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# Case studies— innovations in management



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## Australian Agricultural Company—weed seed spread protocol

Jenny White

### Overview

Australian Agricultural Company (AACo) operates 19 stations throughout Queensland and the Northern Territory spanning 6.6 million ha of prime cattle country running approximately 360 000 head of cattle. The land is one of the company's greatest assets, but some of it is potentially threatened by highly aggressive, exotic woody weeds such as prickly acacia.

AACo has been active in its identification and treatment of exotic weeds across its stations, implementing integrated systems to control and manage existing infestations and prevent further spread. This protocol has been developed to protect the substantial investment of time, effort and money AAcO has made in weed control.

### Problem

AACo purchases livestock from outside vendors and, because of the spatially diverse nature of AAcO stations, transporting cattle between stations poses a considerable threat of inadvertently distributing weed seed. As prickly acacia has appeared in new locations after livestock have been transported from infested areas to clean ones, AAcO has recognised cattle as one of the main vectors of its spread. To protect clean stations from potential incursion of spreading prickly acacia, AAcO has developed its own Weed Seed Spread Policy.



Nathan March

▲ Outbreaks of prickly acacia at Rockhampton Downs, NT—now treated

### Stock management

The Weed Seed Spread Policy was developed specifically for prickly acacia, mesquite, chinee apple and, to a lesser extent, parkinsonia. To ensure that ingested seed is not transported to weed-free locations, any livestock that have been exposed to podding plants are quarantined for a minimum of 8 days prior to transport to a new destination. This is necessary because seed can pass through the digestive tract of an animal and still remain viable once excreted (43 per cent of ingested seed in the case of prickly acacia). AAcO generally follows this protocol for both internal and external movements of cattle.

AACo stations infested with prickly acacia have allocated holding paddocks adjacent to



main trucking yards dedicated to the quarantining of livestock. These holding paddocks are weed free and are monitored regularly for any establishment of exotic weed seedlings.

As well as preventing weed seed spread, keeping cattle in a holding paddock prior to transportation has the additional advantage of reducing carcass shrinkage caused by stress and time off feed. Trials conducted by AACo over four years have shown that carcass shrinkage can be reduced by 10–12 per cent by keeping livestock in a holding paddock for a minimum of 36 hours prior to transport.

AACo has developed alternative options for transportation of livestock if they cannot be quarantined before leaving a station (e.g. because of weather concerns or other unforeseen circumstances). In these situations the cattle are quarantined:

- on arrival at the new destination
- at a suitable alternative location.

### It's simple

A significant financial investment is not required to build extra holding paddocks and, in AACo's experience, this is eventually offset by savings in time, effort and money spent on weed control.

AACo's stock hygiene protocol has been implemented successfully without hindering the normal station routine. A typical eight day quarantine period includes:

- 1 day muster
- 1 day drafting
- 5 days in quarantine holding paddock
- 1 day mustering and trucking to destination.

### Manager's experience

Sam Graham, manager of Dalgonally, a property 80 km north of Julia Creek in north-west Queensland says 'This protocol is no big deal to our operation, as we can see the benefits and have just implemented this strategy as another property management requirement.'



Nathan March

▲ Stock hygiene protocols reduce the risk of transporting weed seed



### **Minimising other vectors of spread**

Livestock are not the only vectors of weed seed spread—other unsuspecting carriers include:

- contractors employed by stations (e.g. earthmovers, bore drillers, fencing and mustering contractors)
- machinery shared between stations (e.g. dozers, road trains and other vehicles)
- hay products—AACo stations that produce hay for distribution need to be extremely diligent in ensuring it is free of weed seeds
- fodder or grain
- soil and gravel—relocation of these materials on a station can result in a weed outbreak in a new location
- feral animals—as they are possible vectors, they need to be controlled
- humans—people entering stations for tourism and recreation may inadvertently bring weed seeds with them.

AACo is monitoring all these potential vectors, and its managers use the information acquired to assess the risk of contamination by exotic weed species.

Under AACo guidelines, in some instances vendors and/or contractors must declare if machinery or feedstuffs have been exposed to exotic weed infestations and, if so, what has been done to prevent the spread of these seeds.





## Mechanical control of prickly acacia on Lydia

Peter Klem with Cameron and Shaun Waltman

### Introduction

Lydia, owned by Cameron and Shaun Waltman, is an 8100 ha property comprising gidgee country and flood channels of Lydia Creek. It is located 33 km south-west of Winton in central western Queensland. The Waltmans have been on Lydia for nearly five years and their main business is cattle and sheep breeding and fattening.

Prickly acacia was brought onto the property with stock many years ago to provide protein and to provide shade on open downs. It spread rapidly in 1999–2001 after three years of above average rainfall. During the last two years (2002–03), which have been dry, there hasn't been much progress in the spread of acacia, and a small percentage of it has died.

