

Marra Creek Waterponding Program: Rehabilitating scalded rangelands

Thompson, R.

Central West Catchment Management Authority, New South Wales Australia

Keywords: waterponding; rehabilitation; scalded

Abstract

A four-year program to restore scalded and bare soils in western NSW, Australia, during the 1980s has left a remarkable legacy that has since rehabilitated 30,000 hectares of severely degraded land for environmental and production outcomes. In the Marra Creek District (western NSW) around 100,000 hectares had become bare and scalded due to grazing pressure, drought, wind and water erosion. About 30,000 hectares have been rehabilitated through waterponding. Locally, the successes of the original 18 landholders saw many others in the area adopt the technique. This is largely due to the socio-economic benefits including increased wool cut, lambing percentages and farm productivity. But there are other indirect benefits of strengthened communities and a sense that land managers can pass their properties onto future generations in a better condition than it was when they received it. The original mapping of scalded country estimates that 70,000 hectares remain to be rehabilitated in the region. With strong public acceptance and support, the program is well placed to meet this challenge.

Introduction

In the Marra Creek District (western NSW) around 100,000 hectares had become bare and scalded due to grazing pressure, drought, wind and water erosion. Soils in this area are duplex – a sandy loam layer sitting above heavy clay. These soils are prone to erosion and scalding, as

the top sandy loam layer is easily lost to wind and rain erosion to leave a crusted, sealed clay surface. These scalded areas have virtually no vegetation and habitat for local fauna.

Biodiversity and farm production are heavily impacted and exposed soil means that erosion continues.

What is waterponding?

Waterponding is a land management technique to restore scalded land (duplex soils) and return it to either grazing production or its previous native vegetation or, as is often the case, both. It involves grading a series of horseshoe shaped banks on slopes or complete circles on level scalds to catch and hold rainfall to a maximum depth of ten centimeters in the horseshoe shape ponds. Each waterpond covers 0.4 hectares. The water collected in the ponds cannot penetrate the sealed clay surface, but causes it to swell and crack on drying. Over a series of rainfalls, infiltration is improved by this deep cracking and seed is able to lodge and germinate in the roughened surface, where moisture is also held.

Project implementation

The four years of the initial program were spent trialing correct waterponding design and construction in collaboration with landholders in the Marra Creek district. Because more rapid revegetation can speed up the reclamation process and improved ecological outcomes, the method in the last 25 years has included broadcasting seeds of Oldman Saltbush (*Atriplex nummularia*) and Mitchell Grass (*Astrebla lappacea*). The program also redesigned the use of vehicle-mounted laser technology in designing banks. This increased the accuracy and efficiency of bank design – previously done through laser, staff and walking.

Progress to date

Of the original 100,000 hectares of scalded country mapped in the district, 30,000 hectares have been rehabilitated through waterponding. Locally, the successes of the original 18 landholders saw many others in the area adopt the technique. This is largely due to the socio-

economic benefits including increased wool cut, lambing percentages and farm productivity. But there are other indirect benefits of strengthened communities and a sense that land managers can pass their properties onto future generations in a better condition than it was when they received it.

Ecological results

Through waterponding, scalded sites around Marra Creek have been transformed into healthy ecosystems in which species diversity and ground cover is dramatically increased. Scalded country often supports only a few rangeland plants such as Streaked Poverty bush, Goat Head Burr and Five Minute Grass. But within 12 months the species diversity in waterponded areas, reliably increases, and within two years as many as 15 native grass and forb species can be expected, including a mix of perennial and annual species. Species such as Curly Mitchell Grass and Neverfail will also regenerate or can be successfully sown, indicating soil health is improving and becoming healthy and productive 'heavy cracking clay'.

Lessons learned

The take-home message from the waterponding program is that persistence and long-term commitment are needed to make a difference to the quality of our natural resource assets in the Rangelands (Thompson 2008). This long-term commitment allowed us to see how the waterponding technique stands against the cycles of nature (eg drought and flood), and has meant that techniques could be developed that are robust in all conditions. Another lesson relates to the importance of community engagement. The widespread adoption of the waterponding technique highlights the benefit of working with people on the ground for practical and useful outputs. But to achieve adoption by landholders, we found that results must be demonstrated to the community. Field days, media and high traffic demonstration sites were all used to prove that the science works.

Meeting future challenges

The original mapping of scalded country estimates that 70,000 hectares remain to be rehabilitated in the region. With strong public acceptance and support, the program is well placed to meet this challenge.

Reference

Thompson, R. (2008) Waterponding: Reclamation technique for scalded duplex soils in western New South Wales rangelands. *Ecological Management & Restoration* **9**, 170-181.

Thompson, R. (2010). Marra Creek Waterponding Program: Rehabilitating scalded rangelands. In: *Proceedings of the 16th Biennial Conference of the Australian Rangeland Society*, Bourke (Eds D.J. Eldridge and C. Waters) (Australian Rangeland Society: Perth).