

Production and potential

Case study: David MacLure
Location: Keajura Park, Tarcutta, southern NSW
Property size: 1600 ha
Rainfall average: 650–700 mm
Soils: Ironbark country, red earths
Enterprises: Fine-medium wool, first-cross lambs, beef cattle, canola, wheat, oats, triticale



Potential is the word David MacLure uses a lot regarding his family's 1600 hectare aggregation based at Keajura near Tarcutta in Southern NSW.

Salinity is a problem on the lower lying areas, but ironically, the massive drought of the last four years has proven to be a boon, allowing the MacLures a window of opportunity to get machinery onto country which was previously too waterlogged to sow.

David told Matt Crosbie that he believes that the salt-tolerant pasture species he has sown on a badly salt-affected area may prove to be more productive than other 'better' paddocks. He is also looking forward to seeing how the apparently more salt-tolerant lucerne variety, Salado, will stand up on his property.

This paddock was getting worse and worse with salt and we decided we had to do something about it. Luckily we found out about grants for sowing perennial pastures to help with the salt problem and we registered the Keajura



Belinda, Hamish and David MacLure in lucerne sown around a previously badly scalded salt area

Prograze Group and received a dollar for dollar grant in December 2003.

We are trialing three different lucernes, Salado, Pioneer L55 and Genesis around the edges of the salt with a salt pasture mix of puccinella, tall wheatgrass, balansa clover and strawberry clover in the scalded country. The less salty areas were sown to a mixture of Holdfast and Australian phalaris, subclovers, strawberry clover and fescue – although there's not even a plant left of the fescue.

Basically we had to do something, we were just going to lose the country and access to the house as the saline area was making the road in boggier and boggier.

It's looking pretty good at the moment as we cut silage last year off about eight hectares of the lucerne and got 160 round bales. I think we'll cut 220 to 250 bales off it this year.

At the moment I can't see a lot of difference between the lucernes, it just depends how they go when they get their feet down into the salty water.

We've owned this place (Keajura Park) for 16 years. It had not been pasture improved and the grasses that were there just weren't growing. Water would run off the hills and just sit in the paddocks and nothing would grow so we started by forming up contour banks to keep the water off the flats.

I think this salt area will eventually be as good as or even more productive than our other country. We've got the salt-resistant species in the ground and we'll always have the water. I can see it being green in February without rain which is really good.

In the worst drought in 100 years, last year I bogged the super spreader in this paddock. This year I supered all over it and didn't even look like getting bogged, so the plants are taking up the moisture. It's almost like having irrigation.

In a way, having the drought worked well for this paddock as I was able to get onto most of it and get rid of the tussocks. We had to sow late due to the season and then the paddock got waterlogged and red-legged earth mite started to cause damage so we had to get a plane in. But by January-February this year it started to really get going. Now it has beaten the waterlogging and it is going to really take off.

I don't want any stock in here until after the strawberry clover has set seed, then I'll put the sheep into it to spread the seed around.

Looking ahead

We've learned a lot from this exercise and I'd probably do a few things differently a second time.

Key points

- Drought allowed salt-tolerant pastures to be established on previously waterlogged land
- Lucerne can soak up moisture around a salt scald
- Salt-affected land has the potential to be very productive



Photo: M Crosbie

David MacLure in highly productive salt-tolerant pasture on his property

If I had the chance I would have the area mapped electro-magnetically so I knew how close I could sow the lucerne to the salty areas. In our case, some small areas of lucerne have died out and we're resowing those bits with strawberry clover. The other thing is that I wouldn't put tall wheatgrass in again. It looks too tough to be palatable to sheep I think, although it might be ok for cattle.

The potential of the place is just amazing.

We had 1000 lambs on 25 ha of balansa clover, but within three weeks we had to take the lambs off because of problems with grass tetany and bloat. I just couldn't get enough sheep on it to keep the feed down.

At the moment we've got 1000 ha of pasture where we can't put stock on because the pasture is too hot so we've got 1200 Merino hoggets in a 36 ha paddock, 900 wethers on 16 ha and another 1200 ewes on 16 ha.

We've put 2500 tonnes of lime out in the last eight years. We're just about to get onto liming the paddocks a second time. We'll do soil tests and go back into liming country which had a first crop of canola to pay for the lime eight years ago.

We put out 300 t of lime a year using our own spreader, but it only took two years of spreading for the machine to pay for itself.

The cropping rotation can take four years to sowing down, then the pasture is locked up for a full year, so it's really five years before the paddock is in full grazing production.

We're sowing 120-160 ha to permanent pasture every year, so the next five years is when we are going to see the production.

I want to get up to 3500 ewes joined to Border Leicester rams and Merinos and 100 breeding cows and try and do it easy with plenty of grass at all times - we should be able to do that comfortably.

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The science behind the story

By Dr Brian Dear

The 'Holy Grail' of lucerne breeding – the search to develop a productive, acid-tolerant lucerne – is getting closer thanks to research by the CRC Salinity coupled with investment from the Grains Research and Development Corporation and NSW Department of Primary Industries.

The first elite plants and associated rhizobia have been selected in just three years research, verifying a significant shift in the aluminium tolerance of four lucerne lines under controlled conditions. If this achievement can be verified in a range of soils, the project will have been enormously successful – a task not previously accomplished elsewhere in the world despite several decades of research.

In the base population of one lucerne line prior to selection, a single round of selection for Al tolerance reduced the number of plants in the population showing less than 5 millimetres root growth

after aluminium shock from 82 to 31 per cent.

Over 200 rhizobia strains have been screened, with field evaluations on 10 of them showing they are outperforming current commercial strains and allowing nodulation at acid levels down to a pH of 4.2.

Selections from the nodulation and Al tolerance screens have been transferred to the SA and NSW breeding programs, with around 200 grams of seed being generated.

This project offers enormous benefits to producers given that a lucerne capable of high production in soils with a pH of 4.5 could open up lucerne production on 6 Mha of agricultural land in both WA and NSW.

A number of studies investigating the water use of lucerne-based pastures compared with annual crops and pastures have shown lucerne is very effective in minimising deep drainage in most years.

Results from southern NSW indicate the long term recharge below 170 centimetres, calculated over 47 years, for annual crops and pastures ranges from 6-11% of average annual rainfall in the 400 to 750 mm zone. Where lucerne is used, recharge is reduced to between 0 and 3% of average annual rainfall.

Recent case studies have also indicated increased profitability across a range of livestock enterprises which grow lucerne. Since profit is a major driver of adoption this can only improve the potential rate of adoption and scale of impacts associated with growing lucerne.

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