



Hart Beat

Hart Field Site Group Inc.
www.hartfieldsite.org.au

July 2010 Issue 6

From the Chairman



Welcome Hart members, to the first edition of HART BEAT for 2010. The Hart Field-Site Group proposes to produce 4-5 editions of HART BEAT for 2010 depending on seasonal conditions. Members who received HART BEAT last year will be familiar with the *Yield Prophet*® format.

For new Hart members, the information provided within HART BEAT comes from running the *Yield Prophet*® simulation model at four locations throughout the Mid-North. At each of these locations detailed soil measurements have been taken to improve the accuracy of *Yield Prophet* reports. For more information about *Yield Prophet*® refer to the back page of this edition of Hart Beat, visit the new Hart website (details below) and follow the links or contact our trials manager, Peter Hooper.

We hope this service provides you with valuable information to use when making decisions regarding the soil moisture status of your soil(s) and nitrogen status of your crops. We value and invite your feedback in relation to this product and how we can possibly improve it further.

I would also like to take this opportunity to make Hart members aware of an upcoming nitrogen workshop at Maitland run in conjunction with the YP Alkaline Soils Group. Guest speakers are Nick Poole, Mick Faulkner and Peter Hooper. I attended a similar workshop last year and it was excellent! There was plenty of opportunity for open discussion and questions. Refer to the details below.

Hart has just launched its new website. Members and growers now have easy and comprehensive access to all Hart activities and information including trials and trial results, media articles etc. Check it out at

www.hartfieldsite.org.au

I hope to see you at up-coming Hart events in 2010 and on behalf of the Hart board "thankyou" for your continued support.

Matt Dare
Chairman
Hart Field-Site Group Inc

Soil 2 Grain Workshop "Keeping crops greener for longer"

Maitland Golf Club, Monday 2nd August
9:00am – 1:00pm (Breakfast at 8:00am)
Speakers include Nick Poole & Mick Faulkner
For more detail see the website



Sampling trials and sowing the commercial crop 7th May

Site & commercial crop update

Sowing began on the 1st of May for the time of sowing trials and finished in early June.

The commercial crop was sown on the 7th May with Clearfield canola at 3 kg/ha with 60kg/ha DAP and the 2010 field day site was sown with Wintaroo oats sown at 140kg/ha and 60kg/ha DAP.

Dates for 2010

Winter Walk

Tuesday 27th July – at the site
9:00am – noon

Hart Field Day

Tuesday 21st September Gates
open 9:00am

Spring Twilight Walk

Thursday 21st October – at the site
5:00pm



Hart

Site information as of 23rd June 2010

Soil type: Sandy clay loam
 PAWC: 201mm
 Average annual rainfall: 400mm
 Average GSR (Apr to Oct): 305mm

The season so far

Annual rain to date: 196mm
 GSR to date: 121mm
 GSR decile: 5
 Maximum temp since sowing: 26.7°C
 Minimum temp since sowing: 0.7°C
 Average temp accumulation per day: 11.9°C
 Current predicted soil N status: 88kg/ha
 Current predicted PAW: 28mm

Grain & hay yield predictions

Yield prophet estimate: (Date of report 03/07/2010)

These estimates are based on a 50% probability

Yield t/ha	Sown 14 th May (see graph)	Sown 5 th May
Grain	3.0	2.9
Hay	6.0	5.5

French & Schultz grain yield estimate:

100% WUE: 4.0t/ha, 80% WUE: 3.2t/ha
 This model assumes that there is 110mm of evaporation and decile 5 (190mm) rainfall for the remainder of the growing season.

Pre-sowing soil nitrogen and water

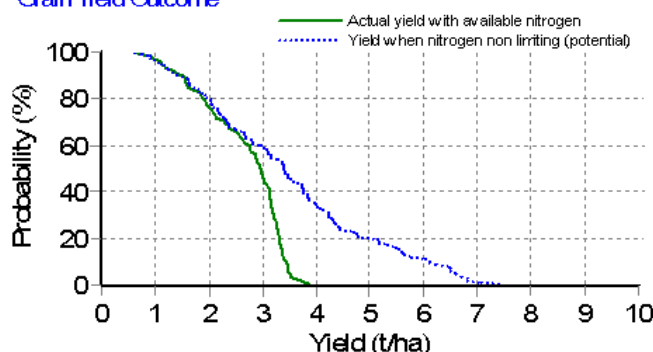
(measured 15th March)
 Soil N prior to sowing (0-90cm): 68kg/ha
 Plant available water at sowing (0-90cm): 0mm

