

Have a yarn

talking salt with Peter & Lois Kelly

"Stopping the spread of salt-affected area"

***P**eter and Lois Kelly have spent more than \$100,000 in cash and in-kind contributions on their gillingarra farm in a bid to arrest salinity and waterlogging.*



It is a significant contribution given that the salt-affected area on their property, Lo-bel Farm, is just 40ha. The area lost to salt has been dramatic and rapid.

Until the heavy rains of 1999 there was no evidence of salt on the farm and now the salt-affected area is spreading north at a rate of 150 metres per annum.

Located on the Moora-Bindoon Road, 30km south of Moora, Peter acknowledges that because of the road frontage, the initial motivation was aesthetics.

"Six years ago, we would never have guessed that the salt-affected area would spread as it has," he said. "We have really had to increase our efforts to arrest it."

Part of the Kelly family's efforts to curb the area affected by salt has included their involvement in the Sustainable Grazing on Saline Lands project.

Originally the project covered 15ha but Peter has been working on a much broader area.

The site is bounded to the south-west by a dolerite dyke and to the west by the road and railway line – all restricting the natural flow of water from the salty area to the Moore River, which flows just a few hundred metres to the west.

Over the past six years there is not much that Peter and Lois Kelly and their daughters, Lana and Marelda, have not trialled on the salt-affected and waterlogged site.



“We cannot imagine what would have happened here if we hadn’t installed drains and pumped.”

Their efforts began in 2000 when they planted trees to reduce recharge and were followed up with the planting of subtropical perennial grasses.

With an abundance of fresh water on the site, the Rhodes grass grew well.

At this stage, Peter was coming to grips with the huge volumes of water feeding into the site from higher in the catchment and realised that more desperate engineering measures - pumping and drainage were going to be necessary.

The catchment area of 750ha is estimated to have an inflow of 3,900,000 cubic metres annually.

In July 2002 he got approval to install 1.2km of drains that would allow the water to flow to a central point and then be pumped up through the road and railway line culverts and drain into a 90mm stormwater pipe and into the adjacent Moore River.

Over time he installed six windmills that would pump the drain water up into a tank, which would then gravity feed into a main drain under the road and into the river.

Peter has pumped a staggering 26,000 gallons (nearly 120,000 litres) daily since July 2002.

Over that time, the quality of the drain water has improved from 570 parts per million to 190 ppm.

“We cannot imagine what would have happened here if we hadn’t installed drains and pumped,” Peter explained.

“Drainage has been like pulling the plug allowing this area to flush. I would never beat this without drains.”

The drains were 2 metres deep and open, but Peter has laid 15cm diameter pipe in the drains and filled the drains in as they were silting up.

“We are dealing with sand and I had tried to use tyres in the drains but it was very labour intensive,” he said.

“The 15cm pipe was our next option but it was difficult to keep the pipe flat and in some parts it silted up and we had to flush it out with the fire fighter.

“If I had my time again, I’d put the pipe into the freshly dug drain and cut slots in it every 20m and place rocks over the slots to allow filtered inflow.”

The Kelly family’s efforts to revegetate the site and surrounding area have been relentless and ongoing.

The perennial grasses were followed by plantings of saltbush seedlings and 5000 salt-tolerant eucalypt trees.

“But you have to keep trying.”



Peter admitted that trying to establish vegetation has been hit and miss at times.

He planted 4000 saltbush seedlings in July 2006 and estimates that only 300 of those survived because of the dry season.

"But you have to keep trying," he added.

In a bid to slow some of the recharge north-east of the site, a 10ha area was sown to lucerne last year and this has been rotationally grazed more recently.

"The lucerne has been an outstanding success – you know it is deep-rooted and because it looks good it gives you a psychological lift," Peter said.

"We planted some salt-tolerant NyPa grass this year also."

"In fact we have had a lot of technical support from the SGSL project and more recently the Catchment Demonstration Initiative and for that we are very grateful."

Peter explained that the site has changed much over the six years it has been treated.

Areas that were originally scalded and bare now support saltbush plants that are 1 metre high.

On the other hand, salt-tolerant eucalypts planted on what were the northern fringes of the original salt-affected area are dying and other areas

of pasture are being lost to salt scald. Peter is not about to give up the fight however.

"We will probably have to install a further 500m of drain to keep on top of the waterlogging," he said.

"Ultimately we want to reclaim 75 per cent of that site with vegetation that can be grazed by stock."

"In fact we have had a lot of technical support from the SGSL project and more recently the Catchment Demonstration Initiative and for that we are very grateful."

QUICK FACTS



Location: 30 km south of Moora.

Rainfall average: 573mm

Enterprise mix: Export hay, grain, sheep & cattle.

Trial size: 20ha

Trial aim: Establishment of saltbush; perennial pastures; trees over drains.

Saltland pasture mix: Tall wheat grass; puccinellia; Rhodes grass; NyPa grass; lucerne and trees.

Original vegetation: Wattle; white gum and low scrub.

Paddock cover before trial started: Barley grass.

Soil type: Grey clay.

Watertable: 40cm above the surface.

Water salinity: 1799 mSm (Just over a quarter seawater)

Water pH: 4.8

Clearing date: 1965





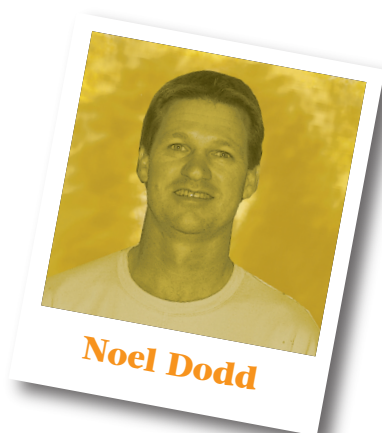
A word from the gate...

The site is an excellent illustration of the hydrological processes of the Yilgarn area. Understanding the importance the hydrological process before trying to treat the problem clearly illustrates that management needs to be about the cause as well as the result.

Peter and his family, along with John Longman from the Gillingarra LCD have made a commendable effort in developing an integrated approach of treatments.

For example the focus on increasing water use higher in the landscape with the Lucerne, sub-surface and shallow surface drainage and waterlogging salt tolerant plants such as the saltbush and NyPa grass.

Estimates indicate that 4 million m³ in rainfall is deposited into the catchment on an annual basis. Much of which runs off the granite in the upper catchment, disappearing into the midslopes gravels and sands to reappear at the break of slope and across the flats, such as at the SGSL trial site.



Here the creekline loses overland flow where it disappears beneath the surface as it flows past the homestead area. A bore that is capable of supplying 100kl /day that is overflowing is adding a significant quantity of good quality water to the surface issues.

There are plenty of clues to what is causing the discharge to express itself in the area. The 1:250 000 Geological map shows a strong lineation crossing the bottom of the catchment.

The Bindoon – Moora Road although a very visual barrier is only restricting surface flows up to the capacity of the two culverts. A 1:20 Average Reoccurrence Interval (ARI) for this catchment is in the order of 15m³ with the paleo-drainage confusing the system.

The continual decline in remnant roadside vegetation and planted eucalypts shows that the drains are not removing enough water from the lower slopes.

Noel Dodd farm and catchment planning consultant based in the northern agriculture region.

"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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