

Buffel Grass Management Strategy: Central Australia 2024 - 2030

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Acronyms	Full form
DEPWS	Department of Environment, Parks and Water Security
IPA	Indigenous Protected Area (see Map 1)
NT	Northern Territory
SoCS	Sites of Conservation Significance (see Map 1)
TWG	Buffel Grass Technical Working Group
WAC	Buffel Grass Weed Advisory Committee

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Glossary	
Assets	<ul style="list-style-type: none"> • Sites of Conservation Significance (SoCS) • Cultural • Built • Recreational • Historic • Native Habitat • Economic/Pastoral
Central Australia	For the purpose of this Strategy, the Alice Springs and Tennant Creek Weed Management Regions, shown in Map 1
Control line	An area where buffel grass is managed in line with this Strategy
Declared weed	A plant declared to be a weed under section 7 of the <i>Weeds Management Act 2001</i>
Firebreak	An area clear of bush and other flammable material
Infestation	Dominant, to the exclusion of other species
Infrastructure Corridor	Includes: <ul style="list-style-type: none"> • Gas • Power • Water • Railway • Construction • Mining
Land Owner/Occupier	“Owner” refers to the holder of an estate in fee simple, while “occupier” must refer to someone having exclusive possession, occupation, use or enjoyment of the land. Example where an entity would not be an owner or occupier: the holder of an easement would not be classed as an owner or occupier as they do not have exclusive possession, occupation, use or enjoyment of the land.
Road	See section 5(1) of the <i>Control of Roads Act 1953</i> and section 270 of the <i>Local Government Act 2019</i> .
Site of Conservation Significance (SoCS)	Site identified as having international and or national significance for biodiversity conservation in the Northern Territory.
Track	Refers to the main access into a property and or site.
Transport Corridor	Including: <ul style="list-style-type: none"> • A road as defined by the <i>Control of Roads Act 1953</i> and the adjoining road reserve (area between the boundary of another property and the road) or • A road defined by the <i>Local Government Act 2019</i> and the adjoining road reserve. • A railway corridor as defined by the <i>Australasia Railway (Special Provisions) Act 1999</i>.

1. Introduction

Background

Buffel grass (*Cenchrus ciliaris* and *C.pennisetiformis*) was introduced to the Northern Territory in the late 1800's, initially as stuffing in saddle packs by early Afghan cameleers. It was more intentionally planted across Central Australia from the 1960's in coordinated dust and erosion control projects, and as a drought-resistant fodder to sustain pastoral endeavours.

Buffel grass has since become widespread, impacting biodiversity, cultural values, and contributing increased grass loads that fuel wildfires. Buffel grass threatens the culture of First Nations people by displacing bushfoods, covering hunting tracks and hiding snakes. It grows prolifically following seasonal rains, is tolerant to fire, and is an early re-invader of burnt areas.

A formal weed risk assessment (2022) scored buffel grass as a very high impact weed, but with a low feasibility of control. In 2023 a Buffel Grass Technical Working Group (TWG) was established to examine the impacts of buffel grass in NT, assess the management options available, and to consider regulatory controls that could further guide buffel management.

The TWG delivered a suite of recommendations, including the formation of a Weed Advisory Committee and the declaration of buffel grass as a weed under the *NT Weeds Management Act 2001* (the Weeds Act), along with funding, research, education and policy to complement existing buffel control efforts.

Purpose

This Buffel Grass Management Strategy (the Strategy) has been prepared by a Weed Advisory Committee (Buffel Grass WAC), appointed under the Weeds Act by the Minister for Environment, Climate Change and Water Security. It is intended to guide the prioritisation, objectives and management actions required to mitigate the negative impacts of buffel grass in Central Australia, on the environment, economy and community.

The Strategy recognises and supports priorities for biodiversity and cultural heritage protection identified at a national and local level. Management will focus on reducing impact on significant cultural and environmental values, and protection of physical assets from the threat of wildfire. Due to its widespread distribution, effectiveness at stabilising Central Australian soils, and value to the pastoral industry, it is agreed that buffel cannot feasibly be eradicated from the NT.

