

# Building Resilience & Profitability of High Rainfall Farmers

## What's Happening

2021 was the final year in a three year project focused on building resilient farm businesses and strengthening farm decision making. Extensive workshops and activities were delivered to farmers (especially women and young farmers) and the wider farming industry to build confidence and skills. The culmination of the project has resulted in a website dashboard <https://myfarmdashboard.sfs.org.au/> with optional push notifications of the four key parameters (soil moisture, pasture availability, commodity prices and climate data) thus providing information that increases farmer and agronomist ability to make better on-farm management decisions.

The project involved a collaboration between Southern Farming Systems, Federation University (Ballarat), Glenelg Hopkins Catchment Management Authority, MacKillop Farm Management Group and Agriculture Kangaroo Island.

During 2021, three Women on the Land workshops were held; Climate Workshops with Darren Ray and Leighton Wilksch; Resilience Mindset with Polly Hohn, and a bus trip amongst the north coast fire scar.

The recalibration of the new and improved Pastures from Space continued in 2021. In time, access to the pasture growth rates mapping will be found through the website listed above.

## Soil Moisture Monitoring

The project partially funded the installation of up to 30 soil moisture probes across the high rainfall zone in Tasmania, Victoria and South Australia. On KI, three 120cm deep Adcon soil moisture probes were located at Bucks (Gosse), Heinrichs (Parndana) and Berrys (Birchmore). This information was uploaded every 15 minutes and can be found at the following address: [http://toip-server.net.au:8080/custdata/agbyte/kihrz/agb\\_index.html](http://toip-server.net.au:8080/custdata/agbyte/kihrz/agb_index.html) (see QR code at the end of this article).

### Summary points:

- During winter, rainfall events infiltrated to 120cm at all 3 sites. The Buck and Heinrich sites had periods where saturation limits were reached (evident in 'table top' flat lines following heavy rainfall).
- During spring, pasture growth was abundant and by December, root activity was around 110-120cm at the 3 sites.
- All 3 sites entered May 2022 with less total soil moisture compared to the previous 2 seasons.

From the start of July to into November, the Buck site showed no moisture draining from the profile in the lower 90-120cm

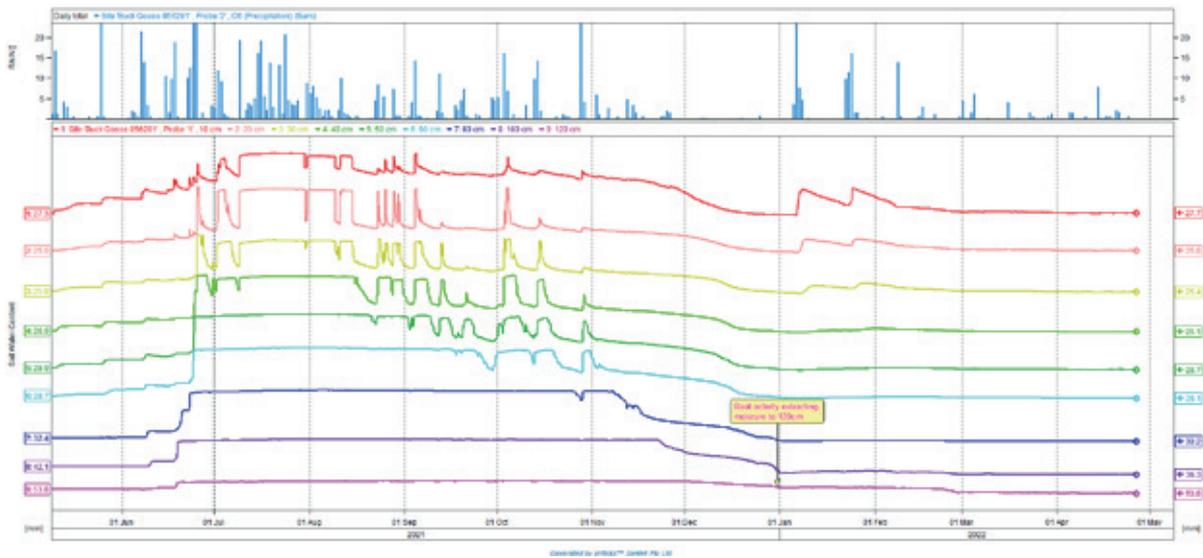


Figure 1: Buck Gosse site. Moisture sensor readings at varying depths in the soil profile.



profile, evidenced by the classic 'table top' line (Figure 1). The January 2022 rainfall event soaked to ~30cm. The site had some interesting diurnal fluctuations (= root activity) during February evidenced by a steep drop in moisture level at 120cm inferring that the roots were extracting moisture beyond 120cm. Pasture growth saw this moisture removed from the profile in the following months.

