

Agave

Century plant, sisal

Agave spp.



Agave are widely cultivated in gardens within Queensland, especially in drier inland districts. Three species of agave are known to be naturalised in Queensland, *Agave americana*, *Agave angustifolia* and *Agave sisalana*. These agaves have invaded the environment, often forming dense, almost impenetrable thickets that compete with native vegetation, limiting the growth of small shrubs and groundcover species. Agave can also reduce pasture and land availability for grazing animals.

Legal requirements

Agave species are not a prohibited or restricted invasive plants under the *Biosecurity Act 2014*. However, by law, everyone has a general biosecurity obligation (GBO) to take reasonable and practical measures to minimise the biosecurity risks associated with invasive plants under their control.

Local governments must have a biosecurity plan that covers invasive plants in their area. This plan may include actions to be taken on certain species. Some of these actions may be required under local laws.



Description

A very large perennial rosette-forming plant, growing 1–2 m high and 2–4 m across. Older individuals may sometimes develop a short woody stem at the base of the plant and commonly produces numerous suckers which form a large clump or colony. When fully mature, agave plants develop a massive flower cluster on a robust flowering stem, 3–12 m high.

The large leaves at the base of the plant are long and narrow and are arranged in a rosette. They may be upright (i.e. erect or ascending) or spreading in nature and are sometimes bent backwards near their tips. Leaves are 0.3–2 m long and 3.5–25 cm wide, usually rigid and somewhat fleshy (i.e. succulent). They are normally bluish-grey to greyish-green in colour, but forms with variegated leaves are relatively common. The leaf margins of some species are coarsely toothed, with prickly teeth, up to 1 cm long, borne at intervals of 2–6 cm. Leaves have a pointed tip (i.e. acute apex) topped with a large dark-brown coloured spine up to 6 cm long.

The massive flower clusters are 1–8 m long, are borne at the top of a very robust flowering stem. Flower clusters are multi-branched, with the branches being further divided towards their tips (i.e. they are terminal panicles). Individual flowers are borne in an upright position on stalks, 2–4 cm long. Flowers are 5–10.5 cm long, are yellow or greenish-yellow in colour with their six petals being fused together at the base into a short tube, 8–20 mm long. Flowers also have six very prominent stamens. They also have a large ovary topped with a style and three stigmas. Flowering occurs from summer through to autumn.

The fruit is a large oblong capsule, 3.5–8 cm long, with a pointed tip and consists of three compartments. These capsules turn from green to brown or blackish in colour as they mature and eventually split open to release their seeds. Seeds are 6–8 mm long, black in colour and shiny in appearance.

On some species, plantlets are also produced in clusters near the tips of the flowering branches.

Agave species identification

Agave americana var. *americana* (century plant) has very large greyish or variegated leaves that are usually 1–2 m long that are often bent backwards at their tips.

The spines at the tips of its leaves are 3–5 cm long. The leaves have numerous, prickles, 5–10 mm long, along their margins. Flowers are borne in an upright position and are yellow or yellowish-green in colour. It produces large capsules and usually doesn't develop plantlets on the branches of its flower clusters.

Agave americana var. *americana* 'Marginata' (variegated century plant) is very similar to *Agave americana* var. *americana* in all characteristics except it is distinguished by its variegated leaves (i.e. they are green with yellowish margins).

Agave americana var. *expansa* (century plant) has bluish-grey or greyish green leaves that are mostly borne upright. The spines at the tips of its leaves are relatively small, 2–3 cm long. These species produce large capsules and usually doesn't develop plantlets on the branches of its flower clusters.

Agave angustifolia (Caribbean agave) has green, greyish-green or variegated leaves that are usually 0.5–1 m long on adult plants. Leaves have many, small prickles, 2–5 mm long, along their margins and are usually very rigid. Flowers are borne in an upright position and are yellow or yellowish-green in colour. It produces large capsules and sometimes also develops plantlets on the branches of its flower clusters

Agave sisalana (sisal) has dark green or greyish-green leaves that are usually 0.5–1.3 m long on adult plants and usually very rigid. Leaves do not have any prickles on their margins. Flowers are borne in an upright position and are yellow or yellowish-green in colour. It usually doesn't produce capsules, instead developing numerous plantlets on the branches of its flower cluster.

Similar species

Agave species may also be confused with the false agaves which have naturalised in Queensland. These species can be distinguished by the following differences:

- *Furcraea foetida* (Cuban hemp) has pale green leaves that are 1–2 m long on adult plants. These leaves can have some prickles along their margins, but mainly near the bases of the leaves. Flowers are borne in a drooping position and are whitish or greenish-white in colour. It doesn't produce capsules, instead developing numerous plantlets on the branches of its flower clusters.
- *Furcraea selloa* (Variegated false agave) has variegated leaves that are usually 1–2 m long on adult plants. These leaves have numerous prickles (7–8 mm long) along their margins. Flowers are borne in a drooping position and are whitish or greenish-white in colour. It doesn't produce capsules, instead developing numerous plantlets on the branches of its flower clusters.

Life cycle

Agave species reproduce by seed, but most of the reproduction is probably vegetative. It produces numerous suckers and often also develops plantlets on the branches of its flower clusters.

Agave species spread laterally via suckers and can form very large and dense colonies over time. Young plants can be dispersed downstream during floods. Plants are most commonly spread into bushland areas in dumped garden waste.

Habitat and distribution

Agave is native to northern and central Mexico and some parts of southern USA (i.e. Arizona and Texas).