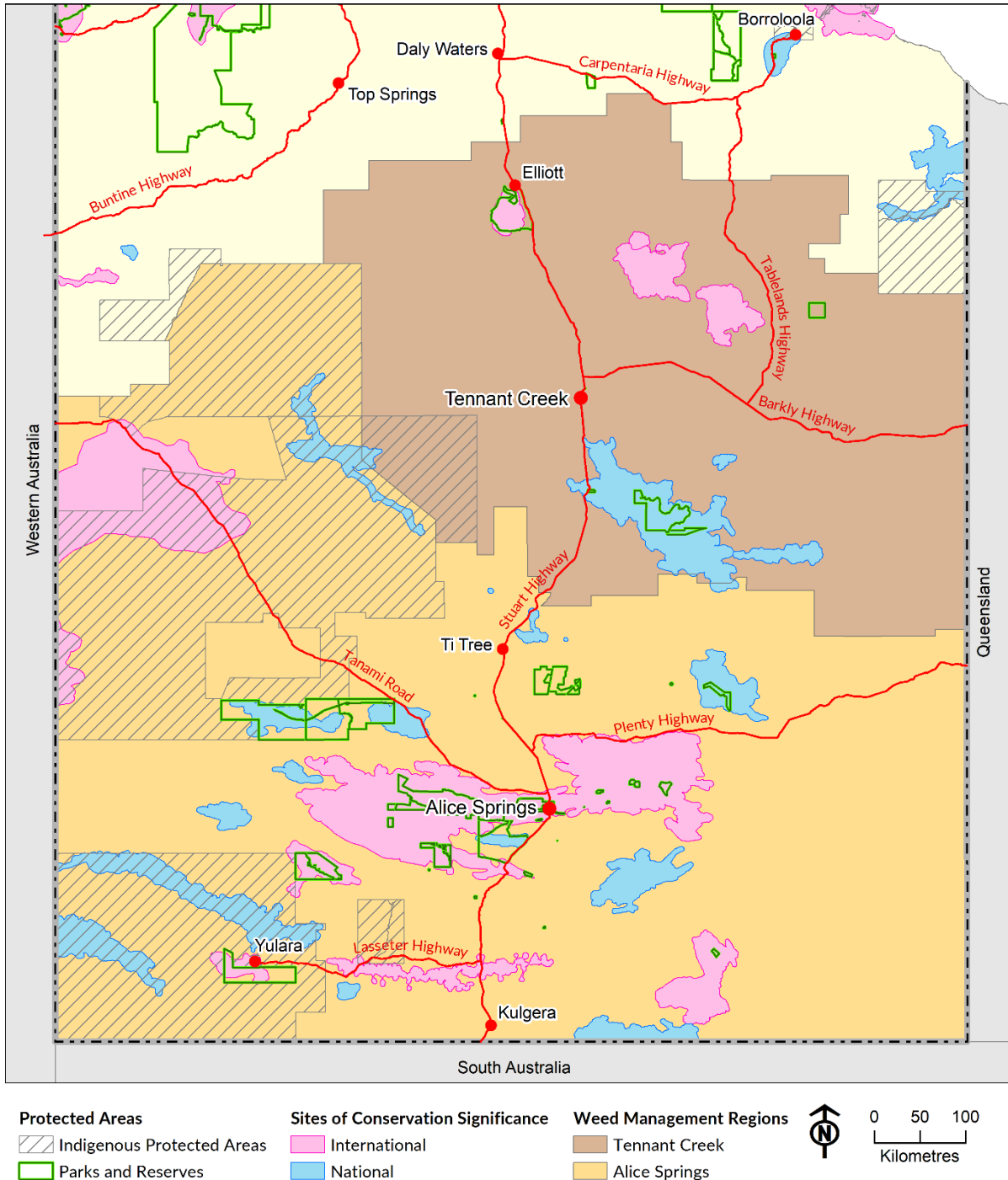
The Strategy timeframe allows land managers to research and trial the feasibility and benefits of the management recommendations, and to measure the effectiveness of any regulatory controls introduced under the Weeds Act to support the Strategy (i.e a weed declaration). A declaration would allow the Strategy to be adopted in part or in full, as a weed management plan, enforceable under the Weeds Act.

Priorities for buffel management

Priority areas are recognised where buffel grass poses the greatest risk to biodiversity, cultural and community values, due to its competitiveness and fuel load contribution. Specific areas for strategic control have been identified in the Alice Springs Regional Weeds Strategy, Natural Resource Management Plan Arid Lands Region, the Alice Springs Regional Bushfire Plan and the Threatened Species Action Plan.

