

# primefacts

FOR PROFITABLE, ADAPTIVE AND SUSTAINABLE PRIMARY INDUSTRIES

AUGUST 2009

PRIMEFACT 733

REPLACES AGFACT P7.6.32

## Camphor laurel

### Daryl Firth

Former Technical Officer (Scientific), Alstonville

### Rod Ensbey

Regional Weed Control Coordinator, Grafton

### Introduction

Camphor laurel (*Cinnamomum camphora*) is an evergreen tree that belongs to the Lauraceae family. It is native to China and Japan and in Australia there are related species such as Oliver's sassafras (*Cinnamomum oliveri*) which inhabit rainforest remnants on the east coast.

Since the seventeenth century, camphor laurel has been used commercially for its timber and essential oils in China and Japan. It is still used in South-East Asia for interior softwood timber. There is a small camphor laurel timber industry on the north coast, although good specimen trees are not common.



Figure 1. Camphor laurel invading roadsides. Reece Luxton.

Camphor laurel has not been used for commercial production of camphor oil since the 1920s.

Camphor laurel was introduced to Australia as an ornamental species about 1822 and was established in the Sydney and Brisbane Botanic Gardens in 1854 and 1861 respectively.

Many other plants have been introduced as ornamentals and become weeds but the history of camphor laurel is a little different. Its value as an ornamental tree was actively promoted in municipal parks, gardens and school grounds and it was widely planted for shade and shelter on north coast dairy farms after the clearing of the 'Big Scrub' from the elevated red soils in the late 1800s. The density of camphor laurel, its attractiveness to a number of bird species and the ideal climate and soils for its growth have allowed it to naturalise and spread extensively in many parts of the State.

Camphor laurel is now a declared noxious weed in a number of local government areas on the north coast and in the Sydney region (see Figure 8).

### Description

Camphor laurel is an evergreen tree which grows up to 20 m in height (see Figure 1 and 2). It has a large, spreading canopy and a short, stout bole or trunk up to 1.5 m in diameter.



Figure 2. Young camphor laurel tree. George Wisemantel.

The bark is greyish brown and has a rough texture. The leaves are alternate, 5–10 cm long and 2.5–5 cm wide and are a glossy green.

Flowers are minute, white and borne on panicles or heads near the ends of branches. They have a distinctive odour and attract large numbers of small flies.

The fruit is a round berry 8 mm in diameter. The berries are green when immature and ripen to black (see Figure 3). They contain a single seed about 5 mm in diameter.

In dense stands, second generation trees are more upright with long, slender boles and small canopies. Young trees tend to form multiple stems after fire or other injury.

Camphor laurel is easily identified by the pungent camphor odour arising from crushed leaves or exposed wood. In its native habitat there are three distinct types based on the major oil components of either camphor, cineole or linalool. The camphor form is most common in Australia.

### Distribution

Camphor laurel was widely planted as an ornamental or shade tree. It has become naturalised in the coastal area from Nowra on the south coast of New South Wales (NSW) to Cooktown in North Queensland.

In NSW, heavy infestations occur in the Lismore, Tweed, Byron and Ballina councils and parts of the Orara Valley west of Coffs Harbour. It is estimated that there is some 91,000 hectares of land containing camphor laurel in the Tweed, Brunswick and Richmond river catchments. Camphor laurel is continuing to spread in these areas and is also spreading southwards.

Many of the southern infestations contain only young trees, from 3 to 10 years in age. Therefore, the potential for continued spread and domination of the landscape in many areas of the coastal fringe is significant.

### Habitat

Camphor laurel grows in areas of high rainfall, averaging 1000 mm or higher. Camphor laurel can grow on a wide range of soil types but especially prefers fertile flood plains and soils derived from basalt.

Camphor laurel invades habitats where forests have been cleared or disturbed, usually for pasture or cultivation. Areas that remain inhabited by rainforest are not invaded, except along tracks cleared for logging.

Camphor laurels are spreading further up catchments and hillsides, and westward into drier areas with poorer soils.



Figure 3. Camphor laurel fruit and leaf structure. George Wisemantel.



## Impact

While camphor laurel has the normal attributes of a weed, such as adaptation to the disturbed environment, prolific seed production, rapid growth rate and a lack of serious predators or diseases, it also has many specific attributes which enhance its weed status.

- It has a tendency to form single species communities and exclude most other tree species, including desirable native vegetation.
- It has a competitive advantage over native vegetation because it establishes easily.
- Birds and other fauna readily eat the fruit and disperse the seeds.
- It has a very dense, shallow root system which, when accompanied by the shading provided by the canopy, suppresses the regeneration of native seedlings.
- It can destabilise stream banks due to undercutting by the shallow root system and the general lack of ground cover species around the trees to hold the soil in place.
- Mature camphor laurel trees are large and therefore difficult and expensive to remove.
- Camphor laurel trees are long-lived with some trees being over 100 years old and reports of some up to 500 years old in their native habitat.
- Camphor laurel trees regenerate easily after lopping.
- Invasion of agricultural lands by camphor laurel can cause significant impacts on productivity and the costs of control can reduce the viability of some agricultural pursuits (see Figure 4).

