Yield Prophet - After a Dry July!

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& Chris O'Callaghan, Executive Officer, the Liebe Group.

This edition of Yield Prophet comes at the end of another long dry spell. It shows just how dry this season has been. The lack of rain in July has meant that most of the region sits below the decile 1 line. See Figure 1 (Hyde's site) and Figure 2 (McAlpine's site).

Figure 1: Hyde's season to date

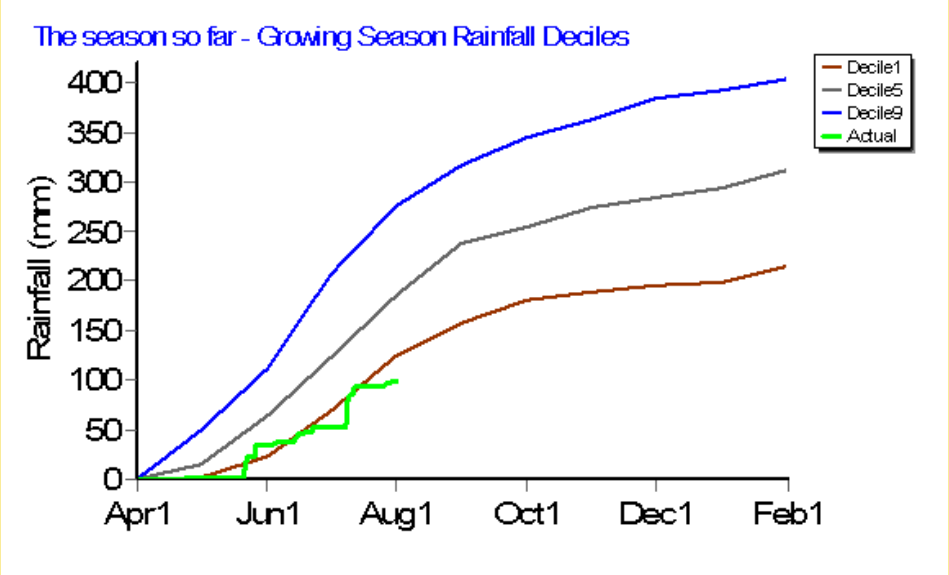
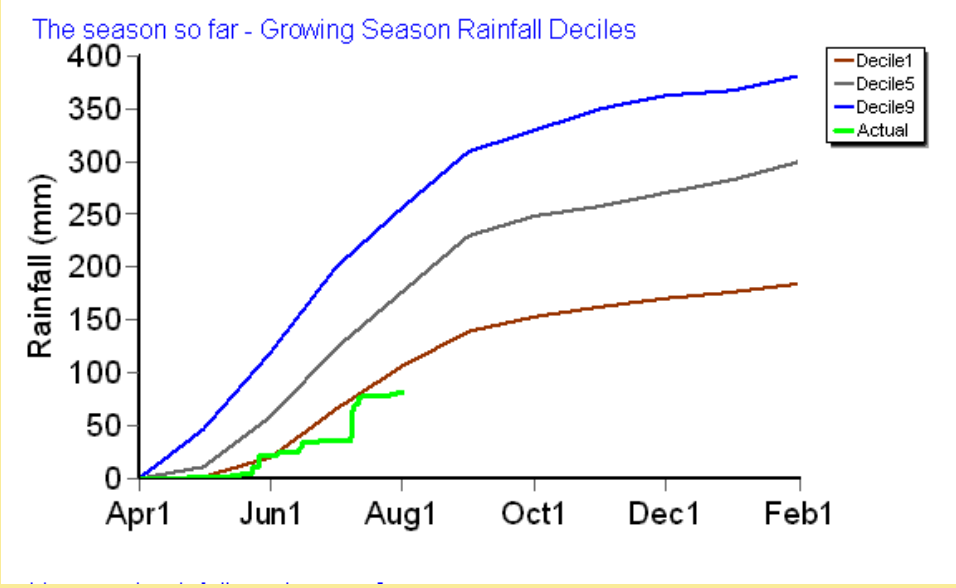


Figure 2: McAlpine's Season to Date



The Liebe Group acknowledges the support from the GRDC and the Department of Agriculture, Fisheries and Forestry

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Grow to your full potential.