Three species of agave are known to be naturalised in Queensland: *Agave americana*, *Agave angustifolia* and *Agave sisalana*. These agave species are also naturalised in many parts of Australia but have a scattered distribution. Agave have been recorded from, Western Australia, New South Wales, Australian Capital Territory, Victoria, and south-eastern South Australia. *Agave americana* is also naturalised on Lord Howe Island and Norfolk Island.

Because it is very difficult to collect, herbarium records greatly underestimate the actual distribution of these species in Australia. It may also be naturalised in Tasmania and the Northern Territory.

Control

The GBO requires a person to take reasonable and practical measures to minimise the biosecurity risks posed by agave. This fact sheet provides information and some options for controlling agave.

The best control for agave species incorporates integrated management strategies, including herbicides, mechanical and physical methods.

Physical control

Dig out plants completely and burn or deep bury. Refer to the relevant local government or rural fire service for guidelines on lighting fires in your area.

Mechanical and fire control

Mechanical control using machinery can quickly reduce the size of the infestation. Although agave can regrow from suckers, this is a slow process and so opportunity exists to push up the large plants and burn at a later stage. Use of fire to burn plants either before or after spraying has had success, especially on reducing the sucker regrowth. More research is needed to fully ascertain the effectiveness of fire on plants.

Herbicide control

Treatment with herbicides can be effective, because the plants are relatively easy to find. See Table 1 for the treatment options in situations allowed by label and under permit.

Prior to using the herbicides listed under these permits (PER 82307 and PER11463), you must read or have read to you and understand the conditions of the permit. To obtain a copy of this permit visit apvma.gov.au.

Landholders and contractors should check if the property is in a hazardous area as defined in the *Agricultural Chemicals Distribution Control Act 1966* prior to spraying.

Further information

Further information is available from your local government office, or by contacting Biosecurity Queensland on 13 25 23 or visit biosecurity.qld.gov.au.



Agave americana var. *Americana* with flower



Agave americana var. *Americana marginata*

Table 1. Herbicides for the control of agave species

| Situation | Herbicide | Rate | Registration details | Comments |
|--|--|-------------------------------------|-----------------------------------|---|
| Agricultural non-crop areas, commercial and industrial areas, pastures and rights-of-way | Fluroxypyr 200 g/L (e.g. Flagship 200) | 3000 mL/100 L of diesel distillate | | Foliar spray |
| | | 10 mL undiluted per plant | | Stem injection |
| | Fluroxypyr 333 g/L (e.g. Starane Advanced) | 1800 mL/100 L of diesel distillate | | Foliar spray |
| | | 6 mL undiluted per plant | | Stem injection |
| | Fluroxypyr 400 g/L (e.g. Comet 400) | 1500 mL/100 L of diesel distillate | | Foliar spray |
| | | 5 mL undiluted per plant | | Stem injection |
| Forests including native vegetation areas, bushland reserves, revegetation areas, national park areas, non-cropland including rights-of-way, open spaces, commercial and industrial areas, domestic and urban areas, public service areas, botanic gardens | Glyphosate 360 g/L (e.g. Roundup Biactive, Glyphosate 360) | 1000 mL + 1000 mL water | Permit 82307 (expires 31/07/22) | Cut, scrape and paint |
| | | 1000 mL + 1000mL water | | Stem injection |
| Non-agricultural areas, domestic and public service areas, commercial and industrial areas, bushland/native forests, roadsides, rights-of-way, vacant lots, wastelands, wetlands, dunal and coastal areas | Imazapyr 250 g/L e.g. Unimaz 250 SL | 500 mL/100 L water + wetter | Permit 11463 (expires 30/06/2023) | Foliar spray Minimise spray run-off as off target damage may occur if roots of susceptible plants are nearby |
| | Metsulfuron-methyl 600 g/kg (e.g. Brush-off) | 10 g/100 L water + wetter | | Foliar spray |
| Agricultural non-crop areas, commercial and industrial areas, fence lines, forestry, pastures and rights-of-way | Picloram 120 g/L + triclopyr 240 g/L (e.g. Access) | 1670 mL/ 100 L of diesel distillate | | Basal bark |

Read the label carefully before use and always use the herbicide in accordance with the directions on the label.



Agave angustifolia (photo courtesy of flickr: Forrest and Kim Starr)



Agave americana var. *expansa*



Spines on leaf margins of *Agave americana* var. *expansa*



Large spine at the end of leaf on *Agave americana* var. *expansa*



Agave sisalana (photo courtesy of flickr: Forrest and Kim Starr)



Agave sisalana plantlet cluster on flowering stem
(photo courtesy of flickr: Forrest and Kim Starr)



Agave americana var. *Americana* infestation with lateral suckers



Agave americana var. *expansa* infestation

This fact sheet is developed with funding support from the Land Protection Fund.

Fact sheets are available from Department of Agriculture and Fisheries (DAF) service centres and our Customer Service Centre (telephone 13 25 23). Check our website at biosecurity.qld.gov.au to ensure you have the latest version of this fact sheet. The control methods referred to in this fact sheet should be used in accordance with the restrictions (federal and state legislation, and local government laws) directly or indirectly related to each control method. These restrictions may prevent the use of one or more of the methods referred to, depending on individual circumstances. While every care is taken to ensure the accuracy of this information, DAF does not invite reliance upon it, nor accept responsibility for any loss or damage caused by actions based on it.

