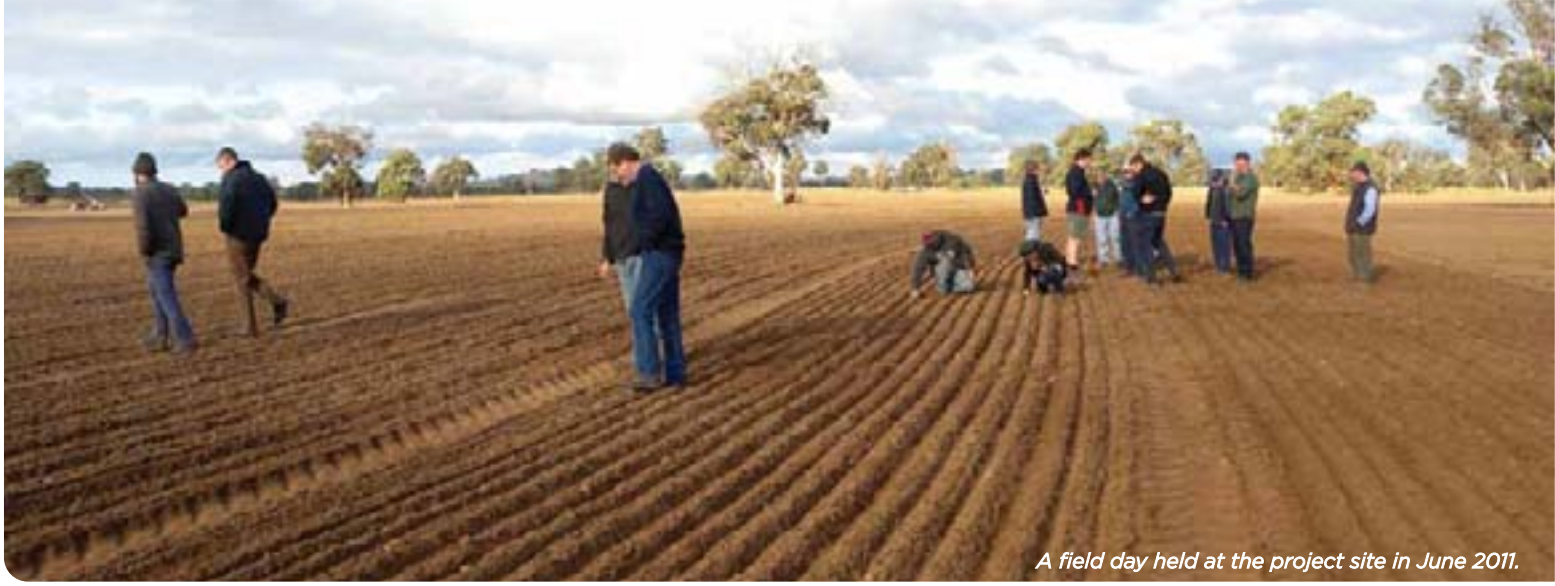


A field day held at the project site in June 2011.

Perennials breathe life into the Darkan river flats

SWCC
south west catchments council

John South (landowner) and Brad Wooldridge (lessee) jointly manage a 400 hectare property in Bokal, WA. They were keen to find a way to improve the productivity and sustainability of their river flats

John, Brad and Paul inspecting the soil profile and clover plants early in 2011.

Background

John South (landowner) and Brad Wooldridge (lessee) jointly manage a 400 hectare property which sits at the junction of the Arthur and Hillman Rivers in the Bokal district.

The site has large areas of low-lying sodic clays and fragile yellow sands that are prone to wind erosion and low productivity. They were keen to find a way to improve the productivity and sustainability of these river flats, which are similar to large areas of farming land in the district.

John had experimented with perennial pastures on a small scale (5-10 acres) in the past, however had not had the confidence to try it on a larger scale.

In 2011 John received funding through the South West Catchments Council's Sustainable Agriculture On-ground Grants Program to establish 200 hectares of perennial pastures on the property.

Summary

Name:	John South
Location:	Bokal (South Darkan)
Size of Property:	400 Ha (~85% arable)
Current Farming System:	100% sheep; merinos and crossbreds
Annual Rainfall:	500-525mm
Summer Rainfall:	4 out of 5 years
Landscape:	Low lying river flats
Soil Type:	Half yellow sand over clay at 0.5-1m, half sodic soil with very shallow heavy clay
Perennials Sown:	Kikuyu, phalaris, tall wheat grass, cocksfoot, tall fescue, strawberry clover and lucerne
Area Sown in 2011:	200 Ha
Time of Sowing:	Kikuyu – early September 2011; Phalaris mix – mid June 2011

Pre-sowing preparation

Prior to seeding a comprehensive soil testing program was completed to determine potential constraints to plant growth. The results revealed a hostile soil that was severely limited by low pH and toxic levels of aluminium, as well as low potassium and high EC (salinity) levels in the clay areas of the site.

