Stabilising degraded sand hills

Location: Mt Damper district

Region: Central Eyre Peninsula

Industry: Mixed farming

Issue: From problem sand hill to the highest yielding part of the paddock is impressive

Key Outcome: Planning to resolve ongoing soil management issues pays dividends

By Linden Masters, Upper Eyre Peninsula Regional Landcare Facilitator

Background

In 2015 James Pollock developed a plan to stabilise a deep sand dune with the assistance of a Regional Landcare facilitator and with funding from the National Landcare Program, through the Eyre Peninsula Natural Resources Management Board, The dunes covered 30 – 40% of paddock and comprised of four larger sand hills within the paddock totalling 40 ha. These sandy areas had very low fertility and very high wind erosion risk.

James was concerned that without a change in management the site would continue to erode and become more difficult to manage. The key outcomes that he was looking to achieve by changing management of this site were to;

- increase surface cover

- reduce erosion risk, and

- increase production.

James was also looking to increase soil organic carbon levels in the long term.

With preliminary assessment up it was determined the best way to achieve these objectives was to fill the blowouts, reduce tillage, increase nutrition and seed inputs, and retain surface cover by carefully managing grazing.

James considered a range of management strategies including a change in rotations and sowing dunes with cereal rye. Using temporary electric fencing to exclude stock and manage grazing would also substantially increase surface cover on the site and stabilise the dunes.

Temporary electric fencing was used to manage stock when grazing stubbles

Cereal Rye Stubble after the first year reduced wind erosion

The project

James levelled the deep blowholes and after the first rain sowed with cereal rye using a 'cross hatching' technique, sowing at right angles, across the sand hill. This allowed double rates of seed sowing and fertiliser application.

James followed the plan and used a grant to buy the electric fencing which was erected and used to keep stock off the newly levelled and sown site over summer and ultimately the watering point to be shifted to another location, relieving stock pressure from tracking over the sand hill. Some trouble was experience getting a good earth on the fencing system This was innovatively and cheaply solved by using a 20 L drum filled with water but tipped upside down and allowed to slowly leak thereby creating some wet the earth around the earth stake and increasing the conductivity.

Outcomes

In November 2017 the report back from James to the Regional Landcare facilitator consisted of the following:

"The sand hill we did some work on a few years ago is about to reaped and I anticipate eight bags/acre.

Compass barley was sown – details per hectare- 100 kg seed, 70 kg DAP fertiliser, 50 kg of Urea, 50 kg Sulphate of 'Ammonia with zinc, manganese and copper as trace elements. Guessing whole paddock average six bags."

James shared why he thought the management measures he took were so successful at changing this unproductive site.

"I'm was really pleased that this problem sand hill, in a dry season, will out yield the heavier flats. I've been able to move away from using cereal rye by using a double sowing rate of barley and with good nutrition the sand hills which have now been stabilised." "No-till and early sowing allowed the crop to establish before a cycle of cutting winds caused damage".

James felt the use of extra nitrogen at sowing helped substantially and was the best money spent in his cropping program. Also the success of the crosshatching method to double sow has now been applied to other sand hills on the Pollock property.

The electric fencing, vital in the early stages, continues to be used to relieve grazing pressure on other wind erosion prone areas on the farm.

The future

With good experience under his belt, James is confident in managing this type of country in the future. He will continue to maintain the cover on the dunes by managing the potential for over grazing through the careful positioning of water troughs and electric fencing. He will continue to use cross hatching of the dunes, which allows double sowing of grain and fertiliser, as it is worth the extra effort to get good ground cover.
Increasing soil fertility on the sand is a long-term goal, as this country is well suited to malting barley production.

The take home message from this project is planning as the key component to managing these areas effectively. "You need a vision! Although the plan for this site is a long-term proposition (three - five years), the management actions are broken into manageable chunks. Don't do half a job in levelling blowholes before sowing, as once stabilised you don't want to go back a second time and do further disturbance," – James Pollock, 2015.

An example of strong economic and environmental outcomes achieved by a young farmer, in trying country, through planning, accessing and implementing Landcare advice.