Saltland

What do you do with it?

Do you leave it like this?

or

Do you turn it into this?

"No question ... say some"

Turn the pages to find out what else active saltland managers have to say ...

CASE STUDY 1 - 'Kamann' (Tintinara)

Owner-managers ; Jeff & Linda Gowling

Property

Kamann is 742Ha of generally sandy, undulating country with moderately saline areas in significant paddock-sized areas. The property has mixed livestock enterprises including prime lambs and vealer production. There are 138Ha (350 acres) cropping and 156Ha (400 acres) of lucerne seed production. Compared to 10 years ago, prior to pasture renovation, they are carrying only slightly higher stock numbers and have slightly reduced the cropping area. However the big gain is the introduction of the lucerne seed production. This has significantly increased the profitability and the sustainability of the farm.

Saltland Pastures

Establishment

By renovating a paddock that was dominated by sea barley grass and carrying (with supplementary feeding) approximately 1dse/Ha, the carrying capacity has been increased to 6dse/Ha (on an annual basis). The pasture is a productive mix of puccinellia, tall wheat grass and clovers, which is heavily stocked through the summer to autumn period.

Establishment involves spraytopping in the year prior to sowing. This was and still is considered essential for barley grass control. Another weed-kill follows the initial workup. Seed is dropped on the surface and is followed up with a light harrow and rolling. Fertiliser is applied at sowing and an insecticide to control red-earth mite is applied in the establishment phase.

Jeff Gowling in that paddock during autumn. Despite hard grazing there still remains some good feed on this mixed saltland pasture.

Ongoing Maintenance

With good phosphorus levels in the paddock and maintenance of a clover component in the pasture stand, very little in the way of maintenance is required. There are no major pests to spray for and a reasonably wet year will help reduce the barley grass component. There is little else in the way of weeds.

Grazing Management

In order to work the change of lambing, stock are introduced in late spring, from lambing. This is earlier than usually recommended for saltland management, however Jeff is confident the high water use efficiency of the property, based on extensive lucerne pastures is more than adequate to compensate for this.

The high level of lucerne plantings on this property underpins the long-term sustainability of this property. The high water use ability of lucerne reduces rainfall 'recharge' to the saline ground-water table, maintaining the ground-water level and hence soil salinity at a lower level than it would otherwise be.

The lambing ewes are generally left in the paddock through this summer period, averaging a stocking rate of 6dse/Ha. The hard grazing during this period also encourages more leaf and hence better feed quality in the tall wheat grass pasture.

The Bottom Line?

Assuming a prime lamb GM/dse of $15 (PIRSA 2000), The cost of renovation is almost recouped in the first full year of grazing due to increased carrying capacity alone. However there is additional benefit in the strategic use of the saltland pasture to change to spring-lambing.

Establishment Costs per Ha

Item	Cost
Year prior to sowing	
Chemical Topping	$17.50/Ha (contract cost)
At sowing	
Workup	$4
Knockdown	$12
Seed - puccinellia at ~ 3kg/Ha	$13.50
Seed - tall wheat grass ~ 2kg/Ha	$8.40
Sow, harrow, roll	$8
DAP + sulphur (100kg/Ha)	$45
Insecticide	$3
TOTAL	**$111.40**

The saltland pasture is silvergrass free and has only a low component of sea barley grass, enabling the change which pays dividends. This comes through an increased lambing percentage of 25% to a flock of 1000 ewes.

This increase in lambing percentage from 75 to 100% enables 250 merino ewes of the self-replacing flock to be mated with cross-breds, while still maintaining flock numbers.

The clear profit then, as Jeff sees it, is the extra 250 cross-bred lambs from these ewes, valued at current market price ($15-$20) each.

Other economic benefits that Jeff has been able to quantify are;

- Reduced hand-feeding
- The ability to set stock through the lambing period reduces handling costs by an estimated 20%
- Improved wool yield due to a reduced grass seed problem
- A better price for the wool that is produced due to reduced vegetable matter (grass-seeds).

