SOIL matters

IN THIS ISSUE:

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.

Transition to Murraylands and Riverland Landscape Board

Our role

The Murraylands and Riverland Landscape Board (the board) is responsible for administering the *Landscape South Australia Act 2019* (the Act), which is the new framework for managing the state's land, water, pest plants and animals, and biodiversity, within the new Murraylands and Riverland region.

The landscape board will develop a new regional plan with five key priorities and a stronger focus on climate resilience and biodiversity to support the development of resilient landscapes and sustainable primary production.

From 1 July 2020, eight regional landscape boards and Green Adelaide will administer the new Act across South Australia. For more information visit www.landscape.sa.gov.au

Our vision

Our vision for the region is 'a healthy living landscape meeting the social, environmental, economic and cultural needs of the community, and ensuring the rights and wellbeing of future generations'.

Australian Government | National Landcare Program | Regional Landcare Facilitator | Government of South Australia Murraylands and Riverland Landscape Board | LANDSCAPE SOUTH AUSTRALIA MURRAYLANDS AND RIVERLAND

Photos of the month

taken 5/8/2020

Photo 1. Areas of the site are suffering Water logging.

Photo 2. The site was treated with a layer of cereal straw covered with roughly 6 inches of sand, with the hope of increasing crop establishment on the scalded area.

Photo 3. The scalding area at this site has been reduced with the treatment with good early sown crop establishment on the outer edges of the seep.

Over the last ten years there has been a significant increase in the number and size of seeps in the Murraylands and Riverland region, particularly in the Mallee region. The Murraylands and Riverland Landscape Board together with Mallee Sustainable Farming and GRDC have been working with land managers and farming groups to investigate the cause of the seeps, identify management options to reduce the impacts of seeps and explore ways to identify seeps as a preventative measure.

Above are photos of Kevin and Geoff Bonds property at Mannum, where even after the last couple of dry years they are still finding the seeps to be persistent and increasing. Insight Extension for Agriculture's Dr Chris McDonough has Mallee Seep Management trials set up on the property with a number of other sites across the Mallee region working with CSIRO, SARDI, Murraylands and Riverland Landscape Board, GRDC and Mallee Sustainable Farming.

Come along to Mallee Sustainable Farming's Field days to get the update on Mallee Seeps and other projects in the Murraylands and Riverland Landscape Board Region.

- Thursday 10th September – Lameroo, SA
- Friday 11th September – Loxton, SA

For more information head to https://msfp.org.au/events/

Landcare Week August 3 – 9

Get connected with the environment in your local community

Nominations are now open for the Bob Hawke Landcare Award and will closes on August 31

The Bob Hawke Landcare Award is a prestigious, national award that publicly recognises an individual involved in championing Landcare and who inspires others to take action on their own property or through a Landcare group. The award acknowledges an individual's leadership and commitment to Landcare, natural resource management and sustainable agriculture. The award nomination is open to an individual who champions the uptake of sustainable agriculture practices and can demonstrate the adoption of improved practices among landholders as a consequence this action. They will be closely involved in Landcare, and can demonstrate an outstanding commitment to local communities and drive community activity.

The Bob Hawke Landcare Award recipient will be awarded a prize package to the value of $50,000 for further development of their knowledge and skills in sustainable land management to enable an even stronger contribution to Landcare.

The Bob Hawke Landcare Award will be presented at the National Landcare Awards gala dinner on Thursday 11 March, 2021 in Sydney. For more information and to submit a nomination, please visit the Bob Hawke Landcare Award website: https://bobhawkelandcareaward.com.au/

Virtual fencing technology for natural resource management

South Australia's first virtual fencing trial of cattle has successfully demonstrated its use in protecting a native vegetation area from being grazed.

In the trial conducted at Eden Valley by CSIRO, twenty Santa Gertrudis heifers were fitted with Agersens eShepherd® pre-commercial neckband prototype which trained the cattle to respond to an audio cue as they approached a virtual fence line within a 14-ha wire-fenced paddock.

The trial was conducted over a 44-day period, with the virtual fence line being progressively shifted (on days 1, 4, 9 and 15) to prevent cattle from grazing an area of river red gum saplings within the paddock. By the end of the trial the cattle had been excluded from this area for 99.8% of the time, with no observed damage to the saplings.

This promising result demonstrates the potential of virtual fencing technology to deliver various NRM outcomes for graziers, including: keeping animals out of other environmentally sensitive areas (e.g. riparian zones, fragile soils), reduced overgrazing and erosion, and improved maintenance of groundcover and weed control.

CSIRO's scientific publication of the full trial results can be found here.