COUNCIL OF GRAIN GROWER ORGANISATIONS LTD
COGGO

IMPROVING WATER USE EFFICIENCY IN THE NAR
Monday 23rd August
Buntine Bowling Club

1:30-3:30pm
Afternoon tea provided

Members: FREE
Non-members: $20

Contact:
Sarah Burt or Jemma Counsel
9664 2030

This report has been created with assistance from:

Department of Agriculture and Food

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The Liebe Main Trial Site at Nankivell's, has been representative of the areas that have received patchy rain earlier in the season. With the last half of July being dry these are now at decile 2 after reaching decile 6 in early July.

Figure 3: Nankivell's growing season rainfall

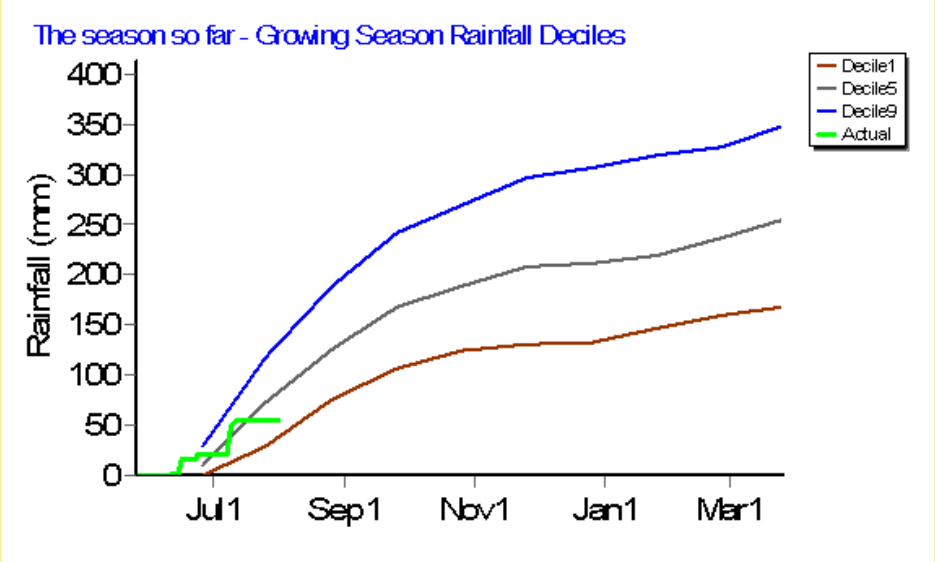
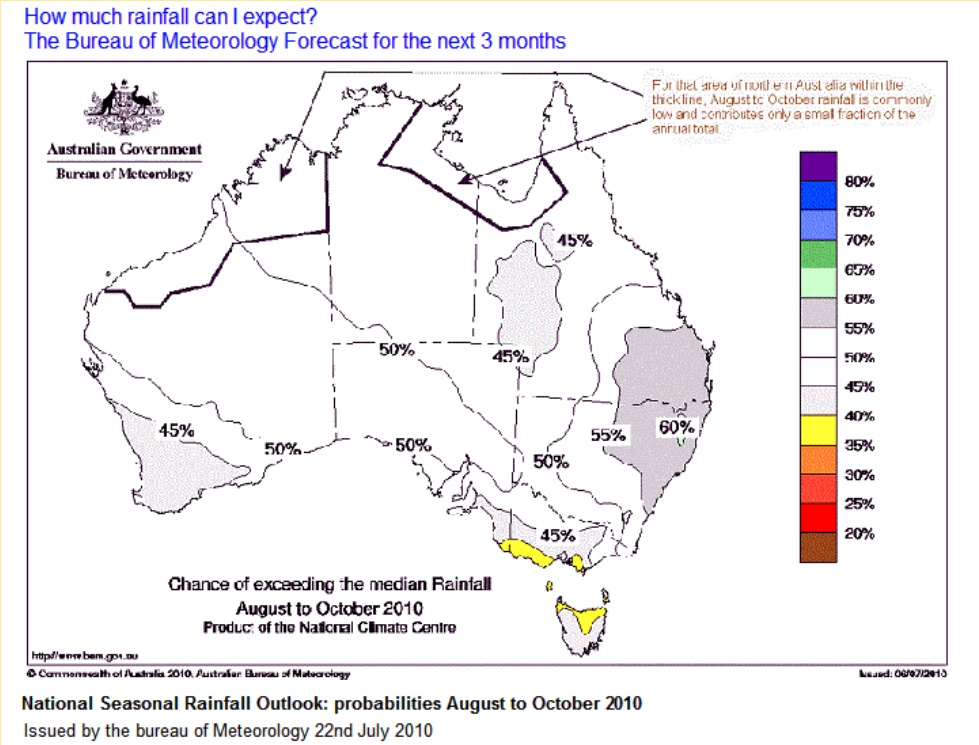


