

Table 1. Herbicides for the control of groundsel bush

Situation	Herbicide	Rate	Comments ^{1, 2, 3}
Pastures, non-agricultural, commercial, industrial land and rights-of-way	2,4-D amine 625 g/L (e.g. Ken-Amine 625)	2.9–4 L/ha 220 mL/100 L water 240 mL/15 L	Aerial application—higher rate for bushes Spray when actively growing High volume foliar spray Misting. Lightly wet plants
Pastures and non-agricultural land	2,4-D acid 300 g/L (e.g. Affray 300)	10 L/ha 33 mL/1 L kerosene or mineral turpentine 100 mL/10 L water 1 L/10 L water 0.37 L/ha	Helicopter spraying Basal bark or cut stump Knapsack foliar spray Sprinkler spray—1 L/100 m ²
Pastures, rights-of-way and industrial land	2,4-D as sodium salt 700 g/kg (e.g. Tornado DF)	275 g/100 L water	High volume spot spray Addition of a surfactant is recommended (consult label)
Irrigation channels/banks, non-agricultural, commercial, industrial land, home gardens, pastures, rights-of-way and forests	Glyphosate4—IPA 360 g/L (e.g. Roundup Biactive)	700 mL – 1 L/100 L water 100–150 mL/15 L water 1:9 (2 x 2 mL dose per 0.5 m bush height)	Handgun—high rate in winter Knapsack foliar spray Splatter gun foliar spray
Commercial, industrial land, pastures and rights-of-way	Picloram + 2,4-D 75 g + 300 g (e.g. Tordon 75-D [®])	0.65 L/100 L	Spot spray
Agricultural non-crop areas, commercial and industrial areas, forests, pastures and rights-of-way	Triclopyr 300 g/L + Picloram 100 g/L (e.g. Conqueror ⁵) Triclopyr 300 g/L + Picloram 100 g/L + aminopyralid 8 g/L (e.g. Grazon Extra ⁵)	250–350 mL/100 L	Foliar spray Handgun Knapsack Use lower rate for plants 1–1.5 m tall in spring to summer, higher rate plants over 1.5 m or autumn treatment
		30 mL/15 L	
Agricultural non-crop areas, commercial and industrial areas, fence lines, forestry, pastures and rights-of-way	Triclopyr 240 g/L + Picloram 120 g/L (e.g. Access)	1 L/60 L diesel	Basal bark or cut stump
Recreational, commercial, industrial land, pastures, rights-of-way and forests	Triclopyr 600 g/L (e.g. Garlon 600 [®])	160–320 mL/100 L water 500 mL/60 L diesel	Foliar spray Lower rate for seedlings and plants to 2 m, higher rate for plants over 2 m Basal bark/cut stump
Home gardens, commercial situations and recreation areas	Triclopyr 50 g/L (e.g. Defender Blackberry Plus Tree Killer)	200 mL in 1 L kerosene or diesel	Basal bark, stem injection Refer to product label for details
Home gardens, parks, golf courses, factories and other similar situations	Triclopyr 60 g/L (e.g. Richgro Tree & Blackberry & Woody Weed Killer)	200 mL in 1.1 L kerosene or diesel	
Grass pasture	MCPA 340 g/L + Dicamba 80 g/L (e.g. Kamba M)	2.8–4 L/ha 0.19–0.27 L/100 L 60 mL/15 L	Broadacre (boom) spray Handgun Knapsack
Pastures, forests, rights-of-way and industrial situations	Clopyralid 300 g/L (e.g. Lontrel [®]) Clopyralid 600 g/L (e.g. Lontrel Advanced) Clopyralid 750 g/kg (e.g. Clomac)	330 or 500 mL/100 L 165–200 mL/100 L water 130 or 200 g/100 L water	Handgun Spray foliage when growth is active Use higher rate on plants over 2 m tall
Pastures	Tebuthiuron 200 g/kg (e.g. Graslan [®])	1 gm/m ²	Hand application (restrictions on use apply)

The formulations of 2,4-D, clopyralid and glyphosate listed here are examples only. Other formulations are available and many include groundsel bush on the label, but the treatments listed may vary. Consult the product label for more information. For users who rely on home garden packs, triclopyr is available in products containing 50 g/L (e.g. Yates Tree & Blackberry Killer, Amgrow Chemspray Tree & Blackberry Killer), 60 g/L (e.g. Richgro Tree & Blackberry & Woody Weed Killer) or 120 g/L (e.g. David Grays Blackberry & Tree Killer). Registered uses vary so users should consult labels carefully before proceeding and follow instructions closely.