The risk of further buffel grass spread and introductions is highlighted in the Tennant Creek Regional Weeds Strategy, particularly through the movement of vehicles and machinery in the mining and exploration industry, and along road, railway and gas pipeline corridors.

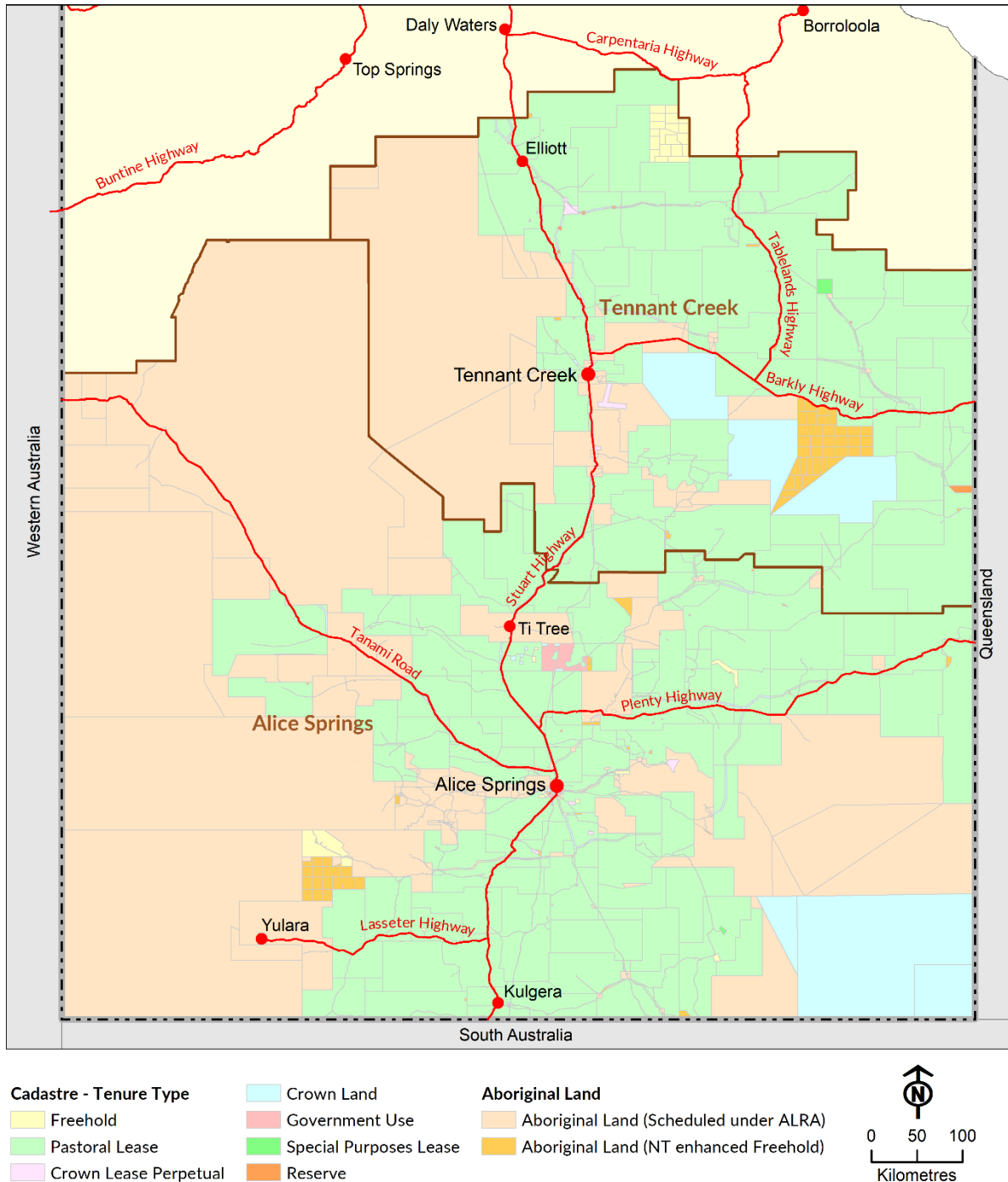
Sites of Conservation Significance (SoCS), Indigenous Protected Areas (IPAs), parks and reserves contain key biodiversity and cultural values for Central Australia. Community values are further reflected in areas of recreational use, historic assets and native habitat preservation.



