

SOIL matters

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Welcome to Soil Matters, a quarterly newsletter providing updates and information on soil, weather and industry developments to support on-farm decision making within the Murraylands and Riverland Landscape Board. This newsletter will draw together a number of resources including:

- Local soils and agricultural information
- Murraylands and Riverland Landscape Board weather station network
- Murraylands and Riverland Landscape Board soil moisture probe network
- Upcoming grants, programs and projects relevant to your region.

We would appreciate any feedback on content, or ideas for content and are happy to assist with any inquiries regarding the featured tools and projects. Please contact Zoe Starkey, Regional Agriculture Landcare Facilitator on zoe.starkey@sa.gov.au or 0408 416 684 for more information.

Photos of the month

Spring has sprung in the Murraylands and Riverland Landscape Board region with many groups holding crop walks that have been either part or fully funded by the Murraylands and Riverland Landscape Board through funding from the Australian Government's National Landcare Program and landscape levies.



Barossa Improved Grazing Group Pasture walk, looking at Polyculture pastures at Keyneton Station, Keyneton

Photos of the month cont.



Lowbank Ag Bureau taking a look at the oat National Variety Trial, the group sourced outside funding to have both wheat and barley represented in the trial also.



Loxton Pulse Check Group tour of the Murray Plains, pictured here looking at Murray Plains Farmers SAGIT funded Profitable Pulse Trial



Point Pass Ag Bureau Spring Crop walk visited the SARDI Pulse trial, looking at sowing times, rates and discussing biomass cut results



Why did the Farmer receive an award...? He was outstanding in his field. Point Pass Ag Bureau looking at a Phosphors trial in a wheat crop.



Milang Ag Bureau hosted Dick Richardson – Grazing Naturally and Arnd Enneking – Greenpatch Ag to discuss Regenerative Farming.



Murray Plains Farmers held their annual spring crop walk, pictured here looking at the National Variety Trial wheat and barley site at Palmer.



The Karoonda WoTL Group got together to enjoy the results of a good season so far, pictured here in a compass barley crop at Perponda.

Part 1: Saltland Pasture Redemption Project



What have we learned?

The Saltland Pasture Redemption Group and Project was initiated by the Coorong Tatiara Local Action Plan and Coomandook Ag Bureau to investigate the application of new developments in the productive use of saline land.

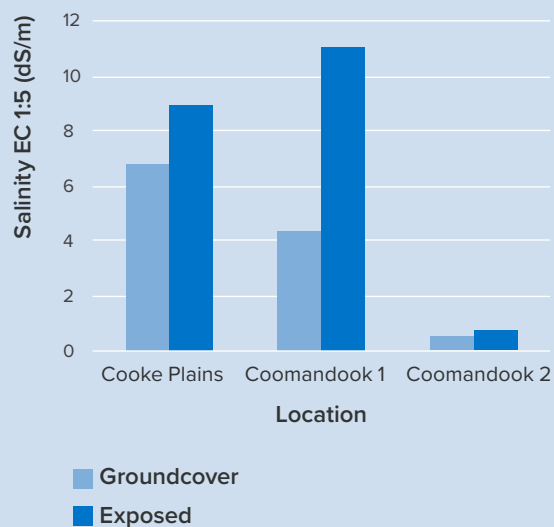
Throughout the life of this project, successful establishment of pastures on saline soils occurred where there was evidence of groundcover (green or dead plant material) or areas where the surface was slightly elevated.

The results can be found in the report '[Saltland Pasture Redemption – Tips and Tools for Identifying and dealing with Saline Soils](#)' where it can be seen that the groundcover appeared to reduce the soil surface salinity levels across all sites both at the soil surface and further down the profile, emphasizing the importance of trying to retain groundcover to reduce the level of salt scalding.

This project receives funding support from the National Landcare Program - Smart Farms Program, and the Murraylands and Riverland Landscape Board, and the Limestone Coast Landscape Board.