Puccinellia paddock, Greenvale sown May 2000

CASE STUDY 2 - 'Gaymore' (Keith)

Owner-managers ; Trevor & Janet Egel

Property

Trevor divides his property (total 1614Ha) into what he calls 'salt country' (1253Ha) and 'sand country' (361Ha). The flats are salt-affected and include some permanent swamp areas. The sand rises are affected by non-wetting sand characteristics. Salinity and non-wetting sands are both potentially significant limitations.

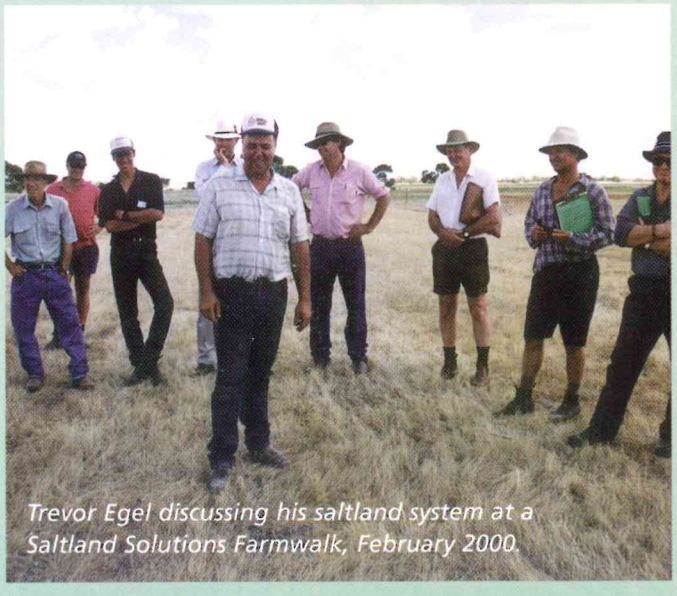
However the main income of the property arises from the salt country simply because the majority of the area is salt-affected and it doesn't fuss Trevor one little bit.

The main enterprise is wool production. Currently a self-replacing ewe flock of 2600, plus cattle are supported. Stock are managed around significant areas of lucerne, puccinellia and sometimes tall wheat grass being shut up for seed production. Some area is cropped to barley. The lucerne and some puccinellia pastures are also currently under an upgrading program – 200Ha each year

In terms of carrying capacity, sand country will support 5dse/Ha annually and salt country averages 3.5dse/Ha, however the salt country is much more cost effective, with the inputs to the lucerne pastures being much higher.

Establishment cost per Ha

Item	cost
Roll samphire	$1.50
2 workings	$10
seeding	$5
Puccinellia seed - at 8-10kg/Ha	$9 (harvest cost) opportunity cost $26
Fertiliser / Lime	$10
TOTAL	**$35.50**



Trevor Egel discussing his saltland system at a Saltland Solutions Farmwalk, February 2000.

Stock on puccinellia pasture at Moss Dale, near Keith

Saltland Pastures

Establishment
Renovation of almost bare saltland with puccinellia (previously supporting approximately 0.5dse/Ha) has increased the stocking rate to 3.5 dse/Ha.

The cost of salt-tolerant pasture establishment on this property is also very low for two reasons. The cost of seed is almost nothing, as seed is reaped on the property and secondly, weed control is rarely required. This is because the flooding during wet years creates flats that are almost bare of vegetation, including one of the most salt-tolerant weeds, sea barley grass.

Establishment generally involves rolling of samphire in the heat of summer to get the best impact (Note; Samphire is protected under the native Vegetation Act. Historical areas need to be protected, however regrowth can be effectively 'cleared' within a period of 5 years of last being cleared.)

Due to a heavy soil-type the paddock is worked over two to three times to produce a fine seed-bed. The seed is then dropped on the surface with a low rate of fertiliser/lime.

