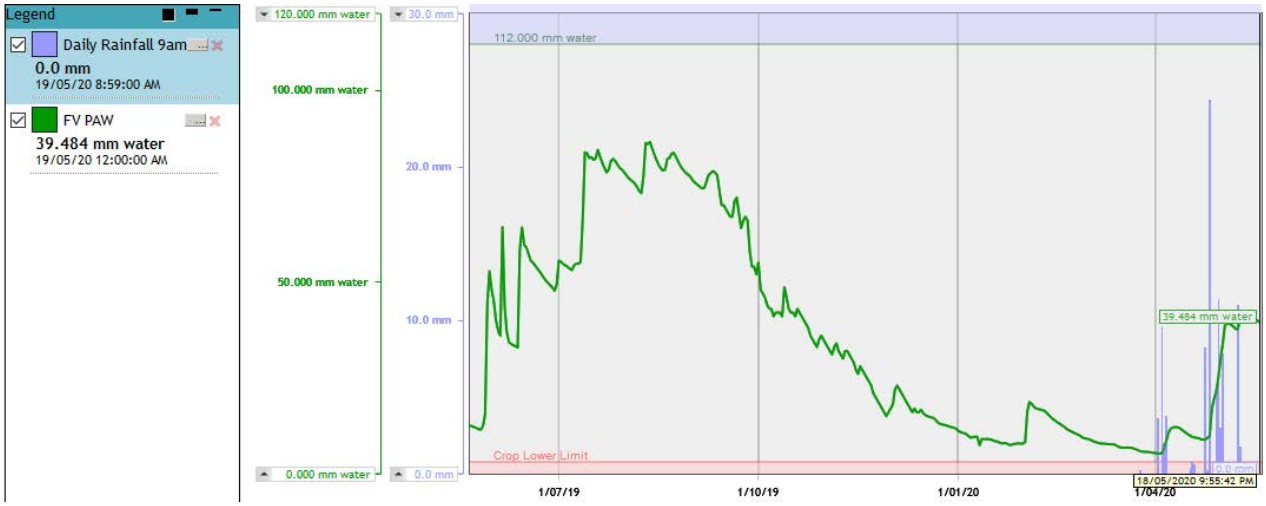
BIGG Soil Moisture and Climate Data Report – 20/5/20

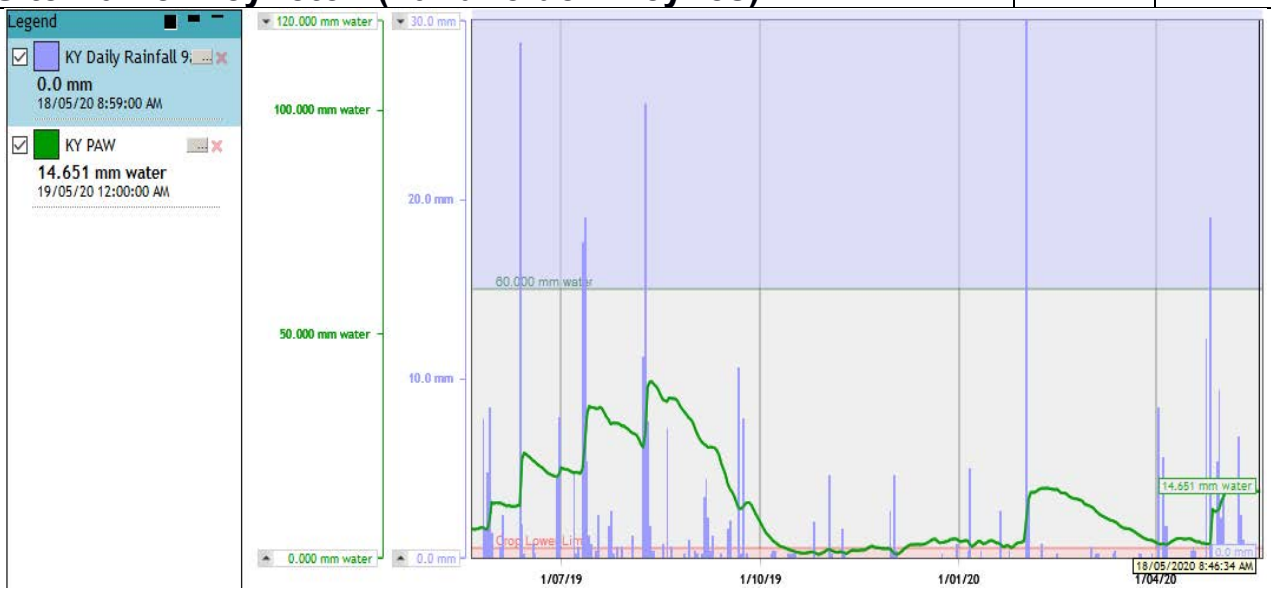
Flaxman Valley, Keyneton, Koonunga, Moculta