### Control efforts

In early 2002, the Waltmans decided to start controlling prickly acacia because it was taking over their good country and, as the property is small, they needed to be able to use it all. 'We treated approximately half of the prickly acacia on Lydia in the last 12 months.' They clean specific paddocks initially and in others treat scattered trees first, and leave the denser areas until last. They find that by doing a little bit all the time, control doesn't become a big issue. According to the Waltmans, 'The drier the weather is, the better, but you also have to be financial to do this.'

### Chemical control

'We use a 4-wheeler motorbike with a 200 L tank in a trailer to spray Starane®, water and a wetting agent over any bush up to head height, as a mixture of Starane® and diesel is far too expensive to use on regrowth. We obtained a 95 per cent kill with this method even when it was dry and the trees had very little leaf on them.' Trees must be wetted properly, with foliar spraying, and to avoid hot weather, treated early in the morning or late in the afternoon—not in the heat of the day.

### Mechanical control

Grubbing with a 135 hp John Deere 4WD wheel tractor with a 4-in-1 bucket is the main method of mechanical control used by the

*'Trees must be wetted properly, with foliar spraying, and to avoid hot weather, treated early in the morning or late in the afternoon.'*



Peter Klem

▲ Spray tank and quad bike setup at Lydia



Peter Klem

► Tractor and 4-in-1 bucket



Peter Klem

▲ A modified bucket is proving effective in controlling prickly acacia

Waltmans during the dry and when time allows. When the bucket is opened up, it becomes a blade with a cutting edge (2 foot long and 1 foot deep) attached. Only the cutting edge is used to slice the root or lift out the plant. If the full width of the blade were used, the tractor would need greater horsepower. The tractor is also used for other property work and maintenance (e.g. pulling a fire plough and digging post holes).

Large mature trees are pushed over with the tractor blade up high. The cutter bar is most effective on trees to 3 m in height. Anything with a trunk over 15 cm in diameter is too big for the tractor. The tree is pushed over with the front of the 4-in-1 bucket and the hydraulics are used to lift or cut the root off below ground.

The Waltmans have found that with the machine they can clear, in one hour, an area that would take all day to basal bark spray. They achieved a 95 per cent kill in the drier part of 2002, and a rate of about 70 per cent when the weather was wetter. Very little

regrowth has appeared on plants that were cut off below ground level or lifted out, whereas experience has shown that if a tree is cut off at ground level, regrowth will occur.

According to Cameron and Shaun, 'the regeneration of native grass has been enhanced by the holes left after mechanical grubbing.' When it rains, these holes retain water, which soaks into the ground and increases soil moisture thereby promoting the growth of natural grasses instead of prickly acacia. Apart from herbage, the main grasses found on Lydia are Mitchell, Flinders and button grasses, and buffel grass, which grows on the harder country and creek lines. To date, treated areas have not been seeded, though they do have plans to seed buffel in the harder country in the future.

The Waltmans said, 'We believe in mechanical control using a cutter bar and would advise others to use a similar set up and just make the cutter bar suit the size of their machine. You can treat prickly acacia in the hottest part of the day, in air-conditioned comfort listening to the radio, or you can basal bark spray.'

'In 5–10 years we will still be digging trees because they will still keep coming up. We see emus as the biggest carters of seed between properties. We can control our stock, but we can't control the emu.'



Peter Klem

▶ Pasture regeneration after mechanical grubbing

*'According to Cameron and Shaun, "the regeneration of native grass has been enhanced by the holes left after mechanical grubbing."*



## Using goats and camels to control prickly acacia

Melissa Brien with David and Maree Jones

### Introduction

The Grove, owned by David and Maree Jones, is a 10 522 ha property (including stock route), 46 km west of Winton. It was purchased in mid-2000 to use mainly as a sheep block, but also to run a few hundred cattle, together with 1000 goats and 13 camels to control prickly acacia. The mix of country on The Grove includes open Mitchell Grass Downs—some with red ironstone ridges—some gidyea country, and the alluvial channels of Wokingham Creek and the Western River.

Over most of the property, it is estimated there are 40 prickly acacia trees per hectare. While it provides increased shade, which can also improve lambing, prickly acacia makes stock handling very difficult and reduces pasture production. According to David and Maree, 'Mustering in prickly acacia is hard going. Grass doesn't seem to grow underneath the prickly trees and you are left with a substantial area with little fodder.' Prompt action was required to deal with the prickly problem.

Though the Jones first tried control with herbicides, they soon discovered that this was not the best option for the whole property, and use it now mainly near gates, around dams (where the plants suck up a lot of water) and other small problem areas.



Peter Spies

▲ Goats grazing on prickly acacia near dam

They have come to the realization that they cannot tackle the lot. They have purchased a skid loader so they can push large numbers of trees more quickly and take advantage of their fodder value.



Melissa Brien

▲ A loader is being used to push prickly acacia

*'Grass doesn't seem to grow underneath the prickly trees.'*



### Camels and goats

Before they came to The Grove, the Jones had goats at Hughenden where they were used for controlling boree and gidyea regrowth. 'They opened up a lot of country for us there and we thought about using them down here, hoping it would work', David said. So, in early 2002 they were introduced on The Grove. Six months later, 13 camels were brought to work with them. 'When we sold our goats in Hughenden, we sold them to a bloke who was trialling using camels and goats together on prickly acacia. A few people around here have camels for prickly acacia also', David said.

