

Golden chain tree

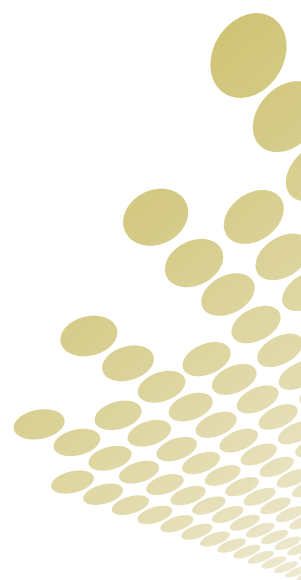
Laburnum anagyroides



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Note: This weed risk assessment is a working draft only and requires more information before firm recommendations can be made.

Please send any additional information, or advice on errors, to the authors (steve.csurhes@deedi.qld.gov.au).



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Front cover: *Laburnum anagyroides*

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Summary

Laburnum anagyroides is popular garden ornamental native to the mountains of central Europe.

Reproduction is from seeds.

All parts of the plant are toxic and can cause poisoning if ingested.

While present in Australia, this study was unable to find any evidence of the species behaving as a “weed” in Australia.

Climate modelling suggests *L. anagyroides* is best suited to cooler, upland areas of subcoastal southeast Queensland, with most of the state being too hot.

More information is required before a robust prediction of potential weediness can be made. However, at this stage, there seems little evidence to suggest *L. anagyroides* will become a significant problem in Queensland.

Identity

Species: *Laburnum anagyroides* Medik (Fabaceae)

Synonyms:

Cytisus alschingeri

Cytisus laburnum

Laburnum anagyroides var. *alschingeri*

Laburnum vulgare

Common names:

Golden chain tree, common laburnum, peatree

Taxonomy

The Fabaceae is a large and economically important family of flowering plants found throughout the world, with 730 genera and over 19,400 species (Wikipedia, 2009a).

There are two species of *Laburnum*; *L. anagyroides* and *L. alpinum*. Most garden specimens are a hybrid between these species (*Laburnum x watereri* ‘Vossii’) (Wikipedia, 2009b).

There are also a number of subspecies and cultivars including *Laburnum anagyroides* ssp. *alschingeri*, *Laburnum anagyroides* ssp. *anagyroides*, *Laburnum anagyroides* ssp. *jacquinianum* (GBIF, undated), and *Laburnum anagyroides* ‘Sunspire’ (*Laburnum x watereri* ‘Sunspire’).

Description

L. anagyroides is an upright, sparsely branched deciduous tree. It grows 4–9 m tall and 3–4 m wide at the crown (Figure 1).