Map 1. Sites of Conservation Significance (SoCS), Indigenous Protected Areas (IPAs), parks and reserves.

2. Management Objectives

To support the underlying land use purpose and goals of tenure per Map 2 below, buffel grass management objectives are identified in Table 1. The impacts of buffel grass vary depending on the land management context – where it is growing, the type of land tenure, who is managing the land, and for what purposes.



Map 2. Tenure types applicable to registered and un-registered land in Central Australia.

Table 1. Objectives for managing buffel grass under different land use purposes

Land use purpose	Tenure(s)	Land use goals	Objectives of buffel management
Conservation	Reserve Freehold Vacant Crown land	Maintain healthy, natural ecosystems Protect high value conservation and cultural assets	Build capacity & commitment Detection Early intervention Prevent establishment Minimise/prevent impact Reduce/prevent spread Reduce/prevent spread off-site
Aboriginal land (non pastoral/conservation)	Freehold Special Purpose Lease	Protect environmental, cultural & community assets	Build capacity & commitment Detection Early intervention Prevent establishment Minimise/prevent impact Reduce/prevent spread Reduce/prevent spread off-site
Roads/corridors (including gas, power, infrastructure)	Freehold Crown Lease Perpetual Vacant Crown land	Maintain safe transport infrastructure and supply of goods & services	Early intervention Prevent establishment Minimise/prevent impact Reduce/prevent spread

Land use purpose	Tenure	Land use goal	Objective of buffel management
Recreation	Freehold Crown Lease Perpetual Vacant Crown Land Reserve	Protect environmental, cultural & community assets	Build capacity & commitment Minimise/prevent impact Reduce/prevent spread
Peri-urban/rural residential	Freehold	Healthy and safe rural lifestyle	Build capacity & commitment Prevent establishment Minimise/prevent impact Reduce/prevent spread Reduce/prevent spread off-site
Pastoral	Pastoral Lease <ul style="list-style-type: none"> • Term • Crown • Perpetual 	Maintain land condition and pastoral productivity	Build capacity & commitment Minimise/prevent impact Reduce/prevent spread off-site Targeted application

3. Reasonable Management Actions

The recommended actions in Table 2 represent a reasonable standard of land management expected from land owners, occupiers and users to support the objectives for buffel management outlined in Table 1. Land management groups and industries may develop tailored plans to meet reasonable management actions.

Table 2. Reasonable actions to meet objectives for buffel grass management.

Objective	Strategy	Recommended Reasonable Management Actions
Build capacity & commitment	Land managers are aware and educated on objectives and recommended actions in this Strategy	Communications strategy and rollout
		Strategically placed signs providing education on buffel spread and prevention programs
		Improve mapping and monitoring methods for buffel grass
	Land managers in priority areas are equipped to tackle buffel as opportunities arise	Aboriginal ranger groups funded to reduce buffel in IPA's
		Resource and assist Landcare groups with community-led projects
		Identify and access funding opportunities to resource control in priority areas
		Support private landholders through access to herbicide and equipment loans
	Land managers can monitor, measure and share success to continually adapt management regimes	Management plans are developed to schedule monitoring and describe mapping techniques
		Support community buffel-related events
		WAC to monitor and assess effectiveness of this Strategy and adapt as necessary
Detection		Develop and implement a monitoring program

Objective	Strategy	Recommended Reasonable Management Actions
	Identify new buffel in areas previously considered 'clean'	Record density and distribution of buffel on land Report buffel where it has not previously been known
Early intervention	Prevent buffel grass from becoming established in new areas	Identify clean areas for surveillance Prioritise treatment of new outbreaks Limit introductions into areas where buffel is not established No new introductions of buffel grass into the NT without a permit
Prevent establishment/ spread on land	Prevent land becoming infested with buffel grass	Survey priority areas following rainfall Treat isolated outbreaks as a priority and follow up Minimise soil disturbance Avoid moving through infestations
Minimise/prevent impact	Protect assets from wildfire (conservation, cultural, built)	Maintain firebreaks around land area boundaries and infrastructure Maintain firebreaks and reduce fuel loads in priority landscapes Mosaic burning and treatment regime to intercept buffel growth cycle
	Maintain biodiversity	Prevent land being 'infested' (ie dominated, excluding other species) Follow up after buffel control to prevent re-establishment during native rehabilitation
	Retain wildlife habitat for threatened species	Ensure buffel grass management is a component of threatened species action plans