Ongoing Maintenance
Once established, the puccinellia pasture has little maintenance. Pesticide sprays are applied occasionally if required (Red Legged Earth-Mite can sometimes be a problem in the establishment phase) and Trevor will oversow with puccinellia at a minimal cost to thicken a below average stand if required.

Grazing Management
More restricted in a wet year, in which water will cover almost 300Ha, stock are generally restricted to rotational grazing of the lucerne pastures during the winter period.

Puccinellia is only moderately grazed through the spring to early summer period, depending on feed availability. The main grazing of puccinellia is of dry feed through the late summer and autumn period and the early winter as puccinellia shoots away with the early rains.

Care is used to maintain a good height on the puccinellia going into winter. This allows the plant to still maintain leaf above the water level in a normal year, and survive the waterlogging. Over summer, maintaining a level of ground cover on the saline area helps to manage the salinity levels in the soil.

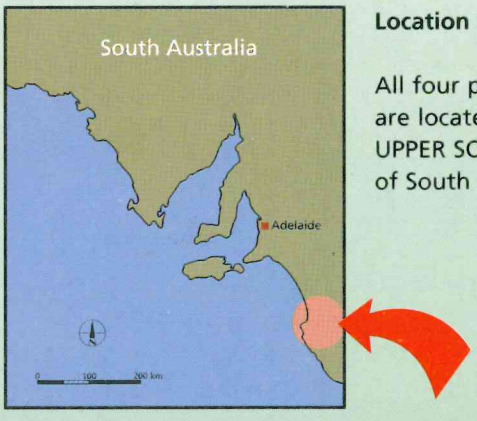
While rotational grazing of lucerne will also continue through the summer to autumn period, the availability of the puccinellia flats is of benefit to protect the lucerne from the damage livestock can cause at this time of year.

The Bottom Line?
The main enterprise consists of a self-replacing ewe flock of 2600. With an average micron of 18.5 and with current premiums for fine wool, this livestock enterprise is currently profitable and saltland provides the basis for this.

In 1999, wool across the sheep enterprise was reduced to an average of 18.5micron while maintaining an average wool cut of 5kg/Hd. This is a fantastic achievement, buoyed with premium returns, placing the average gross margin at approximately $21/dse (Estimated using production costs from PIRSA gross margins, 2000 for the self-replacing merino flock). Increasing production by 3dse/Ha via saltland pasture then becomes very worthwhile, particularly when the cost outlay for renovation is less than $40/Ha. Returns then outweigh capital outlay in the first year.

Other benefits Trevor has found
- The return on puccinellia seed - often from the first year of sowing.
- Even though no grazing occurs in the establishment year, sheep can be kept in the paddock early on in the season with hand-feeding - without damage to the puccinellia
- When supplementary feeding is required, stock can be kept on the saltland without damage to the puccinellia, in comparison to leaving in a lucerne paddock, which particularly sheep can damage by digging around the plant.

Saltland is grass-seed free, and is virtually dust free. This contributes to a reduced vegetable matter in the wool and their ability to run fine wool merinos.



Location Map

All four properties are located in the UPPER SOUTH EAST of South Australia.

CASE STUDY 3 - 'Nepowie' (Woolumbool)

Manager ; Lindsay Breeding

Property

Nepowie covers approximately 2600Ha in the Woolumbool area. Approximately half of the property is salinity affected to varying degrees. The soil type on the flats is sand over clay. The remainder of the area is rising ground, which generally has non-wetting characteristics. Nepowie carries the breeding operations of the McBride pastoral company.

Saltland pastures

Establishment

Prior to renovation, the worst affected flats had been reduced to a carrying capacity of 2 to 3dse/Ha. Via establishment of puccinellia and/or tall wheat grass pastures, the stocking rate has increased to 6.5 dse/Ha in one paddock and 8dse/Ha in the other.

