Welcome to Soil Matters, a bimonthly newsletter providing updates and information on soil, weather and industry developments to support on-farm decision making within the SA Murray-Darling Basin. This newsletter will draw together a number of resources including:

- Bureau of Meteorology seasonal outlook
- SA Murray-Darling Basin weather station network
- SA Murray-Darling Basin 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 Eliza Rieger, Regional Landcare Facilitator on eliza.rieger@sa.gov.au or 0408 416 684 for more information.

Alternatively you can subscribe to a hard copy of the newsletter by emailing eliza.rieger@sa.gov.au

Photo of the month

Michael Eyres sheds some light on the shallow sandy loam over calcrete soil types commonly found in the Coomandook area. For more information on this soil type see our Soil of the Month on page 5.
The following information has been sourced from the Bureau of Meteorology ‘Climate Outlook-monthly and seasonal’ issued on 25 May 2017.

**Chance of exceeding median rainfall (%)**
- There is a 25-30% chance of exceeding median rainfall in the Eastern Mount Lofty Ranges over the June-August 2017 period; recorded median rainfall in Ashbourne is 330mm over this period. Past accuracy for this district is low.
- There is a 25-30% chance of exceeding median rainfall for the Riverland districts over the June-August 2017 period; recorded median rainfall at Taylorville is 88mm. Past accuracy for this district is very low.
- There is less than 25-30% chance of median rainfall for the Mallee districts over the June-August 2017 period; Recorded median rainfall at Sandalwood is 111mm. Past accuracy for this district is very low.

**Chance of exceeding median temperature (°C)**
- There is a 70-75% chance of exceeding median maximum temperatures in the Eastern Mount Lofty Ranges over the June-August 2017 period; recorded median maximum temperature in Monarto during this period is 14.2°C. Past accuracy for this district is low.
- There is a 70-75% chance of exceeding median maximum temperatures in the Riverland districts over the June-August 2017 period; recorded median maximum temperature in Waikerie during this period is 16.7°C. Past accuracy for the district is low.
- There is a 75-80% chance of exceeding median maximum temperatures in the Southern Murray Mallee districts during the June-August 2017. Recorded median maximum temperature for Lameroo during this period is 15.7°C. Past accuracy for the district is low.
The following climatic observations have been compiled from records spanning from 1 May-31 May 2017. Rainfall records show a dryer May across most SA Murray-Darling Basin districts when compared to 2016 records. Despite the decreased May 2016 rainfall, soil moisture is persisting across many of the districts (please see soil moisture probe network dials on page 4). Degree day values, atmospheric and soil temperature records are lower than 2016 records across many districts, this may impact pasture and crop development.

Mt Pleasant May Conditions:
Average daily maximum temperatures for May were 14.9°C; 1°C lower than 2016 records; average daily minimum temperatures were 7.7°C; 1.8°C less than 2016 values. The lower atmospheric temperatures are reflected in the soil temperature with records of 12.6°C for May. Similar to other SA Murray-Darling Basin districts Mt Pleasant recorded a low average degree day value of 1.4 indicating the decreased plant growth opportunities in cold Autumn months. Average wind speeds of 12.3km/h were recorded, significantly less than 2016 average of 21.2km/h, decreased wind speeds also decrease plant transpiration helping conserve soil moisture levels. The highest wind speed for the month was 77.1km/h, and brought 4mm of rain. Rainfall was significantly lower than 2016 records with 25mm for May 2017 compared with 72.8mm from the same month last year. Lower rainfall combined with lower degree day values and lower soil temperatures will impact the rate of mineralisation within the soil, in turn this may impact crop and pasture growth rates in the district.

