



Have a yarn

talking salt with Keith, Rosemary & Boyd Carter

“Productivity potential of salty country”

A massive 3500mm of rainfall over 16 months in 1999 and 2000 left Wubin farmers Keith, Rosemary and Boyd Carter with a lasting legacy.

Located in the Jibberding South Catchment where the fall of the land is 1 metre in 1 kilometre, eight per cent of the farm became inundated for more than a week.

Much of the Carters' property, 20km east of Wubin is heavy salmon gum and York gum country and about 400ha is now salt-affected as a consequence of those heavy rains six years ago.

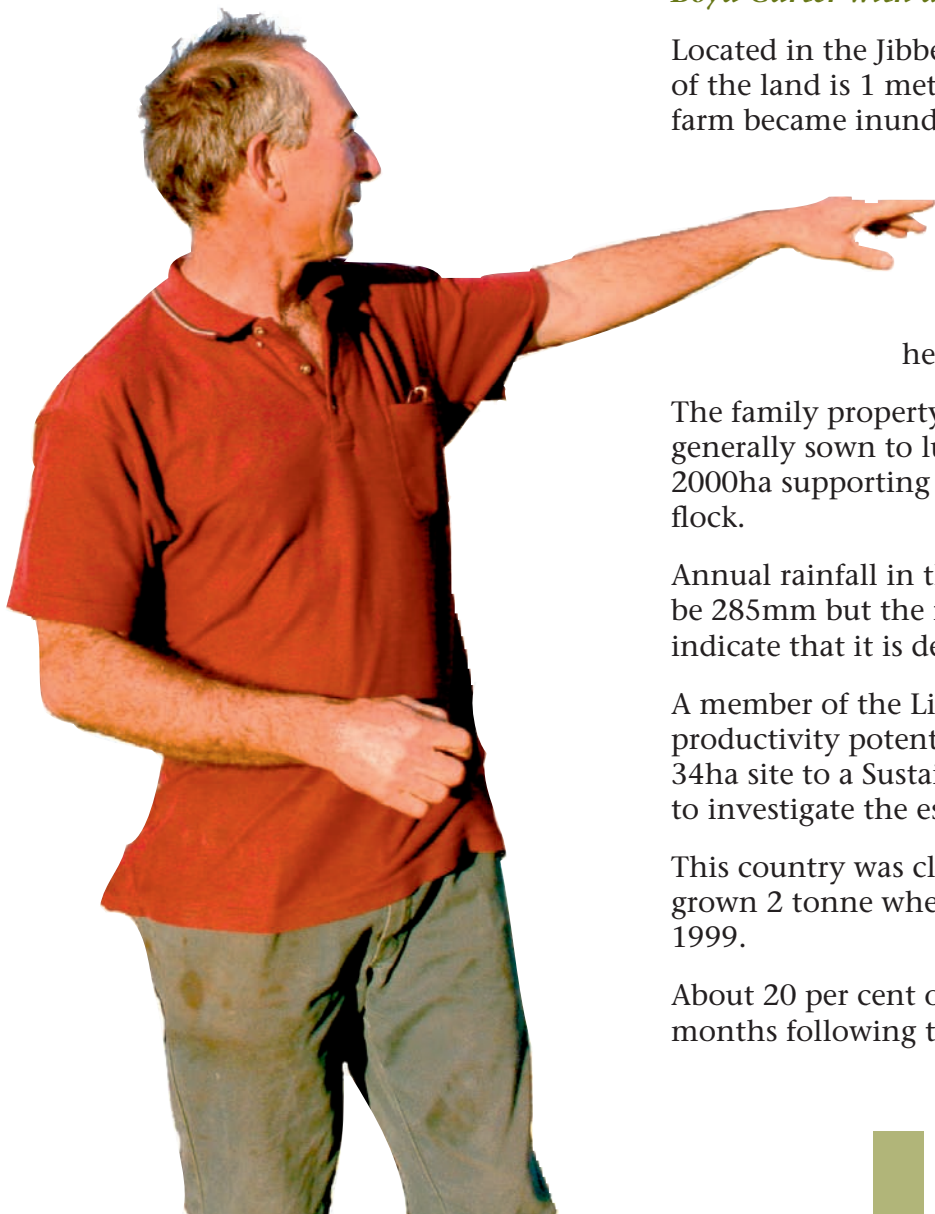
The family property covers 6700 hectares, with 4300ha generally sown to lupin and cereal crops and a further 2000ha supporting a 3500 head self-replacing Merino flock.