Article provided by Tracey Strugnell
 Coorong Tatiara Local Action Plan
 Coorong and Tatiara District Councils

Impact of groundcover on soil surface salinity (0-10cms) 2020





Legumes on Sand

The Murraylands and Riverland Landscape Board is working in partnership with Mallee Sustainable Farming and local landholders to determine the efficacy of a variety of treatments on legume and groundcover production in sandy rise conditions at Lameroo.



Figure 1: A collaborative 'drive-by' field day was held at the Lameroo trial site on September 10

The project titled 'Improving groundcover options with legume production in sands' is a dual focus project aimed at quantifying where productivity and ideal break options lie by legume crop type and which practices and species types will secure the longest lasting stubble loads and groundcover into the tough summer period.

It is the summer and pre-sowing period when legume stubbles generally diminish quickly, potentially leaving vulnerable sandy soil types at risk to wind erosion.

The trial, which is now roughly at the halfway point of its 4 year term, is sited along the Kulkami Road close to Lameroo on what is rated as a highly erodible dune site. The soil type at the site is a classic non-wetting bleached sand over a clay substrate with an approximate 5 metre relief. Soil strength is high at ~ 170 mm at >2000 kpa of soil resistance based on a hand held penetrometer. This kind of 'hard-pan' is sufficient to mitigate root penetration and reduce crop access to moisture and nutrients.

The logic of the project is to examine both the biomass and grain productivity potential increase from deep ripping and deep ripping/spading options of sub-surface clay elements against the risks to soil stabilisation and crop establishment. A 112 plot trial has been selectively established at rotating sites in the vicinity of the current trial site.

Year 1 – 2019

In the first year of the trial (2019 – which also was a pilot phase) trialled lentils, chickpeas, lupins, vetch, faba beans and field peas with additional mixed species treatments of faba beans/canola and field peas/canola. In 2019 only deep ripping and 'additional nutrient' was trialled against 'district practice'. District practice treatments consisted only of 45.6 kg/ha of mono-ammonium phosphate (MAP). The additional fertiliser treatment consisted of 50 kg/ha of sulphate of ammonia, 11 kg/ha of urea and 60 kg/ha of muriate of potash which it was estimated would supply an additional 20 kg/ha of nitrogen, 12 kg/ha of sulphur and 25 kg/ha of potassium. Additional nutrition plots also received a foliar trace element applications of zinc, copper manganese and molybdenum during the growing season. The chickpea crop was a failure in the first year, most likely due to herbicide residues.

At harvest in 2019 year one results clearly showed that the benefits of the additional nutrition package employed were minimal against the control (figure 1), compared to the deep ripping treatments undertaken (figure 2):

As a result the 2019 trial suggested that investment in the extra nutrition package was not profitable as opposed to soil amelioration activities. With the rotation of the site to its year 2 position in 2020 additional incorporation of spading as a treatment in conjunction with or without deep ripping was proposed. A more advanced approach to inoculation was also employed – the details of the overall cropping approach will be captured in the 2021 annual report.