Currency Creek May Conditions:
May 2017 rainfall was slightly higher than 2016 records with 39mm compared to 36mm. A majority of May rain fell in the second half of the month, with 18mm falling on 20 May; average soil temperature was 13.7°C and evapotranspiration was 0.5mm on the day. Relatively warm soil conditions and low evapotranspiration rates will encourage soil moisture to move through the soil profile and assist mineralisation. Average diurnal soil temperature fluctuations have increased from 2.2°C in 2016 to 6.4°C in 2017, this may reflect a change in land use or management practices resulting in less ground cover to protect the soil from atmospheric temperature fluctuations. Average maximum temperature for May 2017 was 17.9°C; 1.6°C lower than 2016 records. The Degree day values was 2.03, half the recorded value of 4.2 from May 2016. Low degree days combined with lower soil temperatures and higher diurnal soil fluctuations may result in slowed plant growth rates in the district.

Taylorville May Conditions:
May 2017 rainfall was 19.4mm, 16mm less than 2016 records; all rain was received after the 16May. The daily average maximum temperatures was 18.9°C; 1.7°C lower than 2016 records. Average daily minimum temperature was 6.4°C; 2.8°C lower then May 2016 values. The average degree day value for May was 2.4, nearly half the value for May 2016. Lower temperatures combined with shorter day length result in lower degree day values, this impacts on plant growth and development potential. Soil temperature has been recorded to steadily decrease over the month, ranging from 21.7°C on 1 May to 15.6°C on 30 May. Despite decreasing soil temperatures, remaining soil warmth from the summer months combined with current soil moisture will continue to encourage soil biological mineralisation. May was a fairly still month with only three days of wind above 40km/h and average daily speeds of 5.2km/h.

Sherlock May Conditions:
Sherlock average daily maximum temperature was 18.5°C; 1°C lower than 2016 records. Sherlock average daily minimum temperature was 5.7°C; 4°C less than 2016 values. Despite the lower atmospheric temperature records average daily soil temperatures were 14.5°C and did not fall below 10°C throughout the month. Diurnal soil temperature fluctuations remained very low at 2.5°C, the relatively warm soil conditions and consistent soil temperatures will create a good environment for soil mineralisation and plant root growth. The May rainfall record was 34.6mm; 9.8mm less than 2017 records. Over 17.8mm of total rainfall was recorded on the 17 and 18 May, as evapotranspiration was very low at this time (1.5mm) rain had a strong chance of penetrating the soil profile.
SA Murray-Darling Basin Soil Moisture Probe Network:

The information below is a dial representation (dry to wet) of plant available soil moisture recorded at eight sites from the Natural Resources SA Murray-Darling Basin soil moisture probe network. The below information is based on data recorded on 31 May 2017, 31 April 2017 and 31 May 2016. The dials below are provided with support from Agriculture Victoria Soil Moisture Monitoring calculations.

**Lameroo Heavy Flat (loam over heavy clay)**

Soil moisture has dropped by approximately 12% over the past month. Current levels are sitting near 78% full. Available moisture was empty at the same time last year.

**Lameroo Midslope (loamy sand over medium clay)**

Soil moisture has increased slightly over the past month. Current moisture sits at over 90%. Available moisture was empty at the same time last year.

**Langhorne Creek (sandy loam over clay)**

Soil moisture has dropped slightly over the past month. Available moisture was near 0% at the same time last year.

**Langhorne Creek Rise (sandy loam over clay)**

Soil moisture has dropped slightly over the past month. Available moisture was near 0% at the same time last year.

**Lowaldie Flat (loamy clay over clay)**

Soil moisture has remained at 100% capacity for the past month. Available moisture was at 50% at the same time last year.

**Mt Compass Dryland (sand over clay)**

Soil moisture has dropped slightly over the past month. Available moisture approximately 12% higher at the same time last year.

**Pinaroo Swale (sandy clay over clay)**

Soil moisture has dropped by approximately 5% over the past month. Available moisture was near 0% at the same time last year.