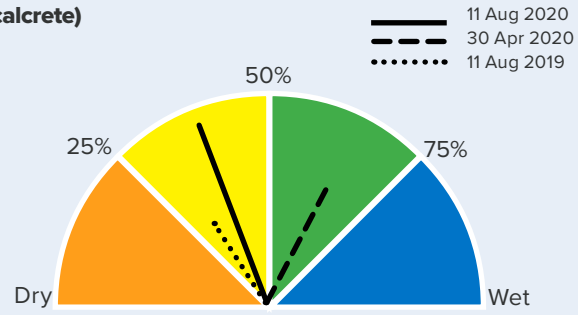
The Barossa Improved Grazing Group also produced a 2-page case study of the trial results, which can be found here.

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 June 2020.

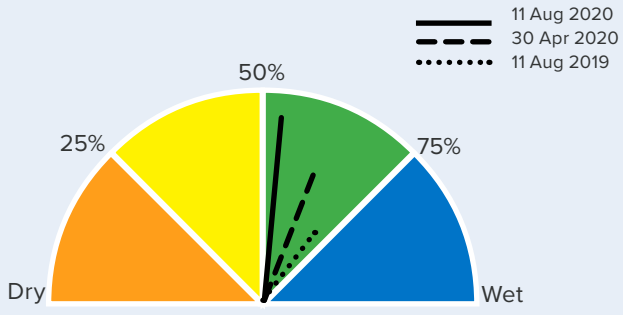
You can view more regional soil moisture data here: https://landscape.sa.gov.au/mr/land-and-farming/tools-for-land-managers/soil-moisture-monitoring-network

Waikerie-Lowbank Mid-slope (loamy sandy over loamy clay-calcrete)



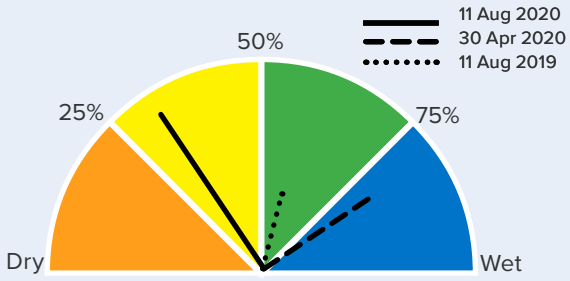
Growing season rainfall (GSR) received in 2020 (01/04/20-11/08/20) was 48.2 mm compared to 78.2 mm in the same period in 2019. Out of season rainfall (OSR) to 31/03/20 was 63.8 mm.

Lameroo Sandy Rise (sand over sandy loam)



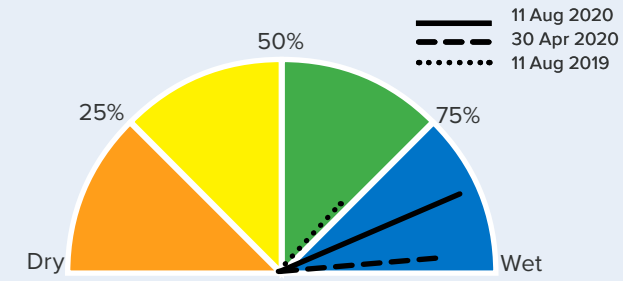
Growing season rainfall (GSR) received in 2020 (01/04/20-11/08/20) was 79.8 mm compared to 119.2 mm in the same period in 2019. Out of season rainfall (OSR) to 31/03/20 was 76.4 mm.

Lowaldie Mid-slope (sandy loam over clay)



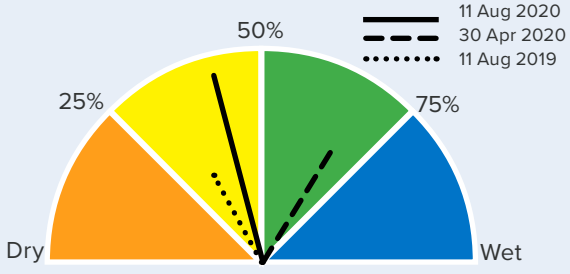
Growing season rainfall (GSR) received in 2020 (01/04/20-11/08/20) was 94.4 mm compared to 139.6 mm in the same period in 2019. Out of season rainfall (OSR) to 31/03/20 was 117.2 mm.