Figure 2: Response of each crop to additional nutrition inputs

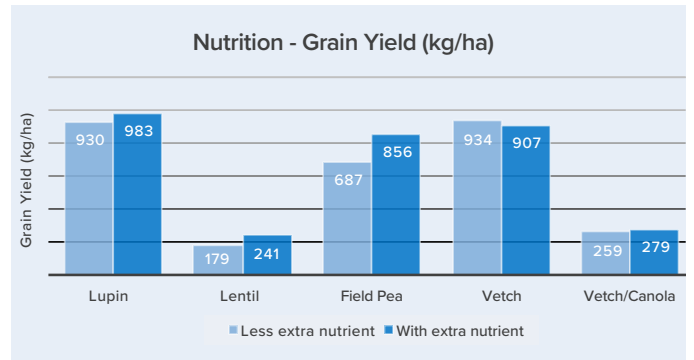
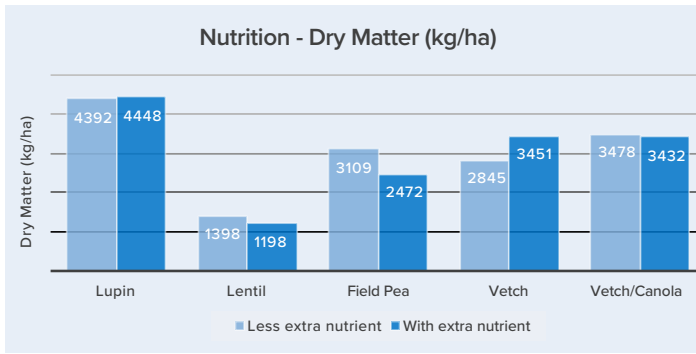
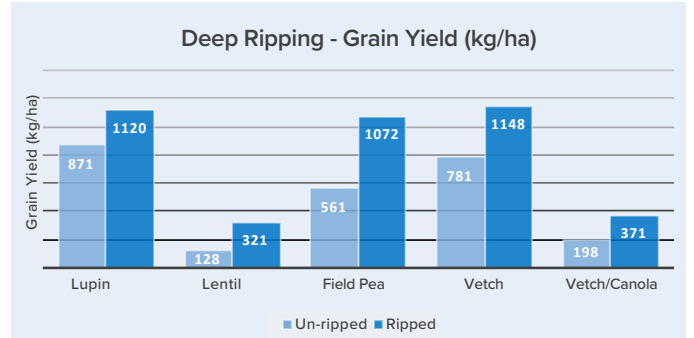
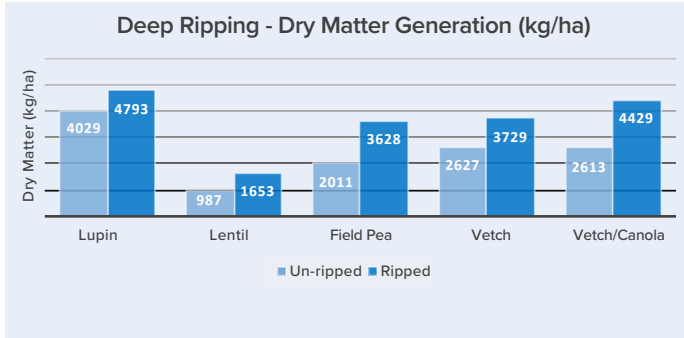


Figure 3: Response of each crop to the deep ripping treatment



Year 2 – 2020

2020 has seen the development of another 112 plot trial. Monitoring of the site has been elevated in the current season to focus additionally on the effects of seasonal conditions on crop emergence, establishment and groundcover generation across lentils, chickpeas, lupins, vetch, faba beans and field peas + mixed species treatments of faba beans/canola and field peas/canola.

Pre-harvest 2020 the monitoring of the plots has shown a tremendous improvement in root penetration in the deep ripping treatments with the dual spading and deep ripping treatments only adversely affecting lupins where both salts and a higher soil pH affected germination and establishment.

Results of the 2020 trial will provide better visual and overall assessments of biomass and grain quality generation than the 2019 pilot phase. It is hoped that the results of the project overall will go a further step towards assisting landholders to balance a variety of risks in working with legumes in sandy Mallee conditions.

If you are interested in further information on the project a 2019/2020 project report is available, please contact Jeremy Nelson Project Officer – Sustainable Agriculture on 0429845216 or Jeremy.nelson@sa.gov.au



Figure 4: The effects of deep ripping and spading have worked very well across most crop types, with an example of nil treatment (L) and deep ripping only (R) in field peas at the 2020 trial site



Grower Profile

Name: Daniel Evans

Trading Name and Location:
Evandown

Size of Property: 8000Ha

Average rain: 250mm



If cropping, how many acres and what's in rotation?

2020

Wheat 1500Ha

Barley 1600Ha

Vetch 160 Ha

Oats 180Ha

Rye 45Ha

Livestock, what and how many head?

Normally 1850 Mo Merino ewes (1650 currently)

Includes approximately 850 White Suffolks

Rainfall for 2019 and how much rain to date for 2020?

2019 143mm

2020 351mm YTD

How long has the property been in the family?

Since around 1906 I think.

How has your farming practice changed over the last 5-10 years?

