



Have a yarn

talking saltland grazing with Greg Astbury

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“Lessons learnt from a saltland pasture”



Lessons from a saltland pasture trial are helping the Astbury family to make economic use from land at risk from salinity.

Since 2007, Greg, Heidi and son Nathan Astbury, of Nomans Lake, have participated in an on-farm Sustainable Grazing on Saline Lands (SGSL) trial funded through a South West Catchment Council (SWCC) ‘Caring for our Country’ project.

The Astbury family farm in a 400mm rainfall zone in the Upper Great Southern, with 60 per cent of their land cropped and 40 per cent pasture grazed by merino sheep.

Greg Astbury said his family participated in the trial to learn strategies for dealing with saltland, as his farm included potentially saline, flat country.

“Hopefully we can get some economic return from that land,” he said.

“The sheep can get Vitamin E, a green pick and potentially we can take some grazing pressure off the rest of the farm.”

Mr Astbury said one of the main things he had learned from the trial was the importance of good weed control for at least two years prior to planting saltland pastures.



“Weed control is the most important thing in getting a good establishment, particularly with perennial grasses and pasture species,” he said.

Two paddocks, located 1km apart, were used for the trial and were previously cropped on a one-year crop, one-year pasture rotation.

Cleared of salmon gum, york gum, white gum and jam vegetation up to 90 years ago, salinity emerged in the southern paddock in the late 1960s and at least 50 years ago in the paddock to the north.

The watertable ranges from 2.22m to 0.36m below the surface across the two locations, and the salinity of the watertable is 226 millisiemens per metre (mS/m) on the freshest area, to 3390 mS/m (about 60 per cent as salty as seawater) on the saline flats.

The southern trial is located in a 26ha paddock at the edge of the salt-prone area that consists of a ‘fresh ridge’ of 6ha and saline clay flats comprising 20ha.

Soil types vary from deep sandy gravels on the fresh ridge to shallow loamy duplex soils and grey clays on the flats. The root zone salinity ranges from 50

(mS/m) at the fresh ridge to 250 mS/m in the saline flats.

Two perennial shotgun mixes – a ‘fresh’ mix and a ‘saline’ mix – were prepared for the fresh ridge and saline flat sites.

The fresh mix included 7kg/ha of Resolute tall fescue, 3kg/ha of Sirosa phalaris, 2kg/ha of Puna chicory, 2kg/ha of L90 lucerne and 10kg/ha of group AL ALOSCA.

“Chicory also established well, and is quite impressive”

The saline mix was comprised of 0.25kg/ha of old man saltbush, 0.25kg/ha of river saltbush, 3kg/ha of Dundas tall wheat grass, 3kg/ha of Resolute tall fescue and 1kg/ha of Puna chicory.

A knockdown was applied before the shotgun mixes were direct drilled on June 18, 2007, using a combine seed drill fitted with knife points.

A blanket wiper was used to attempt to control wild radish in mid-September, 2007, and wild oats and ryegrass were

mown with a pasture topper in mid-October the same year and again in October 2008.

The site was used for short grazing intervals in 2008, supporting 966 sheep grazing days per hectare that year.

A further 420 mated ewes had access to the site, as well as barley stubble, from April 7 to May 7 in 2009.

Mr Astbury said the sheep had benefited from the green pick, particularly during the autumn period, and he was particularly pleased with the establishment of the grasses on the saline flats.

“Phalaris and fescue both did establish quite well on the fresh ridge,” he said.

“Chicory also established well, and is quite impressive.”

“Lucerne was there, but with the dry summers it struggled to persist and old man saltbush didn’t establish as well as I thought it might – maybe it needed better weed control.”

The 25ha paddock to the north where the other trial took place contains shallow, sandy duplex soils and grey clays, and had a root-zone salinity ranging from 150 to 400 mS/m.

The Astburys stopped cropping the paddock on a regular basis about 15 years ago when they established 15m alleys comprising *Acacia saligna* and various species of saltbushes.

Strips were sown between the alleys on June 18, 2007, to phalaris, tall fescue, tall wheat grass, chicory, lucerne, medics (Orion, Sphere, Burr, Strand and Disc varieties), clovers (persian, Prima gland, and balansa varieties), ryegrasses (Kraka and



Rocket) and the Ball Salina mix (containing clover, medic and ryegrasses).

Due to a wet July, high soil salinity and insufficient weed control the previous year, emergence of the annuals and perennials was poor, and mainly cotula and barley grass weeds germinated.

“I think puccinellia is the key grass in very saline areas”

The existing rows of saltbushes and *A. saligna* have since been cleared and burnt, and in 2009 the paddock will be planted to six-metre wide alleys of old man saltbush seedlings, with a 30 metre inter-row.