Moorlands Sandy Rise (sandy loam over sandy clay rubble)



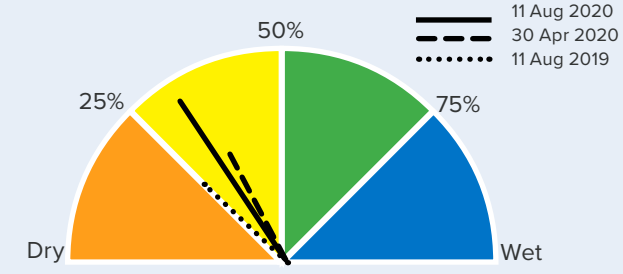
Growing season rainfall (GSR) received in 2020 (01/04/20-11/08/20) was 103.4 mm compared to 171.2 mm in the same period in 2019. Out of season rainfall (OSR) to 31/03/20 was 63.8 mm.

Pinnaroo Mid-slope (loamy sand over sandy clay)



Growing season rainfall (GSR) received in 2020 (01/04/20-11/08/20) was 69.4 mm compared to 124.2 mm in the same period in 2019. Out of season rainfall (OSR) to 31/03/20 was 116 mm.

Waikerie-Maggea Sandy Rise (sandy loam over clay)



Growing season rainfall (GSR) received in 2020 (01/04/20-11/08/20) was 48.2 mm compared to 78.2 mm in the same period in 2019. Out of season rainfall (OSR) to 31/03/20 was 63.8 mm.

Regional weather station network

The SAMDB automated weather station (AWS) network has 15 minute data updates, the ability to view information by table or chart calculators for growing degree days, rainfall amount, chill hours and portions and daylight hours. To follow our weather station network please visit: Murraylands and Riverland Weather Stations.

The following climate observations have been compiled from 1st April 2020 to 11th August 2020 draw comparisons to the same period of time in 2019.

AWS summaries

Wilkawatt – Period March 1, 2020 – August 12, 2020 compared to same period in 2019

Total rainfall for the period was 129 mm with a near identical 129.6 mm in the same period in 2019. The average daily temperature for the period was 13.1 deg C contrasting with 11.4 deg C in 2019. Soil temperature averages at 15 cm averaged 14.0 oC in 2020 compared to 14.4 oC in the same period in 2019. Growing degree days (T base 10) averaged at 4.9 units per day in the period in 2020 compared to a lower 3.7 units per day average in the corresponding 2019 period. Observing global solar radiation inputs in the 2019 period saw an averaged input of 198 W/m2 (in a 15 minute log period) across the full day period with 171 W/m2 averaged daily input in the 2020 period. Marginally lower averaged daily wind-speeds in the 2020 period of 8.64 km/h compared to the higher average in the 2019 period of 9.24 km/h. Reference crop evapotranspiration calculated at the site also produced an averaged slightly lower daily rate of 2.33 mm/day in the 2019 period compared to 2.40 mm/day in 2020. Frost hour daily averages were 0.56 in 2020 and 0.68 in the corresponding period in 2019.

Cadell – Period March 1, 2020 – August 12, 2020 compared to same period in 2019

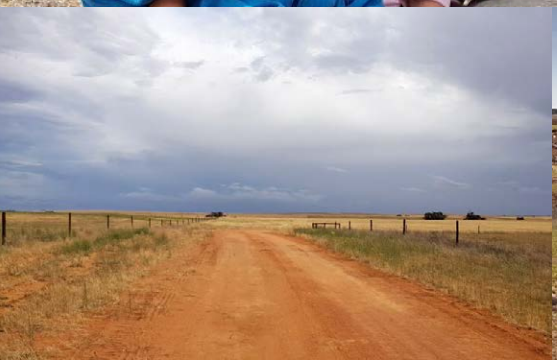
Total rainfall for the period was 90.6 mm with a 65.2 mm in the same period in 2019. The average daily temperature for the period was 12.3 deg C contrasting with 13.7 deg C in 2019. Soil temperature averages at 15 cm averaged 16.9 oC in 2020 compared to 18.0 oC in the same period in 2019. Growing degree days (T base 10) averaged at 4.3 units per day in the period in 2020 compared to a higher 5.2 units per day average in the corresponding 2019 period. Observing global solar radiation inputs in the 2019 period saw an averaged input of 144 W/m2 (in a 15 minute log period) across the full day period with 142 W/m2 averaged daily input in the 2020 period. Marginally lower averaged daily wind-speeds in the 2020 period of 3.89 km/h compared to the higher average in the 2019 period of 3.91 km/h. Reference crop evapotranspiration calculated at the site also produced an averaged slightly lower daily rate of 1.93 mm/day in the 2019 period compared to 2.11 mm/day in 2020. Frost hour daily averages were 2.19 in 2020 and 2.11 in the corresponding period in 2019.