Figure 4: Current Season Outlook

The Bureau of Meteorology (BOM) has downgraded their assessment of rainfall for the August – October period from the 50% chance of a median rainfall, to a 45% chance. This is in a negative direction, but not a great movement. This being the case there is a lot of uncertainty about whether it will stay dry. In drier areas crops have shed potential over the last 3½ weeks. There is not a lot we can do, but wait to see what rain does fall in this period. If it is close to median then crops will compensate by maintaining more grains per spikelet 'going wider' and then with increased grain weight.



National Seasonal Rainfall Outlook: probabilities August to October 2010
Issued by the bureau of Meteorology 22nd July 2010

SITE DESCRIPTION

PROPERTY: Ian Hyde, Dalwallinu

SOIL TYPE: Loamy Clay

ROTATIONS:
2009 = Volunteer Medic Pasture

VARIETY: Bonnie Rock

SOWING DATE:
25/5/2010

SITE DESCRIPTION

PROPERTY: Liebe Group Long Term Research Site, West Buntine.

Stuart and Leanne McAlpine, West Buntine.

SOIL TYPE: Deep Yellow Sand

ROTATIONS:
2009 = Lupins
2008 = Wheat
2007 = Wheat

VARIETY: Magenta

SOWING DATE: 28/5/2010

Grain Yield Outcomes

Yield prospects have fallen significantly across the region. The dry first week of August has really driven home the fact that we are in a decile 1 year which has limited yield prospects. We are now more justified to use the 90% probability to asses grain yield. This puts all sites at yields less than 1t/Ha - the lighter soils at McAlpine's perform, closer to 1t/Ha (Figure 6) and the shallower rooting depth at Nankivell's limiting yield to more like 600kg/Ha (Figure 7). All sites are insensitive to additional nitrogen at these levels. Those of you with crops on lighter soils that have maintained yield potential through this dry period may be inclined to downgrade this potential after you see what the August 11th rain does. As mentioned above, if we do not receive median rainfall from here (probability = 50%), crops with the ability to fill sufficient grains, we will see the following top-end yields - 1.5t/Ha at Hyde's (Figure 5); 1.3t/Ha at McAlpine's (Figure 6); 1t/Ha at Nankivell's (Figure 7). The model remains hard on the restricted root depth at this site.