Machinery

- Have changed to hydraulic tynes and press wheel controlled individual depth control on the No Till Bar to handle the stone better and maintain correct sowing depth.

Crop varieties:

- Scepter wheat and compass barley for high yields
- Grenade wheat and scope barley as part of brome grass control

Soil health

- Summer spraying and no till has helped with moisture retention and ground cover

Fert/Chem options:

- Clearfield is a game changer for brome grass on sandy country.

Livestock

- 6 month shearing for easier flock management
- Preg testing for 1s & 2s and run separately
- No dry ewes/ lambed and lost kept in self replacing mob, scanned dry get 1 more chance in XB mob, Lambed and lost are all sold at marking.
- We use ASBV's as part of our ram selection when purchasing sires for our own nucleus flock ram breeding program, with a focus on staple length, fat and muscle.
- Confinement feeding when needed
- As ewe numbers are down we mated our ewe lambs for the first time this year and a reasonably happy with the result, will be doing the same again next year with a few refinements.

And if you could pick one of the above, which has been the most beneficial to the sustainability of your farming business? This could be either environmental and or business based eg. Profitability, Manageability, etc

The sheep have gotten us through some tough times for the last 3 years, but hoping the crop will pay a fair bit back this year. The combination of no till and running sheep works well for us as paddocks can be grazed right up till sowing, it also allows us to vastly increase and decrease our sown cropping/feed area as to how the year is looking.

Have you done any 'in house' trials on your property? What sort of results were achieved? And have you implemented any new practices as a result of those trials?

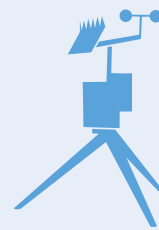
The whole farm is one constant trial.

The main one this year was mating the ewe lambs. We mated 535 at 9 months of age and achieved 56% on ewe lambs mated, not spectacular, but an ok first attempt.

Adult sheep averaged 115% on ewes mated

And finally. Do you have any trials planned or exciting ideas for the future?

We are looking at an inoculant trial for our medic pastures as we haven't been getting very good nodulation, will try some different things next season.



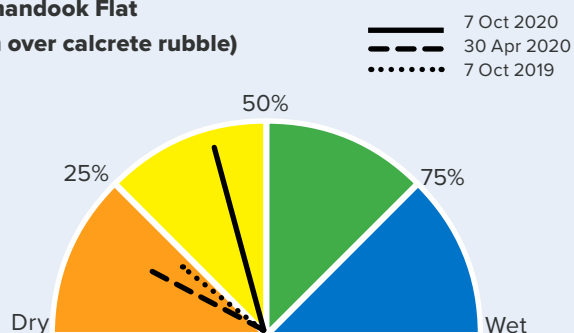
Murraylands and Riverland Soil Moisture Probe Network

This is a dial representation (dry to wet) of plant available soil moisture recorded at eight sites throughout the Murraylands and Riverland soil moisture probe network. The dials are provided with support from Agriculture Victoria. The data is recorded from 30

April 2020, 30 June 2019 and 30 October 2020.

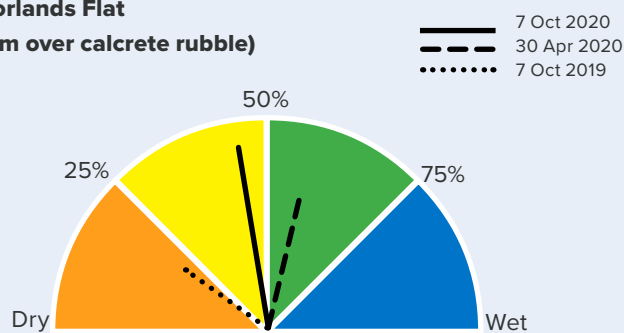
You can view more regional soil moisture data here: <https://landscape.sa.gov.au/mr/land-and-farming/tools-for-land-managers/soil-moisture-monitoring-network>

Coomandook Flat (loam over calcrete rubble)