Annual rainfall in the district is generally considered to be 285mm but the five year average of 200mm seems to indicate that it is declining.

A member of the Liebe Group, Keith was interested in the productivity potential of this salty country and dedicated a 34ha site to a Sustainable Grazing on Saline Lands project to investigate the establishment of a range of perennials.

This country was cleared about 80 years ago and had grown 2 tonne wheat crops until the torrential rainfall of 1999.

About 20 per cent of the SGSL site was under water for 10 months following the heavy rains.





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Keith sowed the site to a mix of subtropical perennial grasses – Rhodes grass, Bambatsi and Gatton panic, setaria and signal grass in the spring of 2001. This was a particularly dry season, with 286mm of rain recorded for the whole year.

Nonetheless, some of the grasses hung on, with Bambatsi panic proving to have the greatest degree of drought tolerance.

Competition from weeds such as roly poly (*Salsola kali*) was an issue as the Carters deferred grazing the site until the perennials were properly established. Eventually they ran a pea roller over the roly poly in an attempt to squash it out.

Keen to establish some annual legumes in the surviving perennial grasses, Keith over-sowed the site with Cadiz serradella and balansa clover the following autumn.

Like 2001, 2002 proved to be a dry year and plant density on the site was sparse.

The following season, the Carters opted to go back in and over-sow the site with

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Evergreen’s perennial mix of Rhodes grass, Bambatsi and Gatton panics, signal grass and setaria in September 2003.

Keith admitted that this particular sowing should have been better planned.

“The competition from the annuals such as capeweed proved to be too great and the perennials suffered,” he explained. *“In the areas where little had established in 2001, we did well.”*

Saltbush was sown in rows 30 metres apart using a niche seeder in July 2003, the aim being to establish a ‘saltbush feedlot’. Keith estimated less than 30 per cent of these plants survived.

“I ploughed the site with a disc plough and saltbush and acacia were sown in rows with perennial grasses and lucerne in the inter-row,” he said.

“The saltbush has done best where the site is the saltiest and presumably that has something to do with the availability of moisture and the lack of competition.”

“I think it would be preferable to establish some of the saltbush from seedlings, but this will come down to how long you want to wait before you get a return on your investment.”

Keen to boost the legume content in the pasture, Keith sowed a mix of legumes in 2005. Spraying was delayed because of windy conditions.

Keith first burnt back the Rhodes grass with an application of Spray. Seed and then sowed a mix of Santiago medic, Charano yellow serradella, Casbah biserrula



and the hard-seeded Marguerita serradella.

"It was a tough July and the Marguerita, which is expensive to establish, did not set a huge amount of seed," Keith said.

"I prefer to have a mix of species, and perennials and annuals in the system to cater for a range of weather conditions.

"With 10 inches (250mm) of summer rainfall this year, we had more feed than we could use."

At present, the Carters' SGSL site is predominantly Rhodes grass, Bambatsi panic and the native windmill grass.

Bambatsi panic has proved to be incredibly drought-tolerant and Keith thinks that in future he may use it in preference to Rhodes grass.

In his experience saltbush seems to be the last port of call for the sheep.

"In our experience, grazing perennials – both the grasses and the saltbush – on their own has not been a great success, but when the sheep have access to adjoining stubble then they do well," he said.

"With all the summer rainfall this year and a perched watertable, having a perennial in the system has to be a help."

Keith is also involved with the national Grain & Graze program and has been able to scrutinise the grazing from his SGSL

site which in 2005 and 2006 has provided nearly 26,000 grazing days for his sheep.