Crop growth

Variety: Gladius
 Sowing date: 14th May
 Nitrogen fertiliser at sowing: 9kgN/ha
 Targetted plant density: 180 plants per square metre
 Current growth stage: 4 leaf / 2 tiller (GS14/22)
 Predicted date of 1st node (GS31): 11th August

This graph shows the chance of reaching the corresponding yield given weather, soil conditions and agronomic inputs to date, and historical climate data (100yrs) to simulate remainder of the season.

Grain Yield Outcome



Condowie

Site information as of 23rd June 2010

Soil type: Sandy loam
 PAWC: 127mm
 Average annual rainfall: 349mm
 Average GSR (Apr to Oct): 252mm

The season so far

Annual rain to date: 146mm
 GSR to date: 108mm
 GSR decile: 5
 Maximum temp since sowing: 27.7°C
 Minimum temp since sowing: -0.4°C
 Average temp accumulation per day: 13.3°C
 Current predicted soil N status: 214kg/ha
 Current predicted PAW: 25mm

Grain & hay yield predictions

Yield prophet estimate: (Date of report 03/07/2010)

These estimates are based on a 50% probability

Yield t/ha	Sown 29 th April (see graph)	Sown 15 th May
Grain	3.5	2.8
Hay	5.5	5.5

French & Schultz grain yield estimate:

100% WUE: 3.0t/ha, 80% WUE: 2.4t/ha
 This model assumes that there is 110mm of evaporation and decile 5 (150mm) rainfall for the remainder of the growing season.

Pre-sowing soil nitrogen and water

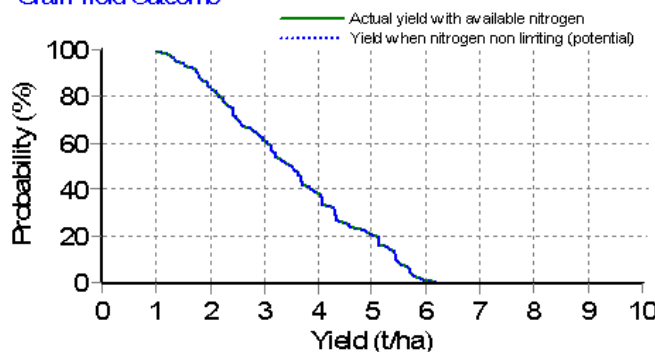
(measured 15th March)
 Soil N prior to sowing (0-90cm): 215kg/ha
 Plant available water at sowing (0-90cm): 0mm

Crop growth

Variety: Gladius
 Sowing date: 29th April
 Nitrogen fertiliser at sowing: 6kgN/ha
 Targetted plant density: 180 plants per square metre
 Current growth stage: 4 leaf / 1 tiller (GS14/21)
 Predicted date of 1st node (GS31): 8th July

This graph shows the chance of reaching the corresponding yield given weather, soil conditions and agronomic inputs to date, and historical climate data (100yrs) to simulate remainder of the season.

Grain Yield Outcome



Spalding

Site information as of 23rd June 2010

Soil type: Red brown earth
 PAWC: 150mm
 Average annual rainfall: 434mm
 Average GSR (Apr to Oct): 322mm

The season so far

Annual rain to date: 183mm
 GSR to date: 143mm
 GSR decile: 6.5
 Maximum temp since sowing: 25.5°C
 Minimum temp since sowing: -4.1°C
 Average temp accumulation per day: 10.5°C
 Current predicted soil N status: 109kg/ha
 Current predicted PAW: 62mm

Grain & hay yield predictions

Yield prophet estimate: (Date of report 03/07/2010)

These estimates are based on a 50% probability

Yield t/ha	Sown 6 th May (see graph)	Sown 15 th May
Grain	4.8	4.8
Hay	8.5	8.3

French & Schultz grain yield estimate:

100% WUE: 4.6t/ha, 80% WUE: 3.7t/ha
 This model assumes that there is 110mm of evaporation and decile 5 (199mm) rainfall for the remainder of the growing season.