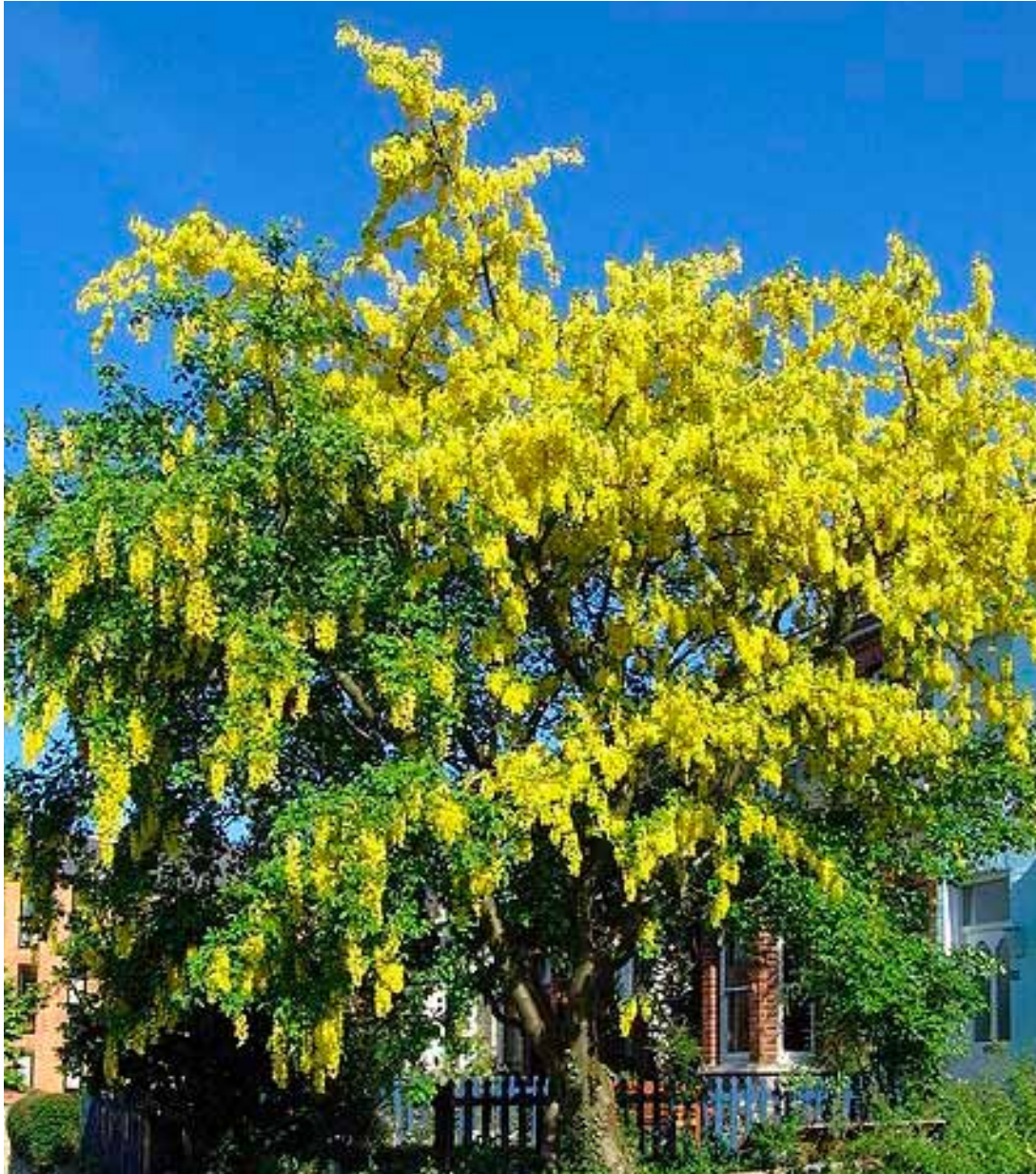


Figure 1. *Laburnum anagyroides* in flower

(Photo: Andrew Dunn. Image from Wikimedia Commons under a Creative Commons Attribution ShareAlike 2.0 License).

Leaves are trifoliate, 3–7 cm long, comprised of alternate leaflets, each 3–8 cm long and 2.5 cm wide, elliptic-lanceolate or obovata in shape. Flowers are yellow, densely packed and arranged in pendulous racemes 10–20 cm long (Figures 2 and 3).



Figure 2. *Laburnum anagyroides* with flowers

(Photo: J F Gaffard. Image from Wikimedia Commons under a GNU Free Documentation License).



Figure 3. Close-up of *Laburnum anagyroides* flowers

(Photo: Jeff de Longe. Image from Wikimedia Commons under a GNU Free Documentation License).

The calyx is 5 mm long and 2-lipped. The fruit is a green flattened pod, 4–7.5 cm long and 7.5 mm wide, with more or less winged sutures (Figure 4). Each pod contains 2–7 kidney-shaped, dark brown seeds (Barceloux, 2008; Evans, undated; Flora of Pakistan, undated; Szentesi & Wink, 1991).

L. anagyroides can fix atmospheric nitrogen within its specialised root nodules (Plants for a Future, 2008).

L. anagyroides can be distinguished from *L. alpinum* (Scotch laburnum), as it has shorter racemes and more densely packed flowers (Kew Gardens, undated).

