



Parkinsonia

Jerusalem thorn or jelly bean tree
Parkinsonia aculeate

DECLARED CLASS 2



Description

A hairless shrub or small tree, rarely to 10 m high. Slender green photosynthetic zig-zag branches armed with sharp spines. Leaves with a short, spine-tipped stalk, leaf branches 20-40 cm long, flattened with small, oblong leaflets along each edge. Flowers

yellow, fragrant, five petalled, each on a long, slender drooping stalk. Seeds oval, hard, about 15 mm long, borne in pencil-like pods 5-10 cm long, constricted between the seeds.

The problem

Parkinsonia can form dense, and often impenetrable, thorny thickets along watercourses and bore drains. This restricts access of stock to drinking water and can make mustering virtually impossible. The ability of seeds to float means flooded country is particularly susceptible to invasion by parkinsonia. Some infestations in the Gulf of Carpentaria Region and Fitzroy catchment are now up to several kilometres across. Such infestations provide a harbour for feral pigs, which can predate on livestock, damage crops, and seriously degrade the environment.

Parkinsonia has been recognized as a Weed of National Significance.

Life cycle

Parkinsonia is fast growing and may flower in early summer of its second or third year of growth. Once established, flowering can occur opportunistically to exploit variable seasonal conditions. Pods mature in late summer, float on water and are hence readily dispersed by flood waters. Seeds have a thick and extremely hard coat and so remain viable for many years to allow germination under favourable conditions. Seeds require wet soil conditions for several days to induce germination.

Habitat and distribution

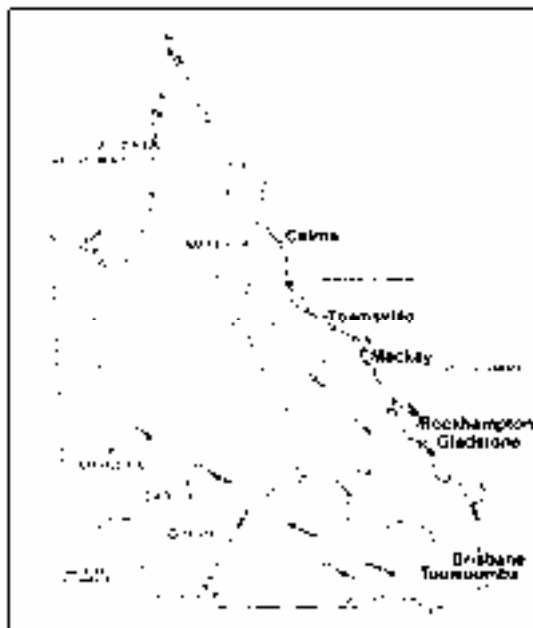
Parkinsonia is thought to be native to tropical America but has spread throughout the world as an ornamental and shade tree.

As parkinsonia is adapted to an extremely wide range of soil types, there is little doubt that it will continue to spread through watercourses and adjoining areas throughout the sub-humid and semi-arid environments of Queensland. The most vulnerable areas would appear to be the Gulf Region, Channel Country and downstream into the Lake Eyre catchment.

Declaration details

Parkinsonia weed is a declared plant under *Land Protection (Pest and Stock Route Management) Act 2002*. Declaration requires landholders to control declared pests on the land and waters under their control. A Local Government may serve a notice upon a landholder requiring control of declared pests.

FIGURE 1 – DECLARATION MAP SHOWING SHIRE AND CATCHMENT BOUNDARIES



Control

Biological control

Three species of insects have been introduced into Australia as biological control agents against parkinsonia. These are:

Parkinsonia seed beetles *Pentobruchus germani* and *Mimosetes ulkei*.

Both *Pentobruchus germani* and *Mimosetes ulkei* are seed beetles which attack only parkinsonia and whose larvae destroy mature parkinsonia seeds.

Pentobruchus females lay eggs singly on the outside surfaces of pods and can lay up to 350 eggs each. Female *Mimosetes* beetles lay clusters of eggs in cracks and holes in the pods. Larvae of both species tunnel into seeds after hatching. After entering a seed, each larva spends its entire development period in the same seed and pupates in the seed. Usually only one larva survives in each seed. By the time a larva pupates before changing to a beetle, it has eaten all the living contents of the seed and the seed will not germinate. Each new *Pentobruchus* beetle emerges through a hole in one end of the seed and a hole in the side of the pod. Each new *Mimosetes* beetle emerges through a hole in the side of the seed and a hole in the side of the pod. Individual beetles of both species can live for up to 2 months but more typically they live for about 5 weeks. The life cycles of both species range from about 5 weeks in the hot months of the year to about 12 weeks in the winter.

