

THE PINE PLANTATION ROTATION

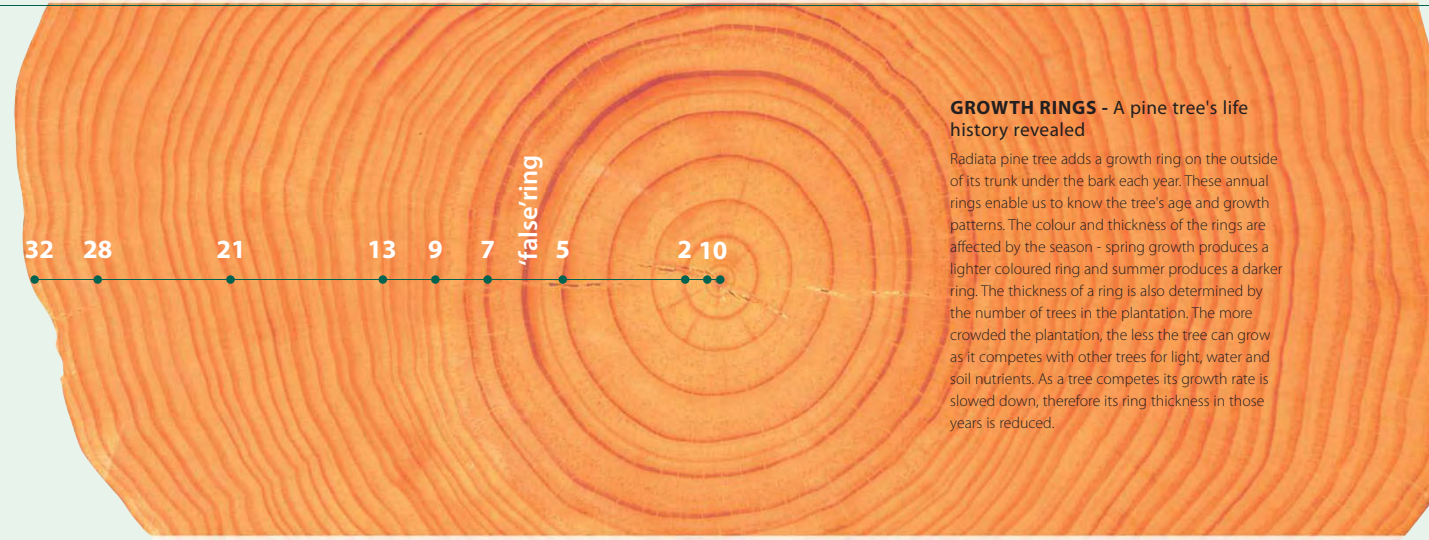
Forests NSW is the largest producer of plantation-grown radiata pine timber in Australia, selling enough timber to construct about a quarter of the houses built in Australia each year.

Radiata pine is a native tree of North America, growing on a narrow stretch of coast in Southern California and on two small islands off the coast of Mexico.

The first 'commercial' radiata pine plantation established in Australia was planted in Tuncurry on the mid-north coast of New South Wales in 1914. Although this site proved unsuitable, planting expanded to the higher altitude tableland areas near Bathurst, Tumut, Bombala and Walcha where the trees then flourished. Radiata pine plantings in New South Wales now exceed 210,000 hectares and are valued at over \$1 billion.

Radiata pine is not only commercially-grown in Australia - it is one of the most widely grown exotic timber species in the world with major plantations in New Zealand, Chile and Spain.

Forests NSW is developing carbon trading, which links the ability of trees to absorb carbon with industry's need to reduce carbon emissions. Radiata pine is an excellent absorber of carbon and greatly aids the reduction of greenhouse gases.



GROWTH RINGS - A pine tree's life history revealed

Radiata pine tree adds a growth ring on the outside of its trunk under the bark each year. These annual rings enable us to know the tree's age and growth patterns. The colour and thickness of the rings are affected by the season - spring growth produces a lighter coloured ring and summer produces a darker ring. The thickness of a ring is also determined by the number of trees in the plantation. The more crowded the plantation, the less the tree can grow as it competes with other trees for light, water and soil nutrients. As a tree competes its growth rate is slowed down, therefore its ring thickness in those years is reduced.