The entire plant, including its seeds, is poisonous (Flora of Pakistan, undated).



Figure 4. *Laburnum anagyroides* seed pods (Photo: Wouter Hagens. Image from Wikimedia Commons under a GNU Free Documentation License).

Reproduction and dispersal

L. anagyroides is a perennial and reproduces from seeds. It lives for about 20 years (Waterwereld, 2009). In its native range, flowering occurs from May to June (Szentesi & Wink, 1991). Flowers are hermaphrodite and pollinated by insects (Plants for a Future, 2008). Seed pods appear in June and mature by the end of August. Pods are dehiscent and remain on the plant for some time. Some pods open in late September, but many will open the following spring. Seeds either fall out of the open pods, or remain in the pods for a year or more (Szentesi & Wink, 1991). Seeds have a hard, impermeable coat that delays germination. When propagated for use in gardens, the seeds are scarified to promote germination, using either mechanical or sulfuric acid scarification techniques (Pijut, undated). The plant can also be propagated by layering or grafting (PlantCare.com, undated).

Preferred habitats

L. anagyroides is native to mountains of central Europe and is best adapted to temperate climates. However, it can survive in sub-tropical climates.

L. anagyroides can grow in a range of soil types, provided the soil is well drained and does not dry out for extended periods. Its light green foliage is susceptible to sunburn during hot summer days and flower buds can be damaged by late spring frost (PlantCare.com, undated).

L. anagyroides can tolerate strong winds, and can grow in cold-exposed situations. It cannot tolerate maritime exposure (Plants for a Future, 2008). *L. anagyroides* is shade tolerant (Gratani & Foti, 1998) but prefers full sun to partial shade (Evans, undated).

This study was unable to find information on preferred vegetation communities.

Origin and distribution

L. anagyroides is native to middle, south-eastern and south-western Europe (Austria, Czech Republic, Germany, Hungary, Switzerland, Former Yugoslavia, Italy, Romania, and France) (GRIN, 2009). It has naturalised in other parts of Europe, for example Germany (FAO, 2009).

L. anagyroides was introduced to Britain in 1560, and has been a popular plant in parks and gardens (Kew Gardens, undated). *L. anagyroides* was introduced to the northern United States and southern Canada as an ornamental tree (Barceloux, 2008). *L. anagyroides* is also listed as 'naturalised' in New Zealand (New Zealand Plant Conservation Network, 2005).

History as a weed overseas

L. anagyroides has naturalised in parts of Europe (Germany) and New Zealand. This study could only find one reference, Otto *et al.* (2007), which listed *L. anagyroides* as a "weed" (in north-eastern Italy, which lies within the species' native range). This study was unable to find any evidence that *L. anagyroides* is a major weed elsewhere. The majority of references refer to its poisonous characteristics.

Uses

L. anagyroides is widely grown as an ornamental tree in parks and gardens throughout Europe (Szentesi & Wink, 1991). It is often used as a rootstock for other members of the Fabaceae. Its wood is used to make instruments and furniture (Plants for a Future, 2008).

L. anagyroides is well known as a poisonous plant. All parts of the plant contain dangerous alkaloids, in particular cytosine, which is similar to nicotine. Symptoms of poisoning include abundant salivation, vomiting, then neurological signs (convulsions), cardiac (hypertension, tachycardia, arrhythmia), and respiratory signs (Herbarium, 2009).

Status in Australia and Queensland

A number of Australian nurseries offer *L. anagyroides* for sale as a garden plant on-line. Considering its attractive flowers, there is a good chance that the species is now present in many gardens across at least southern Australia (where climate is most favourable). However, there are only a few herbarium records for this species, from South Australia and Tasmania. There are no herbarium records of the species in Queensland, suggesting it may be a relatively recent import.

References to this plant in Australia mention its poisonous properties (for example Horticultural Therapy Association of Victoria, undated).