The difference here in carrying capacity is worth a mention as the difference lies in the seeding rate. The higher stocking rate was sown at 8kg/Ha of puccinellia only, compared to 4.5kg/Ha puccinellia, plus 4kg/Ha of tall wheat grass. In terms of salinity this ground is quite high and puccinellia is the most suitable pasture. Lindsay says he will always go for the higher seeding rate now, not just because of the increased stocking capacity right from the beginning, but also because of the competitive advantage of the thicker stand, in which barley grass barely encroaches. After all, this only equates to an extra $20/Ha at establishment (if you are buying seed, even cheaper if you reaped your own!)

The usual establishment method includes the following; A spraytop the year prior to sowing, using glyphosate to reduce barley grass density. A rate of 600ml/Ha is used because of the varying maturity of the barley grass. The aim is to kill the new and top the more mature plants. In the year of establishment, there are two to three workups (depending on the couch grass) prior to the break and a kill of weeds germinated following the break. Seed is dropped on the surface, followed by a set of cultipackers, sowing and rolling in the one operation.

Establishment Costs per Ha

Item	Cost
Year prior to sowing	
spraytop	$13.50
At Sowing	
Work-up	$8
Knockdown	$12
Seed - puccinellia at 8kg/Ha	$32
Seed & roll	$5.50
TOTAL	**$71.00**
Maintenance fertiliser costs 19:13:0:9	$26.00/Ha

The paddock is then shut up and monitored for Red Legged Earth-Mite until the first grazing in March the following year.

Ongoing Maintenance

Clover establishment has not been successful, due to high salinity levels. As a consequence the pastures are fertilised regularly with a nitrogen based fertiliser to maintain strong healthy growth. The seed production paddock in particular, will receive a late spring top-dressing most years of 50 to 60kg/Ha 19:10.

Grazing management

Grazing during the winter time is generally confined to the higher ground pastures consisting mainly of lucerne, cocksfoot and veldt. Saltland pastures are normally rested through this period. Perennials are highly valued for their higher water use and productivity. Clay-spreading is being carried out on the high ground in order to establish good lucerne pastures.

The normal grazing period for puccinellia and tall wheat grass pastures is during the summer to autumn. The pastures are stocked heavily through this period to keep on top of the tall wheat grass growth.

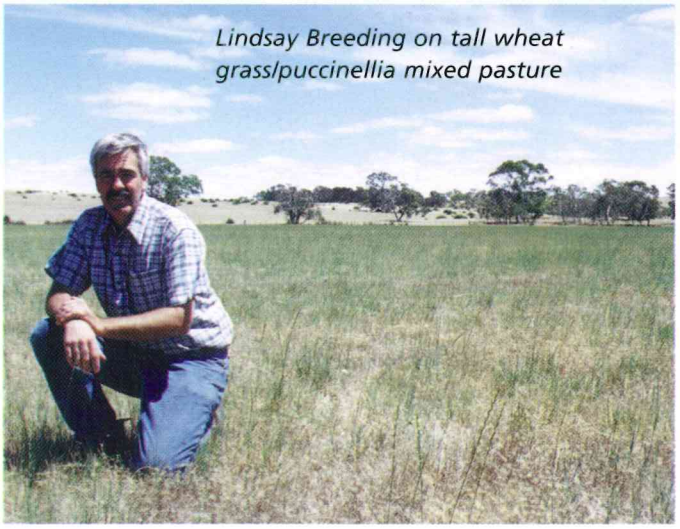
The summer growing ability of tall wheat grass can be a bonus when spring and summer rainfall occurs. The pasture responds with increased growth and improves water use efficiency, reducing the drainage to the saline water-table.

The Bottom Line?

Nepowie carries the breeding operations of the McBride pastoral company and as such receives internal valuations for rams and bulls rather than a market valuation.

Even so, the defined gross margin is $12.96 per dse. This still translates into a benefit of up to $64.80 per hectare under saltland renovation, with an increase of 5dse/Ha.