The Carters would like to establish a series of saltland pasture feedlots – each 20 to 30ha in area – adjacent to stubble paddocks.

But given the experience of this SGSL site, Keith said he would sow the annuals before the perennials in the future.

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QUICK FACTS



Location: 20km east of Wubin

Rainfall average: 285mm

Enterprise mix: Lupins, cereal crops and self-replacing Merino flock

Trial size: 34ha

Trial aim: Determine the profitability of a Merino sheep system grazed rotationally on subtropical perennial grasses over-sown with a legume.

Determine the effect of this system on the watertable when compared to cropping and lucerne pasture.

Saltland pasture mix: Subtropical perennial grass mix of Rhodes, Bambatsi and Gatton panic, setaria and signal grass in 2001. Due to the dry 2002 the site was resown in September 2003 with an Evergreen perennial mix of Rhodes grass, Bambatsi and Gatton panics, signal grass and setaria.

Original vegetation: Wattle, salmon gum, York gum and tea-tree

Paddock cover before trial started: Barley and silver grass

Soil type: sandy duplex

Watertable: -2.7m

Water salinity: 5550mS/m (seawater)

Water pH: 3.1

Clearing date: 1920-1930s



A word from the gate...

Sometimes the big message that we get from a research site is not about the success of what we tried, but about what nature did.

The story from the SGSL work at the Carters' farm appears to be one of those instances. SGSL had two trial sites at the Carters' – one site associated with the Producer Network and another site associated with the WA2 research project. At each location, nature had a pretty important message to tell us about small leaf bluebush (*Maireana brevifolia*).

Bluebush is a valuable salt tolerant plant that grows and spreads naturally. Quite thick stands of bluebush grow in the road reserves near both of the SGSL sites on the Carters' farm. With the control of grazing on these sites, seed from the road reserves invaded the SGSL sites to provide a very useful productivity bonus.

Bluebush is a plant that grows in moderately saline soils that have low to moderate levels of waterlogging. Each year around February to March, bluebush produces large amounts of winged seed that can carry in the wind. The seed of bluebush loses viability when stored at room temperatures and ambient relative humidity, so 'new-season's' seed needs to be collected each year. However, these can be distributed by hand



Ed Barrett-Lennard

into areas with a cover of barley grass or ice plant and the plant will begin to recruit. After this, control of grazing and the passage of several years can convert a piece of degraded saltland into a useful feed resource.

There are two keys to the use of bluebush feed. Firstly (as for saltbushes) the leaves of bluebush contain quite high concentrations of salt so good quality drinking water must be provided to sheep. However, the second issue is specific to bluebush – the leaves contain quite high concentrations of oxalate. Sheep grazing bluebush must therefore have access to other sources of feed (hay or under-storey) to dilute the oxalate in the diet. Failure to do this can result in kidney damage to sheep.

For many years we have talked about the "low-cost" method of establishing saltland pastures – put up a fence and allow natural regeneration to occur. Bluebush is the most important species using this approach. It looks as if the two SGSL sites at the Carters' farm are well on their way to being revegetated using this simple and effective technique.

*Ed Barrett-Lennard is a Principal Research Officer with the Department of Agriculture and Food WA. He is recognised nationally as an authority on saltland agronomy. He produced the second edition of *Saltland Pastures of Australia*.*

"The Sustainable Grazing on Saline Lands program (SGSL) aims to support sheepmeat producers and woolgrowers profitably manage by dryland salinity on their farms.

SGSL involves building a network for testing and exchanging information, providing farmers with useful, timely and relevant information and conducting on-farm research into saltland production options.

The program operates in WA as a producer network of regional farmer groups undertaking individual sustainable grazing projects on local salt-affected farms as well as a Research & Development project through the CRC Salinity of which CSIRO and DAFWA are principal contributors.

The SGSL is a National program initiated and funded by Australian Wool Innovation, MLA and the Federal Government's Land, Water and Wool agency. In WA the project is co-funded, administered and delivered by the Department of Agriculture and Food WA, in conjunction with the CRC Salinity and CSIRO."

Further products in this series available at www.landwaterwool.gov.au

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