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Buffel grass: understanding perceptions can contribute to policy development

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Background

- Buffel grass (*Cenchrus ciliaris*) is highly prized by many pastoralists as an important pasture grass for livestock
- It has also helped with rehabilitation of degraded land
- Buffel grass is a major environmental weed with the potential to establish in over 60% of mainland Australia
- There is a wide spectrum of opinions on the relative benefits and costs of managing buffel grass in a sustainable way.


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What we wanted to achieve

- Recognition of the legitimacy of a diversity of views
- Appreciation of the complexity of the buffel issue
- Pathways toward more effective management including policy directions
- An approach that can be applied to other plants that are the subject of differing viewpoints regarding costs and benefits

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Objectives

With funding from LWA, we worked with agencies, regional groups and individuals to document:

- The social, economic and environmental benefits and costs of buffel grass spread including its benefits and costs to pastoral production
- The relative benefits and costs of different management options, keeping clearly in focus the outcomes for both conservation and production
- The acceptability of different management options to stakeholders and the likelihood of adoption
- Recommendations for improved management of buffel grass


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Stakeholders

- Federal and State Departments of Environment/Conservation e.g. environmental impacts (biodiversity, water, fire, weeds, Park management), Agriculture (animal and pasture production), Transport
- NRM Boards and regional committees
- Landcare
- Pastoral Boards
- Industry bodies e.g. Agforce, PGA, SAFF, NTCA
- R&D agencies e.g. MLA, LWA and individual DWM projects, esp. Setterfield LWA NTU25 project
- Shire Councils
- NGOs e.g. Greening Australia
- Companies e.g. S. Kidman, Rio Tinto
- Indigenous agencies e.g. CLC
- Individual landholders


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Project activities

- Desktop review of available information about environmental, social and economic benefits and costs of buffel grass and its control or management, and differences amongst regions
- Focus groups in four NRM (sub) regions to elucidate the costs and benefits of buffel grass in the environment from an *organisational* perspective. The regions were:
 - Fitzroy Basin
 - Alice Springs
 - South Australian Arid Lands
 - Pilbara

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Project activities

- Surveys to assess costs and benefits of buffel grass as judged by *individual* pastoralists – 25 proposed for each region but numbers varied
- Opportunistic interviews with practitioners to provide case studies of benefits and costs for different management objectives
- Synthesise the results of the study so that researchers, the community and organisations can appreciate the complexity of the buffel issue and can recognise the most appropriate pathway toward more effective management

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Perceptions of benefits

Organisations:

- The most widely agreed benefit of buffel grass was livestock production, although it was less strongly supported in SAAL
- A second benefit nominated by all groups and rated highly was the capacity of buffel grass for erosion control

Individuals:

- The most important pastoral benefits were that buffel grass responds quickly to rain, controls erosions, provides bulk feed and survives drought, although the rank order differed amongst regions
- A few SAAL pastoralists did not recognise any benefits at all

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Perceptions of costs

By contrast there were marked differences amongst institutional and individual perspectives regarding costs

Organisations:

- Some but not all groups recognised variously monocultures, fire, biodiversity impacts and costs of control

Individuals:

- Pastoralists across three regions agreed that the main cost of buffel grass was the expense of seeding and establishment
- Pastoralists in SAAL did not identify any costs at all
- Environmental costs were hardly mentioned

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Management objectives and land use/tenure

Groups recognised four exclusive management objectives:

- Eradicate if very localised
- Reduce spread into clean areas
- Suppress and
- Manage for dominance, where dominance means buffel grass is >50% of pasture, and monoculture means >90%

Various land uses/tenures were identified for different regions

- Environmental reserves Mining
- Pastoral Defence
- Indigenous Other

Environmental land and pastoral land were common to all regional groups

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Management objectives and land use/tenure

Management objective	Environmental reserves		Pastoral land			
	High conservation value	High conservation value	High conservation value	High conservation value	Low conservation value	Low conservation value
	No production allowed	Production applicable	High production value	Low production value	High production value	Low production value
Eradicate if very localised	y	y	n (F) y (AS) y (SAAL) y (P)	y/n	y	n
Reduce spread into clean areas	y	y	y/n	y/n	y	n
Suppress	y	y	y/n	y/n	y/n	n
Manage for dominance, where dominance means buffel grass is >50% of pasture, and monoculture means >90%	n	n	y/n	y/n	n	n

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Management objectives and land use/tenure

Organisations

- Management objectives for environmental reserves and for pastoral lands of low conservation value were broadly agreed
- The contentious issue within and between regions was the management objectives for pastoral land of high conservation value

Individuals

- Over 40% of pastoralists placed a high value on managing buffel grass within reserves
- Few individual pastoralists aimed to keep buffel grass out of areas with high conservation value, and most commonly they saw no environmental problems associated with it

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Acceptability of management tools & strategies

- Overall, tools and strategies for management of buffel grass on environmental reserves were generally uncontroversial and were a matter of the resources available to the responsible agency
- Institutional and individual perspectives on acceptable tools and strategies for pastoral lands were similar and revolved around managing grazing
- However, for both environmental and pastoral lands, the exact way in which any strategies and tools would be used will be strongly influenced by the local environmental, economic and social conditions

