RESTORING PRODUCTIVITY THROUGH PRECISION WEED CONTROL

Targeting Prickly acacia and Chinee apple using drone and basal barking methods

NQ DRY TROPICS

PROJECT OVERVIEW

The problem

This trial was established to find effective ways to manage invasive woody weeds such as Prickly acacia and Chinee apple, which pose a serious threat to northern grazing landscapes.

These aggressive weeds:

- Outcompete native vegetation.
- Degrade riparian zones.
- Provide shelter for feral pests like pigs and deer.
- Suppress ground cover, reducing grazing productivity.

Left unmanaged, dense infestations choke out productive land and act as major seed banks, continually spreading seed across the landscape. This results in the reinfestation of surrounding paddocks and invasion of previously weed-free areas.

By targeting these dense infestations directly, the project aimed to tackle the core of the problem — removing the primary source of weed pressure to allow native vegetation to regenerate and the landscape to begin recovering.

Filling drone for treatment.

About the Herbicide: Method® 240SL

This trial tested the effectiveness of Method® 240SL, a new herbicide recently introduced to the Australian market, for controlling dense infestations of woody weeds in Northern Queensland.

The trial explored a range of application techniques, such as basal bark treatments near waterways, to assess effectiveness while minimising environmental impacts. It also aimed to identify optimal application rates for different weed species.

It offers several advantages:

- Lower use rates compared to existing herbicides.
- Strong residual control and high effectiveness.
- Multiple application options including broadcast, foliar spot spraying, basal bark, trunk injection, and cut stump methods.

The trial contributes to ongoing research across Queensland to improve woody weed management in challenging environments.

This trial is an experiment using an off-label application method via drone. Work is currently underway to obtain APVMA approval for drone applications. Always follow label instructions when using Method.

Basal barking treatment.

Project sites in the Bowen Broken Bogie (BBB) catchment:

- **Strathmore Station** – Prickly acacia and Rubbervine
- **Sonoma Station** – Chinee apple and Lantana

Trial techniques:

- Drone broadcast spray
- Basal barking
- Backpack mister with combination of Method + Metsulfuron herbicide.

Timeframe:

Established in 2023 - Follow-up treatments ongoing

TRIAL SITES AND TREATMENTS

Site 1: Strathmore

(Drone application – Prickly acacia)

Treatment 1 (June 2023)

- Rate: 2.5L/100L Method + 1% Hasten
- Application: Drone @ 7-9 m/s

Results:

- ✓ ~98% canopy kill within 5 weeks
- ✓ Surviving plants where spray was missed showed: Burnt and deformed shoot tips by August — clear signs of chemical translocation.
- ✓ The drone spray penetrated the canopy and reached all the way to the ground layer, taking out seedlings.
- ✗ High recruitment of Prickly acacia seedlings and Rubbervine observed.
- ✗ Rubbervine survived treatment.
- ✗ Application speed didn't allow for sufficient chemical volume and canopy penetration of mature plants.

Treatment 2 (January 2025)

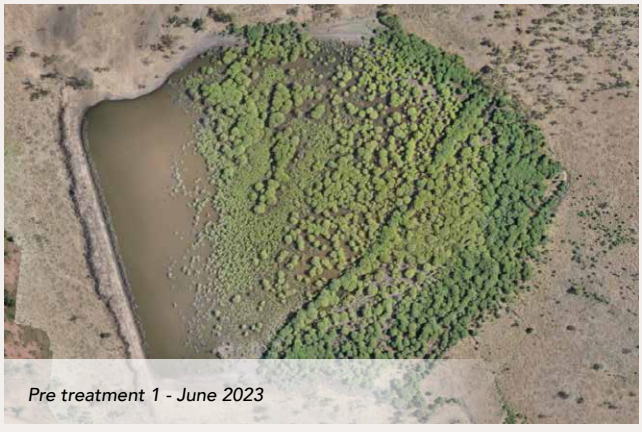
The aim was to apply 2.5L Method for every hectare of target canopy cover.

- Split application rates:
  - Most of the site: 2.5L/100L Method + 1% Hasten.
  - Western edge (low-rate): 1L/100L Method + 1% Hasten.

Results:

- ✓ The high rate proved more effective.
- ✓ The drone was flown at 1-1.5 metres p/s to increase application volume, chemical rate and droplet size remained the same. A rate of 2.5L per 100L proved effective, against mature trees.
- ✓ The low rate was effective at killing regrowth, however more mature trees survived and re-sprouted.

