



Section 4

Decision Support Tool

The Decision Support Tool	76
Information on key variables	76
The key variables: access, density and size	77
Access	77
Density	78
Size of infestation	79
Incorporating fire and biocontrol into your management plans	79



The Decision Support Tool **Information on key variables**

The Lantana Decision Support Tool is a computer-based system to help guide land managers through the complex task of integrating control techniques to provide an efficient and cost-effective solution to their lantana management problems.

Information for the development of this tool was drawn from 3 years of adaptive management field trials at 11 sites throughout the distribution of lantana in Australia.

- 1 The land manager is required to answer a series of questions concerning the key variables as they relate to the targeted management site. These variables include:
 - access to infestation
 - density of infestation
 - size of infestation.

Guiding definitions, including pictorial representations, are provided as part of the tool to ensure accurate information is provided.

- 2 The answers to these questions lead the land manager to a selection of available management sequences and information on how to implement them. This will include information on:
 - the estimated time per area required to undertake the management action
 - the estimated cost incurred per area
 - the expected efficacy of controls
 - the overall timeline to achieve control and/or implement the sequence
 - limitations and suitability of the techniques used.

From this information, the land manager can determine which control sequence is most appropriate to their situation on the basis of expected management outcomes, available equipment, labour requirement and funding and the time restrictions for completion of the control activity.

Support information is provided in the associated sections of this *Lantana Best Practice Manual* and should be read prior to undertaking management activities.

In order to get the best from the Decision Support Tool you will need to have completed a Property Pest Management Plan (or a Site-Specific Management Plan under the Plan to Protect Environmental Assets from Lantana), part of which involves mapping areas of lantana on your property (for further information refer to Section 2 on Property Pest Management Planning). Once mapped, you will need to assess each lantana infestation area separately to provide information on the key variables that drive the Decision Support Tool.

Please answer the following questions:

- What are the land management outcomes required (i.e. production or conservation management)? (Please note, conservation goals can be identified for selected areas of a primary production property).
- What is the area of the selected management site?
- What is the density of lantana at this site?
- How accessible is the site and the lantana you have chosen to manage?

The key variables: access, density and size

To simplify the Decision Support Tool while maintaining its value, several key variables were chosen to guide landholders to potential control sequences. These variables (defined below) influence the type of management options available, the cost of control and the likelihood of successful lantana management.

Access

Access to infestations will greatly affect the types of control available. Access can be influenced by the localised terrain at the site of the infestation and by the ability to transport vehicles or equipment to the site. In addition, there may be an increased danger during mechanical controls if there is limited knowledge of what lies underneath dense lantana infestations (e.g. rocks or gullies). All three elements should be considered in your assessment of access.

For the purpose of the Decision Support Tool, access to an infestation is categorised as:

- a. *easy*—can easily transport personnel and machinery to the lantana and operate the machinery on site (e.g. open paddock, flat, no obstacles to transverse on way to site)
- b. *moderate*—can easily transport personnel but only limited machinery to the lantana (e.g. open woodland over a creek)
- c. *difficult*—can transport personnel but not machinery to control the infestation (e.g. forested slope, river, considerable obstacles to transverse on way to site).

Table 7: Access to an infestation

Machinery/personnel	Access category		
	Easy	Moderate	Difficult
On foot	Yes	Yes	Yes
Trail bike	Yes	Yes	Yes
Quad bike	Yes	Yes	Yes
Conventional vehicle (with spray unit)	Yes	Yes	No
Bobcat	Yes	Yes	No
Small tractor, excavator or bulldozer	Yes	No	No
Large tractor, excavator or bulldozer	Yes	No	No



Density

Density can strongly influence the types of control methods recommended, mainly due to access of control options and the variable effectiveness of different control strategies for the management of high or low densities of lantana. In broad terms, density can be linked to control strategy thresholds (adapted from McNaught et al 2008):

- 1–15% cover—control by promoting competition and spot-spraying
- 15–50% cover—control by promoting competition, broadacre chemical control and some mechanical
- > 50% cover—requires broadacre treatment, pasture establishment and spot-spraying regrowth.

Density definitions and examples

For the purposes of the Decision Support Tool, the density of a lantana infestation is categorised as:

a. light density

- plants are sporadic with grass areas between them
- < 500 plants per hectare
- < 10% cover (WoNS mapping Class 3)⁴⁵
- usually less than 1 m high
- often composed of new seedlings and fresh regrowth
- access available to individual bushes.

b. medium density

- lantana forming clumps with some grass areas
- 500–2500 plants per hectare
- 10–50% cover (WoNS mapping Class 4)⁴⁵
- approximately 1–2 m high
- small to large bushes
- access diminished to vehicles but not to humans.

c. high density

- lantana is generally impenetrable without cutting access trails
- > 2500 plants per hectare
- usually > 2 m high
- ‘old man’ lantana common
- > 50% cover (WoNS mapping Class 5)⁴⁵
- access denied except through initial mechanical or fire treatments.



Size of infestation

The size of an infestation also has a significant impact on the type of control methods that are applicable. For instance, large scale equipment and/or aerial management options are unlikely to be available, or economically feasible, for use on a small infestation. Conversely, manual removal methods are uneconomical on a large scale. Significant saving on costs due to economy of scale principles can be achieved by tackling larger infestations and reducing the fixed costs of using equipment or contractors.

For the purposes of the Decision Support Tool, the size of a lantana infestation is categorised as:

- | | | | |
|----|------------------------|------------------------|---|
| a. | local infestation | i.e. < 0.25 ha in area | ~ small outbreak (50 m × 50 m) |
| b. | small infestation | i.e. 0.25–1 ha | ~ small section (up to 100 m × 100 m) |
| c. | medium infestation | i.e. 1–10 ha | ~ small/medium paddock (up to 1000 m × 100 m) |
| d. | large infestation | i.e. 10–25 ha | ~ large paddocks (up to 1000 m × 250 m) |
| e. | very large infestation | i.e. > 25 ha | ~ several paddocks (> 1000 m × 250 m) |

These categories have been determined as the cut-off points where different control strategies apply.

Now armed with this information you are ready to use the Lantana Decision Support Tool. Please see the accompanying CD at the back of this manual.

Incorporating fire and biocontrol into your management plans

Fire and biocontrol are not given as first options in the integrated management sequences provided by this Lantana Decision Support Tool as they are highly variable in both costs and results. This does not imply they are not useful integrated management options.

If you intend to use fire or biocontrol as a first management option, it is recommended you assess each patch and use this as your starting to point. Each patch can then be run thorough the Decision Support Tool to provide suggested sequences for managing your lantana from this point on.