Objective	Strategy	Recommended Reasonable Management Actions
	Preserve cultural values & practices	Manage buffel in accordance with goals, objectives and actions identified in IPA and Healthy Country Plans
Prevent/reduce spread off-site	Minimise/prevent seed spread on public road corridors	Control buffel grass to reduce seed production to a distance of 10m on either side of sealed roads
		Provide education to road users at strategic locations, on vehicle hygiene/washdown procedures
		Designated road stops kept free of buffel seeds
		No transport of uncovered buffel grass
		Adhere to guidelines in NT 'Preventing Weed Spread Is Everybody's Business' document
	Restrict/prevent seed spread along railway, gas, power and other infrastructure corridors	Spray, burn or slash buffel in corridors adjoining priority areas (Map 1) to minimise buffel seeding (or per arrangement with underlying land tenure)
		Implement vehicle, plant, equipment, machinery and construction material hygiene protocol to prevent re-introductions after control
		Vegetation management plans to include buffel control, in consultation with underlying land tenure
		Adhere to guidelines in NT 'Preventing Weed Spread Is Everybody's Business'
	Reduce/prevent seed spread between adjoining land uses	Buffel control lines of 200m adjoining priority areas and differing land tenures
Avoid transport of contaminated product/machinery on public roads or between differing land tenures		

Objective	Strategy	Recommended Reasonable Management Actions
		Adhere to NT 'Preventing Weed Spread is Everybody's Business' and any industry code of practice or commitment to reduce seed spread – (e.g. Biosecurity Management Plans)
Targeted application	Ensure that use in pastoral and rehabilitation does not negatively impact adjoining tenures	<p>Manage in accordance with the requirements and objectives of the NT <i>Pastoral Land Act</i> and the <i>Soil Conservation and Land Utilisation Act</i></p> <p>Develop and adhere to any industry code of practice to prevent and reduce off-site impacts (eg. pastoral, mining/exploration, construction, transport)</p>

4. Mapping and Monitoring

Consistent and reliable weed data is critical for effective weed management. Land managers can use data about the type of weeds, where the weeds are found, and the extent of the infestation to help prioritise on-ground actions.

The NT WeedMate app has been developed to collect weed data points for general mapping purposes. The app helps to collect information about the weed species, density and location; add extra information such as treatments, chemicals and growth stages; and organise data in a format ready for mapping. To learn how to download and use the app, go to nt.gov.au/weeds.

The Weed Management Branch has produced the 'Northern Territory Weed Data Collection Manual' intended for data managers, researchers and land management agencies. This manual describes what information to collect when mapping, controlling and monitoring weed infestations in the NT. The manual can be downloaded from nt.gov.au/weeds. The manual is based on the national guidelines published in 'A Field Manual for Surveying and Mapping Nationally Significant Weeds'.

The supply of weed data to the Weed Management Branch by individuals and groups using the manual is important to increase knowledge of weeds within the NT. The collection of data in accordance with the Northern Territory Weed Data Collection Manual will result in improved and consistent data quality. Increased quality and quantity of weed infestation data across all parts of the NT is fundamental in planning and delivering strategic and coordinated weed management to protect the Territory's assets.

The 'Weed Data Collection Field Guide' provides a step by step guide for land managers and on-ground workers such as contractors, farmers, stockmen and rangers, about the weed data collection process in the Northern Territory.

In conjunction with this Strategy, the guideline 'Weed Plan: A weed planning guide for Central Australia' will assist land managers to determine the most appropriate management actions and ensure they are implemented at the most appropriate times. It is available at nt.gov.au/weeds.

Regular monitoring and review are key elements of any weed management program. Weed management programs for properties should include realistic time frames and goals, recognising that achievements, particularly with regards to established populations, may only become evident in the long term. It is important to document weed occurrences and the control methods used so that success, or failure, can be critically analysed. Accurate records can enable a management program to be reworked or fine-tuned depending on the need. Above all, continual maintenance is imperative otherwise reinfestation may only be one growing season away.