The pastures have also shown excellent persistence since they were established seven to eight years ago. This enables continuing high production with a low fertiliser maintenance cost, ensuring ongoing profits to the business.



Lindsay Breeding on tall wheat grass/puccinellia mixed pasture

CASE STUDY 4 - 'Greenvale' (Woolumbool)

Owner-managers ; Phil, Leigh and Graham Clothier, Woolumbool

Property

Greenvale is approximately 2050 Hectares and the major farm enterprises are wool production, stud sheep (Poll Dorset & White Suffolk), cropping and prime lambs. There is currently significant areas being clay-spread to improve crop productivity and water use efficiency.

Saltland Pastures

Establishment

The Clothier Brothers are emphatic that renovation and maintenance of salinity affected pastures to puccinellia will at least double and perhaps triple their carrying capacity. From degraded sea barley grass pastures supporting two to three dse/Ha, saltland renovation and management has improved carrying capacity to 7.5dse/Ha, which is the property average.

The normal establishment method is as follows;

- In the year prior to renovation the paddock is spray-topped to reduce barley grass.
- Clothiers maintain that the key to the weed-control success they have experienced is to go in early, at head emergence. The paddock is then heavily grazed through the spring to reduce dry matter.

At sowing

The paddock is worked, and weed germination is then sprayed with a knockdown. The paddock is scarified and the puccinellia seed is dropped on the surface. Finger harrows, followed by a tyre roller has produced good success on their property. A puccinellia seeding rate of 10kg/Ha is used because of the instant pasture density which keeps the barley grass component low.

Balansa seed is also included in the seed mix at 1kg/Ha, the clover establishes in some parts of the paddock on the slightly rising ground, however the pH of some saline areas can be too high for balansa clover.

Establishment Costs per Ha

Item	Cost
Year prior to sowing	
Spray-top	$13.50
At sowing	
Work-up	$5
Knock-down	$12
Puccinellia seed at 10kg/Ha	$40
Balansa @1kg/Ha	$1.80
Santiago medic @ 1kg/Ha	$3.25
Seed, harrow	$5
100kg/Ha DAP sowing	$48
40kg/Ha urea late August	$15
TOTAL	**$143.55**
Ongoing fertiliser application	$16 (nitrogen)

Early Grazing Management

The newly established paddock is snap grazed in late August using a big mob of sheep. Clothiers believe this assists with the control of capeweed and maintains green growth longer, when the feed quality of puccinellia is particularly good. The pasture is then spelled until the puccinellia has set-seed, about mid December.

Ongoing Maintenance

Regular applications of urea are carried out, in the first year and at ongoing periodic intervals where a clover component is absent. Clothiers are adamant that it is essential that the puccinellia grass system is dependent upon a nitrogen source for both productivity and sustainability and if a clover component is unable to provide it (through salinity or pH limitations) then fertiliser applications are required.

Grazing Management

The main grazing of puccinellia is in the spring through to autumn period, when the silvergrass seed free nature of the puccinellia pasture becomes a real advantage. This reduces the wool vegetable matter at shearing and improves sheep growth and health through this period.

The Bottom Line?

Puccinellia is viewed highly favourably as a pasture on Greenvale. In their own words 'it is no dearer to establish than any other pasture, even cheaper for the same carrying capacity' and with wool production being the core farm enterprise, productive and profitable pastures are essential to the business.

Three year average gross margins for 1994-96 are $160/Ha for the stud enterprise and $117/Ha for the commercial sheep flock. This ensures the capital cost of pasture renovation is virtually re-couped within the first year of grazing. Annual fertiliser applications are seen as essential for maintaining that productivity and return. With only a cost of approximately $20/Ha it is considered well worthwhile when basic economics are considered.

Leigh & Graham Clothier on a newly established puccinellia/clover pasture ; sown May 2000

Produced by Kate Morris for the
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