The Heinrich Parndana site saw a shorter saturation event from July to mid September at the 90-120cm depth (Figure 2). The January rainfall event soaked to around 60cm. The graph shows moisture moving out of the 10-40 & 50-80cm profile in February 2022. It's not certain if this was natural draining or root activity and evapotranspiration (there was not a lot of diurnal fluctuation present to confirm). Pasture growth during

summer/autumn saw this moisture removed from the profile.

The Berry Birchmore site saw a saturation event at the 90-120cm depth from July to November (Figure 3). The January rainfall event soaked to ~30cm. The site still had residual moisture from the January rains going into May.

And whilst not directly involved in the project, the Bell Cygnet River site is a long term site and we feel it's important to publish the data. There was a lovely drawdown curve from mid August to mid December by the canola in 2021, showing there was minimal rainfall for infiltration and that the canola roots extracted nearly every bit of available moisture (Figure 4). The graph revealed that the lower profile (100-160cm) was actually the driest ever since the soil probe was installed in 2014.

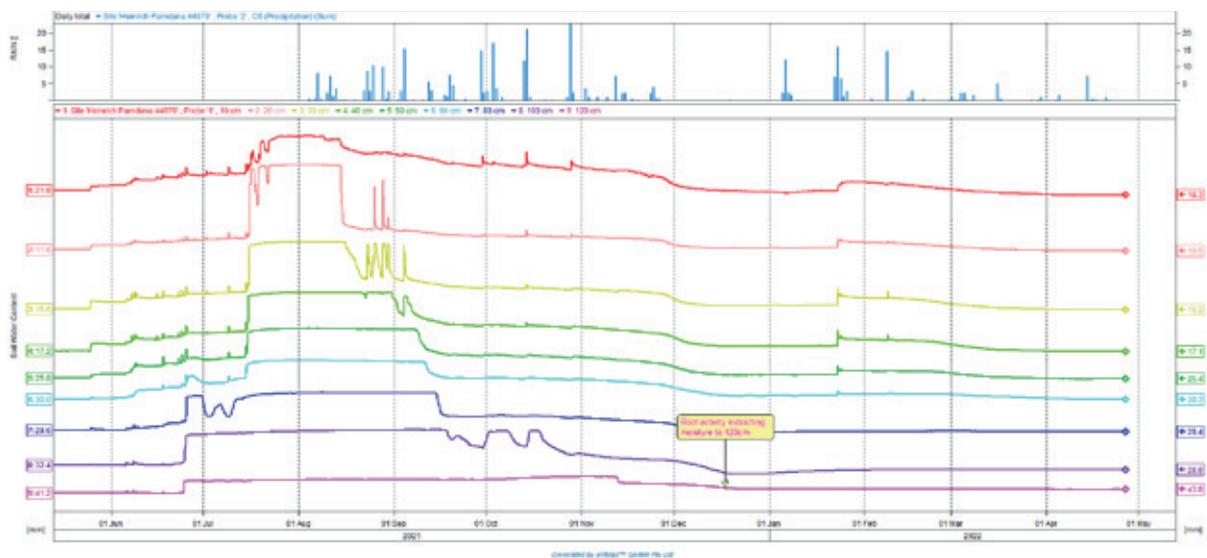


Figure 2: Heinrich Parndana site. Moisture sensor readings at varying depths in the soil profile.