This study was unable to find any reference to this species behaving as a weed in Queensland. However, there is anecdotal evidence that the species may be starting to escape from gardens around coastal southeast Queensland.

Pest potential in Queensland

Climate-modelling software suggests that parts of southeast Australia experience climate types that are comparable to the species' native range (Figure 5). Moreover, only cooler upland (subcoastal) areas of southeast Queensland appear to have climate types suitable for this species. Remaining areas of Queensland appear to be too hot. Hence, it appears reasonable to suggest *L. anagyroides* is most likely to naturalise, and perhaps become a pest, in upland areas around Stanthorpe, Warwick and perhaps Toowoomba. Of course, other factors such as soil type, disturbance regimes and land use will influence the species' ability to naturalise and become abundant.

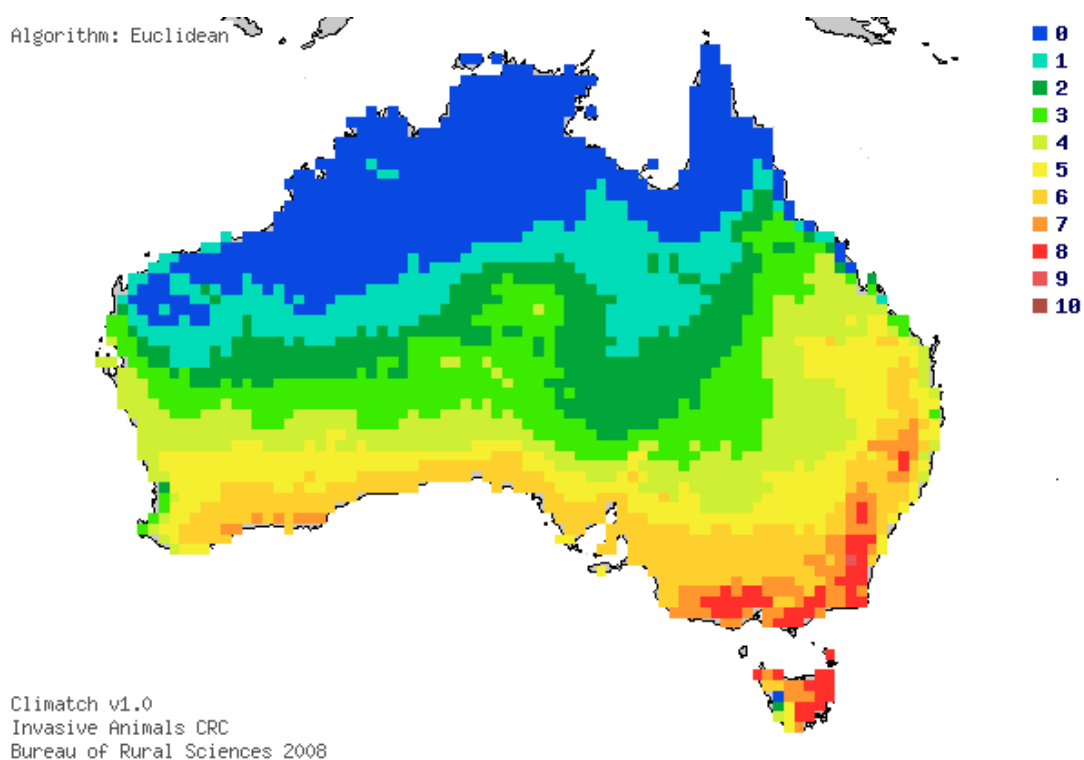


Figure 5. Areas of Australia where climate appears suitable for survival of *Laburnum anagyroides*. Red and orange indicates areas that are most suitable, followed by yellow, green and blue (green and blue are considered unsuitable). Native and naturalised distribution points were used to determine climate match. Map produced using the software Climatch Ver. 1, Bureau of Rural Sciences (DAFF, 2009).

Control

This study was unable to find any information on control of *L. anagyroides*.

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