Notes

- ¹ Pasture legumes are susceptible to these herbicides.
- ² Cut stump treatments—cut as close to ground as possible and apply mixture immediately (within 15 seconds).
- ³ Basal bark treatments—paint/spray 25 cm band around base of each stem.
- ⁴ Glyphosate will kill pasture species.
- ⁵ Cannot be used in hazardous areas without a DAF permit.

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



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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 www.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.

Restricted invasive plant

Groundsel bush

Baccharis halimifolia



Groundsel bush rapidly colonises disturbed areas, especially overgrazed pastures. It competes with pasture species for water and nutrients. Groundsel bush spreads rapidly from windborne seed, making clearing groundsel bush from paddocks a very time-consuming and expensive task.

In native *Melaleuca* wetlands, groundsel bush can form a dense understorey, suppressing growth of native sedges and interfering with the natural ecosystem.

Groundsel bush can become abundant in the vegetation along watercourses and in coastal woodlands and forest areas if not controlled.

The wind-dispersed seed can be a nuisance in urban areas where it sticks to insect screens and germinates in home gardens. Urban problems include potential allergies caused by airborne pollen and seed ‘fluff’.

Legal requirements

Groundsel bush is a restricted invasive plant under the *Biosecurity Act 2014*. It must not be given away, sold, or released into the environment without a permit. The Act requires everyone to take all reasonable and practical steps to minimise the risks associated with invasive plants and animals under their control. This is called a general biosecurity obligation (GBO). This fact sheet gives examples of how you can meet your GBO.

At a local level, each local government must have a biosecurity plan that covers invasive plants and animals in its area. This plan may include actions to be taken on certain species. Some of these actions may be required under local laws. Contact your local government for more information.

Description

Groundsel bush is a densely branched shrub usually no more than 3 m high. Stems are green, maturing to brown and woody. Bark of mature plants is deeply fissured. Leaves are dull green, alternate, wedge shaped, 2.5–5 cm long and 1–2.5 cm wide, with a few lobes in the upper part. It has a deep branching taproot with numerous fibrous laterals in the upper soil.

Male and female flowers are borne on separate plants. Male flowers are pale yellow and open around mid to late March, slightly earlier than the female flowers. Female flowers are white and inconspicuous at the end of branches until seeds are fully developed.

Life cycle

Female plants flower around late March to early April and once pollinated develop a fluffy appearance, with tufts of white hair that begin to blow the fluffy seeds in the breeze from mid to late April. Most germination occurs in the autumn/winter period.

Plants normally do not flower in the first year of growth. Plants that are 2 m tall can produce from 500 000 to a million seeds.

Seeds from mature plants drift in the breeze like thistle seeds, most falling within a few metres of the parent bush. Wind updrafts can carry seeds many kilometres.

Seeds germinate readily with rainfall; however, if they become buried they can remain dormant for several years.

Methods of spread

Seeds are readily transported by wind, running water, vehicles and machinery. Soil disturbance in infested areas usually leads to substantial germination. Further infestation occurs unless the ground is sown to pasture or other competitive ground cover.

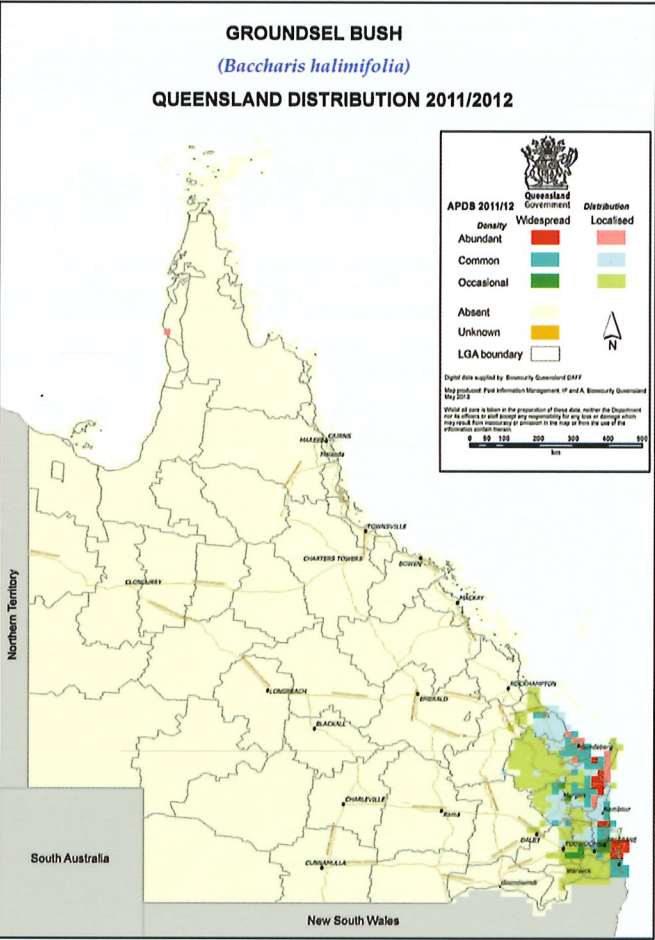
Habitat and distribution

Groundsel bush is a native of Florida (United States) and coastal areas adjacent to the eastern side of the Gulf of Mexico.