**Lowaldie Sandy Rise (sand over loam)**

Soil moisture has remained at 100% capacity for the past month. Available moisture was approximately 80% at the same time last year.
Soil of the month: Shallow sandy loam over calcrete

This soil profile information has been compiled drawing on information from ‘The Soils of Southern South Australia Volume 1’ (James Hall, David Maschmedt and Bruce Billing) and the Department of Environment and Natural resources, Soil and Land Program Soil Characterisation Site data sheet

Production:
The shallow sandy loams on calcrete soils account for 5.1% or 800 200ha of southern South Australia. Commonly found in the Murray Mallee these soils are generally of Aeolian origin. These soil types are frequently found on flat to gently undulating plains. Dryland agriculture ranges from moderate to low, and is mostly determined by soil depth. The dominant land uses are; broadacre cropping (usually incorporating complimentary breaks of annual pasture), grazing of improved pastures in higher rainfall districts and wine grapes in areas of favourable climate and where deep ripping of calcrete for increased moisture is possible. Irrigation potential is variable as drainage potential is dependent on subsoil calcrete thickness, extent of subsoil fracturing and underlying materials.

Nutrition:
Inherent fertility is moderately low (CEC at the sample site was 8.4). Regular phosphorus applications are essential and zinc and copper are occasionally required. Manganese may be needed on cereals. Organic carbon levels are good, no chemical barriers exist above the lower calcrete layer. Soil pH is neutral at the surface, alkaline with depth.

Management:
Surface stones may interfere with and abrade equipment. Seedling emergence may be impacted due to stoniness and low water holding capacity. Shallow and rubbly soils have limited water holding capacity and may limit productive capacity and crop options. Wind erosion can be a problem, particularly where soils are subjected to over-grazing or excessive cultivation.

For more information:
Left below: Bureau of Meteorology, Root zone soil moisture, 4 June 2016
Right below: Bureau of Meteorology, Root zone soil moisture 4 June 2017
Less fertiliser more pasture

Well managed regenerating legume pastures can provide an effective and low cost break phase option for Mallee farmers. However, production from traditional medic based pastures is often poor on Mallee sands.

In other regions, alternative legume pastures species such as serradella and clovers have been successfully incorporated into farming systems with sandy soils. In 2015, Mallee Sustainable Farming and CSIRO established a trial at a Karoonda site to evaluate a range of regenerating pasture legume species on Mallee sandy soils. This trial continued in 2016 to assess the productivity of these pasture options in the first year of re-generation.

“Delivering multiple benefit messages – A partnership with NRM” is an innovative Grains Research and Development Corporation funded project bringing together grains industry and natural resources management people to work together in extending sustainable farm practices on key production issues that have clear environmental outcomes. This project is a partnership between the Ag Excellence Alliance and Mallee Sustainable Farming. Read More: [http://www.msfp.org.au/wp-content/uploads/2016.08.04-Karoonda-FD-booklet.pdf](http://www.msfp.org.au/wp-content/uploads/2016.08.04-Karoonda-FD-booklet.pdf)

nrmFARM

nrmFARM is a free online farm management program for farmers, horticulturalists, and rural property owners in the Natural Resources SA Murray-Darling Basin (SAMDB) region.

Accessed via a secure log-in, nrmFARM is a web based farm management tool that allows users to create and save a map of their property and record farming actions and activities undertaken. nrmFARM allows users to record information including:

- crop and livestock types
- fencing and irrigation
- soil improvement and fertiliser applications
- chemical applications
- animal husbandry activities
- spraying and baiting
- soil test results.

The online program is compatible with a broad range of commodities that are farmed within the SAMDB region and is suitable for farms and rural properties of all sizes.

nrmFARM has been developed in partnership with Natural Resources South East, to be easy and practical to use, and to provide users the ability to maintain, cross reference and collate farm records either by paddock or property.

How to access nrmFARM

If you are a first time user of nrmFARM you will need to create a user login and password first. To do this click on ‘Manage your Account here’ when you reach the sign in page.

To access nrmFARM go to the Natural Resources SAMDB website.

Want to know more?

T: Eliza Rieger on 0408 416 684
E: eliza.rieger@sa.gov.au
Landcare Conference

The Landcare Association of SA is pleased to announce that the 2017 State Community Landcare Conference will be held from 11 to 13 September 2017, in Clare. The Conference will include the 2017 State Landcare Award presentations. With the theme of Celebrating Innovation and Diversity in Landcare, the Conference will showcase Landcare and natural resources programmes from across South Australia.

