

How to attack *Mimosa pigra* on a grand scale

The successful *Mimosa pigra* control program on Melaleuca Station in the Northern Territory is the result of a practical, reasoned and planned approach to tackling a large-scale infestation. The lessons learnt over the past five to six years provide valuable insights in the way both large and smaller-scale infestations of mimosa and other damaging weeds can be tackled.



Mimosa pigra growing wild. By 1993 the weed covered 10,000 ha of Melaleuca's floodplain

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Melaleuca Station lies in the Mary River catchment approximately 100 km east of Darwin in the Northern Territory. It experiences a monsoonal climate with an average annual rainfall between 1300 and 1600 mm. The station was subdivided from Point Stuart Station in the early 1980s to form a 300 km² property used for the purpose of domesticated buffalo production. Three other such 'buffalo blocks' were formed at the same time.

History of the *Mimosa pigra* invasion

In the early 1980s mimosa was already established on the property. It was a very small infestation and control only took two men two days. However, by 1993, the mimosa had spread to cover 10,000 ha of the flood plain. This was a very large infestation and meant that almost 33 per cent of the property was not available for production. At this time, the property changed hands and a mimosa control program began.

The Sampan Project saw the Northern Territory Government take initiatives under the *Noxious Weeds Act* to control mimosa on navigable channels of the lower Mary River. On Melaleuca, 2000 ha in the Red Lily 1 paddock were cleared of mimosa.

The decision to act

In 1995 a new manager was faced with a restricted carrying capacity on the flood plain. Mimosa still covered 8000 ha, and the 2000 ha cleared by the government program were in need of continuing maintenance to keep them mimosa-free. It was decided to tackle the problem in a systematic and planned way, building on the good work already started. A proposed five-year control plan including a detailed budget was put to the

directors of the company that owned Melaleuca in 1995. The proposal was accepted and the program started in 1996. As of November 2000, the 2000 ha originally cleared as part of the Sampan Project remains free of mimosa and is back in production. Another 3000 ha are under various stages of treatment, of which 2000 ha are used for dry-season cattle production at a capacity of one beast to every two hectares (1:2 ha).

Mimosa control program

The aim of the mimosa control program is to:

- Maintain the 2000 ha area that has already been cleared of mimosa in Red Lily 1 and return it to production.
- Clear the country closer to the homestead and work downstream along a line in 1000 ha blocks. The line was selected early in the program and stretched from Red Lily 1 to Rumby and Ackerie Plains, and covered a further 3000 ha on top of that already cleared.
- Clean up these areas and have all 5000 ha back into production in five years.

The program is based on a year-by-year approach.

Year 1

A 1000 ha area of old-growth mimosa is selected and in December a 100 metre perimeter around the area is sprayed.

Year 2

The perimeter is chained, stick raked and burnt. In October the whole 1000 ha area is burnt inwards from the perimeter. This has the effect of opening the country



up and saves on one year of spraying. Floodwaters then control the regrowth through the suppression of any seedlings that germinate after burning.

Year 3

The whole area is chained in July, or when the floodwaters recede and machinery can gain access. The first bulk spray over the whole area to control regrowth takes place in December. This is done meticulously using a run-by-run approach from fence line to fence line so that no plants are missed.

Year 4

The area is now classed as 'clean country' and is stick raked and bulk sprayed once again. Grasses are planted in around May. Particular attention is paid to water-courses so that seed can be spread through water movement in the wet. Species planted depends on what is available as seed or runners. Choice of species is a critical factor in ensuring that the area is revegetated, thus becoming productive once more.

Year 5

Treatment is similar to Year 4. Another bulk spray may be done if required and perhaps another stick rake, if the season permits.

Year 6

The area is grazed lightly for a short period and attention is paid to any regrowth areas. The country is now essentially clear of mimosa.

Progress: maintaining the pressure

Some unforeseen problems have been encountered throughout the program. As water runs both ways on the flood plain, mimosa seeds can be moved in two directions. Control of regrowth therefore takes more time than originally envisaged.