On the north and mid north coast, camphor laurel invades large areas of land and inhibits potential land use in the same way as lantana, groundsel bush, crofton weed and privet. It is especially troublesome on sloping, rocky land not readily accessible to machinery or grazing animals, and on better land not intensively utilised. The contraction of dairying and banana farming since the 1960s has resulted in large areas becoming infested with camphor laurel.

## Stages of invasion

Stage 1. Scattered seedlings and small trees.

Stage 2. Scattered trees of various ages but canopies do not touch.

Stage 3. Closed stand with canopies touching.

Stage 4. Closed canopies with a variety of other species, including rainforest natives as a ground stratum.

## Life cycle

### Germination

Seeds germinate more readily after ingestion by birds. It is thought that the fruit contains a germination inhibitor to delay germination until seeds are separated from the fruit. Viability is usually at least 70 per cent in the first year, decreasing rapidly in the second year. Some seeds remain viable for 3 years. Germination extends over a period of 4 to 20 weeks. This adaptation ensures the spread of viable seeds over time, leading to favourable weather conditions for germination.



Figure 4. Camphor laurel invading agricultural land. Rod Ensbey



### Seedling growth

Seedlings do not grow quickly until the root system becomes established, after about 1 year. In closed stands of camphor laurel, seedlings grow slowly, along with some native species, until the stand is disturbed, allowing more light to enter and seedlings to grow more rapidly (see Figure 5).

### Flowering

Camphor laurel starts flowering after approximately seven years, depending on location (see Figure 6). Flowering occurs in spring.



Figure 5. Camphor laurel seedling. Rod Ensbey.

### Fruiting

Fruits mature in autumn; they are small green berries which turn black on ripening in April–May. Over 100,000 fruits can be produced on a mature tree.

### Spread

The ripe fruit is ingested and spread by a number of species of birds, including pied currawongs, flock pigeons, magpies, figbirds, olive-backed orioles, blue-faced honeyeaters and black-faced cuckoo shrikes. As a result trees readily establish along fencelines and under powerlines.

Seeds can also be transported a long way by water.

### Control and management

Landowners are encouraged to control isolated and scattered trees, particularly if they are small, as soon as possible. Local councils have active control programs for roadsides and reserves. These programs focus on working from the cleaner, lightly infested areas to the more heavily infested 'core areas'. In core areas, gradual, long-term management programs are being put in place.

A number of techniques are available to control camphor laurel. The technique used will depend on the situation, landscape, number of trees to control and resources available. It is important to plan your control program and take a long-term approach



Figure 6. Camphor laurel tree in flower. George Wisemantel.

including follow-up treatments, control of other weed species, and planting of replacement species.

Management should aim to increase competition, which will prevent invasion by camphor laurel.

### Pasture management

Good pasture management can prevent camphor laurel invasion. Overstocking and overgrazing will lead to pasture degradation and allow the invasion of weeds.

### Forestry and horticulture

Establishing intensive land use such as agroforestry or horticulture can prevent the spread of camphor laurel trees, especially on poorer or steeply sloping land.

### Mechanical removal

Smaller trees (up to 10 cm in diameter) can be lopped and the stumps treated with chemical. Professional tree arborists can cut down bigger mature camphor laurel trees, mulch the timber and grind the stump out of the ground. This is a particularly good technique in urban areas, roadsides and backyards where a tree needs to be totally removed.

Bulldozing can be done without prior chemical treatment. Bulldozing removes the entire tree but is an expensive option and the resulting disturbance of soil can lead to the rapid re-establishment of camphor laurel and other weeds.

Soil erosion can occur on cleared slopes unless a desirable ground cover is established quickly. Landholders planning to undertake a mechanical control program involving significant soil disturbance should seek advice from the Catchment Management Authority and comply with any relevant environmental guidelines and legislation.

### Chemical control

Chemical control is an effective way of controlling existing infestations. Herbicides can control trees without the need to disturb soil or other vegetation.



Figure 7. Mature camphor laurel trees following death from stem injection with herbicide. Trees can be removed (or left in place where there is no safety risk) and the area replanted with native species. Rod Ensby.

In areas to be cleared, prior herbicide control allows easy removal of the dead stumps and hastens the revegetation process.

Effective control of camphor laurel can be achieved by using either the cut stump, stem injection, basal bark or foliar spray application techniques. The method used depends on the site situation, tree size, access and personal preferences (see Figure 7).

Only a registered chemical applied according to the label should be used. Registered herbicides for the control of camphor laurel and more information on application techniques can be found in the Industry & Investment NSW publication *Noxious and Environmental Weed Control Handbook*.

### Replacement of removed trees

When planning a good control program, replacement with native species or competitive pastures is vital for long-term weed control.

Native rainforest and other species will often germinate underneath camphor laurels but the intense competition by mature camphor laurels dramatically reduces the ability of those seedlings to grow to maturity. When camphor laurels are controlled in stages these native species are able to grow and replace the camphor laurels.

