilly and mountainous country.

Site requirements

Manna gum occurs in cool to temperate environments (<10°C to 17°C mean temperature) with rainfall averaging 500-1000 mm/yr. Manna gum grows best on moist but well drained alluvial soils near watercourses.

Particularly tolerant of frosts, with natural populations experiencing 5-60 frosts per year.

Timber

The pale timber, which is moderately hard, is neither strong nor durable, burns fast, and sawn material is liable to warp and split. It is sometimes sawn for timber although many references do not promote Manna gum as a timber species.

Other benefits

Its other main uses are for honey production, wildlife habitats, and as an ornamental species. It is also used as a windbreak, shade tree and fuel wood.

Eucalyptus oblique

(Messmate)

Messmate is a tall to very tall tree, attaining heights of 45-90 m in height and 2-3 m DBH in typical hilly open-forest locations. The trunk is of good form, and typically two-thirds or more of the tree height.

Natural occurrence

Messmate is widespread in New South Wales, Victoria and Tasmania, growing best in the cool moist mountains of Victoria and eastern Tasmania.

Site requirements

Growth is best in cool moist climates (<10°C), and temperate climates (10°C -17°C). Messmate performs best in areas where rainfall exceeds 1000 mm/yr, but also achieves high growth rates in rainfall zones averaging 750-1000 mm/yr. Messmate grows on a wide range of soils, but prefers moist, deep mountain podsols and loams.

Is very tolerant of frost, with natural populations experiencing 10-100 frosts a year, which may be frequent and severe.

Messmate has only recently been planted in plantations and therefore its performance in these conditions is not yet known.

Timber

The timber, which is commonly known as Australian or Tasmanian oak, is pale in colour, with open texture, usually with straight grain and fairly well defined annual growth rings. It is light in weight for a eucalypt species and is easily worked, glued and stained. It is of moderate strength and hardness, however it is of low durability, and is therefore not recommended for use in the ground unless treated. It has a wide range of uses in manufacture and

construction, including house building, joinery, flooring, and furniture, and is a major source of pulpwood production in Tasmania.

Other benefits

Messmate is planted for wildlife habitat and as an ornamental tree. It is also commonly used for windbreaks, shade, fuel wood and honey production.

Eucalyptus muellerana

(Yellow stringybark)

This is a medium sized tree ranging from 25-40 m in height, and up to 1 m DBH. It has a straight trunk, with grey-brown, fibrous bark, and a well-developed crown.

Natural occurrence

Yellow stringybark typically occurs in tall open-forests, within 80 km of the coast, on the South coast of New South Wales and in south-eastern Victoria.

Site requirements

Yellow stringybark prefers temperate climates with average temperatures in the range 10°C to 17°C, and average rainfall of 750 - 1000 mm per year. It performs well on a wide range of soils, but grows best on fairly deep, heavy loams over a clay subsoil. Yellow stringybark is commonly found in moist valleys and the sheltered slopes of undulating and hilly country.

It is relatively tolerant of frosts, with natural populations experiencing up to 20 frosts per year.

Timber

It is a high class timber, which is hard, heavy, strong and durable, making it suitable for use as posts, and heavy construction.

Other benefits

Other uses of Yellow stringybark are for shade, fence posts, fuel wood, wildlife habitat and as an ornamental tree. It is also used for windbreaks and honey production.

Eucalyptus regnans

(Mountain ash)

Mountain ash is one of the tallest species in the world, ranging from 55-75 m in height in most conditions, but can reach a height of over 100 m.

Natural occurrence

Its main occurrences are in the eastern part of Victoria, the Otways south west of Melbourne and Tasmania.

Site requirements

Mountain ash prefers cool temperatures, averaging less than 10°C and rainfall over 1000 mm/yr. Best growth is on deep friable clay loams.

Mountain ash is extremely tolerant of frosts, natural populations may experience up to 100 frosts a year.

Establishment

This species does not like exposure so careful consideration should be given when siting plantations.