Site Name: Flaxman Valley (Landholder: Evans)



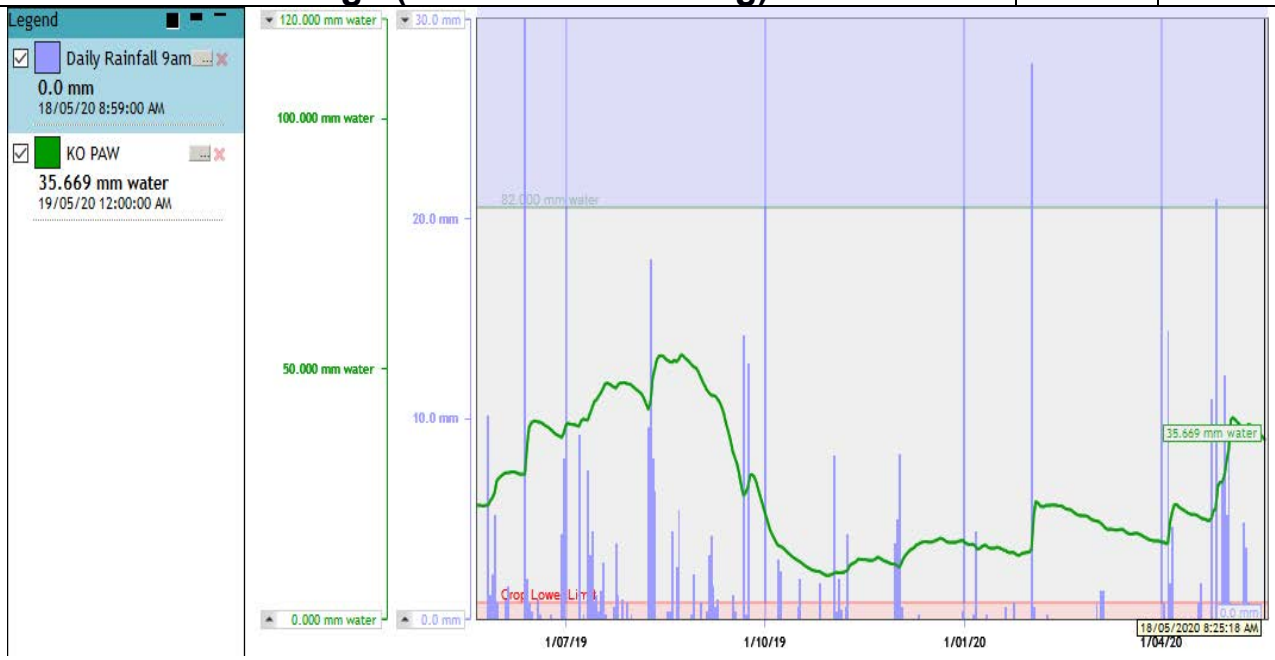
2020 rainfall (Apr-current)	**98mm**	**Estimated soil moisture in the profile**	**35%**
Soil type	Sandy loam over clay		
Pasture type	Phalaris/annual grasses/clover based pasture		
Current pasture status *(see photos below)*	Composition: Phalaris 10%, Grasses (barley grass and ryegrass) 65%, Broadleaf weeds (dock, capeweed, carrot weed) 25% Estimated Feed on Offer (FOO): 1200 kg DM/ha		
2020 paddock and grazing management	The paddock was last grazed on 1-4/5/20 by 500 single ewes which are due to lamb in July (stocking rate 107 DSE/ha).		
Narrative	Over the last month plant available water (PAW) has gone up from 12mm to a peak of 39mm. The pasture has started growing rapidly and has pulled 10mm of this water out of the profile, which is currently sitting at 35% full. Rainfall since April has been 110mm compared to 27mm for the same period last year. But patches of rain have consistently been followed by stretches of warm sunny weather, creating optimal conditions for pasture growth and no periods of water-logging or saturation. The higher rainfall is also reflected in lower evapotranspiration (ET) figures: 73mm for the period 19th April to 18th May last year versus 50mm this year. However, the ET figure is only half the picture as we need to also define what the pasture is 'seeing'. This can be determined from the NDVI sensors on BIGG's weather stations to calculate crop specific ET or crop evapotranspiration (ETc). On this front the picture reverses dramatically with 33mm of water use this year compared to 10mm last year		