Working the camels and goats together ensures grazing pressure is exerted over the whole tree—the goats eat the bottom half and the camels eat the top. They work together and they get on quite well. Goats and cattle also work well together as they don't compete for food—goats browse, while cattle graze. However, goats must be kept away from cattle lick blocks because they can't handle much urea—it can kill them pretty quickly. Goats can get on top of the regrowth, completely

eating it off. 'They did that with the regrowth in Hughenden and it doesn't seem to come back. We don't know about prickly acacia yet, but we are hoping it does the same thing here. Both the goats and camel eat the seeds', David said. Unlike cattle and sheep, which pass viable seed, camels have a rumen that completely digests it, so they minimise the spread of prickly acacia.

*'Working the camels and goats together ensures grazing pressure is exerted over the whole tree.'*



▲ Goat damage to seedlings

Melissa Brien

### Goat management

Running goats on a sheep property requires careful planning. As goats shed a lot of their hair, which may contaminate sheep wool, the Department of Primary Industries suggested that the Jones keep the sheep and goats completely separate on the property, as sheep were the main income. 'When we work the goats through the yards we have to make sure it is nowhere near where we are going to be shearing or working sheep, because the goats



Melissa Brien

◀ Camel browsing prickly acacia



shed so much hair. It's unreal... it gets everywhere—it's on the ground, in the air, it's everywhere. You have to [wait] for the hair to blow away before you can put your sheep through. If you could afford it, it would be ideal to have your own set of goat yards where you could handle them, or have a portable set where you could handle them separately', David said.

According to David, it's important to have your fences 'up to scratch' if intending to use goats, which he recommends buying fence-trained 'because they know how to stay inside.' He said that 'it's false economy' to try to use feral goats because 'the first thing they want to do is get out and they can travel a long way in a very short time... Camels may

be the same. I think in a lot of cases wild camels can wreck your fences and can be hard to keep in. Our camels have been hand-raised and they are quiet.'

### **Plan of attack**

The Jones first stock the smallest paddocks with goats and camels, then work up to the largest. This is a big job as the whole fence, including the gateway, must be electrified. Hinge-joint fencing can be used, but the cost is usually prohibitive for large paddocks. The Jones found it cheapest to run a hot wire at about 20 cm right around the bottom of the fence. David said 'It would be good to have three paddocks going at the one time, and be able to introduce the bucks back in and take them out, and then have a paddock for



Peter Spies

▲ Prickly acacia infestation at The Grove. Note fenceline effect. Goats and camels grazing on left.





weaning.' When it rains, the Jones plan to rotate the goats every year or to move them back into the paddocks as the prickly acacia comes back.

In the relatively short time that they have been on The Grove, the goats and camels have opened up a lot of country that was formerly dense prickly acacia infestations. The Jones have found that goats ringbark a large percentage of smaller trees with softer bark. 'We're waiting for a wet season now to find out whether those trees come back or not. Goats will climb up on a bush that's been pushed over and will eat everything that's there.' David said that camels break a lot of branches down and the goats sometimes get more feed from these. While it is still too early to gauge kill rates and responses, it is hoped that repeat stocking of paddocks over a number of seasons will gain results and 'buy' some time. This was David's experience in Hughenden, where repeated stocking with goats controlled boree regrowth, 'that was so thick you couldn't ride through it.'

A further advantage in using goats to control prickly acacia is that, once the herd is fully established, the Jones plan to sell capretto (kid meat) and chevron (adult meat) in overseas markets. The feral nanny goats are put over Boer goat bucks, a breed from South Africa, 'because they are meat goats. The Boer kids put on weight very quickly and are ready in 6–10 months depending on the season and the market (for which they are being grown)', David said. 'We use the Boer bucks to beef the kids up a bit, and have them ready for sale earlier.'

'We don't think there is a great amount of money to be made; it's just that the goats are working away at the prickly bush. It is surprising how much of the tree they actually eat. We thought they would work on the regrowth, but we didn't expect them to eat the bark and to shred the tree so much. They have done better than we ever expected', said David ...We would never go half goats on the place or anything like that. It's just a little sideline... more than anything, it cuts our chemical costs back. When you are putting herbicide out you are getting no return whatsoever and you have to make the time to do it, whereas the goats and camels are just there nibbling away at it the whole time while you're doing whatever else. Sometimes you wonder a bit about the safety of all the herbicides you are putting out. You can have gloves and all the rest of the safety stuff but you're still handling it. Goats and camels would have to be better for the environment, not polluting by pumping the chemicals into the soils' David said.



Melissa Brien

▲ Goats browsing prickly acacia

*'Goats and camels have opened up a lot of country that was formerly dense prickly acacia infestations.'*