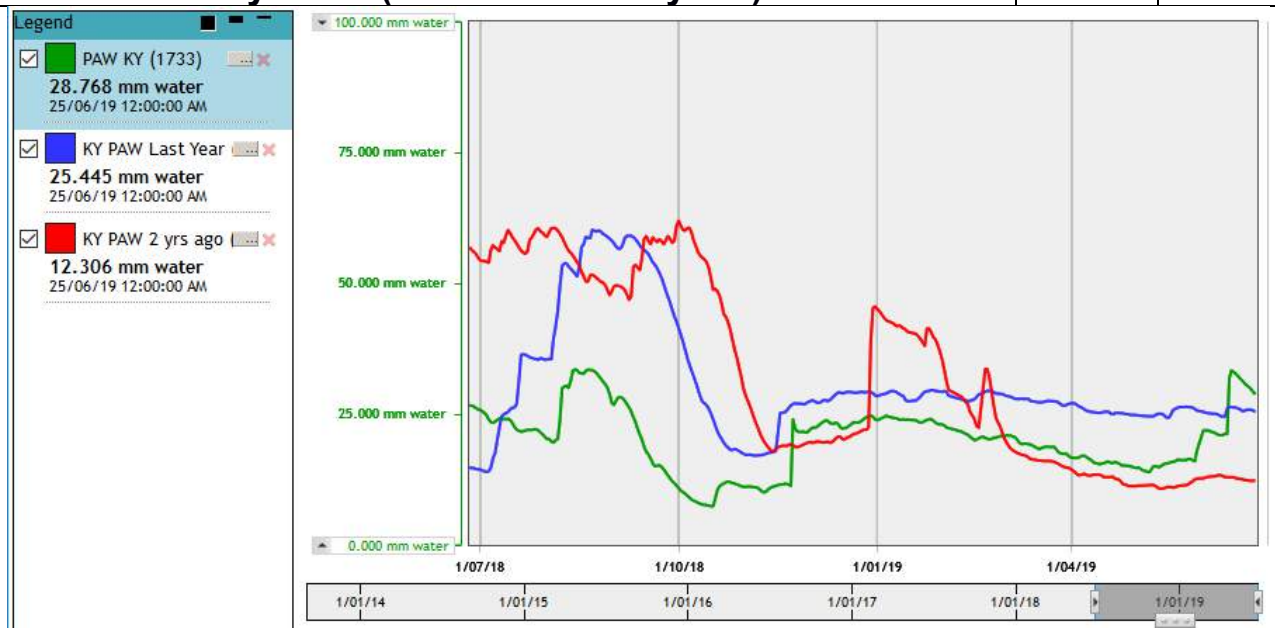
BIGG Soil Moisture and Climate Data Report – 27/6/19

Site Name: Flaxman Valley (Landholder: Evans)

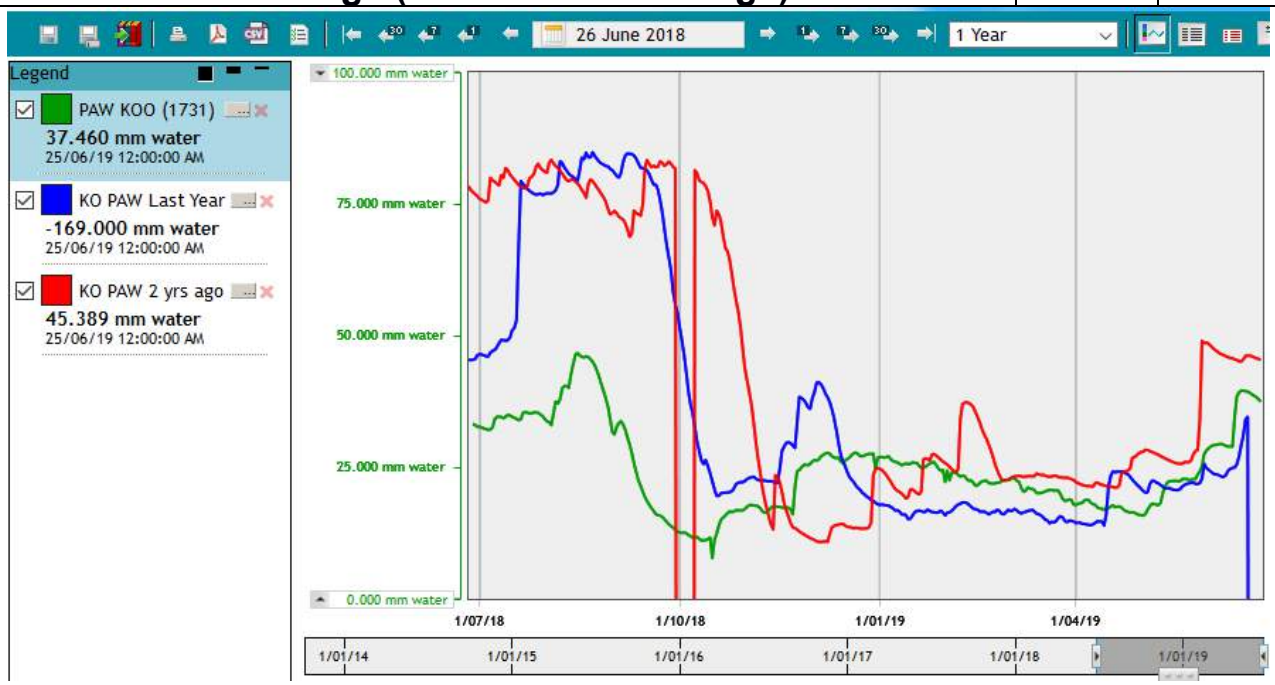
2019 rainfall (Apr-current)	**104mm**	**Estimated % of Available Soil Water Capacity**	**49%**
Soil type	Sandy loam over clay		
Pasture type	Phalaris/annual grasses/clover based pasture		
Current pasture status *(see photos below)*	Composition: Phalaris 25%, Grasses (barley grass and ryegrass) 55%, Broadleaf weeds (dock) 5%, Clover 5%, Dry grass 10% Estimated Feed on Offer (FOO): 2100 kg DM/ha		
2019 paddock and grazing management	On 20/6/19, 90 twin-bearing ewes (stocking rate 39 DSE/ha) were moved into the paddock just prior to lambing. Before this the paddock was last grazed in November 2018.		
Narrative	The plant available water (PAW) comparison graph above shows the improvement in stored moisture this year compared to the same time in the two previous years. The site is 10mm above 2018 and 30mm above 2017. Rainfall for the period April to June was actually higher last year than this year, but much of that rain came earlier in the season when the plants were still using water (120mm v 104mm). The timing of this year's rain has meant more of it has been captured in the soil. The primary drivers of water use are the ambient conditions (temperature, relative humidity and wind), which is measured by the evapotranspiration (ETo), and plant greenness and growth stage, which we estimate using the readings from the NDVI (Normalised Difference Vegetation Index) sensor. ET is still low, but the NDVI took off in May but dropped again in early June. Given the high paddock FOO this suggests there is a fault with the NDVI sensor (which is being investigated).		