For more information
www.forest.nsw.gov.au
 or phone Forests NSW Information Centre
 1300 655 687 or (02) 9871 3377

0 YEARS

AGE 0 - Growing the seeds or cuttings and preparing the site

The first step in growing a plantation is to germinate the seeds or establish cuttings from selected trees. Forests NSW nursery near Tumut is capable of growing over seven million seedlings and cuttings annually. Seed is sown during September and October, ready for planting from June to August the following year. The site where the pine plantation is to be grown needs to be prepared before you can plant the seedlings. Forests NSW plantations are either grown on cleared farmland or re-grown on existing plantation land after a previous timber harvest. Site preparation normally involves ripping (breaking up of the compacted soil with a bulldozer) and mounding (creating rows of soil mounds to allow young seedlings to establish their root systems quickly). Herbicides are also applied to kill off competing grass. If not treated with herbicides plantations can fail to grow well.



2 YEARS

AGE 2 - The seedlings grow into small trees

After two years the seedlings reach approximately 2 metres in height and begin to suppress competing vegetation. In some cases remedial fertiliser is applied to promote well-



1 YEARS

AGE 1 - Planting the seedlings

Planting takes place in winter when the seedlings are dormant (not growing) and when the ground is moist. One seedling is planted every 2.5 metres along the rows of mounds which are between 3 and 4 metres apart (about 1000 plants/hectare). Fertiliser is sometimes applied at planting to give seedlings a growth boost.



5, 7 & 9 YEARS



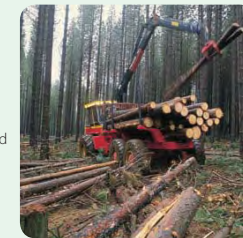
AGES 5, 7 & 9 - Pruning

In more productive plantations the best trees have their lower branches pruned up to three times in their lives (at around the age of five, seven and nine). They are commonly pruned up to a height of 6.2 metres. The trees that are pruned produce clean, knot-free logs that are commonly referred to as pruned logs. Pruned logs are valuable and are used to create high-value products such as plywood (a high strength low weight board product), furniture, appearance-grade wall cladding, shelves and flooring.

13, 21 & 28 YEARS

AGES 13, 21 & 28 - Thinning

During the life of a plantation it is necessary to remove (thin) the smaller and weaker trees to give the stronger trees more room to grow. Thinning allows the remaining trees more space, light, food and water. Thinning happens when the trees are at around age 13, 21 and 28. Some of the timber removed during a first thinning is treated with preservative to make it durable for use in landscaping and vineyards. Most first thinning timber is called pulpwood and is processed into small pieces called woodchips. These woodchips are pulped to make newspaper, particle board and kitchen cupboards. The first thinning yields mainly pulpwood or treated posts and the second thinning provides about 40% pulpwood and 60% sawlogs. Third thinning yields 20% pulpwood and 80% sawlogs.



This pine plantation is undergoing its second thinning.

32 - 35 YEARS

AGES 30 to 35 - Final harvest

The pine trees in a plantation are finally harvested between age 30 and 35. The logs from this final harvest provide most of the building timber for Australian houses and are also used for furniture. The logs are cut then processed into lengths by a mechanical harvester. They are taken to a sawmill where they are sawn and dried to produce timber. The final harvest mostly yields sawlogs.



Final harvest

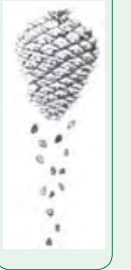


Transporting logs to mills

A NEW PINE PLANTATION

After harvesting the trees, the land is prepared for a new pine plantation to grow.

Go to Age 0 to start the rotation again.



PRODUCTS

PULPWOOD

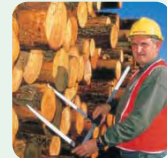
Used for making reconstituted timbers (medium density fiberboard, particleboard, oriented strand board), paper products, other preserved timbers.



SMALL LOGS



SAWLOGS



SAWLOGS - UNPRUNED AND PRUNED

Unpruned sawlogs are used for house frames, decking and paneling, fencing and landscaping, flooring, joinery and furniture. Large pruned sawlogs have uses in feature grade joinery and furniture, bearers and joists, select flooring veneer - furniture and benches.