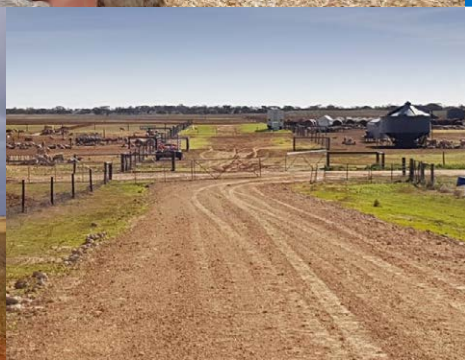
Loxton – Period March 1, 2020 – August 12, 2020 compared to same period in 2019

Total rainfall for the period was 117.2 mm with a 74.6 mm in the same period in 2019. The average daily temperature for the period was 12.3 oC contrasting with 13.7 oC in 2019. Soil temperature averages at 15 cm averaged 15.4 oC in 2020 compared to 17.3 oC in the same period in 2019. Growing degree days (T base 10) averaged at 3.9 units per day in the period in 2020 compared to a higher 4.9 units per day average in the corresponding 2019 period. Observing global solar radiation inputs in the 2019 period saw an averaged input of 152 W/m2 (in a 15 minute log period) across the full day period with 148 W/m2 averaged daily input in the 2020 period. Marginally lower averaged daily wind-speeds in the 2020 period of 5.07 km/h compared to the higher average in the 2019 period of 6.07 km/h. Reference crop evapotranspiration calculated at the site also produced an averaged slightly lower daily rate of 2.30 mm/day in the 2019 period compared to 1.74 mm/day in 2020. Frost hour daily averages were 1.66 in 2020 and 0.75 in the corresponding period in 2019.

Wanbi – Period March 1, 2020 – August 12, 2020 compared to same period in 2019

Total rainfall for the period was 149.4 mm with a 92.6 mm in the same period in 2019. The average daily temperature for the period was 12.3 oC contrasting with 13.9 oC in 2019. Soil temperature averages at 15 cm averaged 14.8 oC in 2020 compared to 16.5 oC in the same period in 2019. Growing degree days (T base 10) averaged at 3.7 units per day in the period in 2020 compared to a higher 4.8 units per day average in the corresponding 2019 period. Observing global solar radiation inputs in the 2019 period saw an averaged input of 163 W/m2 (in a 15 minute log period) across the full day period with 161W/m2 averaged daily input in the 2020 period. Marginally lower averaged daily wind-speeds in the 2020 period of 9.26 km/h compared to the higher average in the 2019 period of 10.51 km/h. Reference crop evapotranspiration calculated at the site also produced an averaged slightly lower daily rate of 2.69 mm/day in the 2019 period compared to 2.15 mm/day in 2020. Frost hour daily averages were 0.75 in 2020 and 0.21 in the corresponding period in 2019.





Grower Profile

Name: Andrew and Ashley Litchfield

Trading Name and Location: AM & AR Litchfield, Geranium SA

Size of Property: 1200 ha

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

1000 acres are in crop with a rotation of barley, rye triticale and vetch

Livestock, what and how many head?

800 merino ewes, 450 merino lambs, and 340 merino/suffolk lambs. 250 merino hoggets, and 800 merino wether lambs in the feedlot

Rainfall for 2019 and how much rain to date for 2020? 2019 was a very dry year, receiving about 180mm. This year is looking a lot more promising with around 160mm falling already, with good opening rains on ANZAC day

How long has the property been in the family? 40 years, but the farm was leased out for some of those years

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

Machinery - 10 years ago we were farming with very old and basic machinery which we could afford on an apprentice wage. Our main tractor was a C670 Chamberlain FEL. Through hard work our main tractor is now a Caterpillar 85 track machine. We've also been able to purchase an O'Bryan scrapper bucket to assist with improving our soil. Other equipment has also been upgraded, including our boom spray and tractor, discs and cultivator bars.

Crop varieties – Still growing basic varieties, although we are looking into growing Clearfield barley in the future.

Soil health – Since incorporating vetch into our crop rotation, we are seeing much better growth from our pastures, such as clovers and medics. We have also been clay spreading sandy non-wetting ground, and looking into soil ameliorations including delving, plozza ploughing and deep ripping, which we hope to start late this year.

Fertiliser/chemical options – We are starting to top dress with more nitrogen based products. There has also been a very good response from using higher sulphur levels in our fertiliser. Like most people, we are using more chemicals than we would like, but are working towards other options where possible to reduce chemical use.

