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POWER OF A PHOTO

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Abstract

Yearly monitoring of a Waterponding site in the Nyngan district for seven years has given encouraging results. Bare scalded semi-arid areas in western New South Wales are being transformed into biodiverse native pastures, thanks to the waterponding technique which is returning clear profit to the landholder and benefits to the environment.

Introduction

Removal of native vegetation from the semi-arid duplex soil by drought or over-utilisation results in the erosion of the fine sandy loam topsoil. A crust on top of the exposed clay subsoil prevents both water penetration and lodgement of wind blown seed. The resulting bare areas are called scalds or clay pans.

Many methods have been tried to make scalded country productive, but nothing has worked as well as WATERPONDING.

The Central West Catchment Management Authority in New South Wales has encouraged the land managers that undertake incentive projects to rehabilitate scalds to carry out yearly photo and step point monitoring, commencing before the waterponding rehabilitation works take place.

This paper highlights the dramatic landscape change through the Power of a Photo that has taken place after the waterponding rehabilitation technique has been applied to scalded duplex soils. (Waterponding is the holding of water on the scald in horseshoe shaped banks, each covering 0.4 hectare at a depth of 10cm).

Method

Photos and pasture measurements were undertaken on 'Billabong' Marra Creek NSW, approximately 80 km north of Nyngan, commenced October 2005, waterponded November 2005 and monitored to 2012.

Over the last 27 years 63,000 waterponds have been constructed covering 32,000 hectares in the Marra Creek duplex soil type.

Photo points and step pointing is carried out before waterponding is undertaken to obtain the bench mark from where we begin the scald rehabilitation

An operator involved in reclaiming scalds is familiar with what the scald was like before waterponding. But to show others the changes over time, a combination of 'before and after' photos and data on vegetation recovery is needed.
The following, simple, 'step-point' method has been adapted to monitor vegetation quality before and after waterponding and is readily used by landholders.

Step 1. Select a site that is representative of the project area and contains the full variation in conditions occurring at the location. This becomes your standard photo point from which to take the annual monitoring photo, looking the same direction.
(The transect line can start in one pond and end up in another.)

Step 2. Drive in two posts 10 m apart. Place a blackboard at the base of one of the posts with the required details that you need for that photo point, for example, Paddock or property name, date and project number.

Step 3. Once the photo has been taken, walk 100 steps from the post that was in the middle of the photo (moving in the same direction as the photo was taken). At each step, record on a field sheet the pasture cover, tree and shrub cover and soil surface cover at the actual point that the apex of the toe of your boot lands on.

Results

Table 1. A scalded clay pan that was monitored in 2005, then waterponds were constructed in November 2005 and monitored yearly to 2012. 7 years under a waterponding system.

Recorded variables	Before Water ponding Scald 25-10-2005	After water ponding 27-02-2007	06-03-2008	16-03-2009	04-03-2010	07-02-2011	14-06-2012
Vegetation	1%	26%	41%	42%	69%	76%	80%
Sealing	99%	74%	45%	46%	30%	23%	20%
Cryptogam	-	-	12%	1%	-	-	-
Bare Ground	-	-	2%	5%	-	-	-
Litter	-	-	-	6%	1%	1%	-

Annual	1%	21%	28%	17%	25%	23%	24%
Perennial	-	5%	13%	25%	44%	53%	56%
Perennial Grass	Nil	2%	1%	8%	20%	42%	37%
Rainfall		315.5mm	548mm	362mm	476.5mm	764.5mm	690mm

Table 1. Shows a pronounced increase in vegetation cover after waterponding and a steady increase in perennial then to dominate perennial grasses. The change in ground cover is captured by step pointing and the Power of the Photo.

Discussion

The ponded water leaches the soluble salts from the scalded surface. This improves the remaining soil structure, inducing surface cracking, better water penetration and entrapment o wind-blown seed.

This Billabong paddock waterponding site has increased from 1% ground cover in 2005 to 80 % ground cover in 2012.

The ground cover was predominantly annual up to 2008 which was 28% of the total 41% ground cover then the Perennials took charge and surged to 56% of the total 80% in 2012. The annuals have stayed at the 24% for the last 3 years. while the perennials have continued to climb every year since the waterponds have been constructed.

The increase in native pasture yield has made the waterponding technique an economic method of increasing production and reinstating functioning native vegetation communities on previously scalded lands.

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