Penthobruchus germaini is a small (about 5 mm 6 mm long) brown beetle from Argentina. It was first released in 1995 and has established much more readily than *Mimosestes*. It has established readily at all release sites and spreads rapidly.

Penthobruchus exerts heavy pressure on parkinsonia seed banks and research has demonstrated up to 95% of seed destroyed at some sites. *Penthobruchus* may become a very important tool in the integrated management of this weed. In the field its presence is indicated by white eggs against the darker background of the pods. Round holes in the pods indicate that beetles have emerged.

Mimosestes ulkei is a small (about 5 mm long) two-tone grey beetle. It was imported from the USA and was first released in 1993. While it is established at several sites, it does not establish as readily as *Penthobruchus*. It promises to contribute to the destruction of parkinsonia seeds. In the field, round emergence holes are the only external indication of its presence.

Parkinsonia leaf bug *Rhinacloa callicrates*

Rhinacloa callicrates is a small green bug (about 3 mm long). It was imported from the USA and was first released in 1989. It feeds on leaves and shoots of parkinsonia. This results in tiny round white spots where it destroys photosynthetic tissue. It is well established in Queensland but it has no significant impact on parkinsonia.

Mechanical control

Initial clearing by stick raking, blade ploughing or ripping is effective, however:

- it is restricted to reasonably level areas away from watercourses;
- clearing will hasten seed germination, necessitating follow up control either mechanically or chemically.

Establishing improved pasture will aid in managing parkinsonia by competition.

Fire

Fire will destroy seedlings if sufficient fuel load is present, but mature plants will usually survive.

Herbicide control

Herbicides registered for the control of parkinsonia are listed in Table 1.

Aerial application

Aerial application is undertaken by purpose built applications by helicopter. Useful for dense, strategic infestations although it may be cost prohibitive on a broad scale.

Foliar (overall) spray

This is a very effective control method for control of seedlings up to 1.5 m tall. Spray leaf and stems to point of runoff. A wetting agent must be used.

Basal bark spray

For stems up to 15 cm diameter, carefully spray completely around base of plant to a height of 30 cm above ground level. Larger trees may be controlled by spraying to a greater height, up to 100 cm above ground level.

Plants should be actively growing and preferably flowering. Field experience has shown that good soil moisture is essential for effective control.

Because parkinsonia infested areas are often subject to flooding, care is needed to ensure mud and flood debris does not prevent spray penetration to the bark. The trunk may need to be cleared before spraying. Addition of petrol or A-1 jet fuel will aid penetration.

Cut stump treatment

May be performed at any time of year. Cut stems off horizontally as close to the ground as possible.

Immediately (within 15 seconds) swab or spray the cut surface and associated stem with herbicide mixture.

Soil application

Use one dose of herbicide per metre of tree height. Place doses close to tree trunk, either with spot gun on clear bare ground, or underground with ground injector. Rain or sufficient soil moisture is required before herbicide is taken up by plant.

Do not use near watercourses or within a distance equal to at least twice the height of desirable trees.