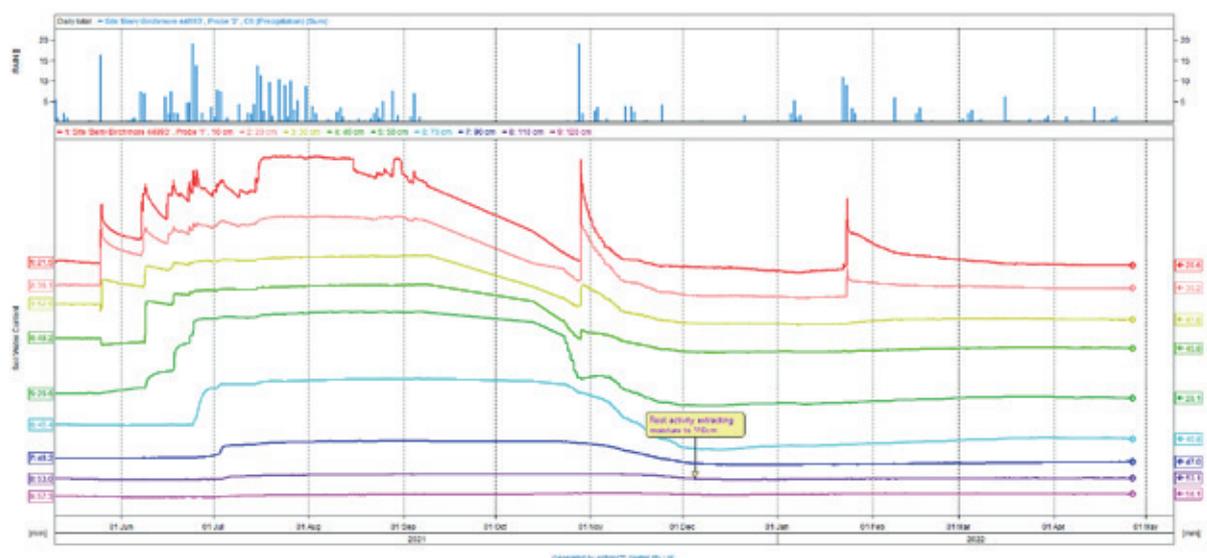


Figure 3: Berry Birchmore site. Moisture sensor readings at varying depths in the soil profile.



# Building Resilience & Profitability of High Rainfall Farmers

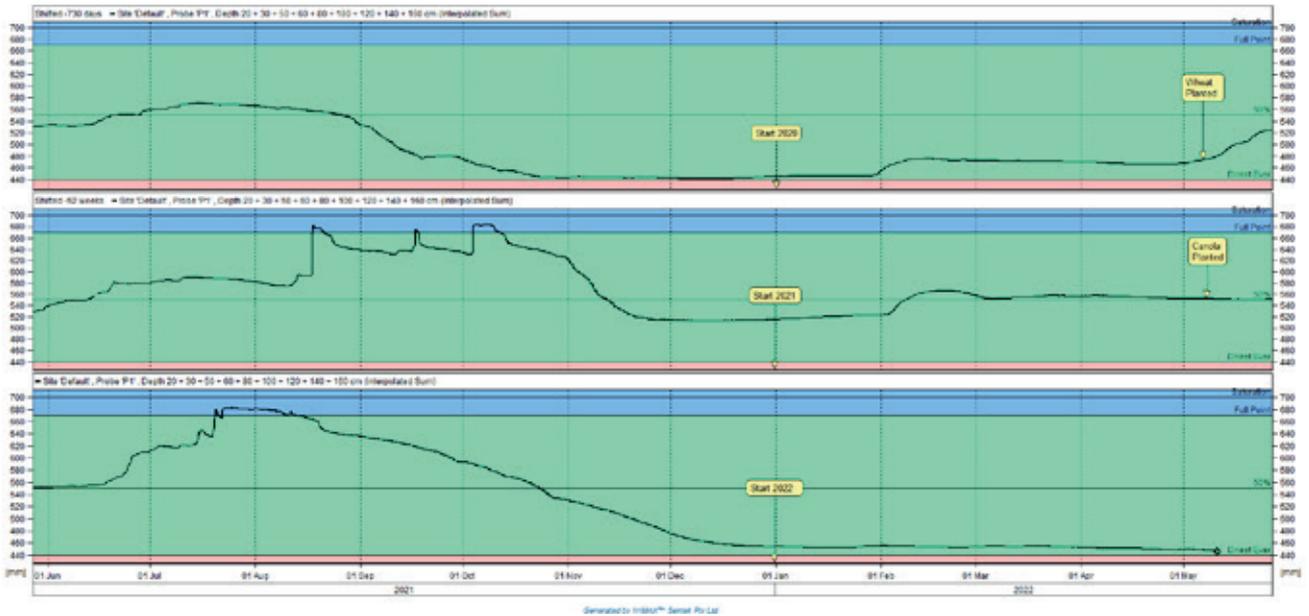


Figure 4: Bell Cygnet River site. Three year comparison of soil moisture levels.