Figure 5: Hyde's Grain Yield Outcome

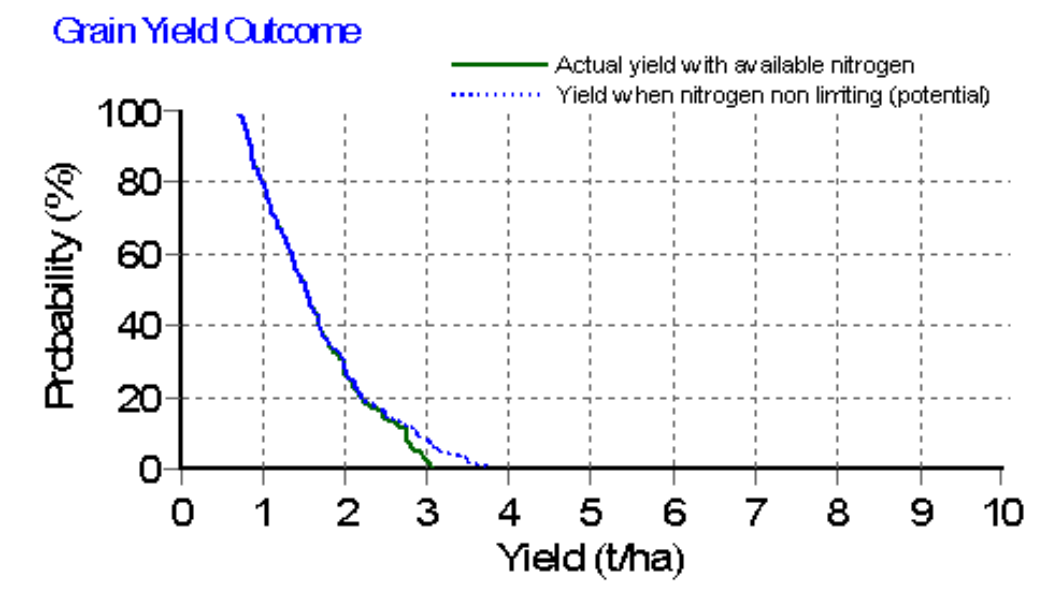
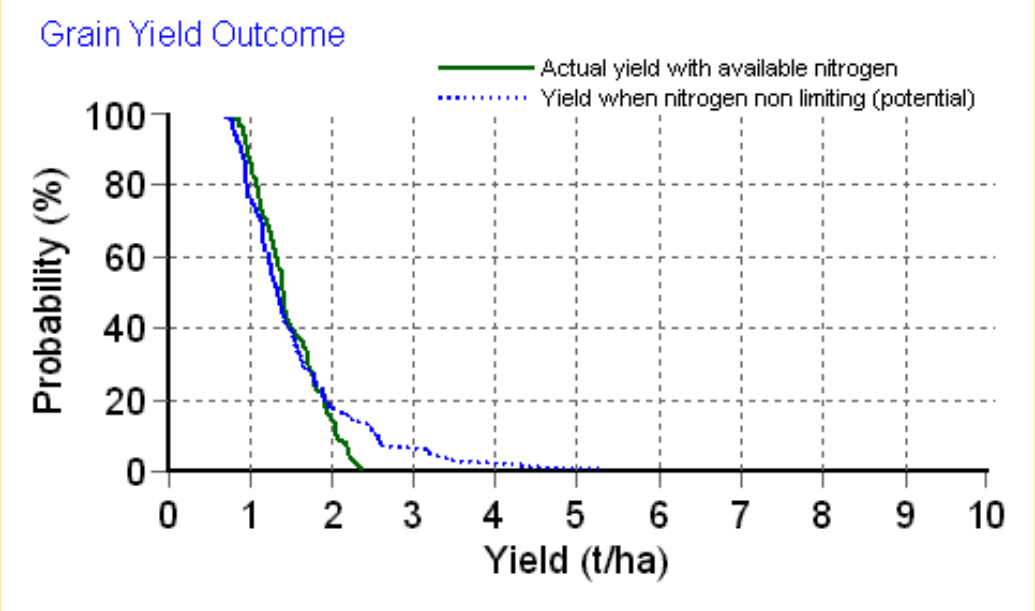


Figure 6: McAlpine's Grain Yield Outcome



SITE DESCRIPTION

PROPERTY: Liebe Group Main Trial Site.

Rob Nankivell, East Maya.

