

Case study



Eradicating the core ... is it worth it?



Increasing production; enhancing biodiversity

Prickly Acacia is a significant direct and indirect cost to property budgets: not only do control costs increase, the longer it is left untreated, but mustering costs increase, and property carrying capacity falls. An independent analysis by Bush Agribusiness, for a property in the Desert Channels Queensland (DCQ) region, showed that when Prickly Acacia was untreated for six years, control costs increased by a factor of four. This analysis highlights that eradicating Prickly Acacia as soon as possible is the cheapest option. Insuring control work in done in the most cost effective way is basic economics.

DCQ's current program subsidises chemical and labour costs to treat the heaviest infestations, on the proviso that the landholder enters into an agreement to control prickly acacia in the surrounding areas.

For each property, DCQ develops a weed plan which identifies the most appropriate control techniques, tools and cost-effective strategies to be used.

The Plan is underpinned by two new regulatory instruments, both of which can only be used under a DCQ Weed Plan that authorises their use. The first of these is the DCQ Area Management Plan which authorises the application of root absorbed (residual) herbicides outside a line 30 metres from the drip line of mature trees, and on slopes less than 5%.

The second of these regulatory instruments is an Australian Pesticides and Veterinary Medicines Authority permit to apply residual herbicides in watercourses under strict protocols.

This means basal bark spraying in challenging areas such as watercourses is no longer the only technique that can be used. However, it does mean careful mapping is required to ensure the treatment technique is correct for the area, and that reporting is possible.

Watercourses are priorities under the DCQ weed plan. These are high public benefit areas as they are a seed source for reinfestation of treated areas, and for spreading downstream. Traditionally, heavy infestations in watercourses were often left untreated by landholders due to limited options, cost and workplace safety – only hand-applied liquid chemicals could be used (machines caused erosion), density made thorn injury likely, and uneven slopes presented physical challenges.

Now, with the use of residual chemicals under the two regulatory instruments outlined above, and a DCQ Weed Plan, cost-effective control of Prickly Acacia in watercourses is a reality. Additionally, because of the high public benefit, the DCQ weed program targets areas like these for subsidies.

The map below shows how DCQ lays out, before work commences, the obligations and project costings for themselves and the landholder. It shows the core and buffer zones DCQ is responsible for under the project, the areas the landholder is responsible for, and the sequence for each activity.



DCQ uses the Stocktake program to assess and classify land condition, which is mapped separately. Heavily infested core areas like those shown in the map above are generally land condition D, and can have a pasture biomass of less than 100 kilograms per hectare. Surrounding buffer areas vary from condition C to B, while paddocks are generally a mixture of condition A and B, with pasture biomass of greater than 2000 kilograms per hectare.

The Queensland Government suggests that improving land condition from D to A/B can lift carrying capacity by a factor of 10. The increased ground cover that delivers improved carrying capacity, leads to better soil condition; it also has the wider community benefit of improving biodiversity and water quality.

The DCQ program has deliberately increased the use of residual chemicals at the expense of liquid chemicals. Under the DCQ Weed Plan and its associated regulatory authorities, residual chemicals can now be used in most places including watercourses.

Residual chemicals are the increasingly preferred option due to the ongoing control of seedlings for up to three years, the reduction in treatment costs, and the reduction in workplace risks and chemical exposure risks.

With residual chemicals, the core areas (>1000 stems per hectare) are treated with 15 kilograms per hectare, but once densities drop below 1000 stems per hectare, the application rate changes to an amount per tree. This confines the blanket application to the smallest possible area and reduces chemical application by up to 40% against traditional application techniques.

While costs vary for each property, under the DCQ program, chemical costs are generally around \$60 per hectare for buffer areas and \$240 per hectare for core areas, with landholder costs of \$1 to \$12.50 per hectare depending on weed density and control technique used.

Comparison between liquid and residual herbicides.

Spraying by hand	Applying pellets by hand
<ul style="list-style-type: none"> ● most common technique ● basal bark with diesel and chemical ● very effective - results within 2 weeks ● slow and dirty ● average \$2.20 per tree ● re-treat for seedlings every year 	<ul style="list-style-type: none"> ● primary chemical used by DCQ for last 2 years ● slow results – rain activated ● 50% faster than spraying ● average \$0.18 per tree ● up to 3 years of seedling control

Chemical costs continue to fall as systems are refined, with the average treatment costs for the DCQ portion of the program halving in the past year, while landholder costs have remained steady – labour costs are not included. At Auteuil, the program treated area was 605 hectares of dense, core infestations in year 1, with the landholder treating an additional 4000 hectares of scattered infestations.

If full pasture recovery is achieved, it is estimated that the property’s carrying capacity will increase by a minimum two decks of cattle per year. This, coupled with significantly reduced annual chemical, mustering and general operating costs, represents a considerable profitability increase, and may also translate to a land value increase.

While DCQ’s program is built on research, development and innovation, traditional techniques are still used where they are the most appropriate and cost-effective. These include strategic fencing and stock weed hygiene, which are relatively cheap but critical, for achieving success.

To monitor the effectiveness of the program and its production and environmental outcomes, DCQ establishes monitoring sites on all participating properties.

The DCQ Weed Program is a framework for success: treating core infestations; putting a buffer around the treatment area; working sequentially to clean the paddock; and keeping it clean. It is underpinned by research, development, innovation and regulatory instruments that enable action cost-effective.