Site Name: Keyneton (Landholder: Keynes)



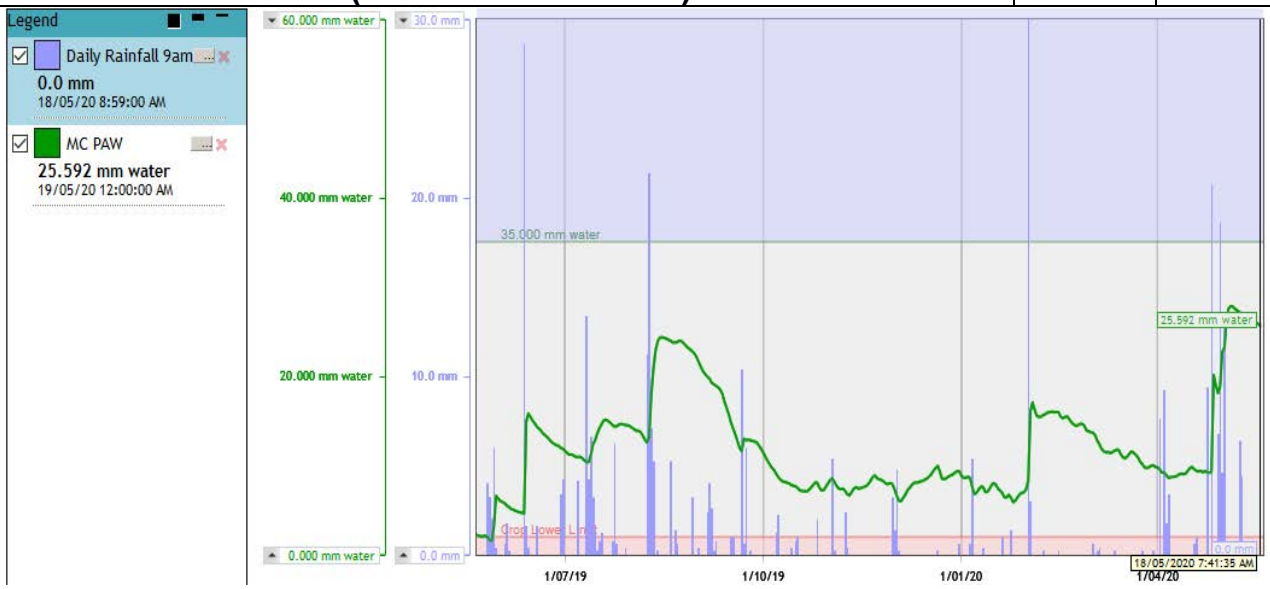
2020 rainfall (Apr-current)	**83mm**	**Estimated soil moisture in the profile**	**24%**
Soil type	Red loam over clay		
Pasture type	Annual grass and sub-clover based pasture		
Current pasture status *(see photos below)*	Composition: Annual grasses 45%, Broadleaf weeds (erodium, mintweed, salvation jane) 25%, Phalaris 5%, Dry grass 25% Estimated Feed on Offer: 1100 kg DM/ha		
2020 paddock and grazing management	The paddock was last grazed in January but has not been since due to a lack of water. It is expected that lambing ewes will next graze the paddock in early June.		
Narrative	The profile on this site is holding 24% of capacity compared to 12% at the same time last year. Rainfall since April is 83mm compared to the same period last year of 28mm. ETc figures are up from 9mm to 23mm, reflecting the increased levels of “green” over last year. Another area of difference worth highlighting is “Growing Degree Days” (GDD). This figure tallies the amount of hours the temperature is above a threshold. Many crops studies track growth of crops according to how many degree-days it takes to move from one phenological stage to the next. At this time last year the accumulated (or summed) GDD figure was 460 compared to 370 this year. The lower figure means that key growth stages are likely to be delayed when compared to last year.		