Note: Speed specific to T15 Drone used during the trial.



Pre treatment 1 - June 2023

Post treatment 1 - March 2025

Canopy kill results

Drone imagery shows significant canopy kill. Surviving plants showed visible signs of stress.

Treatment 2 low-rate application

Low-rate application achieved effective kill of seedling regrowth.

Pioneer species return

Pioneer species like Angleton grass, Jutes, and Armgrass began to recolonise treated areas.

GROUND COVER CHANGE

Vegetation assessments (VegCATs) were collected at the time of the first treatment in June 2023 and again 10 months later in April 2024, following one wet season. This provided a clear before-and-after snapshot of ground cover changes across the trial site.

Cover Type	Surrounding Paddock	Pre-Treatment (Trial Site)	Post-Treatment (Trial Site)
Native perennials	26%	3%	0%
Native annuals	15%	0%	0%
Non-native grass	37%	0%	12%
Native other species	1%	2%	40%
Non-native other	8%	0%	9.5%
Organic litter	7%	0%	0%
Bare ground	5%	95%	38.5%

The surrounding paddock is good, productive country with strong native perennial and annual grass cover and minimal bare ground. The trial site, on the other hand, had almost no ground cover due to the dense Prickly acacia canopy. After treatment, bare ground dropped from 95% to 38%, with early native colonisers including Jutes, Angleton grass, and Armgrass coming back, a sign the site is recovering.

Sonoma - Deformed regrowth - December 2023

Site 2: Strathmore

(Basal barking – Prickly acacia)

Treatment (June 2023)

- Application: Trialed basal barking with:
  - 2.5L/100L Method + 1% Hasten
  - 2.5L/100L Method without adjuvant

Results:

- ✅ Method at 2.5L/100L plus 1% Hasten was effective, making adjuvant application the most effective approach.
- ✅ Older trees with rough bark were killed even without an adjuvant, as the bark holds the chemical (and any adjuvant) in place, allowing better absorption.
- ❌ Younger trees with smooth bark are more resilient to the chemical because they absorb less of it.

Older trees with rough bark were killed even without an adjuvant, as the bark holds the chemical (and any adjuvant) in place, allowing better absorption.

Basal barking was highly effective on individual trees.

Site 2 - Strathmore Basal Bark

Pre treatment - June 2023

Post treatment - Apr 2024

Sonoma

(Drone application – Chinee apple and Lantana)

Treatment 1 (June 2023)

- Drone application at 2.5L/100L Method + 1% Hasten

Results:

✅ The Method application was highly effective in controlling lantana.

(Backpack mister application – Chinee apple and Lantana)

Treatment 2 (January 2025)

- 500mL/100L Method + 100g/100L Metsulfuron + 1% Hasten via backpack mister

Results:

❌ Full canopy coverage is required to kill Chinee apple. Some plants showed reshooting.

Initial drone treatment followed by targeted backpack spraying suppressed canopy growth on Chinee apple and Lantana.

KEY LEARNINGS

- **Volume is key** – The speed of the drone affects kill rates — slower speeds result in higher kill rates because more chemical is applied.
- **Canopy removal sparks recovery** – Opened canopy allowed native colonisers to return.
- **Weed seedbanks remain active** – Follow-up is essential to prevent reinfestation.
- **Follow-up is essential** – Missed plants showed stress, but without retreatment, could recover.
- **Rubbervine control strategy** – Rubbervine began to encroach on the site after applications, suggesting that using a combination of chemicals may be more effective for controlling multiple woody weed species.

CONCLUSION AND NEXT STEPS

The trial showed that Method 240SL, when combined with drone spraying, basal barking, and follow-up misting, can significantly reduce woody weed infestations and help set degraded land on a path to recovery. However, long-term success depends on ongoing follow-up and adaptive management.

Ongoing monitoring of the trial is recommended, with a focus on:

- Developing region-specific weed treatment protocols.
- Encouraging the return of native grasses and forbs through reduced competition.
- Using adaptive management to respond to secondary weed flushes and maintain control.
- Integrating mechanical, biological and Cultural weed management approaches.

Project partners

The trial was developed in partnership with NQ Dry Tropics, Desert Channels Queensland, Strathmore Station, and Sonoma Station.

NOTES

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