

# RECLAIMING A BARE, ERODED SALT SCALD – YOUNG

SUSTAINABLE GRAZING ON SALINE LANDS

Case study – Young

**LANDHOLDERS: DAVID AND VICKIE CLARKE, CUDGELL CREEK, NEAR YOUNG, NSW**

## The problem

This 4.7 ha site sits right at the base of a large slope and had had a salinity problem for some time. In the paddock were a bare salt scald and a dam containing salty water. Many of the paddocks surrounding the site had been used for annual cropping for some years, and it is thought that these paddocks had leaked water into the salty watertable, raising it and creating the salt scald. This water was obvious in the landscape at times, making the site wet, and keeping the dam full. A few gum trees were looking sick because of the salt.



*Before: The salt site was originally dominated by sea barley grass.*



*After: By November 2006 there was excellent pasture establishment. Grazing management has resulted in almost total ground cover and the replacement of annual grass species with perennial pasture species capable of tolerating a variety of saline conditions.*

## Actions taken at the site

### Preparation before sowing

Because of the dry conditions we were not able to control weeds. Those present were some ryegrass, plus tall wheatgrass and lucerne remaining from a previous sowing attempt. However, the drought conditions made the weed cover fairly light.

The pasture was sown on 21 April 2005, when it was dry and we were able to get on to the paddock. We had already missed a year as a result of the terrible drought conditions.

We can sow these areas only when they are dry. Because we didn't spray, we ran over the paddock with the air seeder to scuff up the soil. This is not our normal procedure: we usually direct drill and use chemical control for weeds. The area was fenced off at sowing to control grazing on the new pasture.

The pasture species mix sown was:

- Advance fescue
- Atom prairie grass
- Balansa clover
- chickory
- puccinellia
- Riverina sub clover
- Shaftal Persian clover
- strawberry clover
- tall wheatgrass
- Tekapo cocksfoot
- Victorian rye grass
- Wintergraze lucerne.

This mix was sown at 9 kg/ha.

It was sown with an RFM® Air Seeder at a row spacing of 18 cm, with 110 kg/ha of monoammonium phosphate (MAP).

On 12 June 2005, sprays were applied to control both toad rush and red-legged earth mite. On 2 August the red-legged earth mites were again sprayed, because of a heavy infestation.

Vickie Clarke

Damien Doyle

## Results

The pasture started emerging on 21 June 2005.

Pasture readings were taken in October. The salty area was dominated by annual ryegrass, followed by burr medic and toad rush – species that were not salt tolerant. They survive through winter while fresh rainwater sits on top of the ground, masking the salt below. Outside the salty areas, Paterson's Curse, strawberry clover and phalaris dominated. David was disappointed at the amount of weeds present.

Ground cover in the first season was 90%, although the badly scalded areas were still not heavily vegetated.



*Very lush growth, with ryegrass dominant, 6 months after sowing.*

The site was given two short crash grazings in its first year:

- 4650 ewes and lambs were put in for 5 days in November 2005
- 2500 crossbred lambs were put in for safety from a fire for 2 days in December 2005.

Pasture measurements taken in 2006 and 2007 showed there had been a very good establishment of pasture in both the saline area and the fresher area surrounding it. Ground cover was excellent in both. Salt-tolerant pastures (particularly tall wheatgrass) dominated in the salt area, where strawberry clover and puccinellia were also present.

In the non-saline areas, phalaris dominated.

Over the next few years the salt site dried up, following both the sowing of the salt pasture and the change in use of the surrounding paddocks from cropping to lucerne. Some self-sown gum trees had looked unhealthy in the past, but they now look very good.

## Conclusions from Industry & Investment NSW

*By Jim Meckiff, Advisory Officer, Industry & Investment NSW, Cootamundra*

Typical of the granite landscapes of Young and districts, this low-lying area showed signs of dryland salinity. A salt-tolerant pasture mix was sown.

The site has been fenced off to restrict access by livestock during establishment and to provide improved grazing management. There is a small dam in the lowest corner that shows signs of salt water being present (i.e. the water is crystal clear).

The surrounding paddocks were traditionally used for winter crop production, but lucerne has been incorporated into the crop rotation to soak up groundwater recharge and provide valuable pasture for grazing livestock.

Excellent pasture establishment and correct grazing management have seen almost total ground coverage and the replacement of annual grass species (ryegrass and sea barley grass) with perennial pasture species capable of tolerating a variety of salinity conditions. The species change as you move away from the saline environment and onto the freely draining granite soils of the slopes.

Seasonal conditions in spring of 2006 were not conducive to pasture growth regardless of species, but the deep-rooted perennials such as lucerne still provided green feed for grazing livestock. June 2007 saw a wide variety of annuals, including clovers and broad-leaved weeds, present on the site. Again, the perennial species were well established and were expected to successfully compete with these weeds. The important thing to note is that the soil was not waterlogged, total ground cover was achieved, and plants were growing and using water on what was once a less productive part of this farm.

## Final comments from the landholders

At the end of 2005, Vickie said:

*In hindsight we would not sow again without waiting for rain and getting a germination so we could use chemical to clean the paddock. We think the result would have been better all over, with less weed competition. The reasons we sowed dry without a chemical cleanup were:*

1. *worries about getting the machinery on the ground after rain*
2. *we had quite a bit of lucerne, tall wheatgrass and clovers surviving from a previous attempt and did not really want to kill them.*

*After putting the sheep in we noticed that they knocked a lot of the feed down, which has now become a mulch. We did not put stock in until after the plants had set seed.*

*At the end of 2005 we were quite pleased with the result so far, but the scalded area still remained a problem.*

In 2007 Vicki noticed how good the ground cover was: the paddock had changed.

In 2009 Vicki said the area now provides more stock feed and the salt area is covered over. There is more than double the previous vegetation cover. They now graze the area when it needs it. Usually this is done with about 1500 ewes for about 4 days and happens three or four times a year.

It was amazing how well the pasture recovered from the dry years following rain.

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*Prepared by Luke Beange, Advisory Officer,  
Industry & Investment, Dubbo NSW*

## Acknowledgments

*NSW Salt Teams.*

## APPENDIX

*Rainfall during the trial (mm)*

	Jan	Feb	Mar	Apr	May	Jun
2005	21	55	15	6	1	112
2006	74	6	8	7	5	49
2007	40	20	18	53	54	62
2008	46	33	60	40	14	32

	Jul	Aug	Sep	Oct	Nov	Dec	Total
2005	67	70	80	100	73	25	625
2006	70	11	22	0	24	7	283
2007	34	15	6	35	99	116	550
2008	56	32	31	35	49	69	496

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