It was introduced into the Brisbane region as an ornamental plant in 1900 and has spread along the coastal areas of south-east Queensland (north to Miriam Vale) and down the New South Wales coast. Scattered plants have occurred as far west as the Chinchilla region.

Groundsel bush is a rapid coloniser of cleared, unused land and is particularly suited to moist gullies, salt marsh areas and wetlands. It also does well on high, cleared slopes.

Map 1. Distribution of groundsel bush in Queensland



Control

Managing groundsel bush

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

Pasture management

In grazing situations, good pasture management will greatly reduce groundsel bush invasions. Slashing, timely use of fertiliser and management of stocking rates can assist in control by maintaining a healthy pasture. Good pastures provide competition to limit re-invasion of groundsel bushes. Consult pasture agronomists on the best options for your property.

For tall, dense infestations, burning can reduce the amount of above-ground material (and even kill the odd plant) making it a lot easier to spray regrowth. Annual burning does not reduce existing plant numbers, but allows grasses to establish more quickly and out-compete groundsel bush seedlings.

Regular slashing over a period of several years will result in a decreased level of infestation. In non-grazing situations, reforestation will eventually assist in control of groundsel bush. However, it is important to ensure that seed production is prevented while trees are establishing.

Mechanical control

Hand-pull small plants. Dig larger plants out or cut them off more than 10 cm below ground level.

As groundsel bush is a perennial woody plant with underground growing buds, slashing or burning will rarely kill plants and such action will generally result in regrowth occurring. Therefore the regrowth will need to be promptly controlled.

Biological control

Since the biological control program began for groundsel bush in 1967, over 35 different insects have been tested but only six have become permanently established in the field:

1. Stem borer (*Megacyllene mellyi*)
This beetle is restricted to areas adjacent to salt marshes where the sap flow in the host plant is lower. Newly hatched larvae are drowned by the heavier sap flow in plants growing in non-saline soils. Dense populations of this insect can reduce groundsel bush infestations in suitable habitats.
2. Plume moth (*Oidaematophorus balanotes*)
This insect is present in all areas. Damage is caused by larvae tunnelling in the stems and varies from severe dieback to death of individual branches. Populations of the moth appear to be restricted by ant predation on the eggs and young larvae. This in turn restricts plant damage.
3. Gall-fly (*Rhopalomyia californica*)
The larvae of this mosquito-like fly feed within development shoots and buds. Initially this insect caused heavy damage when it was released. However, soon after its release it was attacked by a small native wasp that drastically reduced gall numbers. Galls can always be found in low numbers, but occasionally higher numbers are found in patches. Overall damage to the plant is minimal.
4. Groundsel bush leaf beetle (*Trirhabda baccharidis*)
This beetle is restricted to similar habitats to the stem borer, where the larvae can form suitable cocoons and pupate in the soil. Plants will be totally defoliated in autumn, but can recover and are in full leaf next

spring. In some years larvae severely damage the buds and flowers.

5. Leaf skeletoniser (*Aristotelia ivae*)
The larvae of this moth eat the soft leaf tissue leaving the skeletal woody veins. Though widespread, populations do not become large enough to cause significant damage. It is most commonly found in the spring on new leaves.
6. Leaf miner (*Buccalatrix iveila*)
The larvae of this small moth mine in the leaf blades and later skeletonise the leaves in a manner similar to *Aristotelia*. This insect is widespread within the range of groundsel bush and causes minor damage.

Research has seen a move away from insect biocontrol to plant disease biological control agents. Two diseases have been studied in Florida. Experimental field releases of the rust fungus *Puccinia evadens* from Florida commenced in 1998 and this pathogen is now established at several sites.

Groundsel bush rust (*Puccinia evadens*) acts as both a leaf and stem parasite, causing defoliation during summer and winter and stem dieback over summer. The infection process requires a moisture film on the leaf or stem surface. The dry spores are spread by wind.

The presence of these biocontrol agents does not relieve landholders from their responsibility under Queensland legislation to manage the biosecurity risks associated with this invasive plant.

Herbicide control

Before using any herbicide, always read the label carefully. All herbicides must be applied strictly in accordance with the directions on the label. Table 1 details the herbicides for groundsel bush control.

Further information

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

