GRAIN & GRAZE 2 CASE STUDY

Pasture cropping: A solution to control silver grass in kikuyu

Written by Greg Warren, Farm and General, Esperance

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Profile

Erica Ayers and Phil Cleghorn

Location: 'Amaroo', 35km east of Esperance, Western Australia

Farm Size: 1,280ha

Annual Rainfall: 550mm

Soil Type: Coastal sandplain (acidic)

Enterprises: Sheep and cattle (12-13 DSE comprised of 3,600 ewes, 320 breeders; with a carryover of 2,000 lambs and 260 yearlings) and a small amount of canola and lupins.

Seven years ago, Erica Ayers and Phil Cleghorn took over farming Erica's family property, *Amaroo*. At the time, the livestock were run on annual pastures and a paddock of barley was sown each year for stock feed. There was also 50 hectares of established perennial pasture (kikuyu).

They knew from the outset that the property's sandy soil and coastal location meant wind erosion and waterlogging were issues that needed to be managed regardless of what enterprise mix they were to adopt in the future. They also knew that if they wanted to increase their livestock carrying capacity they would need to increase the productivity of their pastures.

In order to address these issues Erica and Phil understood it was important to improve *Amaroo's* existing pasture composition and reduce the existing grass weed burden. Therefore they embarked on a 400ha/ year cropping program over three years, to work their way through their annual pasture paddocks.

While this 'annual pasture paddock cleanup' strategy was underway, they also looked closely at how their existing 50ha kikuyu paddock was performing and were impressed with what they saw. This paddock had some of *Amaroo's* poorest quality deep sandy soils and yet they were able to utilise it for stock production year round. They could trail feed livestock at any time of the year, and had available stock feed both in and out of season.

Paddocks with similar soils and annual pastures had to be destocked over summer and autumn to avoid wind erosion.

These observations were impetus to increase the area sown to kikuyu from 50ha to 250ha between 2005 and 2011.

Kikuyu growth threatened

As Erica and Phil's experience with kikuyu grew, they noticed that they were only achieving two years of vigorous growth. The kikuyu appeared to be at its most productive in the second and third years after sowing, but by the fourth year it was quite thatch. It was not growing as vigorously, and the density of silver grass had started to increase at the expense of the desirable annual species which was reduced.

They observed the density of annual species also appeared to suffer in the kikuyu paddocks in years when false breaks were experienced due to competition from the kikuyu. In these years when the annual pasture species died, they were left coming into winter with a paddock of kikuyu entering its winter dormancy. Hence Erica and Phil were left with less available feed for their livestock, compared to the annual pastures paddocks alone.

To overcome the problems they faced, Erica and Phil considered two options. The first was to apply nitrogen to stimulate kikuyu growth, but they were aware that this would not deal with the thatching or silver grass issues and without follow-up rain it would be money down the drain.

The second option they considered was the application of contact herbicides to burn off the kikuyu and control silver grass, but they could see that this option would leave them with even less feed over winter until the kikuyu regrew in late spring, unless they seeded something else into the paddock.

Introducing a grain legume

Hence the idea of cropping a grain legume, after using a contact herbicide, came to mind. The benefits of this approach, as Erica and Phil saw it, was that it would thin the kikuyu stand out; it would ensure nitrogen was available for the regenerating kikuyu to access; it would provide the ability to chemically target silver grass; and it would benefit their overall enterprise by providing a cheaper source of grain for hand feeding over summer and autumn compared with buying feed in.

ABOVE: Assessing the performance of lupins sown into kikuyu pasture at 'Amaroo'.

"Pasture cropping was introduced on 'Amaroo' to address wind erosion and water logging issues, and in a bid to increase livestock numbers whilst also trying to reduce the weed burden.

Convinced that this was an idea worth trialling they undertook a 10 hectare trial in 2010. The legume they settled on was Jenabillup lupins and the steps they undertook were as follows:

1. Sprayed 10ha of kikuyu with a contact herbicide and applied Simazine in late autumn.
2. Seed innoculated lupins at 120kg/ha into the burnt-off kikuyu with an N:P:K fertiliser with a Shearer combine with knife pints and press wheels at 180mm row spacing.
3. Sprayed grass weeds with Select, which also suppressed any regrowing kikuyu.
4. Applied manganese foliar spray to lupins at mid-flowering (and spray for aphids if required).
5. Swathed lupins near maturity.
6. Harvested with pick up front when ripe.
7. The results of the trial were three fold. Firstly, good silver grass control was achieved in a paddock where

it was starting to take hold. Secondly, the kikuyu demonstrated phenomenal regrowth from plants that had been thatchy and growing poorly, and thirdly, an average lupin yield of 1.5 tonne/ha was produced.

8. Inspired by th*ese* outcomes, Erica and Phil used the same methods to sow 50ha of lupins into kikuyu in 2011, again with great results.
9. The same pasture benefits, seen in the 2010 trial, were achieved along with a 2.5 tonne/ha average lupin yield. They also saw an additional benefit in that the lupin crop gave them the option of using it as a grass seed free high quality standing fodder crop, or stubble to finish their crossbred lambs on.

The 2012 season

Feeling convinced that pasture cropping has a role to play at *Amaroo* every year, and with enough stored lupins for 2012, Erica and Phil are looking to sow 50ha of TT Canola into kikuyu in 2012.

They also plan to sow serradella in autumn, into their previously cropped pasture paddock, to improve pasture quality.

LEFT: Inspecting nodulation on Lupin roots.

RIGHT: Two adjacent kikuyu pasture paddocks at Amaroo. The paddock on the left supports reinvigorated kikuyu following a lupin crop.

Acknowledgments

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