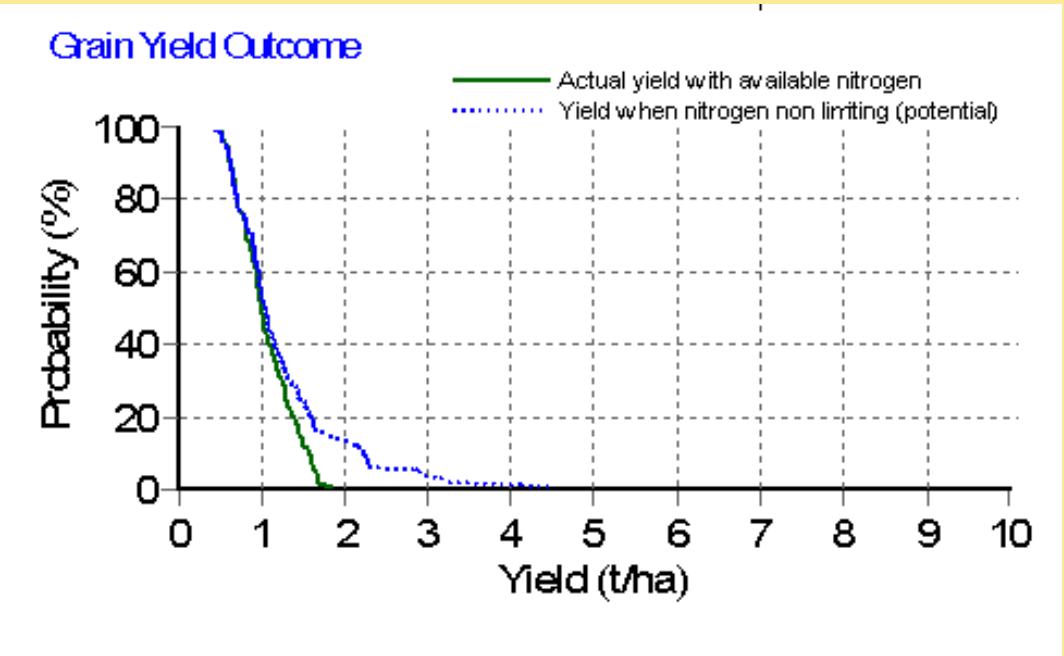
SOIL TYPE: Red Loam

ROTATIONS:
2009 = Field Peas
2008 = Wheat
2007 = Wheat

VARIETY: Wyalkatchem

SOWING DATE: 1/6/2010

Figure 7: Nankivell's Grain Yield Outcome



Plant Available Water (PAW)

The roots are pushing deep, so the bucket size (PAW) is getting larger, however there is not much water in the bucket (Current Crop PAW).

The loamy clay soil type at Hyde's (Figure 8) has only 9mm of water which the crop can extract. After this it is at its crop lower limit, or wilting point. If the crop is using 1mm per day, it has only 9 days before it reaches this point. The sand will be here in 26 days (Figure 9) and the red loam in 18 days.

(Remember that this is dependent upon how well the selected soil type fits the actual soil type).

It is interesting to note that the combined evaporation and transpiration rate has slowed during the dry spell. Where it has been up to 1.4mm per day during better conditions, it is now 1.0mm per day loss. Plants have reduce transpirations as they shut down during the heat of the day, and evaporation losses are lower as the soil water is now deeper (ie not in 0-100mm). This is another restriction to crop development, and yield potential, as the nutrition which lies in the top 100mm has been unavailable in dry soil for a long period of time.