Management

This species is very sensitive to fire, and the bark is easily damaged in thinning operations

Timber

The heartwood is pale-brown, straight grained with an open texture. It is fairly strong and hard but not durable, and the sawn product has to be carefully conditioned if good-quality boards are required. It is easily worked and important for house framing, flooring, furniture, plywood and pulp. The timber is often sold as Tasmanian oak, along with Messmate.

Other benefits

Mountain ash can be planted as wildlife habitat and as ornamental plantings. It is also used for windbreaks, shade, and honey production.

Eucalyptus dives

(Broad-leaved peppermint)

Broad-leaved peppermint is usually a small to medium sized tree ranging in height from 8-25 m, and a DBH of up to 0.7 m.

Natural occurrence

It usually occurs in open stands where it may be the dominant species, and can therefore tolerate exposure. It is widespread in eastern and southern Victoria and in New South Wales on the south-western slopes, and the southern and central tablelands.

Site requirements

Prefers cool to temperate climates (average temperatures <10°C to 17°C, with rainfall averaging between 500 and 1000 mm/yr. Broad-leaved Peppermint is found on a wide range of soils, including those that are poor, shallow and stony.

It is tolerant of frosts, with natural populations experiencing between 10-80 frosts per year.

Timber

The heartwood is light brown and usually straight grained. It is fairly hard, tough and strong, however gum veins are common, and so shrinkage is high. It is easily worked, but is not durable.

Other benefits

Main uses are for windbreaks, shade, and wildlife habitat. It is also used for fuel wood, honey production, oils and as an ornamental tree.

Eucalyptus baxteri

(Brown stringybark)

Brown stringybark has a very variable growth habit, depending on its location. In its optimum location, such as eastern Victoria it may grow 30-40 m high.

Natural occurrence

Common in western Victoria and south-east South Australia

Site requirements

Brown stringybark grows best in areas receiving 500-750 mm/yr rainfall and up to 1000 mm/yr, with average temperatures in the range 10°C to 17°C. It exhibits best growth on fertile soils, but it is also found on deep coastal or inland sand dunes. In its natural range Brown stringybark shows best development on low hills and the plains of eastern Victoria.

Brown stringybark can tolerate up to 15 moderate frosts per year.

Timber

The heartwood is pale brown, of medium texture with straight or interlocked grain. It is hard, strong and tough. As it is moderately durable and easily worked it is most commonly used for general, lighter construction such as fences.

Other benefits

This species main uses are for windbreaks, fuel wood and as wildlife habitat. It is also used for shade, fence posts, honey production and as in ornamental plantings.

Eucalyptus radiata

(Narrow-leaved peppermint)

A well branched tree, 15-22 m high.

Natural occurrence

Narrow-leaved peppermint occurs from south-western Victoria, through Gippsland, into the east coast and tablelands of New South Wales, almost to the border of Queensland.

Site requirements

Narrow-leaved peppermint prefers cool to temperate climates (<10°C to 17°C average temperatures) and average annual rainfall of 750-1000 mm/yr. It grows on a wide range of soils, including sands, skeletal soils and volcanic loams. Narrow-leaved peppermint is common and widespread in foothills and mountains to an altitude of about 1200 m.

Relatively tolerant of frosts, with natural populations experiencing 5 - 70 frosts a year.

Timber

The heartwood is pale pink to light brown, moderately coarse-textured and generally straight grained, but with kino pockets (a small hollow in the wood filled with gum or resin) that may limit its uses. It is moderately hard and strong, but is of low durability. This species is used for general construction.

Other benefits

This species main uses are for windbreaks, wildlife habitat and as an ornamental tree. It is also used for shade, fuel wood, and honey production.

Eucalyptus ovata

(Swamp gum)

Swamp gum is usually a small to medium sized tree ranging in height from 8-25 m. Under optimum conditions

it has a straight trunk for approximately one-half of the tree height.

