

fact sheet

Land Soils and Agriculture



Salinity and Sustainable Land Management

Case Study No 6 – Solferino

Landholder	Tom Nicholas
Location	North of Clermont
Rainfall	690 mm
Property size	6,900 ha
Enterprises	Cattle and grain

Tom Nicholas's operation at Solferino includes both grazing and cropping. He is beginning to implement biological farming practices, and has a number of forward-looking ideas about the sustainable management of his crops and pastures.

A mixture of gidgee and brigalow

Tom's family came to Solferino in 1966. Some of the main types of country include gidgee, brigalow, yellowwood and open downs country on basalt.

Tom started clearing in the late 1980's and the 1990's. Solferino now runs about five hundred breeders, and crops 1,600 ha of sorghum, wheat, and chick peas.

Improving the soil biology

Tom is moving to a more biological style of farming in an effort to make his operation more sustainable, particularly through improving the health of his soils.

Tom has invested considerable effort in improving his understanding of soil biology.

"We realised that the real driver in the ecological system we make a living out of is the carbon in the soil, and the microbes. The food source for the microbes is carbon, and we've run that down gradually over the years with our farming methods. We've got to change and start building it up again," he said.



He now has an avid interest in biological farming, which he sees as being critical to rebuilding the health of his soils.

"We need to start building the soil if we are going to survive in the long term."

Some of the new tactics he is using include the application of fulvic acid with herbicides, cutting back on the use of Atrazine and applying compost teas at planting.

On the grazing side, he's going into a rotational grazing system with deep rooted perennial grasses to facilitate the build-up of soil carbon.

Proven success nearby

Tom made the decision to move into biological farming after seeing results on nearby properties.

"I've got a neighbour in his fourth year of biological farming, and the difference between that and the normal way of doing things is just like chalk and cheese," said Tom.





To the north west of Solferino the basalt drops down to alluvial and inland plains. Shallow salt stores are sometimes found at the boundary between the basalt uplands and the alluvial plains.

Tom has noticed that his neighbour's soils are more friable. He has also noticed that the plant's root systems are extending deeper into the soil. The more fibrous root system is also making better use of available moisture.

"He's even able to sow wheat into good moisture seven weeks after the rain. That says it all to me," said Tom. In the local area, the general planting window after rains is one week for summer crops.

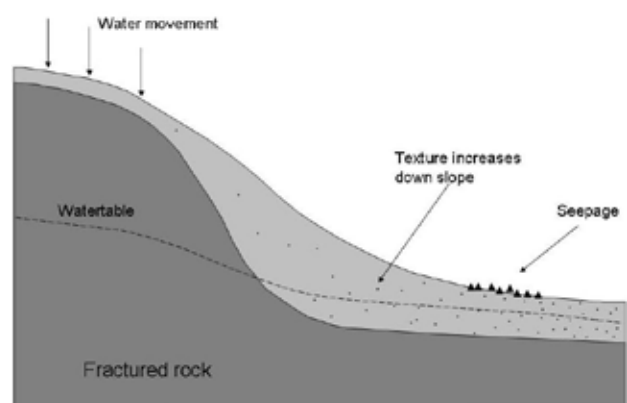
Salt loads in the landscape

Elevated salt loads can occur at points in the landscape where the slope decreases and/or soil textures become finer. At these points water movement slows forming shallow water tables which rise to the surface and concentrate salts through evaporation (see figure below).

The figure right shows the results of salt load measurements using a portable ground conductivity meter (EM31). It can highlight the location and levels of salt in the landscape identifying saline areas. In the example given the highest salt readings were from the scalded areas towards the bottom of the gentle slope.



Stunted brigalow (in the distance) is a good indicator of salty soils. Poor grass cover is also another indicator.



This diagram shows how the restriction of water flow at a change of slope & soil texture can contribute to the rise of water tables and the development of elevated salt loads at these locations.

Keeping an eye on soil salinity

There are some salty soils on parts of Solferino. An experienced eye can pick them up, but it is also useful to do some tests to confirm the problem.

Salt doesn't seem to have had much impact on agricultural production to date but does occur in certain parts of the landscape.

"Salinity only effects production to a small degree. We're still growing crops on that country and its' been farmed for 40 years, and it hasn't become a problem," said Tom.