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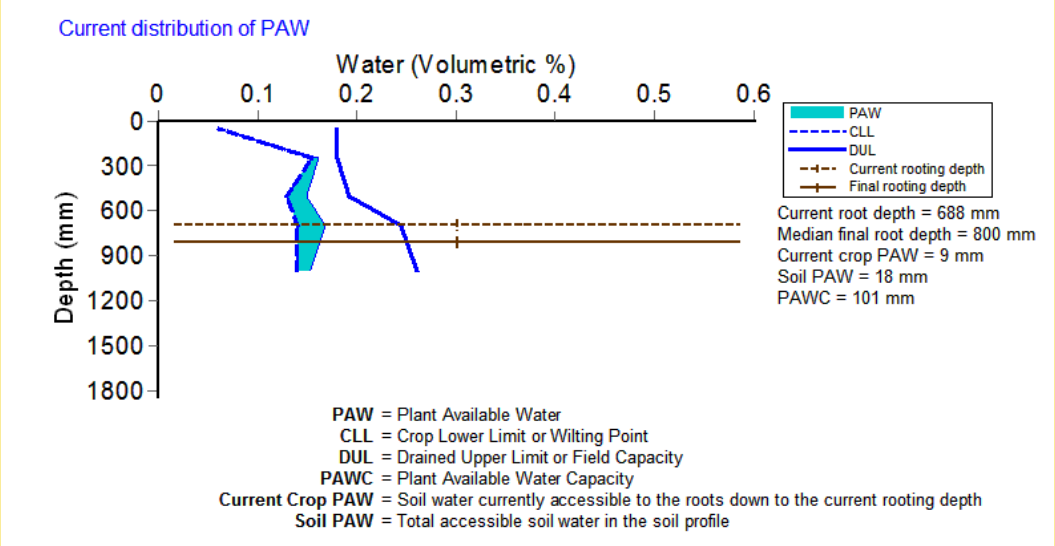
Disclaimer:

Information in this report is of a general nature and any decisions should be made using information from a range of sources. No responsibility is taken for incorrect information printed.

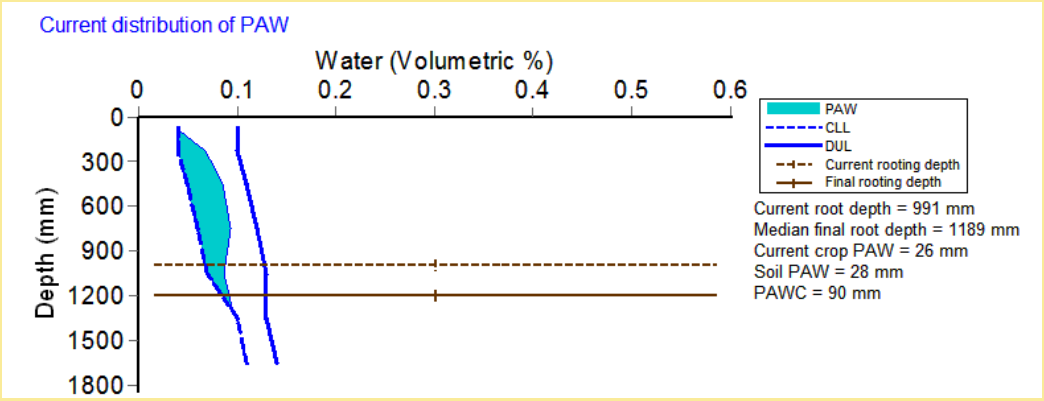
Figure 8: Loamy Clay - Hyde's Soil Water and Root Depth



The model is working off 17mm before the 24th May and has 74.8mm since.
There has been 44mm evaporate and 30mm transpired.
There are 18mm of PAW, but only 9mm available for the crop.

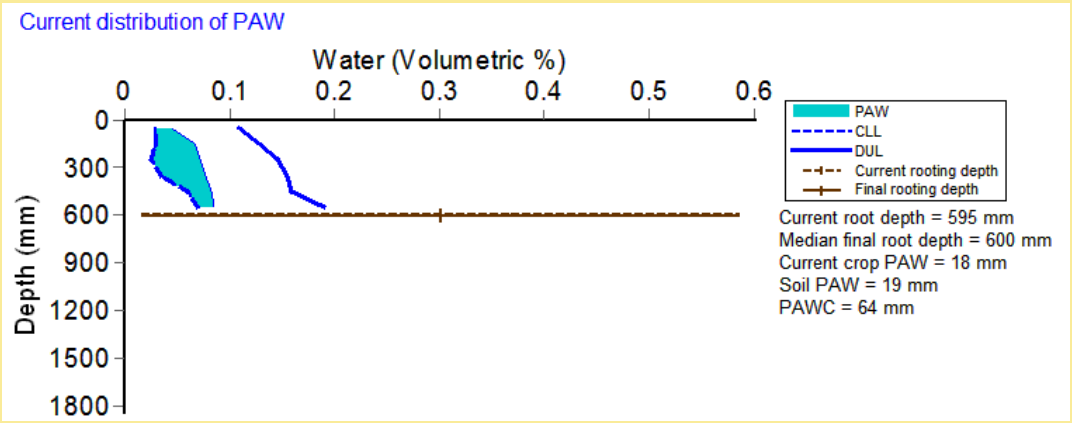
This lighter soil type (Figure 9) has 28mm of water to offer the crop. These are the crops which may emerge after an 11th August rain with yield potential in tact.