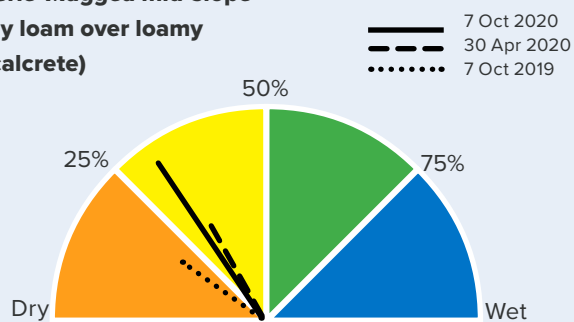
Growing season rainfall (GSR) of 256.2 mm for season received to date compares to 220 mm for same period in 2019. Topsoil moisture (to 25cm) is ~4% higher (YTD) against 2019 levels. Deeper soil moistures are consistent with 2019.

Moorlands Flat (loam over calcrete rubble)



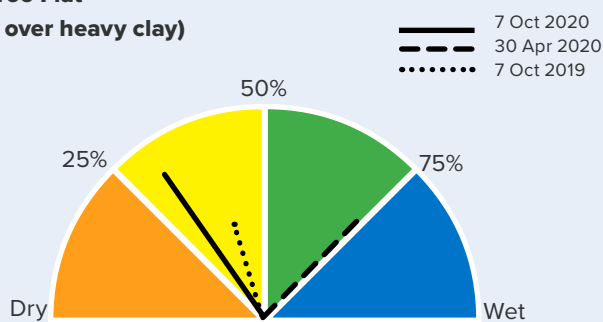
Growing season rainfall (GSR) of 233 mm for season received to date compares to 182.2 mm for same period in 2019. Soil moisture (to 50cm) is overall ~7% higher (YTD) against 2019 levels

Waikerie-Maggea mid-slope (sandy loam over loamy clay calcrete)



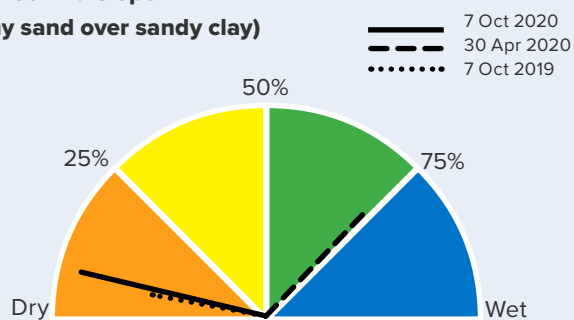
Growing season rainfall (GSR) of 172.8 mm for season received to date compares to 105.6 mm for same period in 2019. Soil moisture (to 90cm) is overall ~6% higher (YTD) against 2019 levels.

Lameroo Flat (loam over heavy clay)



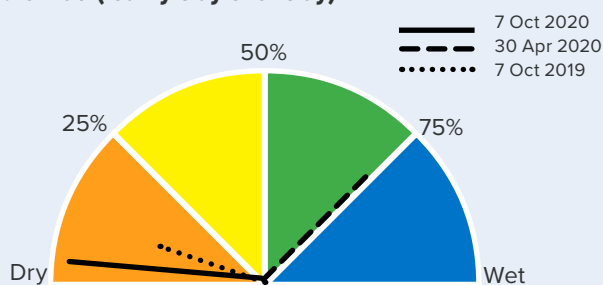
Growing season rainfall (GSR) of 197.8 mm for season received to date compares to 167.2 mm for same period in 2019. Soil moisture (to 50cm) is however overall ~5% drier (YTD) against 2019 levels.

Pinnaroo mid-slope (loamy sand over sandy clay)



Growing season rainfall (GSR) of 191.6 mm for season received to date compares to 161.2 mm for same period in 2019. Soil moisture (to 50cm) is identical (YTD) against 2019 levels with a slightly drier subsoil into 2020.

Lowaldie Flat (loamy clay over clay)



Growing season rainfall (GSR) of 228.4 mm for season received to date compares to 184.4 mm for same period in 2019. Soil moisture (to 50cm) is however overall ~17% drier (YTD) against 2019 levels but deeper sub soil moistures have been better re-charged in 2020.