Fortunately phosphorus levels were more than adequate, and access to groundwater was excellent. Given the results it became obvious that significant soil amelioration was required if the perennials were to succeed, and it would be critical to choose the right plant for the right site.

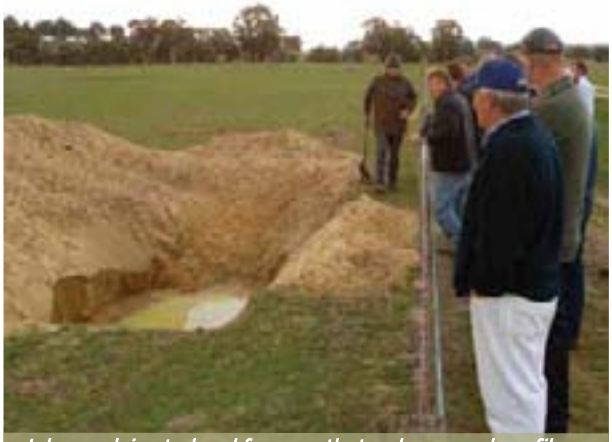
Evergreen agronomist Paul Omodei was contracted to provide technical advice throughout the project, from interpreting soil test results to preparing seeding recommendations and advice on future grazing management. John attributed his willingness to adopt perennials on a large scale to the confidence that Paul's advice gave him.

A field day focused on soil constraints, amelioration and 'choosing the right plant for the right place'.

Based on Paul's recommendations, 500 tonnes of lime was applied in autumn (2.5 tonnes per ha), which was incorporated into the soil via deep ripping and scarification – a process which also aided in weed control and levelling of the site.

The hard-setting clay areas required three passes of cultivation to achieve a good result, while only one pass was required on the sandier parts.

Weed control was achieved by the cultivation followed by a pre-plant chemical knockdown in the weeks leading up to seeding.



John explains to local farmers that a deep sand profile with shallow water table provides an ideal site for kikuyu.

Sowing

In late autumn 2011 the clay areas of the site (a total of 70 ha) were sown to a mix of tall wheat grass (8kg / ha), tall fescue (1kg / ha), phalaris (1kg / ha) and small quantities of lucerne and strawberry clover, with a cover crop of barley (60kg / ha) to protect the establishing perennials.

The balance of the project site consisted of fragile yellow sands (130 hectares), which were sown to kikuyu (1kg / ha) with a canola cover crop in September 2011.

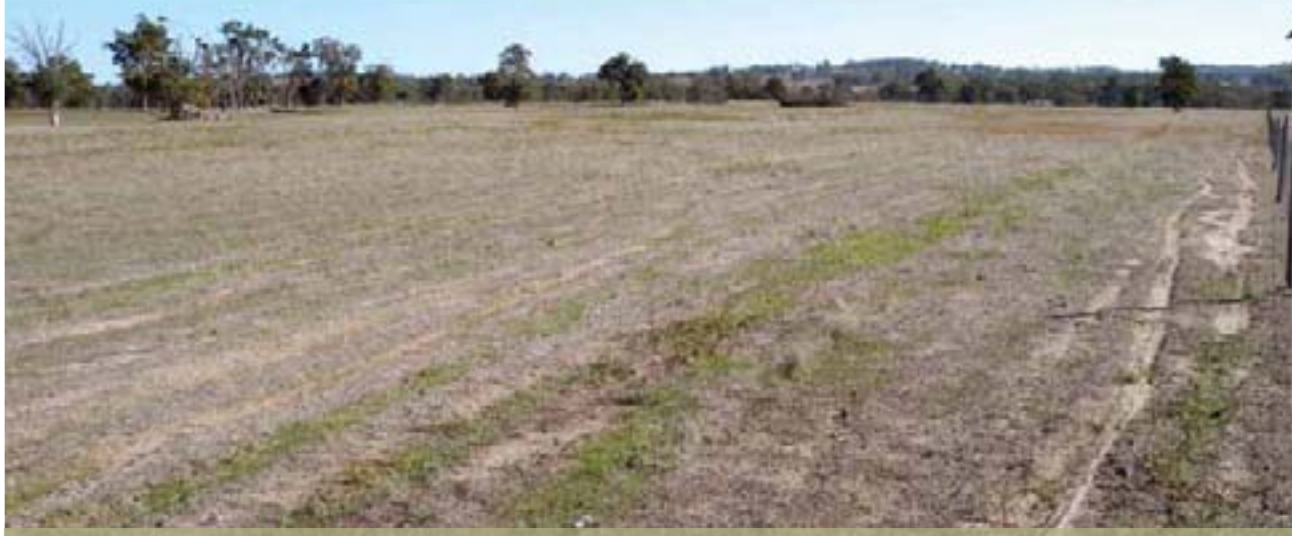
The spring sowing was chosen due to the kikuyu being a sub-tropical perennial, which would have struggled to establish over the cold winter months.

A converted combine with knife points and press wheels was used, using a seeding depth of 10-12 mm across both sites and with no additional fertiliser or seed treatment.

