

How to prepare a parkinsonia control program in the Pilbara

Parkinsonia is a declared plant in Western Australia and classified as one of twenty Weeds of National Significance (WoNS). State legislation exists around the expected management of parkinsonia, and is administered by the Department of Agriculture and Food WA. In the Pilbara, parkinsonia is declared as follows:

- P1: Introduction of the plant into, or movement of the plant within, an area is prohibited
- P2: Plant to be eradicated in the area

Unique biology of parkinsonia

Parkinsonia is quick to mature, with the first seeds produced within two years of the plants life. Once matured, adults become prolific seeders with the ability to produce several kilograms of pods and thousands of viable seeds annually.

Plants generally set flower in the spring, pods appear at the start of summer and seed drop occurs in late summer. Seedpods generally fall under the canopy of the adult plant, where they can remain viable in the soil for a number of years. Some germination under these circumstances will occur, however it's once the adult plant is removed/killed that prolific seedling germination will be observed and hundreds of seedlings will establish.

The dispersal of parkinsonia away from standing populations occurs primarily through the movement of water, as seedpods easily float. Some limited dispersal will occur via animal ingestion and excretion. Populations will generally grow directly adjacent to watercourses and high numbers of seedlings are expected on the 'high tide mark' from floodwaters.

Steps for developing a parkinsonia control program

1. Define the problem and prioritise the problem areas

The first step is to collect all available GIS data, map it in conjunction with pastoral and tenement boundaries and natural and manmade features. This can assist with prioritising areas for initial treatment.

Parkinsonia is primarily dispersed by water, so the sources of infestations are those plants most upstream in a catchment. The sink is where these seeds end up, generally on the neighbouring station or the ocean. The source of the problem must be treated first, with progress made towards the sink of the infestation.

Conducting parkinsonia management in the middle of an infestation is also important if your upstream neighbours are the source of your problem. In removing the adult plants from your own area, you reduce the number of seeds produced and distributed further into your station/tenement. Whilst you may still be getting reinfested from upstream, at least you are stopping your own population from getting thicker or denser.

2. Determine control options

In almost all circumstances in the Pilbara, chemical control is the best option. It is a targeted application and does not cause adverse environmental impacts on soil or surrounding vegetation.

Two techniques are used across the Pilbara, with basal barking the primary method and cut-stump the secondary method.

- 1.1. Basal barking – dilute a registered herbicide with diesel, and apply at low volume to the trunk of target plants. The skills required to basal bark plants are not high, however vigilance is needed to ensure enough chemical is being put on plants to kill that sized tree. The diesel acts as a transfer agent, sticking the herbicide to the trunk of the tree from where it is rapidly absorbed. Death is generally seen within 3 weeks of treatment.
- 1.2. Cut stumping – cut down the target plant close to the ground, and paint the exposed stem immediately with a diluted herbicide mix. The number of people and equipment required are greater than with basal barking, as crews work in pairs with one needing experience operating a chainsaw. This method is usually restricted for use on very large plants or in areas where access is only by foot and large quantities of herbicide and diesel mix cannot be carried.

Fire can be used as a secondary tool to thin out dense populations of small plants or to sterilise any surface seed bank present, however care must be taken on secondary impacts to the surrounding landscape. Mechanical control is not generally used due to the fragile environment we encounter parkinsonia growing.

3. Budget in costs

The following cost items may need to be factored into budgets when developing a parkinsonia control program:

- Labour – contractors or staff
- Herbicide – Garlon 600® or Access®
- Diesel – to mix with herbicide (rate 1:60 of herbicide:diesel)
- Spraying units – Volpi 8 lt hand sprayers/Swissmex 15 lt backpack sprayers
- Vehicles
- Accommodation/meals – provided at established camp or camping out
- GPS equipment

The total cost of a program will vary according to those items which need to be purchased, the number of man days required to cover a defined area and the density of plants controlled within this area.

Generally, herbicide and hand spraying units can be supplied for control programs occurring on pastoral station leases through the Pilbara Mesquite Management Committee or the Pilbara Regional Biosecurity Group.

4. Schedule time for program to be undertaken

Programs are generally conducted between April and October as plants are actively growing (uptake of herbicide will be maximised), and outside conditions are optimal for people to be working in the field.

Parkinsonia acts as a nursery plant – the adult plant protects and restricts the seed bank from germinating until conditions are optimal. This usually occurs when the parent plant is removed/killed in year 1 of a program, and the seeds gain full access to available moisture and sunlight. During the second year of a program, areas previously treated will always yield more parkinsonia as seedlings germinate, sometimes creating a false perception that a

program has failed. However, that is the nature of parkinsonia and after two treatments seed banks should almost be depleted.

We recommend that weed control is undertaken in defined areas at a maximum every 2 years. This period of time allows seeds to germinate but not reach reproductive maturity before they are treated.

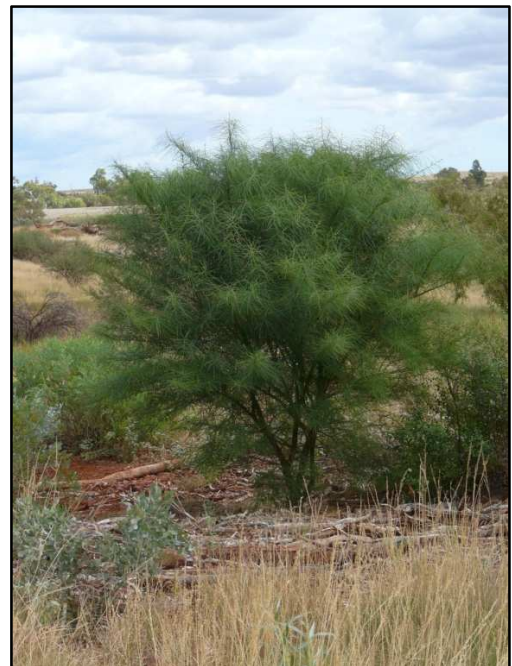
5. Monitor progress

It is imperative that consistent data is collected on the areas treated and the location and number of plants controlled. We recommend using GPS's or GPS's linked to multichannel dataloggers, depending on the skill of people conducting the work. Data should be mapped on similar maps used in planning exercises in step 1.

There are generally three types of monitoring used to evaluate weed control programs – photographic to detect immediate change, transect to detect change over the medium term and aerial survey or aerial photography to detect change over the long term.

6. Undertake follow-up

Specific areas infested with weeds must be revisited at a maximum every 2 years, and regrowth treated.



Above: parkinsonia flowers

Above right: mature parkinsonia

Left: basal barking parkinsonia