

Precision Pasture Decisions

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Key Outcomes

- **Monitoring equipment installed**
 - o **Weather station with rainfall, wind speed and relative humidity – updated every 15 minutes**
 - o **Soil moisture probes under two different perennial pasture systems; veldt and Lucerne**
- **Local growers provided with access to the data and shown how longer term the data has the potential to assist in improving decision making under different climatic conditions**
<http://www.coorong.sa.gov.au/page.aspx?u=2108>

Background

Recent work that the Coorong Tatiara Local Action Plan (CTLAP) has conducted has seen an increase in the quest for knowledge from a group of farmers in the Field region.

This project aims to complement existing activities (including the Saltland Redemption and MLA Healthy Soils Projects) and provide further information to the group to allow them to improve their decision making skills going forward by providing access to weather data monitoring equipment and soil moisture monitoring data that provides up to date information around soil moisture availability and soil water use in the pasture system.

Activities

On 17th May, a weather station and two soil moisture probes were installed on "Maurlee" in an exposed location to enable accurate



weather data (particularly around wind speed and direction) to be collected.

Figure 1. Weather station and telemetry unit

PROJECT DETAILS

Project ID: N/A

Funding Body

This project is supported by the Australian Government's Regional Land Partnerships initiative of the National Landcare Program, the Coorong Tatiara Local Action Plan and the South East Natural Resources Management Board.

Project Duration

2018-2019

Site Locations

- Field ("Maurlee", Turner Agribusiness)



Utilising the same telemetry, two soil moisture probes were installed; one in the veldt paddock to the South of the weather station (Fig2a), and one in the Lucerne paddock to the north of the weather station (Fig2b).



Figure 2 (a) Veldt Pasture

(b) Lucerne Pasture

These probes – although placed in close proximity ended up being in two very different soil types, with the Lucerne probe hitting hard rock at 60cms, and the veldt probe being sand over clay.

The telemetry was first accessed on the 20th May, and data has been continually collected since.

Results – Accessing Data

The data is hosted on the CTLAP website <http://www.coorong.sa.gov.au/weather>. When the site is opened up, the 'dashboard' will appear – summarizing all of the current readings at the site; both on the weather station data (Fig 3), and the soil moisture probe data (Fig 4) where the following data is displayed (updated every 15minutes)

Weather Station data

- Rainfall/temperature/humidity/barometric pressure
- Wind speed, direction and gusts
- Delta T
- Fire Danger Index* (a figure that is calculated based on the other weather factors)