“We think a saltbush alley system is more appropriate for that area of land because it is the most potentially saline part of the farm,” Mr Astbury said.

Barley will be sown in 2009 to provide weed control prior to establishing the pastures.

From 2010, the inter-row will be sown to tall wheat grass and other suitable pasture species such as balansa and persian clover.

Mr Astbury believed the pasture trials in both paddocks would have been more successful if puccinellia had been included, but puccinellia seed was not available at the time.

“I think puccinellia is the key grass in very saline areas,” he said.

Mr Astbury said his family planned to do block plantings of saltbush on more saline areas of the farm.

“I find the problem with saltbush alleys is that you are putting pressure on the alleys with spraying, as there is always a bit of spray drift,” he said.

The saltbush blocks would be fenced off and used for grazing in late summer and autumn.

“You have got to exclude sheep from the end of July to the New Year to get the best use out of them,” Mr Astbury said.

“When the sheep have full time access there is no chance for the saltbush to recover.”

QUICK FACTS



Location: East Narrogin

Rainfall Average: 400 mm

Enterprise mix: Sheep (wool), wheat, barley, oats, canola, lupins

Trial size: 28 ha (shotgun mix area); 9 ha (saltbush alleys site)

Trial aim: To establish a shotgun mix of perennial species over a site with variable salinity, waterlogging and soil texture properties; to establish saltbush alleys and a tall wheat grass inter-row on a site previously sown to acacia alleys

Saltland pasture mix: “Fresh ridge shotgun mix” – Resolute tall fescue (7kg/ha), Siroso phalaris (3 kg/ha), Puna chicory (2 kg/ha) and L90 lucerne (2 kg/ha); “Saline flat shotgun mix” – old man saltbush (0.25 kg/ha), river saltbush (0.25 kg/ha), Dundas tall wheat grass (3 kg/ha), Resolute tall fescue (3 kg/hg) and Puna chicory (1 kg/ha); “Saltbush alley site” – old man saltbush alleys with Dundas tall wheat grass inter-row

Original vegetation: Salmon gum on the flats – increasing proportion of whitegum on elevated areas

Paddock cover before trial started: Annual ryegrass and barley grass (fresh ridge); Barley grass, cotula, samphire and bare scald (on flats)

Soil type: Sandy gravel duplex and shallow loamy duplex (shotgun mix site); Shallow sandy duplex (saltbush alleys site)

Watertable: -2.45 (fresh ridge) to -0.88 (saline flat)

Water salinity: 226 mS/m (fresh ridge) to 3390 mS/m (saline flat)

Water pH: 4.6 (saline flat) to 6.2 (fresh ridge)

Clearing date: 1920-1930

A word from the gate...

So often I hear producers say 'I failed to get a good establishment of perennials due to competition from weeds' and if there is one take home message from this demonstration it is weed control is critical during establishment.

Greg Astbury said himself; the main thing he learnt was the importance of good weed control for at least two years prior to planting saltland and the same is true for perennials on non-saline land.

Greg has also learnt which perennials are suited to particular parts of the landscape indicating the value of trying different things on small areas of your farm or adopting the findings of local trial work. Of interest in this case is the establishment of a tall fescue, phalaris, chicory and lucerne mix on the fresh ridge which after two years is dominated by tall fescue and chicory.

Chicory is a deep rooted species that has proven to be quite drought tolerant in WA and capable of providing highly nutritive feed to livestock in summer and autumn. As such it is best suited to growing stock either in combination with annuals or perennials that require similar grazing management ie rotational grazing.

Stock find chicory highly palatable so it is best to graze mixes containing chicory at high grazing pressures for short periods (eg days) followed by a rest the duration of which is determined by pasture growth rates.

Chicory has a high requirement for nitrogen so a companion legume is essential. It also has poor winter growth so species such as Resolute tall fescue are useful companions to maintain winter production.

Whenever you are considering a temperate perennial companion for lucerne and chicory it is best to select types that are summer dormant such as winter active tall fescues.

Lucerne and chicory are very competitive for moisture in summer and as such they tend to drought out summer active temperate species.

Paul Sanford is a Senior Research Officer with DAFWA specialising in perennial based grazing systems.



Paul Sanford

The Astbury site is an on-farm, farmer driven trial that was previously established through South West Catchment Council (SWCC) IP2 federal government funding. It has been inspired by a prior industry funded project – Sustainable Grazing on Saline Lands (SGSL) which established a legacy of assisting farmers in carrying out their own trials with substantial support from the Department of Agriculture and Food WA.

Transitional year funding through the federal government 'Caring for our Country' project has enabled further assistance to be provided to the Astbury site, with valuable ongoing support from the Facey Group, Department of Agriculture and Food WA, Global Pasture Consultants and the Saltland Pastures Association.

Further information or products in this series available at sgsl.agric.wa.gov.au

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