Natural occurrence

Swamp gum occurs in open-forests or woodlands, and is widely distributed in south-eastern Australia, Tasmania and the eastern Bass Strait islands

Site requirements

Swamp gum prefers cool to warm temperatures (averaging 1°C to 27°C) and rainfall in the range 600-1400 mm/yr. It generally grows on sands and clays, quite often with poor drainage on coastal plains to mountain foothills.

Can tolerate severe frosts, with natural populations experiencing up to 70 per year

Timber

The heartwood is pale in colour, of low density and durability.

Other benefits

Swamp gum can be planted for wildlife habitat, fire wood and charcoal production. Swamp gum can be used to revegetate boggy areas and zones subject to waterlogging.

Eucalyptus cypellocarpa

(Mountain grey gum)

Mountain grey gum is a medium to tall tree, commonly 35-45 m. Under good conditions the trunk is of good form, straight and about two-thirds of the tree height.

Natural occurrence

Common in Victoria, mainly southeast of the Australian Alps, but also occurs in the Grampians. In New South Wales the main occurrence is on the coastal side of the southern tablelands.

Site requirements

Mountain grey gum is found in areas with a cool to warm climate (average temperatures in the range 2°C to 31°C), and rainfall of 700-1300 mm/yr. It will grow on a wide range of soils, and will tolerate poor sands if there is underlying clay, in mountain country or on tablelands.

Mountain grey gum tolerates severe frosts, with natural populations experiencing up to 100 or more frosts a year.

Timber

The heartwood is pale yellow-brown, with medium texture and straight grain. It is hard, heavy, and moderately strong and durable. It is commonly used for general construction, bridges, fences, marine craft and for pulp.

Eucalyptus globoidea

(White stringybark)

A moderate sized tree 25-30m in height.

Natural occurrence

White stringybark is commonly found in coastal southern New South Wales to eastern Victoria in coastal open forests and onto the ranges to an altitude of 1100 m. Also in outer eastern Melbourne.

Site requirements

White stringybark is found in temperate climates (average temperatures of 10°C - 17°C). It prefers average annual rainfall between 750-1000 mm/yr, but will grow in areas receiving as little as 500 mm/yr.

White stringybark is relatively tolerant of frosts, with natural populations experiencing up to 50 frosts per year.

Timber

The timber is pale cream, sometimes with a pink tinge. It has a moderately fine texture, straight grain and develops a sheen when polished. Hard, strong and durable enough to be used as posts or sleepers. It is suitable for furniture, poles fencing and structural beams.

Other benefits

This species main uses are for windbreaks, shade, wildlife habitat and as in ornamental plantings. It is also used for fuel wood and honey production.

Eucalyptus sieberi

(Silvertop ash)

Silvertop ash is a tall tree, 25 m - 45 m, with a long straight trunk that may be half to two thirds of the tree height.

Natural occurrence

The main occurrence of Silvertop ash is south eastern Victoria and south coast New South Wales between the coast and altitudes of 1100 m in the Great Dividing Range. It is also found on the east coast of Tasmania to altitudes of 450 m and east from the Gembrook area near Melbourne.

Site requirements

Silvertop ash grows best in temperate areas where the average temperature is between 10°C and 17°C and the average annual rainfall is 750-1000 mm/yr.

Silvertop ash can tolerate 10-40 frosts per year.

Timber

The wood of Silvertop ash is brown to pink in colour, moderately hard, strong but not durable. It used in general building and occasionally for joinery. Silvertop ash is also used in the paper industry as pulp.

Other benefits

Silvertop ash is planted for wildlife habitat and as an ornamental species. It is also used for windbreaks, shade, fuel-wood and honey production.

References

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Further information

See Agriculture Notes:

AG0771: *Eucalypt plantation establishment - site preparation*

AG0770: *Site preparation for farm forestry*

AG0776: *A suggested stand management regime for eucalypt sawlog rotation*

AG1149: *Blackwood for farm forestry*

AG0808: *Black wattle for farm forestry*

Acknowledgement

This Information Note was originally developed by Gavin Brock and Danielle Cotter. The previous version was published in January 2005.

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