Site Name: Keyneton (Landholder: Keynes)



2019 rainfall (Apr-current)	**84mm**	**Estimated % of Available Soil Water Capacity**	**46%**
Soil type	Red loam over clay		
Pasture type	Annual grass and sub-clover based pasture		
Current pasture status *(see photos below)*	Composition: Barley Grass 65%, Broadleaf weeds (erodium and capeweed) 25%, Clover 5%, Dry grass 5% Estimated Feed on Offer: 600 kg DM/ha		
2019 paddock and grazing management	Currently the paddock is not being grazed. 480 ewe hoggets (stocking rate of 6.2 DSE/ha) recently grazed the paddock from 19/5/19-2/6/19.		
Narrative	Like Flaxman Valley, stored moisture at Keyneton is currently greater compared at the same time in the last two years (29mm versus 25mm at June 2018 and 12mm at June 2017 – see RH side of above graph). The profile reached a drier level in 2017 than it did last year, but that came as a result of high water usage by the pasture rather than from a lack of rain. The NDVI sensors are showing that even though the pasture level is low, it is greening up well. With the passing of the winter solstice, and the move to lengthening days, we will start to see an increase in ETo, which together with the pasture's high NDVI will result in increased daily growth. The indicated PAW, which is currently increasing with each rain event should then begin to show some daily downward stepping as growth and hence water use starts to rise.		

Site Name: Koonunga (Landholder: Kleinigs)



2019 rainfall (Apr-current)	**93mm**	**Estimated % of Available Soil Water Capacity**	**44%**
Soil type	Red brown earth		
Pasture/crop type	Wheat		
Current pasture status *(see photos below)*	Composition: Wheat 25%, bare ground 60%, lupin stubble 15% Estimated Feed on Offer: -		
2019 paddock and grazing management	The paddock was sown to wheat on 23/5/19. Plants are currently at the three-leaf stage, having emerged at a density of 195 seedlings/m^2. The paddock will not be grazed again until post harvest.		
Narrative	Unlike Flaxman Valley and Keyneton, PAW at Koonunga is mid way between that of 2017 and 2018. This is interesting as the rainfall for the period April to June was 71mm in 2017, 84mm in 2018 and 93mm this year. The major difference is that the 2017 season started with a lot more moisture in the profile and it was never depleted (Note: this was due to the paddock being sprayed with a knockdown herbicide in late February 2017 to control volunteer barley, which significantly conserved soil moisture) The NDVI at this site is currently lower than of Keyneton and Moculta, (0.3 compared to 0.5-0.6 – see RH side of following graph). This is likely due to the high proportion of 'bare ground' in the paddock given the wheat only recently emerged after being sown just over a month ago.		

Site Name: Moculta (Landholder: Kochs)

2019 rainfall (Apr-current)	**78mm**	**Estimated % of Available Soil Water Capacity**	**-**
Soil type	Shallow clayey red brown earth over lime		
Pasture type	Native pasture		
Current pasture status *(see photos below)*	Composition: Grasses 60%, Capeweed 30%, Bare ground 10% Estimated Feed on Offer: 300 kg DM/ha		
2019 paddock and grazing management	On 5/4/19, 70 merino ewes (stocking rate of 3.5 DSE/ha) were moved into the paddock just prior to lambing. The ewes and their April-May drop lamb will remain in the paddock until they are shorn in mid-August.		
Narrative	As per last month's report, the Moculta site is still in its early days and its PAW will only be calibrated after one to two seasons. However, the soil moisture probe is responding well to rainfall and water use. Rather than inserting the PAW graph, we have added a comparison of the NDVI between the four sites. Neglecting the current NDVI value for Flaxman Valley (given the likely NDVI sensor fault) the Moculta NDVI is similar to that of Keyneton.		

Photos of monitoring station paddocks: 27/5/19 (left) and 26/6/19 (right)

Flaxman Valley (Evans)


Keyneton (Keynes)


Koonunga (Kleinigs)


Moculta (Kochs)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