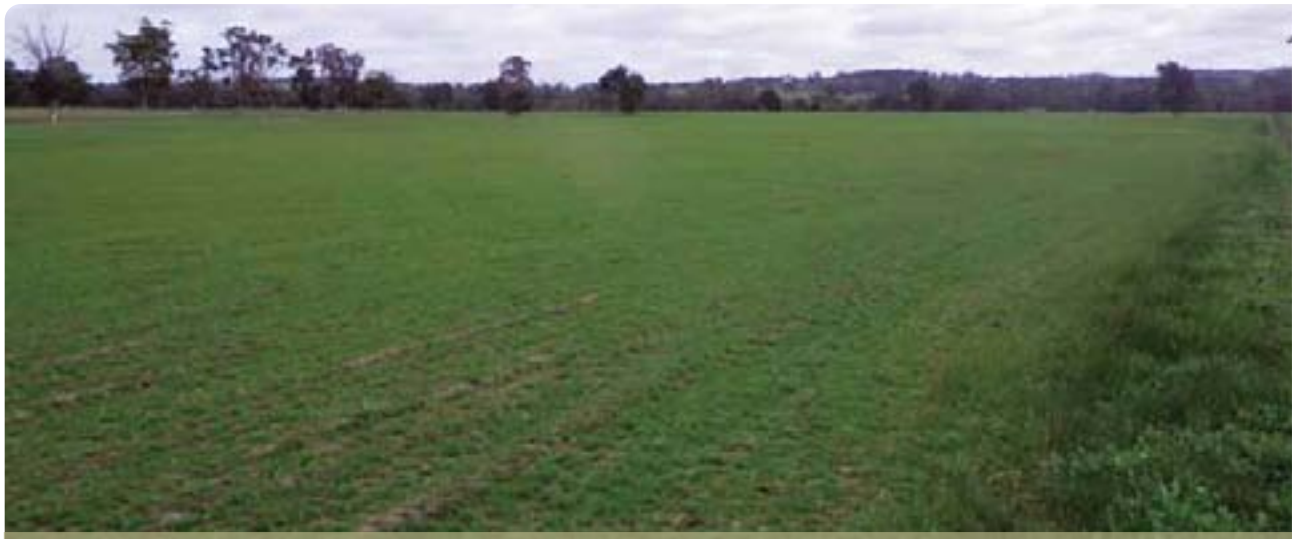
Post-sowing

A post-sowing pre-emergent insecticide mix was applied once to control insects in the newly establishing pastures.

Muriate of potash will be applied in Autumn and Spring of 2012, and urea may also be applied if the survival of annual legumes (which will be over-sown in autumn 2012) is low.



Bare, unproductive land has been treated by the establishment of a perennial pasture mix.



After treatment with tall wheat grass, lucerne, tall fescue, phalaris and strawberry clover.

Planned grazing management

Grazing will be deferred from the site until autumn 2012, unless significant summer rains occur. The barley cover crop will be harvested in summer 2011, which will cover some of the costs of the perennial establishment; however the canola cover crop was destroyed by diamond-back moth and so will not be providing a return.

John and Brad plan to rotationally graze the property in the future, with the aim of using the site for lambing ewes, finishing lambs and out-of-season feed.

The Kikuyu area of the farm also provides for an excellent 'maintenance' ration for ewes in autumn while annual pastures are being deferred.

Establishment so far

Establishment of the perennials on both sites has been successful, although there has been some competition from annual weeds such as toad rush and wireweed.

Kikuyu was slow and patchy in its initial emergence, however overall the establishment rate was high. The delayed germination was put down to an uneven and soft sowing bed caused by the cultivation, and resulting in a deeper sowing than was optimal for the small-seeded kikuyu.

The phalaris/fescue mix also established well with many of the species going to seed in Spring 2011. This will help in thickening up the perennial stands for future years.

A further option at harvest is to operate the header at low wind speed allowing the phalaris and fescue to be harvested rather than blown out the back of the machine. This will allow John to either re-sow the barley/fescue/phalaris mix in areas of poor establishment or clean the fescue and phalaris from the barley.

Time & labour required

John insisted that the time and labour required to establish 200 ha perennials on his property was "not at all a limiting factor". For the phalaris mix, which was sown in autumn, he said that it was important to schedule in the activities between other cropping and farming commitments, however for the spring kikuyu sowing there was no issue with fitting in the extra work. Waterlogging of the low lying areas was a factor, though, and the machines were held off until the soil had dried out enough not to get bogged.

Lessons learned

The main things that John would do differently next time are to start with paddock preparation and weed control in the year (or two) before establishment, and to get the right machinery for incorporating lime. He also said that the technical knowledge that he has gained from this project will be invaluable to him in future years of perennial sowings.

Will you plant more perennials?

"Yes, certainly" says John, who already has another 150 ha of river flats earmarked for sowing in 2012.

For further information

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Puccinellia which was present on the site is regenerating after stock exclusion

Deep ripping of the kikuyu sight in spring 2011

SWCC
south west catchments council
working together to make a difference today and develop a sustainable environment for tomorrow.

CARING FOR OUR COUNTRY

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