Pre-sowing soil nitrogen and water

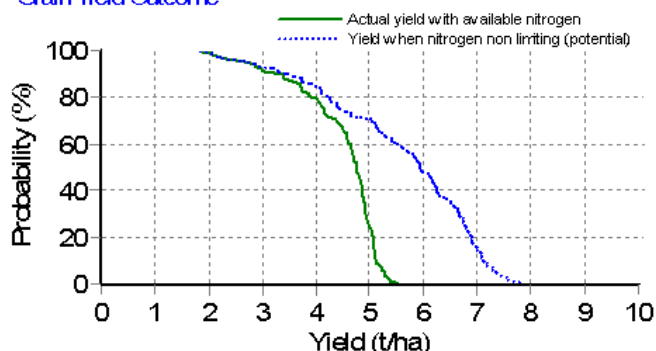
(measured 15th March)
 Soil N prior to sowing (0-90cm): 102kg/ha
 Plant available water at sowing (0-90cm): 0mm

Crop growth

Variety: Gladius
 Sowing date: 6th May
 Nitrogen fertiliser at sowing: 7kgN/ha
 Targeted plant density: 180 plants per square metre
 Current growth stage: 4 leaf / 2 tillers (GS14/22)
 Predicted date of 1st node (GS31): 28th July

This graph shows the chance of reaching the corresponding yield given weather, soil conditions and agronomic inputs to date, and historical climate data (100yrs) to simulate remainder of the season.

Grain Yield Outcome



Tarlee

Site information as of 23rd June 2010

Soil type: Clay loam over clay on rock
 PAWC: 122mm
 Average annual rainfall: 469mm
 Average GSR (Apr to Oct): 350mm

The season so far

Annual rain to date: 184mm
 GSR to date: 153mm
 GSR decile: 5
 Maximum temp since sowing: 27.8°C
 Minimum temp since sowing: 3.3°C
 Average temp accumulation per day: 12.5°C
 Current predicted soil N status: 138kg/ha
 Current predicted PAW: 79mm

Grain & hay yield predictions

Yield prophet estimate: (Date of report 03/07/2010)

These estimates are based on a 50% probability

Yield t/ha	Sown 13 th May (see graph)	Sown 5 th May
Grain	6.2	6.0
Hay	8.0	7.5

French & Schultz grain yield estimate:

100% WUE: 6.5t/ha, 80% WUE: 5.2t/ha
 This model assumes that there is 110mm of evaporation and decile 5 (280mm) rainfall for the remainder of the growing season.

Pre-sowing soil nitrogen and water

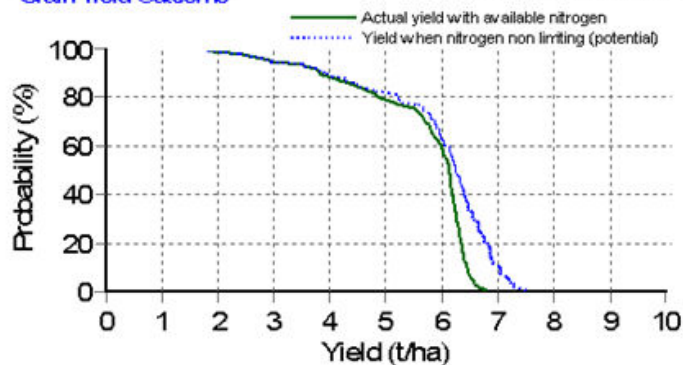
(measured 13th April)
 Soil N prior to sowing (0-90cm): 103kg/ha
 Plant available water at sowing (0-90cm): 35mm

Crop growth

Variety: Correll
 Sowing date: 13th May
 Nitrogen fertiliser at sowing: 0kgN/ha
 Targeted plant density: 180 plants per square metre
 Current growth stage: 4 leaf / 2 tillers (GS14/22)
 Predicted date of 1st node (GS31): 29th July

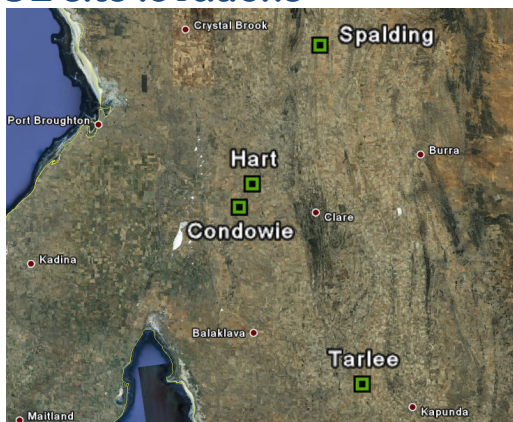
This graph shows the chance of reaching the corresponding yield given weather, soil conditions and agronomic inputs to date, and historical climate data (100yrs) to simulate remainder of the season.