Events and Webinars

Due to COVID-19 some events listed have been cancelled or postponed

Regenerative agriculture – Murraylands and Riverland farm walk

Postponed until February 2021

When: Thursday 24 November

Time: 9 am–2 pm (with light lunch provided)

Bookings: www.eventbrite.com.au/e/regenerative-agriculture-murraylands-and-riverland-farm-walk-tickets-126174771137

(bookings are essential - property location provided on booking)

Dairy SA Young Dairy Network Forum – Cancelled

November 23 @ 3:30 pm - November 24 @ 3:30 pm

DairySA is thrilled to be hosting an SA Young Dairy Network Forum, aimed at all people working in the dairy industry aged 18-35(ish)!

Find your 'Why' at the Young Dairy Network Forum

Organizer: Dairy SA – Cathy Ashby

Phone: 0492 803 805

Email: cathy@dairysa.com.au

Ecovineyards Riverland – postponed

Learn about the EcoVineyards project and how native insectary plants are used by grape growers to create diverse ecosystems in vineyards.

Date and Time: Fri, Nov 27, 2020, 8:45 AM

Location: TBC

Register here: <https://www.eventbrite.com/e/ecovineyards-field-session-riverland-tickets-123160086133>

Livestock enterprise planning sessions

Adelaide Hills sessions scheduled for 8 Dec 2020 (Mt Pleasant area), 3 Feb 2021 (Mt Barker area) & 2 Mar 2021 (Strathalbyn area) | sessions are for sheep, cattle & wool producers [PIRSA]

Hort Connections 2021

7–9 June 2021, Brisbane Convention & Exhibition Centre – more information to be released in the coming months regarding registration opening & general event information

2021 National Landcare Conference

4–6 Aug 2021, International Convention Centre, Sydney

Sustainable economic growth for regional Australia (SEGRA) conference

Amplifying regional advantage

Mt Gambier – to be rescheduled for sometime in 2021 – Australia's premier conference on regional issues | SEGRA is about assisting regional, rural & remote Australia to source & identify the techniques, skills & issues needed to address & achieve successful economic growth & development

Webinars

Watch: [Spring Crop Stategies \(44:57\)](#) [SheepConnectSA]

Watch: [Rabbit & Fox Control \(35:09\)](#) [SheepConnectSA]

Watch: [Cover crops & soil biology in vegetable soils \(1:14:25\)](#) Join Dr Kelvin Montagu (AHR) & Dr Shane Powell (University of Tasmania) for a webinar on the impacts of cover crops on soil biology

Watch: [Back to Business webinar series \(50:17\)](#) Livestock nutrition & management

Watch: [MSF Farm Talk Podcast \(10:09\)](#) AWI Feed Nutrition Project | Introduction to AWI Feed Nutrition Project with Hamish Dickson

Watch: [MSF Farm Talk Podcast \(13:33\)](#) Barley Grass in the Mallee with Dr Chris Preston

National Landcare Conference Webinar Series – Landcare as a business, a strategic approach

November 19 @ 2:00 pm - 3:00 pm

Watch: landcareaustralia.org.au/national-landcare-conference-webinar



Grants

- [Connecting Drought Communities](#) - Community groups and local governments in eligible drought-affected areas of South Australia can apply for event funding under the Connecting Drought Communities – Events Grant.
- [Grants for horticultural netting infrastructure](#) - Helping primary producers in the Riverland & Adelaide Hills/ Greater Adelaide region fund the purchase & installation of new netting, or the replacement of damaged netting, over land used to grow horticulture crops | up to 50% of costs associated with horticulture netting, up to a maximum of \$300,000 [PIRSA]

Fact sheets

- Mixed cover crops for sustainable farming See results so far about specific plant species [here](#) | [click here](#) for a project update [CSIRO, Ag Excellence Alliance, SANTFA, GRDC, the Australian Government's National Landcare Program]
- Virtual fencing study [Click here](#) for CSIRO paper | and [here](#) for a Barossa Improved Grazing Group summary of the trial

Contacts

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For more information about the Murraylands and Riverland Landscape Board and its activities please visit

landscape.sa.gov.au/mr/home

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