Site Name: Koonunga (Landholder: Kleinig)



2020 rainfall (Apr-current)	**101mm**	**Estimated soil moisture in the profile**	**42%**
Soil type	Red brown earth		
Pasture/crop type	Barley (sown in 2020)		
Current pasture status *(see photos below)*	Composition: Wheat stubble 85%, self-sown wheat 10%, 5% bare ground Estimated Feed on Offer: 3000 kg DM/ha (current stubble load)		
2020 paddock and grazing management	The paddock was last grazed in April and will be sown to barley in the next week.		
Narrative	The rainfall figures from 2019 to 2020 show the starkest difference at this site: 28mm compared to 101mm as of 20th May. As a result, the profile has reached 42% of capacity. Evapotranspiration at the site is down to 52mm for the last 30 days compared to 62mm last year. But what about the ETc? This is also down – from 4 to 2mm. The reason ETc is down so much is evident in the site photo (see below): there is no green, so we see a low NDVI (low vegetative index) and hence low potential water use. Hence the rain at the site is all going into the bank, as there are very few plants to utilise it. The danger of continued rain is that the profile will quickly fill, causing water to be lost through drainage. As the soon to be sown barley crop takes hold, we should see it quickly getting its roots down and start using some of that water reserve.		

Site Name: Moculta (Landholder: Koch)



2020 rainfall (Apr-current)	**111mm**	**Estimated soil moisture in the profile**	**73%**
Soil type	Shallow clayey red brown earth over lime		
Pasture type	Native pasture		
Current pasture status *(see photos below)*	Composition: Grasses 65%, Broadleaf weeds (capeweed, erodium) 20%, Bare ground 35% Estimated Feed on Offer: 350 kg DM/ha		
2020 paddock and grazing management	The ewes (100) moved into the paddock for lambing on 26/3/20 continue to graze the paddock. They are also being supplemented with cereal grain and hay.		
Narrative	Conditions at the Moculta site represent a dramatic turnaround: 111mm of rain since April versus 28mm for the same period last year. The profile is also holding an estimated 73% of capacity. Although we need to temper this with the fact that we have not seen the profile at this site fully wet and that our capacity estimate is still a bit raw. But the signs are certainly positive: the current figure of 26mm is a huge improvement over the 3mm at the same time last year. Although we focus heavily on the PAW, it is also interesting to note what is happening at the different depths through the profile, which is where the Moculta separate level graph comes in. This graph shows that while the top 40cm has wet up nicely, moisture has not yet penetrated further into the profile. If we receive more rain in the next couple of weeks, it will be interesting to see how quickly the top levels saturate and hence how quickly the water pushes to the deeper sensors. The textural change at 50cm observed in last month's report (a significant lime layer begins at 50cm depth), may well provide a limit on how far we see the water move. If this is the case we will see little short-term change below 50cm and evidence of "side slope" movement of water down the hillside.		

Photos of weather station paddocks – 17/4/20 (right) and 18/5/20 (left)

Flaxman Valley (Evans)

Keyneton (Keynes)

Koonunga (Kleinig)

Moculta (Koch)