Livestock – 10 years ago we started buying in merino ewes. We slowly built our numbers up to 1000 ewes, although had to drop those numbers back to 800 during last year's drought. We built 2 containment pens approximately 5 years ago, and have just upgraded that to 7 feedlot pens. This will allow us to feedlot ewes, ewe hoggets and finish lambs, and when the opportunity arises, purchase lambs to finish in the feedlot.

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

Livestock have been, and continue to be, a huge part of our business enterprise.

The soil type over two thirds of our farm, gis not suitable for continuous cropping. Running sheep has had the best return per acre, with multiple income sources throughout the year. We find running livestock spreads financial risk, as you're not putting all your eggs in the one basket, praying for enough rain to cover your input costs. We are however seeing very uncertain times at the moment across the world, which has caused a severe reduction on global markets for wool, lamb and mutton. We will be watching the markets closely over the coming 12 months, and may need to shift our business focus if markets don't recover.

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?

We trialled delving with good results where clay was bought up. We are now in the process of building our own delver. We believe that having our own equipment allows us the flexibility of being able to do small parts of a paddock, where it wouldn't be feasible to hire a contractor.

And finally, do you have any trials planned or exciting ideas for the future?

We are looking into Plozza Ploughing, deep ripping and compost to improve soil health.

Grants

Grass Root Grants program – supports community based organisations, volunteer groups and individuals to undertake projects that will assist in managing the region's landscape and natural assets, closing 24 August 2020 - https://landscape.sa.gov.au/mr/get-involved/funding-opportunities/grassroots-grants-2020

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 https://www.pir.sa.gov.au/grants_and_assistance/drought_support/financial_assistance/connecting_drought_communities_events_grant

For more information

Zoe Starkey, Regional Agriculture Landcare Facilitator
T: 0408 416 684
E: zoe.starkey@sa.gov.au

Fact sheets

Fleurieu Farming Systems Inc – have a great easy to read fact sheet out highlighting importance of soil carbon and information and links to information regarding 'Carbon Credits' https://drive.google.com/file/d/19qj01cCw7TCxsNuTHx-JazzJnX2oVZFW/view

Mackillop fact sheet – a comprehensive fact sheet on sandy soil constraints in the south east south Australia, a guide to their diagnosis and treatment. https://mackillopgroup.com.au/project/current-projects/sandy-soil-constraints-in-south-east-south-australia-a-guide-to-their-diagnosis-and-treatment/

Dry Times, Drought Management check list – although the 2020 season is looking more promising over the Murraylands and Riverland Landscape Board region, here are some great tips and information on recovering from Drought and Management going forward https://landscape.sa.gov.au/mr/land-and-farming/drought-management

Events and Webinars

SANTFA 2020 Conference Webinar Series

A Systems Approach, Bringing it all Together – Part 1 21st July, Part 2 4th August, Part 3 18th August - Webinars start at 7.30am and run for approximately 2 hours including question time. SANTFA Members, check your email for the link to your free ticket. Non-Members please visit the events page on the Website to find the link to register www.santfa.com.au/events

GRDC Grains research Update Lameroo

19th August Online. For more information head to https://grdc.com.au/events/list?etype=grains-research-update

Mallee Sustainable Farming Field Days

Thursday 10th September – Lameroo, SA. Friday 11th September – Loxton, SA. For more information head to https://msfp.org.au/events/

Coomandook Sticky Beak Tour

16th September for more information contact Tracey Strugnell tstrugnell@coorong.sa.gov.au

Murray Plains Farmers Spring Crop Walk

18th September for more information mpfarmers@outlook.com

Watch: Post-fire woody weed control (9:46) – bushfire can provide an opportunity to tackle highly-invasive woody weeds such as gorse, blackberry & broom | hear from District Officer Will Hannaford about how these weeds respond to fire & different control methods [Natural Resources AMLR]

Watch: Soil protection & livestock management options (11:21) – join Ian McFarland (PIRSA) & Mike Tiller (Producer, Balaklava) on protecting soil & strategies to prevent adverse impacts from livestock, as well as hear about use of containment feeding in the late summer/early autumn period [supported by Natural Resources AMLR and Natural Resources SAMDB]

Watch: Back to Business webinar series (41:08) – winter livestock health

Watch: Back to Business webinar series (50:17) – livestock nutrition & management

Watch: Back to Business webinar series (42:24) – pasture recovery & management in 2020

Contacts

Landscape Office Murray Bridge
110A Mannum Road Murray Bridge SA 5253
T. 8532 9100 | **F.** 8531 1843

Landscape Office Berri
2 Wade Street Berri SA 5343
T. 8580 1800 | **F.** 8582 4488

E. MRenquiries@sa.gov.au

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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