

Restoring Landscape Function

Turning country around: How to put the
brakes on water and wind erosion

Managing Landscape Function on Koonamore Station

Property Size: 1700km² | Stock: Merino Wool Sheep | Soil Type: Clay Loam over Calcrete

Annual Rainfall: 200mm | Region: North East Pastoral

First step: Identifying the problem

Owned by the Rasheed family since 2002, Koonamore Station is located north of Yunta in South Australia. Predominantly open country with Chenopod shrublands, Koonamore has a long history of Merino wool production. Legacy issues such as **poor placement of old roads and dams, and heavy historic overgrazing (including the impacts of rabbits)** have altered natural overland water flows.

What does this mean for Koonamore Station?

As a result, the country with the best productive capacity (alluvial flood plain country) has had 'the plug pulled out' and the natural surface water flows have been disrupted in the station's 'Round Hill' paddock. Water now moves off the paddock in a deep channelled pattern, resulting in severe droughting and lowered soil water infiltration. Germination and perennial root development is inhibited, and Nick is frustrated by wind erosion and dust as it exacerbates the problem caused by lack of plant cover. This negative loop is intensified as accumulated salts and minerals are unable to disperse through the soil. See below for an overhead look at the current state of the land:



Figure 1: Interrupted water flows

The old Barratta Road on Koonamore Station intersects a natural floodplain. The lowered road level pulls water off the flood-out system, diverting it down the deep channel (on the left of the road). This has denied the downstream zones (on the right of the road) of overland water, resulting in extensive scalding and surface erosion, and the channel has now become its own watercourse.

Dispersive clay is capping on the soil surface reducing water infiltration, and exposing the soil to water and wind erosion. Natural surface water flows are drained off of fertile plains into the new incised channel. Downstream is severely 'droughted' and incapable of growing or sustaining perennial pasture cover.

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Solving the problem is easier than you think

Several methods have been trialled to slow surface water flow and reduce erosion. These include contouring, deep ripping, and construction of small earthen banks. Whilst effective, these methods can be expensive to deploy. To remedy the large scalded land in Round Hill paddock, Nick is trialling the use of a **disc-based tool**, traditionally used to mound beds in preparation for horticultural plantings. This low-cost implement (pictured below), is **efficient to run** and requires low horsepower. As a result, large areas of the country can be treated in a short window of time (paired with adequate rest from grazing).

So what's the cost?

To mound **one hectare** of scalded paddock with a small tractor pulling a garlic pitter we required:

 **15 minutes**

 **0.5L fuel**



Why does this method work?

Seeds get 'caught' on the mounds resulting in localised germination. Water then catches in these depressions which provides good infiltration and encourages seedling establishment.

*not to scale

Small bank slows wind & reduces "wind shear"

Germinating shrubs and forbs along the trench and bank

30cm

Traps moisture improving infiltration

Trapped seeds and debris

"I'm growing feed on banks where I never grew feed before. It has drought-proofed us more, we have more ground cover, and the country looks to be in better condition than before the mounding."

– Nick Rasheed

Extra takeaways



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Don't forget about your TGP!

Total Grazing Pressure (TGP) takes into account the whole gang in the paddock. When managing pasture for rest, or planning the amount of stock a paddock can carry, it's critical to consider the combined pressure of all grazing animals (including rabbits). TGP accounts for domestic, wild, native and feral species.

16 Rabbits = 1 DSE

(A dry sheep equivalent or DSE is equivalent to a 50kg dry ewe)



Rest and recovery is key

This site was historically heavily stocked and over-grazed. With extensive periods of rest, the area is slowly recovering. Establishing colonising plants like *Acacia victoriae* in small depressions fixes nitrogen and creates shelter for other plants like grasses and small saltbushes. Over time, with rest, these species 'creep out' into scalded areas to recover and rebuild poor soils.

The road to recovery

Rangelands vegetation restoration is a long-term process. As landholders we can create environments to trap seed and best utilise every last raindrop by maximising soil water infiltration. Our native species can take time to germinate and establish, but once they're up and going they will be a long term asset. See below for a 5 year timeline:



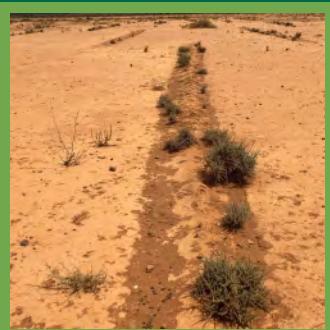
Mechanical intervention



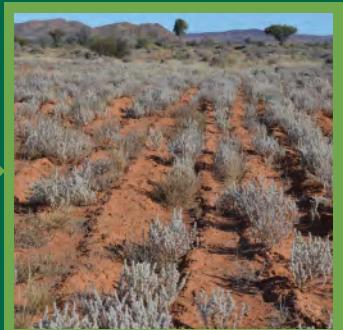
Seed and water capture



Improving soil health for germination



Building diversity



Australian Government
Department of Agriculture,
Fisheries and Forestry



Future
Drought
Fund

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