

WA Sandalwood (*Santalum spicatum*) establishment guide for farmland in the Wheatbelt, July 2005



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Site selection

The preferred site to grow sandalwood is a sandy-loam over clay, duplex soil type. However, sandalwood will also grow on some loamy-gravels, yellow sands and red sands. The site should be water gaining but well drained. Deep white sands, saline soils, waterlogged or heavy clay soils are not suitable.

Host species

Sandalwood is dependent on nutrients and water from host plants to survive and grow. The best hosts are nitrogen-fixing trees, especially the wattles (*Acacia* species). Extensive trials have shown that jam (*Acacia acuminata*) is an excellent long-term host for sandalwood. Rock sheoak (*Allocasuarina huegeliana*), manna wattle (*Acacia microbotrya*) and mulga (*Acacia aneura*) are also useful long-term host species, but should be planted in combination with *A. acuminata*.

Host establishment

The site should be ripped in rows spaced 4-5 m apart and to a depth of 0.4 m. Depending on the soil type, the rows can also be mounded or scalped. In early winter, spray the rows with a knock down and residual herbicide to control weeds for the first year. Two weeks after spraying, plant six-month-old host seedlings along the rows at 2 m intervals (1000-1250 stems ha⁻¹). Any of the above host species can be planted, but the host seedling mix should contain at least 50 % *A. acuminata*. Approximately 50 g of NPK fertiliser can also be applied next to each host to promote growth.

Sandalwood establishment

A very economic and efficient method to establish sandalwood is by direct seeding. Sow the sandalwood seeds when the host trees are 1-2 years of age. Preferably, for good root connections, the host trees should be approximately 1 m tall before introducing the sandalwood. In April, plant 2-3 sandalwood seeds approximately 0.5 m from every second host (500 sowing spots ha⁻¹). Sow the seeds along the rip line, because the host roots will be more concentrated in this region. Plant the sandalwood seeds 2-3 cm below the surface, on the south or east side of the host plant, so as to provide afternoon shade. On hard-setting surfaces, the soil may need to be loosened with a hoe or spade, before seeding. Sandalwood seeds are available from FPC Manjimup Seed Technologies (see Sandalwood Contacts), or from private seed suppliers.

Approximately two weeks after the break of the season (e.g. early June), spray each sandalwood 'spot', in a 0.5 m radius, with a knock down herbicide. Ensure no spray touches the host plants. Weed control is very important before the sandalwood seedlings emerge. Weeds can smother the seedlings and reduce survival and growth. Sandalwood seeds take 4-8 weeks to germinate after good rains in late autumn or early winter. Sandalwood seedlings normally emerge in July/August.

Sandalwood to host ratio

At age 5 years, the parasitic requirements of sandalwood trees greatly affect the survival and performance of the host. A ratio of one sandalwood to one host will place too much stress on the host. At sandalwood age 2 years, the sandalwood to host ratio should be 1:2 or 1:3. Therefore an area with 1000 jams ha⁻¹ should have no more than 400 sandalwood ha⁻¹, at age 2 years. This may require selective thinning of sandalwood throughout the area to achieve the right balance.

Grazing & fire

Sandalwood is readily grazed by domestic and feral herbivores. The site should not be adjacent to large native bush areas, due to high grazing pressure. Prevent sheep, cattle, goats, kangaroos and rabbits grazing the sandalwood. Sheep can be introduced when the sandalwood are 5-10 years old. Parrot numbers also need to be monitored because they can ring-bark seedlings. Sandalwood trees are not fire tolerant and the plantation will need a fire-break.

Growth rate & fruit production

In the 400-600 mm average annual rainfall zone of the Wheatbelt, sandalwood trees should reach a stem diameter of 125 mm (at 150 mm above the ground) at age 20 years. A stocking rate of 200-300 stems ha⁻¹ should produce 2-4 tonnes of commercial timber at age 20 years. In the 300-400 mm average annual rainfall zone, growth rates will be slower, and the trees may require 25-30 years to reach a stem diameter of 125 mm.

After age 5 years, sandalwood trees can produce up to 200 mature seeds (0.5 kg) per annum. Sandalwood trees flower in March-May and the fruits mature in August-November.

Sandalwood contacts

This sandalwood establishment guide was up to date at the time of printing and outlines the general method used to grow sandalwood. For the latest developments and for more information on sandalwood matters please view the FPC website (www.fpc.wa.gov.au), or contact the following FPC branches:

FPC Albany

Forest Products Commission
120 Albany Hwy, Albany, WA 6330
Ph: (08) 9845 5630, fax: (08) 9842 5279

FPC Collie

Forest Products Commission
20 Throssell St, Collie, WA 6225
Ph: (08) 9735 1000, Fax: (08) 9734 5649

FPC Gnangara

Forest Products Commission
695 Gnangara Road, Lexia WA 6065
Ph: (08) 9302 7488, Fax: (08) 9302 7499

FPC Harvey

Forest Products Commission
64 Weir Road, Harvey WA 6220
Ph: (08) 9729 2888, Fax: (08) 9729 2499

FPC Katanning

Forest Products Commission
10 Dore Street, Katanning WA 6317
Ph: (08) 9821 3208, Fax: (08) 9821 3332

FPC Manjimup Seed Technologies

Forest Products Commission
Burnside Rd, West Manjimup, WA 6258
Ph: (08) 9772 0377, Fax: (08) 9772 1305