As more country is cleared, the effort required to maintain these areas also increases. Time, effort and resources are then not available to clear more old-growth areas.

The fifth year of the program is largely on schedule. The last 1000 ha on Rumby Plain were burnt in late October 1999. The 2000 ha in Red Lily 1 are being grazed and the other 2000 ha on Ackerie and Rumby Plains are now in the maintenance program

The program aimed to have an additional 1000 ha start the process in 1996, however, this did not end up being feasible. 2000 ha went into Year 3 of the program as outlined above, and additional areas were cleared in 1997, 1998 and 1999 to bring up the total to 5000 ha under treatment at the present time. Thus the program has slipped a year or so from the original targets, however, the full importance of maintaining the pressure on the cleared areas has become well reinforced.

Chemical control

Spraying efficiency in the mimosa control program has improved through experience. Application rates, spraying conditions and delivery of chemicals have been modified over time.

Application rates

The following chemicals and application rates are used for the mimosa control program on Melaleuca:

Task	Chemical	Rates
Burning	Napalm	label rate
Bulk spraying	Brush-off	50% label rate (see below)
Spot spraying	Star Rain	label rate

Given that recommended chemical rates are for old-growth mimosa, trials have been run in conjunction with chemical companies to determine the rates needed for mimosa regrowth. These indicated that regrowth can be killed effectively at 50% of the label rate.

Spraying conditions

Air and ground conditions have to be right for an effective kill. Spraying must be done on the right day, at the right time and in the right conditions. In particular:

- the temperature should not be over 35°C; and
- spraying should not be done in the late afternoon when the leaves have curled up.

Delivery

The type and/or location of spraying determine which helicopter is used. Three helicopters are used for spot spraying; spraying within close range of the watering/loading point (that is, within a ten minute reload cycle); and spraying where a higher capacity and range is required.

Revegetation

The type of pasture species used for revegetation after clearing of mimosa depends on the seed and/or runners that are available. Olive hymenachne (*Hymenachne amplexicaulis*), para grass (*Brachiaria mutica*) and aleman (german) grass (*Echinochloa polystachya*) are the preferred species.

Some native species have been used and trials are underway to further investigate their use.

Financial considerations

The mimosa control program is working to a strict budget that was set over five years ago. Slowing of the program occurred as the cost of controlling larger areas of regrowth overtook the cost of the initial kill. Experience and increasing efficiency, however, enabled the last 1000 ha of old-growth on Rumby Plain to be tackled in 1999/2000.

Future of *Mimosa pigra* control

Over the next five years, the mimosa control program will focus on maintaining the control achieved in the

Principles of woody weed control

Principles of *Mimosa pigra* and woody weed control that have emerged from the program at Melaleuca are:

- Don't clear more than you can manage in the subsequent years of the program
- Operate within your budget of finance, labour and resources
- Effective spraying means paying attention to the conditions
- Be set for the long haul and have ways to measure progress
- Use the natural environment to help. Floods can kill regrowth and spread grass seed.
- Time the program to use the season to best effect. December, October and July are critical times.
- Modify the options to suit your local environment.

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first five years and reducing the need to spend time and money on regrowth. Another 5000 ha of old-growth mimosa will then be tackled in the subsequent five years. Step-by-step progress will be measured each year.

Conclusion

A successful mimosa control program at Melaleuca Station is the result of a practical, planned and reasoned approach, which began in 1996. A year-by-year program of spraying, burning, revegetation and thorough follow-up has been used. Over this time a number of principles for large-scale mimosa control were developed and can be applied to the management of other damaging infestations.

Acknowledgments

The NT Department of Primary Industry and Fisheries started mimosa control in the Mary River district in 1993–94 as a result of government policy. This proved to be the basis of a successful program on Melaleuca Station. The Mimosa pigra subsidy scheme provided the resources to keep the program moving forward. Without this, the program would have been much smaller. The directors of Melaleuca have also shown a great deal of faith in the program and allowing it to continue with little in the way of economic return to date.

Also see the information sheet on this CD: *Native species for revegetation*

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