Figure 9: Sand –McAlpine's Soil Water and Root Depth



This model is working off 16mm before the 24th May and has 76.4mm since.
There has been 37mm evaporate and 28mm transpired.
There are 28mm of PAW, with 26mm available for the crop.

Figure 10: Red Loam – Nankivell's Soil Water and Root Depth



SPRING FIELD DAY
Thursday 9th September
Liebe Group
Main Trial Site
Nankivells Property
East Maya Road

Registration: 9am

Members: FREE
Non-members: $50
Students: $20

Contact:
Flora Danielzik
9664 2030

The model is working off 14mm before the 24th May and has 55mm since.
There has been 35mm evaporate and 16mm transpired.
There are 19mm of PAW, with 18mm available for the crop.

Nitrogen Budgets

As mentioned in the Grain Yield Outcomes, for these sites there is not going to be a response to N this season. (Unless it becomes a decile 8 finish where the McAlpine and Nankivell sites would show a response)!

Figure 11: Hyde's N Budget

Nitrogen Budget	
Initial N status @24-May	124 kg/ha
Mineralisation since 24-May	-4 kg/ha
N applications	31-May: 11 kg/ha
	21-Jul: 16 kg/ha
	: kg/ha
	: kg/ha
	: kg/ha
Total N in plant	60 kg/ha
De-nitrification since 24-May	0 kg/ha
Leaching	0 kg/ha
Current N status:	**88 kg/ha**

Figure 12: McAlpine's N Budget

Nitrogen Budget	
Initial N status @ 24-May	81 kg/ha
Mineralisation since 24-May	-15 kg/ha
N applications	28-May: 6 kg/ha
	12-Jul: 12 kg/ha
	: kg/ha
	: kg/ha
	: kg/ha
Total N in plant	48 kg/ha
De-nitrification since 24-May	0 kg/ha
Leaching	0 kg/ha
Current N status:	**35 kg/ha**

Figure 13: Nankivell's N Budget

Nitrogen Budget	
Initial N status @24-May	48 kg/ha
Mineralisation since 24-May	-5 kg/ha
N applications	31-May: 2 kg/ha
	15-Jul: 12 kg/ha
	: kg/ha
	: kg/ha
	: kg/ha
Total N in plant	26 kg/ha
De-nitrification since 24-May	0 kg/ha
Leaching	0 kg/ha
Current N status:	**30 kg/ha**

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Those of you with light land wheat-on-wheat paddocks, who have not supplied N in addition to the compound, may need to reassess what you are doing with N after the August 11th rain has passed.

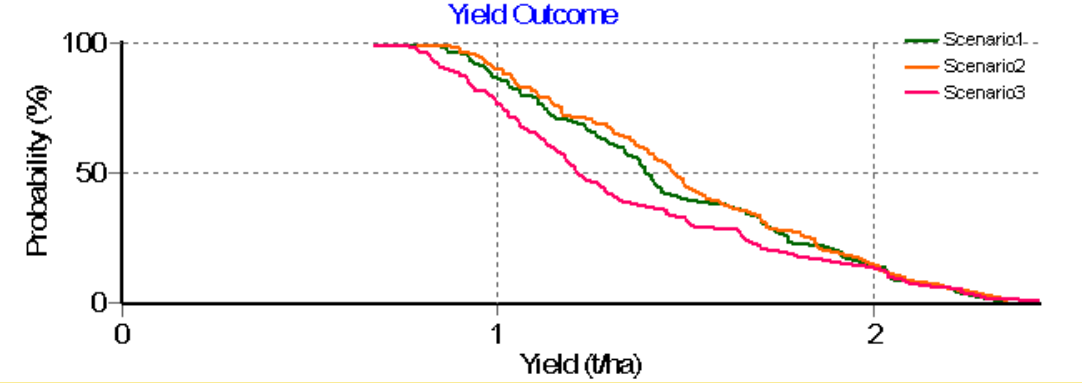
Taking the Opportunity to Introduce Another Aspect of Yield Prophet