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Options for containment on environmental land

Table 6. Feasible and desirable management tools for environmental reserves (with and without grazing), as identified at four regional forums. **S = no tools widely supported.**

Management options	Perth	Alice Springs	South Australia	Acacia Hills	Pilbara
Eradication	Exercising with natives	Mechanical/manual treatments Herbicides Burning and herbicides Mechanical treatments and herbicides	Reseeding Mechanical/manual treatments Chemical control	Mechanical/manual treatments Chemical control	Manual removal Herbicides Surveillance Quarantine
Reduction of spread	Buffer zones Washdown facilities Education Controlled cool fire Healthy ground cover Minimise soil disturbance	Buffer zones Hygiene management: Manage hay transport; Use clean topsoil, gravel Best practice guidelines Fire prevention Road verge management Catchment management in high use areas Herbicide	Buffer zones Vehicle hygiene protocols; Protocols for new works; Limit vehicle, stock access Education Maintain ground cover; Reseeding	Buffer zones Machinery, vehicle, clothing and boot hygiene; Limit soil movement Fire management Maintain cover; Minimise disturbance Reseeding	Herbicides
Suppression	Controlled fire Strategic grazing where permissible	Burning and grazing where permissible Controlled grazing where permissible Stock water management where permissible	Herbicides Apply pastoral hygiene, surveillance Burning and herbicide or grazing where permissible Grazing where permissible	Herbicides	Herbicides

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Options for containment on pastoral land

- Eradication (on a small scale) was not widely supported (either agreed to be inappropriate, or no agreed tools) regardless of high or low production value
- The most broadly supported means of reducing spread (only when conservation value was high) were grazing management, maintaining healthy vegetation cover and minimising soil disturbance, hygiene management and education
- Suppressing buffel grass was only supported widely when conservation value was high. Strategic grazing was the main option
- Where management was for dominance, grazing management (including water and infrastructure placement, stock water management and fencing for soil type) and fire were supported

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We concluded that

- Development of containment protocols needs to include recognition of
 - land use values ("values for what?")
 - social and cultural values of stakeholders (perceptions, acceptability)
 - regional differences
- This study shows that there is reason for hope that diverse views can be met
- Stakeholder engagement in negotiating containment (and ultimately policy) is not a concession by governments but a practical way forward

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Recommendations

There is a need for non-confrontational ways of negotiating acceptable changes in buffel grass management, beginning with those issues that are likely to be most easily resolved. All stakeholders must participate in developing solutions

1. Manage change by involving landholders in an open dialogue about the costs and benefits of buffel grass and in the setting of agreed goals

Pathways for dissemination of information about buffel grass and its management should include both formal and informal networks and should genuinely allow for the needs and preferences of pastoralists

2. Understand and use landholders' formal and informal networks to enhance information exchange

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Recommendations

Community involvement in the design of resource protection strategies is often viewed as messy, time consuming and difficult

3. Recognise and accept the transaction costs of community engagement so that the social benefits of buffel grass can be maximised and the environmental costs minimised

Management objectives and the way in which strategies and tools will be used will be strongly influenced by local conditions

4. Ensure objectives, strategies and tools for management of buffel grass are tailored to local and regional contexts

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Recommendations

Landholders with a lower dependency on buffel grass and an enhanced capacity to adapt to alternative strategies are more likely to find new strategies acceptable

- In situations where buffel grass is yet to colonise large areas, such as southern pastoral lands or various deserts, initiate early community discussion about the benefits and costs of buffel grass and its management

In areas of high environmental value where buffel grass is well established, it is not realistic to expect every asset to be protected

- Develop processes for identifying and prioritising areas of high biodiversity value where management of buffel grass is required

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Recommendations

Surveyed pastoralists had limited interest in exploring the costs and benefits of buffel grass, and there were no incentives for better management of areas of high environmental value

- Develop ways of encouraging land managers to deliver environmental outcomes at landscape scale through management of buffel grass

Enabling legislation should be devised where appropriate, to permit different management objectives to be achieved on different tenures, but any attempt to develop policies for managing buffel grass will need to recognise the critical importance of it to many pastoral enterprises.

- Develop policy recommendations for governments through establishment of representative advisory groups at state and cross jurisdictional levels

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Recommendations

The development of a national strategy for management of a plant species that is both economically important and weedy is novel – there are few precedents to follow and it is essential that we learn from our experiences

- In developing policy, include the ability to monitor and evaluate outcomes and make adaptive change

Better documentation and development of management options will help managers and policy makers make informed choices

- Improve understanding of management options and benefits/costs through documenting existing experience and developing new research; keep regional differences in focus

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Recommendations

We conclude that there is sufficient commonality across sectors, at least at institutional level, to develop a national strategy for the management of buffel grass. The strategy should provide a common reference point and framework for the management of buffel grass, the prioritisation of research and of resources for on-ground management efforts, and provide a mechanism for continued engagement and interaction amongst sectors. Hence:

- Develop a national strategy for the sustainable management of buffel grass for production and conservation, relevant to regional scales

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