Camphor laurels that form wildlife corridors need to be controlled gradually and replaced with alternative food sources wherever possible.

It is always better to use local natives as replacement trees that will encourage the return of native flora and fauna. The *Camphor Laurel Kit* produced by the North Coast Weeds Advisory Committee gives a comprehensive list and guide to replacement species. It is available from your local council or [www.northcoastweeds.org.au](http://www.northcoastweeds.org.au)

### Value adding

Camphor laurel can be a valuable resource as a commercial timber. Every opportunity should be taken to offset the costs of control by using suitable sized trees which meet specifications for commercial harvest. The harvesting, milling and value adding of camphor laurel in northern NSW is estimated to be worth more than \$1 million in annual turnover. Camphor laurel timber is used for a range of products and furniture including tables, kitchen benches, railings, bookcases, chairs, stairs, carvings, sculptures and various items that can be turned on a lathe.

Camphor laurel is also being trialled as a potential fuel biomass in a north coast cogeneration project to produce electricity. Proposals are advanced to use woodchip for fuel to generate electricity at the Condong and Broadwater Sugar Mill cogeneration plants. This will involve the harvest of camphor laurel on a significant scale to supply this project.



## Legislation

Camphor laurel is a Class 4 noxious weed under the *NSW Noxious Weeds Act 1993* in many areas of NSW (see Figure 8).

Class 4 control requirements are that 'the growth and spread of the plant must be controlled according to the measures specified in a management plan published by the local control authority and the plant may not be sold, propagated or knowingly distributed'.

The responsibility for the control of noxious weeds on private land rests with the land owner or occupier of the land. This responsibility extends to the middle line of any adjacent watercourse, river or inland water (tidal or non-tidal).

A full list of noxious weeds and requirements under the *NSW Noxious Weeds Act 1993* can be found at [www.dpi.nsw.gov.au/weeds](http://www.dpi.nsw.gov.au/weeds).

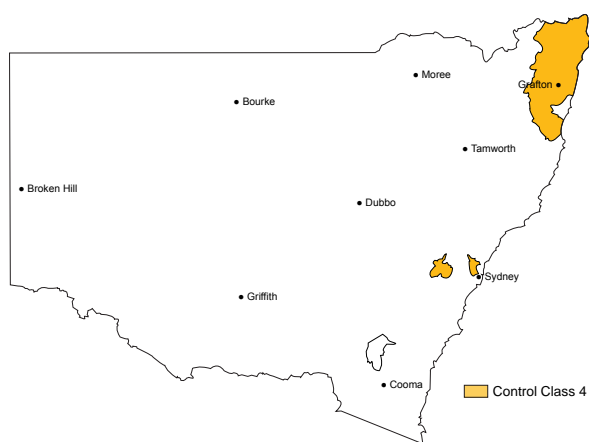


Figure 8. Declaration map of camphor laurel in NSW. Alan Maguire.

## Further information

For further information contact your local council Weeds Officer or Industry & Investment NSW.

The *Camphor Laurel Kit*, produced by the North Coast Weeds Advisory Committee, contains a comprehensive guide to the management of the weed. The kit is available from councils on the north coast or at [www.northcoastweeds.org.au](http://www.northcoastweeds.org.au)

## Acknowledgments

Information for this Primefact was taken from:

*Camphor Laurel* Agfact P7.6.32. Darryl Firth and Rod Ensbey

National Herbarium of NSW. PlantNET – FloraOnline. <http://plantnet.rbgsyd.nsw.gov.au>. Accessed 27 March 2008

## Publications available

A complete list of Industry & Investment NSW weed publications can be found at [www.dpi.nsw.gov.au/weeds](http://www.dpi.nsw.gov.au/weeds). Printed copies of this Primefact are available by contacting the Industry & Investment NSW Bookshop on 1800 028 374 or visit [www.dpi.nsw.gov.au/bookshop](http://www.dpi.nsw.gov.au/bookshop).

---

© State of New South Wales through Department of Industry and Investment (Industry & Investment NSW). You may copy, distribute and otherwise freely deal with this publication for any purpose, provided that you attribute Industry & Investment NSW as the owner.

ISSN 1832-6668

Replaces Agfact P7.6.32

Production coordinated by Annette McCaffery, Annie Johnson, William E. Smith and Barry Jensen

Check for updates of this Primefact at: [www.dpi.nsw.gov.au/weeds](http://www.dpi.nsw.gov.au/weeds)

Disclaimer: The information contained in this publication is based on knowledge and understanding at the time of writing (June 2009). However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up to date and to check currency of the information with the appropriate officer of Industry & Investment NSW or the user's independent adviser.

## Pasture improvement warnings

Pasture improvement may be associated with an increase in the incidence of certain livestock health disorders. Livestock and production losses from some disorders are possible. Management may need to be modified to minimise risk. Consult your veterinarian or adviser when planning pasture improvement.

The *Native Vegetation Act 2003* restricts some pasture improvement practices where existing pasture contains native species. Inquire through your office of the Department of Natural Resources for further details.

Job number 8426