5. Control Techniques

The 'Buffel Grass Management Guide for Central Australia' provides advice on how to manage buffel grass strategically in a range of situations, available at nt.gov.au/weeds. Property management planning will assist to identify and prioritise what needs to be achieved, to best meet the land management objectives. The NT Weed Management Branch can provide assistance with developing a property weed management plan.

The most effective way to manage buffel grass is by planning and using a number of control methods (integrated control) at the appropriate growth and reproductive stage. Germination, growth and reproduction in Central Australia correlate strongly with highly variable rainfall events which can occur at any time of the year. If sufficient rain falls, germination, growth and reproduction can occur in any month except generally July when lower temperatures and frost may lead to curing.

Recent developments taking advantage of residual herbicides such as flupropanate do not rely on plants being actively growing, providing the opportunity to treat buffel grass all year round even while plants are in the dormant stage during extended dry periods which is the norm in Central Australia.

Early intervention is the key if aiming to eradicate buffel grass or limit its extent. Buffel grass is competitive as an established plant, but only weakly competitive as a seedling. The potential for successful management is greater if buffel grass is controlled during the early stages of establishment, and ongoing follow up action is taken.

5.1. Chemical control

There are several chemical options available to control buffel grass. The two main options are flupropanate and glyphosate. These can be used separately or together depending on the density and growth stage of plants.

Glyphosate is only effective when there is active plant growth so that the chemical can be absorbed through leaf tissue. However glyphosate does not control residual seed banks in the soil.

Flupropanate is a slow acting residual herbicide which is absorbed through the plant root system. It can be applied at any stage of plant growth including when plants have hayed off. It controls both parent plants and residual seed banks.

Pine oil is an organic herbicide that has proven to be effective in killing buffel grass seed. It is suitable for application on organic properties and small isolated populations, where it is desirable to prevent the likelihood of new populations arising from wind-blown seed. Organically certified producers should consult their certifier prior to application.

5.2. Non-chemical control

5.2.1. Hand pulling and grubbing

Weeds, including their roots, are physically pulled out of the ground by hand or using hand tools. This is an effective method of control for individual weeds and recent outbreaks that haven't released seeds yet, but it requires a lot of labour.

5.2.2. Slashing

A brush-cutter, slasher or mower are used to cut weeds off above the ground level. This can be effective in suppressing flower and seed development.

Slashing or mowing may increase rates of buffel grass growth, but cutting prior to chemical control of regrowth can reduce costs and increase effectiveness.

5.2.3. Fire

Fire as a management technique is most effective when it is used together with other methods.

Buffel grass is extremely fire tolerant. Controlled burns as soon as possible after curing may reduce potentially dangerous high fuel loads, but this strategy can be risky and should only be undertaken with advice from fire authorities, and in accordance with relevant fire legislation.

Burning may also be used to get rid of rank growth prior to applying herbicide to regenerating tussocks, but soil moisture must be sufficient to enable regrowth, and wind and temperature should be low. This integrated approach to management will reduce herbicide requirements and provide better kill rates.

Fire is not a recommended tool on its own for reducing or eliminating buffel grass.

5.2.4. Livestock grazing

Buffel grass is considered a high-quality stock feed, and grazing can reduce the establishment of buffel grass. Where buffel grass is dense, strategically timed grazing may be useful to suppress seed production and to reduce standing bulk to reduce the risk of wildfire.

Livestock is commonly excluded from areas managed for conservation purposes, as grazing can have a negative impact on the environment if not managed correctly.

Pastoral lessees who rely on buffel grass as an improved pasture are obliged to prevent land degradation, participate in monitoring the environmental and sustained productive health of land, and to improve land condition within the limits of their financial resources and technical knowledge (per *Pastoral Land Act 1992*).

5.2.5. Minimise soil disturbance

Vegetation clearance and soil disturbance create ideal conditions for weed germination and establishment.

Weeds tend to be the first plants to grow and proliferate in any areas where the soil or vegetation is disturbed. From there weeds can spread into natural areas. It is important to understand the implications of transporting weed seeds to disturbed areas. The risk can be reduced with good hygiene measures, minimising soil disturbance, constant surveillance and control.

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