## Pasture Availability

The recalibration of the new and improved Pastures from Space continued ground truthing in 2021. The project aims to be able to provide estimates of pasture availability from satellite images, such as growth rates and feed on offer. Another feature being worked on was estimating historic pasture growth in the paddock. There were 22 paddocks being monitored on 22 farms. The paddocks are in South Australia (7 sites – 2 on KI), South West Victoria (9 sites), Gippsland (2 sites) and Tasmania (4 sites). The resolution of the new Pastures from Space is intended to be around 10m<sup>2</sup> pixels instead of the previous 6ha pixel.

On KI, pasture calibration cuts were taken from a perennial kikuyu pasture on Bucks and an annual pasture on Berrys. Five pasture cuts were taken between June and December 21 at the Buck site with ~6.5tonne of dry matter recorded. Three pasture cuts were taken at Berry site between May and November 21 with ~5.7tonne of dry matter recorded (Figure 5).

## Take Home Messages

- The subsoil of each of the soil moisture probes was the driest it has been since the soil moisture probes were installed.
- Visit the site “My Farm Dashboard” at [myfarmdashboard.sfs.org.au](http://myfarmdashboard.sfs.org.au) and acquaint yourself with the tools on offer.
- A workshop will be held later in 2022 to assist farmers in using the dashboard. Dashboard QR code below:



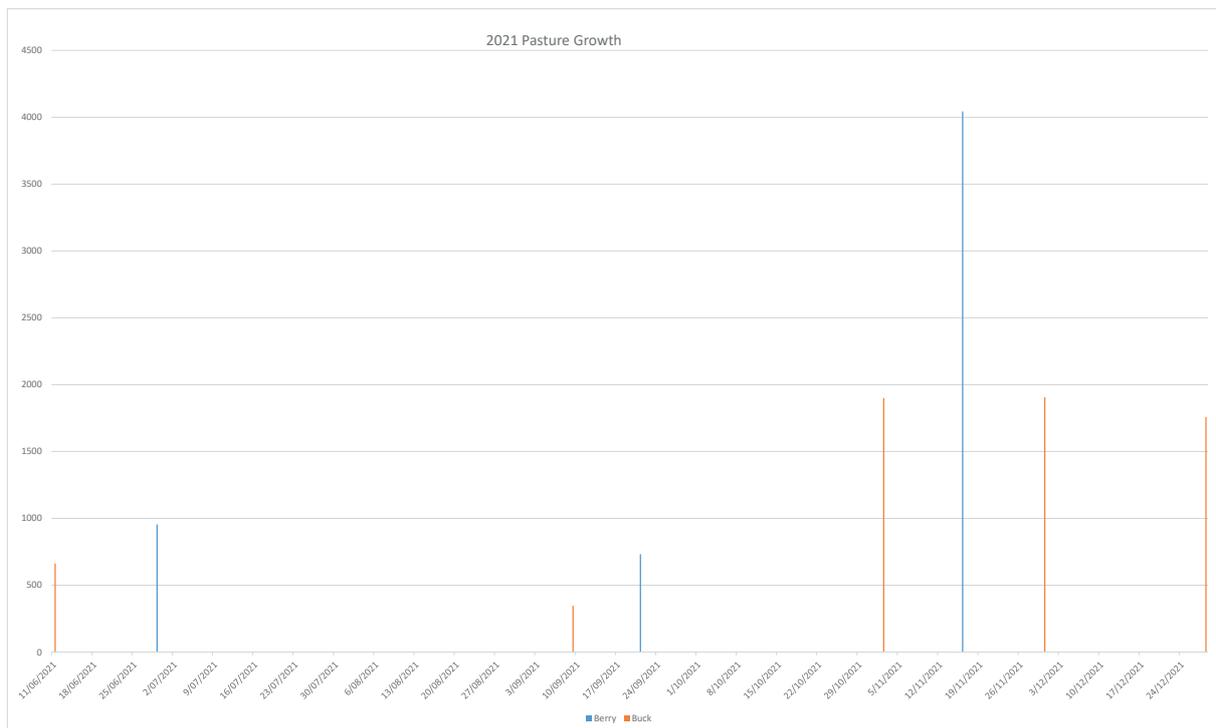


Figure 5: Kg/ha dry matter removed at the Buck & Berry sites during 2021.

## Funding & Acknowledgements

- National Landcare Program (Smart Farming Grants)
- Berry Partners
- Buck Pastoral
- A, T & J Heinrich
- Ag KI for administering the funding

## Further Information

Jenny Stanton  
 M 0484 602 946  
 E jennybehenna@hotmail.com

Leet Wilksch  
 M 0408 428 714  
 E leet@agbyte.com.au



High Rainfall Zone Weather Monitoring: online updates for KI sites.