Grain Yield Outcome



Hart Beat

WUE site locations



Hart Beat definitions

Each site has been characterised for plant available water capacity (PAWC) and bulk density to determine how much of the measured water and nitrogen is available to the crop during the season.

Push probe – a 10mm, steel rod 1m long with a rounded bulb on one end and a 30mm T handle on the other (see picture on cover) the probe is pushed down into the soil with reasonable force.

Push probe depth (cm) – is the depth reached by the push probe when reasonable downward force is applied.

Drained upper limit (DUL) – is the amount of water that a saturated soil holds after it has drained.

Crop lower limit (CLL) – is the amount of water remaining in the soil after crop senescence.

Plant available water capacity (PAWC) – is the difference between the drained upper limit of the soil and the lower extraction limit of a crop over the depth of rooting. It is the maximum water available to a crop from a particular soil type.

Plant available water (PAW) – is the amount of water contained in the soil at a given time minus the crop lower limit.

Bulk density (BD) – is a measure of the weight of dry soil per unit volume of soil.

Day degrees – the accumulation of temperature units, or warmth. It is the main environmental property that controls plant development.

Growing season rainfall (GSR) – is rainfall for the period between and including April to October.

Decile – is a measure of seasonal rainfall on a scale of 1 to 9. In a decile 7 year, 70% of previous years were dryer, in a decile 3 year 30% of previous years were dryer.

The **French & Schultz** formula estimates the rainfall limited grain yield based on the growing season rainfall (GSR). It assumes evaporation of 110mm, it does not include stored water at sowing and a maximum grain yield potential of 20 kg/mm/ha.

Yield Potential = GSR (April-October) – Evaporation (110mm) * 20 kg/mm/ha.

Yield Prophet® has been very accurate throughout Australia, over the past 5 seasons. At the Hart fieldsite the **Yield Prophet®** prediction on the 15th September, using an average finish, has been only 16% above the final grain yield, averaged over the past 4 years, making wheat growth models such as APSIM highly valuable.

Yield Prophet® is an internet based service which uses the APSIM wheat prediction model.

The model relies on accurate soil, crop, historical climate data and up to date local weather information to predict plant growth rates and final hay or grain yields. These are critical measurements specific to the site being analysed and may not fit closely to individual situations. Instead the predictions will give a realistic guide to seasonal prospects based on a site with similar rainfall and / or soil type.

Using climate data for the current season, **Yield Prophet®** simulates the soil water and nitrogen processes in the paddock, and crop growth. **Yield Prophet®** calculates the amount of water and nitrogen available to the crop and the water and nitrogen demand of the crop.

Important Notice: **Yield Prophet®** does not generate recommendations or advice, it is only a guide and must be combined with local paddock and district knowledge. APSIM does not take into account weed competition, pest/disease pressure, pesticide/herbicide damage, farmer error, or extreme events (such as extreme weather, flood and fire). For more information about APSIM or **Yield Prophet®** please visit www.yieldprophet.com.au.

Disclaimer: **Yield Prophet®** information is used entirely at your own risk. You will accept all risks and responsibility for losses, damages, costs and other consequences of using **Yield Prophet®** information and reports. To the maximum extent permitted by law, APSRU and BCG excludes all responsibility and liability to any person arising directly or indirectly from using the information generated by **Yield Prophet®**.

Site	Average annual rainfall (mm)	Soil type	Drained upper limit (mm to 150cm)	Crop lower limit (mm to 150cm)	Plant Available Water Capacity (mm)
Condowie	350	Sandy loam	376	249	127
Hart	400	Sandy clay loam	683	482	201
Spalding	430	Red brown earth	469	319	150
Tarlee	470	Clay loam over clay on rock	570	410	160

Hart field site contact information

Sponsorship enquiries

Matt Dare, Chairman, 8846 3006

Trials information

Peter Hooper, 8842 3230

Membership enquiries

Sandy Kimber, 8842 1718

Email

admin@hartfieldsite.org.au