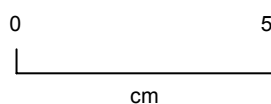
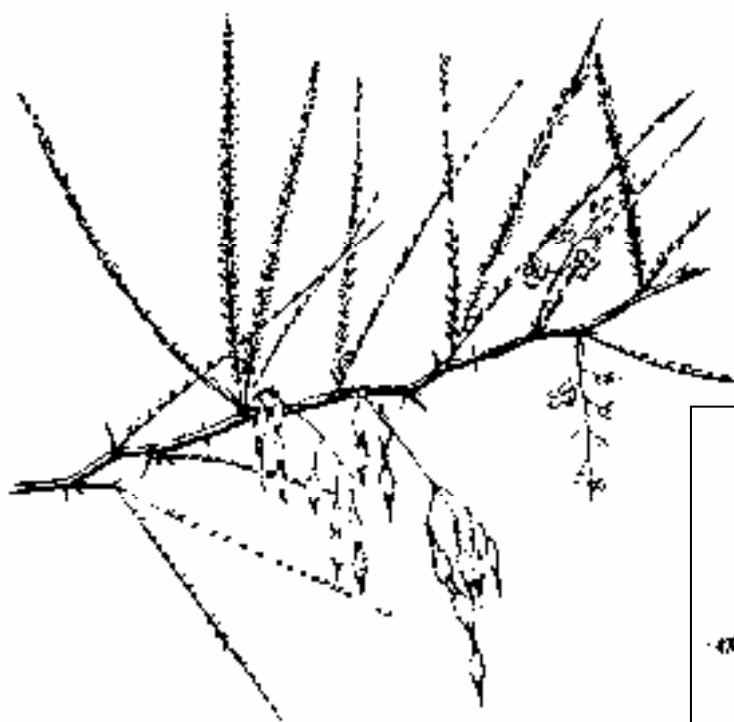
Further information

Further information is available from the vegetation management/weed control/environmental staff at your local government.

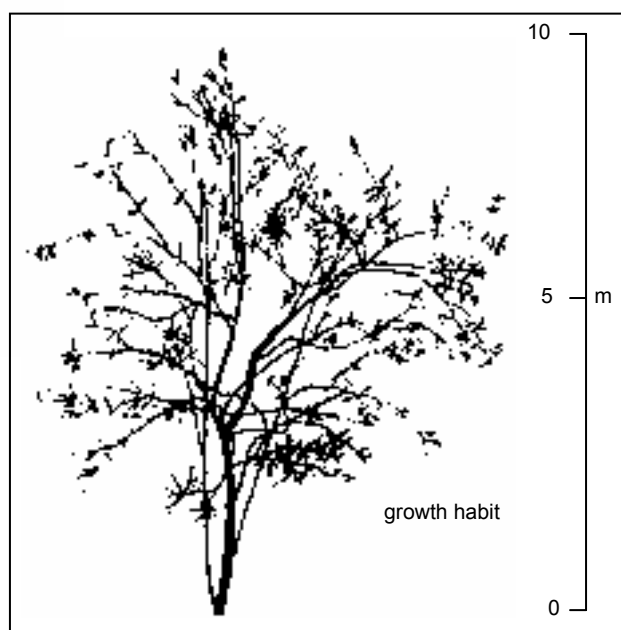


TABLE 1 – HERBICIDES REGISTERED FOR THE CONTROL OF PARKINSONIA

Situation	Herbicide	Rate	Optimum stage and time	Comments
Aerial application	Grazon DS®/picloram and triclopyr	3 L/ha	Seedlings 1–2 m tall, or 12–24 months old	Application by helicopter only. Addition of 1 L/ha of Uptake® wetting agent
	Reclaim®/hexazinone	1 kg/ha	Trees up to 3 m tall	Apply early in wet season, after initial rains but before inundation
Foliar (overall spray)	Grazon DS®/picloram and triclopyr	0.35 L/100 L water	Seedlings less than 2 m tall and actively growing	Wet plant thoroughly. Use wetting agent
Basal bark spray	Access®/triclopyr and picloram	1 L/60 L diesel	As above. Stems up to 5 cm diameter	Do not treat wet stems
Cut stump	Access®/triclopyr and picloram	1 L/60 L diesel	Any time of year	Cut close to ground level and treat immediately
Soil application	Velpar L®/hexazinone (via spotgun)	4 ml per spot – 1 spot for each shrub/tree	Any time, but needs moisture to activate chemical	Shrubs/trees up to 5 m tall
	Graslan®/tebuthiuron	1 to 1.5 g/m ²	Any time, but needs moisture to activate chemical	Refer to label for critical comments



branch, leaves, spikes and flowers



growth habit

Fact sheets are available from NRW service centres and the NRW Information Centre phone (07 3237 1435). Check our web site <www.nrw.qld.gov.au> to ensure you have the latest version of this fact sheet. The control methods referred to in this Pest Fact 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 utilisation 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, the Department of Natural Resources and Water does not invite reliance upon it, nor accept responsibility for any loss or damage caused by actions based on it.