The Sowing x Variety report is not usually a useful source of information for this time of year, it is intended for use pre planting to see how a variety will yield given a particular sowing date. Given the delays in crop development this season due to cold and dry we can compare how varieties are performing by considering a later time of sowing.

The example below (Figure 14) is for Magenta sown at the LTRS at McAlpine's. Scenario 1 is the actual TOS, which is the 28th May. At 90% probability, it yields as well as a 14th May sown crop (1t/Ha). However, this variety sown on the 11th July is 100kg/Ha behind. This yield gap widens to 200kg/Ha in an average year (probability = 50%).

Figure 14: Sowing x Variety report

	Scenario 1:	Scenario 2	Scenario 3:
Sowing Date:	28/05/2010	14/05/2010	11/06/2010
Crop type:	Wheat	Wheat	Wheat
Variety:	Magenta	Magenta	Magenta
Sowing density (plants/m2):	150	150	150
First commencement of flowering (Z60):	20-Sep	17-Sep	27-Sep
Median commencement of flowering (Z60):	27-Sep	23-Sep	5-Oct
Last commencement of flowering (Z60):	3-Oct	30-Sep	12-Oct



The Sowing Opportunity Report shown below (Figure 15), shows how the model sees Magenta growing across a range of sowing dates. It highlights the potential frost risks (blue) which subside as the sowing date gets later, and the heat shock risks (red) which increase as the sowing date gets later. For this environment these are larger, and the yield drops off quickly as the heat shock risk rises.

This report is also for Magenta at the LTRS.

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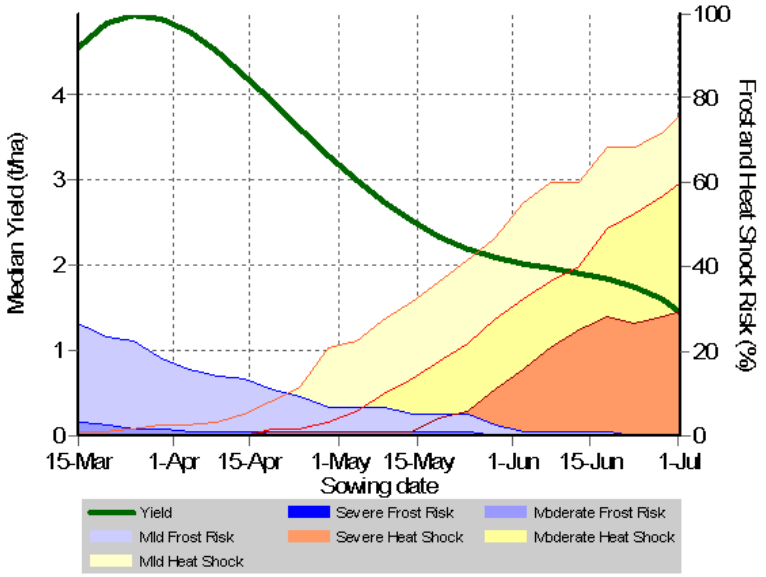
Support with Yield Prophet from Caroline Peek and Rob Grima, Department of Agriculture & Food, WA.

Figure 15: Sowing Opportunity report



This chart demonstrates the sowing date that will maximize crop yield potential this season and the associated frost and heat shock risk. It takes into account the variety, the specific soil type, pre-season soil moisture, the weather conditions so far and unlimited nitrogen. The long term record from you nominated weather station is then used to simulate the median yield potential and the risk of frost and heat shock for each sowing date in the sowing window.