Dr Brad Sauer, Tahnee Thompson and Rowena Eastick
Northern Territory Government

Protecting the production and biodiversity values of the Daly River catchment, through stakeholder engagement and adaptive integrated management of bellyache bush

Summary

Large scale integrated management strategies are required for bellyache bush (Jatropha gossypiifolia) in the Daly River catchment of the Northern Territory. A Biodiversity Fund project in conjunction with the NT Government aims to evaluate fire, grazing and chemical control options, with direction from the range of affected stakeholders in the catchment. Aerial herbicide application can be cost effective, but previous results have been variable, confounded by climatic conditions and water quality and coverage. A trial was implemented in the 2014-15 wet season to compare a range of herbicides, adjuvants and water rates. Damage to bellyache bush, effect on non-target species and regeneration of production and biodiversity values were evaluated. Early results indicate metsulfuron plus 2,4-D amicide with Bonza® was the most effective treatment. More conclusive results will be collated after measurements are conducted in the 2015-16 wet season. On-ground follow-up control is essential. Feedback and collaboration with the land managers has provided ownership of outcomes at a catchment level.

Background

• The Daly River catchment encompasses 54,000 km² and provides livelihoods for a range of stakeholders across a range of land tenures
• The catchment has the most extensive bellyache bush infestations in the Northern Territory infesting an estimated 12,000 ha
• Bellyache bush can form dense, impenetrable thickets often inaccessible during the optimal control time
• Affected landholders wanted to investigate options for cost effective control
• A 5 year Australian Government Biodiversity Fund project co-funded by the Northern Territory Government was initiated in 2012
• Integration of fire, grazing management and chemical control, both aerially applied, and on-ground application, will be evaluated.

Collaboration

• A shared concern led to the formation of the Daly River Bellyache Bush Stakeholders Group, including pastoralists, aboriginal land managers, national parks and recreational users who provide direction for the project
• A cross-tenure catchment plan aims to reduce the rate of spread to clean areas, enhance the condition of the landscape, protect riparian values and to facilitate sustainable grazing practices
• Each year the group meets to review their management activities and plans for the next season.

Herbicide trials

• Aerial herbicide application is useful for broad scale integrated management, but factors affecting herbicide efficacy may be compound
• Adjuvants can provide significant improvements to herbicide efficacy under non-ideal condition
• Water volume will influence cost-effectiveness
• Aerial herbicide trials were implemented with consideration of these factors.

Results

• Damage and mortality were evaluated; adult cohort results are presented in Table 1
• Preliminary results indicate metsulfuron with Bonza® at 150L/ha gave promising cost effective results, but that the addition of 2,4-D amicide may increase overall effective
• Further evaluation is required in the 2015-16 wet season to determine if initial damage translated to mortality

Conclusion

• Stakeholders have found that aerial application ‘breaks up’ large thick infestations by killing off many plants, meaning that feasibility for on-ground control is greatly increased, and fire can also be used more effectively
• Management requires targeted allocation of aerial herbicide applications, on-ground application, fire and movement of stock to allow pasture regrowth to ensure bellyache bush does not re-establish
• Identification of strategic infestations and stakeholder priorities, led to development and implementation of a catchment scale plan
• Results from these trials will be used to further inform this catchment management plan.

Table 1. Herbicide, adjuvant and water volume treatments. Products used: Mefuron (600WG)/Metsulfuron-methyl (600ghl); Amicidell/Advance 700 (2:4-D amine 700gL); Starane™ Advanced (furfurylure 33g/L); Pulser® (102g polyether modified polyalkylsiloxane); Bonza® (411 gl, paraffin w). Results for adult plants were qualified based on mortality % and damage ratings.

Herbicide treatments

Before treatment Bellyache bush infestation prior to application of aherbicide treatment and to confirm level of herbicide interception by bellyache bush in woodland habitats.

Integrated bellyache bush management

Aerial herbicide application Plots of dense bellyache bush infestations were identified and marked with GPS by helicopter, and treatments randomly allocated.

On-ground assessment Numbers of bellyache bush adults, juveniles and seedlings were assessed prior to herbicide application. Damage and mortality were assessed post-treatment.

Fire Burning is an essential component of integrated bellyache bush control and can be used effectively if thick infestations are ‘broken up’ by aerial herbicide application.

Results five months after aerial treatment application. Preliminary results show the metsulfuron treatment with Bonza® adjuvant at high water rate gave promising control.

For further information
Email: brad.sauer@nt.gov.au
Website: www.nt.gov.au/seeds