Soil Probe data

- Soil Moisture
- Soil Temperature

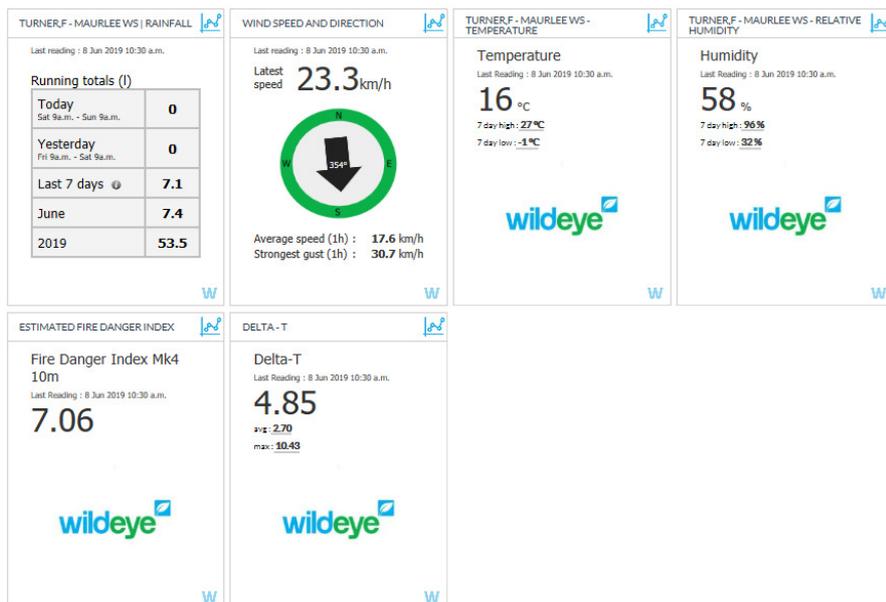


Figure 3. Weather station data

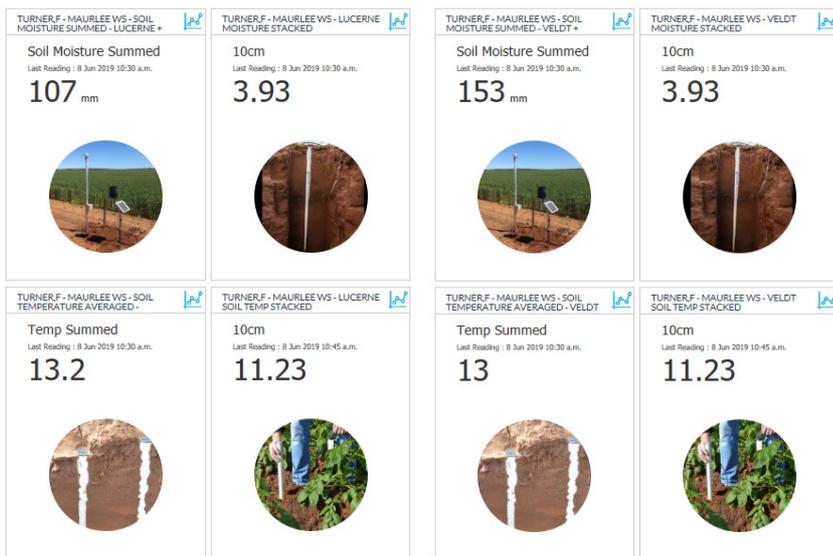


Figure 4. Moisture probe data (Veldt and Lucerne)

As well as providing a current snapshot, this data can then be investigated further by clicking on the item of interest – it then brings up individual graphs for each item, and a range of data and dates can be viewed and interrogated more closely (Figure5).

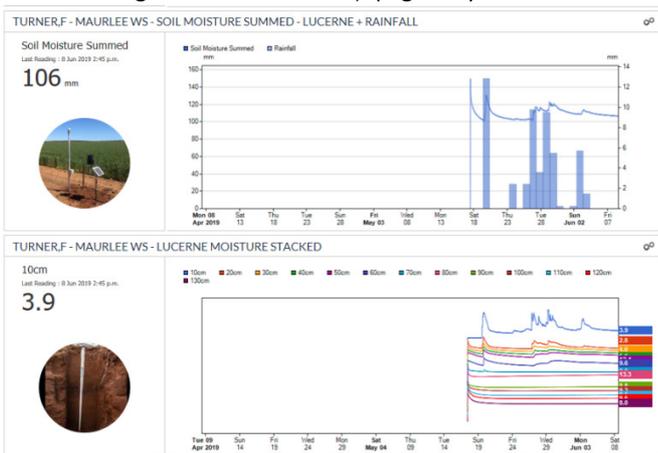


Figure 5. Expanding the graphs to view the historical data and where the data varies over time.

Discussion – How can the data be utilized

Over time, we will start to build up some information that can be very valuable going forward. It is once this history is established – understanding at what level the soil profile is full, at what level it is empty and the impacts on different pasture species in the amount of water utilized that we can really start to utilize these tools going forward.

The data will assist us in understanding

- How full is the 'bucket' (i.e. how much water is available for the pasture)?
- What depth the pasture is pulling moisture from at any one time
- How effective any given rainfall event has been in pushing moisture to depth
- What the extraction limits are of different crops

Future Activities/Recommendations:

Through support of the landholder, the weather station data and moisture probes will be maintained and continue to be made publicly available through the Coorong Tatiara LAP website.

The outputs from the weather station and probes will be utilized as part of the MLA Healthy Soils Project, with farmers working with the soil moisture data to understand differences in plant water use of different species. As the amount of data being collected builds up, the probes as a tool to managing risk and making decisions will be explored.

The weather station data will further be utilized by being made available to members of the Field CFS, allowing them to access local weather data such as wind speed and direction, and the current grass fire index for the area.

Acknowledgements:

Turner Agribusiness – Landholder

Alpha Group Consulting – Installation and support



Natural Resources
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