Entries are now open for the 2017 South Australian Landcare Awards. Nominations are invited from Landcare leaders working on sustainable farming, Coastcare, Junior Landcare, Indigenous land management, and much more. With nine national categories there is certain to be one to fit any kind of Landcare project.

For more information on the conference and the Landcare awards: [http://landcaresa.asn.au/](http://landcaresa.asn.au/)

National “Farming Together” program

Applications are now open for the $14.9m national Farming Together program. This Federal Government initiative is a two-year campaign for primary producers and processors to collaborate and claim marketplace power. Any Australian citizen who farms within the ATO-recognised guidelines can register to receive a free one-on-one consultation to discuss their opportunities and appetite to create a successful collaborative group. This could be either as a co-operative, as a collective bargaining entity or as a less-formal collaborative group. Existing groupings may also apply.

The most-promising groups will be offered assistance for product research and development. Areas that are covered include advice on marketing, capital-raising, packaging, logistics and exporting as well as non-ongoing consultancy appointments.

For more information visit [www.farmingtogether.com.au](http://www.farmingtogether.com.au) or 1800 00 55 55.
Whats on in the region

June
22 - BIGG workshop: Maximising profit in a variable climate
Half day workshop for livestock producers (Moculta Sports Park)

22 - Viticulture precision agriculture workshop
Join our team of experts to hear what precision viticulture can do to improve your productivity (Langhorne Creek)

22 - Free guardian animals and predator management workshop
Come along to the guardian animals and predator management workshop and explore different methods of pest animal control. (Angaston)

22 - Horse owners’ land management workshop
Learn about weed control in your paddock, pasture improvement, managing soils and grazing strategies (Berri)

23 - Precision agriculture in horticulture
Join a team of experts to learn how precision agriculture can improve your production (Lenswood)

25 - Kinchina Conservation Park working bee
Help improve Kinchina Conservation Park in a series of working bees (Rocky Gully)

July
29 - Kinchina Conservation Park working bee
Help improve Kinchina Conservation Park in a series of working bees (Rocky Gully)

August
11 - Growing SA Conference (Hahndorf)
Inaugural GROWING SA conference hosted by Livestock SA and Grain Producers SA. The conference is an opportunity for primary producers to hear the latest in policy developments, farm business advice and commodity research while networking with each other and industry service providers and policy decision-makers.

Farmers Markets in the region

**Adelaide Hills Farmers Market**
Where: 23 Mann Street, Mount Barker
When: 8:30-12:30 every Saturday

**Goolwa Wharf Markets**
Where: Goolwa Wharf, Goolwa
When: first and third Sunday of every month at 9am to 3.30pm

**Mount Compass Produce and Craft Market**
Where: Wetland Car park, Sam Court, Mount Compass
When: Markets are held on the first Saturday of January, February, March, April, October, November and December.

**Murray Bridge Farmers Markets**
Where: The Wharf area, Sturt Reserve, Murray Bridge
When: every Saturday at 8am to 12pm

**The Riverland Farmers Markets**
Where: Berri Senior Citizens Hall, Crawford Terrace, Berri
When: 7:30-11:30am every Saturday

**Strathalbyn Farmers Markets**
Where: On South Terrace near the Old Strath Railway
When: Every third Sunday of the month

For more information on these events visit the events page of our website

Contacts

Natural Resources Centre
Murray Bridge
110A Mannum Road Murray Bridge SA 5253
T. 8532 9100 | F. 8531 1843

Natural Resources Centre
Berri
2 Wade Street Berri SA 5343
T. 8580 1800 | F. 8582 4488
E. samdbenquiries@sa.gov.au

For more information on natural resources management in the region, the SAMDB NRM Board and its activities, please visit www.naturalresources.sa.gov.au/samurraydarlingbasin