Hart Beat

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

October 2009 Issue 5

SPRING TWILIGHT WALK

Thursday, October 15th 2009

5pm start

At the Hart site
on the Blyth—Brinkworth Road

FREE ENTRY
Guest speakers include
Rob Wheeler, SARDI
Greg Butler, SANTFA

Also featuring
Justin Sherrard

General Manager of Rabobank
Food & Agribusiness Research and Advisory
for Australia and New Zealand

Carbon and climate change in the food and agribusiness sector

BBQ and drinks supplied

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Welcome to the Hart Beat newsletter

For some of you, this will be your first edition of Hart Beat. Since the last newsletter rainfall has been above average at each site, ranging from 58mm at Condowie to 104mm at Spalding. Average temperatures have also been cooler in September.

These conditions have improved grain yield potential in some areas.

All the best for harvest.

Lunch time at the field day

Afternoon session at the phosphorus rate trial

Hart Site information as of 30th September 2009

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

The season so far

Rain to date: 295mm
GSR to date: 286mm (75mm since last report)
GSR decile: 6
Maximum temp since sowing: 31.1ºC
Minimum temp since sowing: -1.2ºC
Average temp accumulation per day: 12.7ºC
Current predicted soil N status: 53kg/ha
Current predicted PAW: 50mm
Current push probe depth: 58cm

Grain & hay yield predictions

Yield prophet estimate: (Date of report 1/10/2009)

These estimates are based on a 50% probability

Yield t/ha	Sown 18th May (see graph)	Change from last report	Sown 5th May	Change from last report
Grain	3.7	+1.3	3.5	+0.7
Hay	4.9	-0.1	5.4	0.0

French & Schultz grain yield estimate:
100% WUE: 4.1t/ha, 80% WUE: 3.3t/ha
This model assumes that there is 110mm of evaporation and decile 5 (29mm) rainfall for the remainder of the growing season.

Pre-sowing soil nitrogen and water

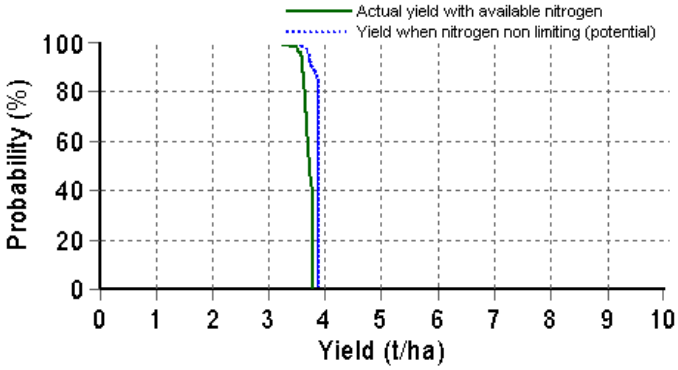
(measured 2nd April)
Soil N prior to sowing (0-90cm): 94kg/ha
Plant available water at sowing (0-90cm): 0mm

Crop growth

Variety: Gladius
Sowing date: 18th May
Nitrogen fertiliser at sowing: 30kgN/ha
Plant density: 162 plants per square metre
Current growth stage: late milk (GS77)
Predicted date of mid dough fill: 10th October

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 30th September 2009

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

The season so far

Rain to date: 260mm
GSR to date: 251mm (58mm since last report)
GSR decile: 7
Maximum temp since sowing: 34.1ºC
Minimum temp since sowing: -1.2ºC
Average temp accumulation per day: 12.6ºC
Current predicted soil N status: 138kg/ha
Current predicted PAW: 33mm
Current push probe depth: n.a.

Grain & hay yield predictions

Yield prophet estimate: (Date of report 1/102009)

These estimates are based on a 50% probability

Yield t/ha	Sown 30th April (see graph)	Change from last report	Sown 15th May	Change from last report
Grain	3.1	+0.5	3.2	+1.2
Hay	4.5	+0.1	4.3	0.0

French & Schultz grain yield estimate:
100% WUE: 3.3t/ha, 80% WUE: 2.7t/ha
This model assumes that there is 110mm of evaporation and decile 5 (26mm) rainfall for the remainder of the growing season.

Pre-sowing soil nitrogen and water

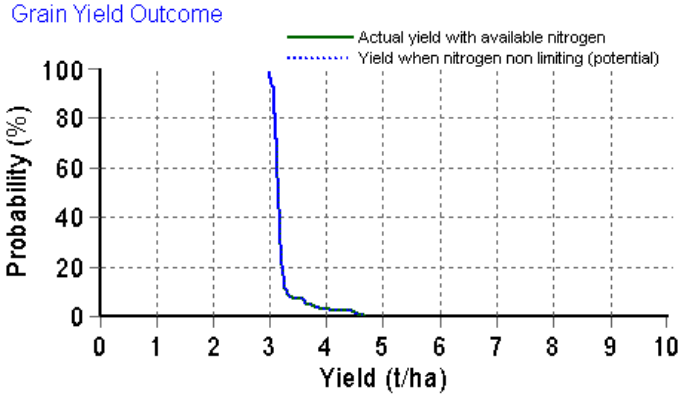
(measured 27th March)
Soil N prior to sowing (0-90cm): 244kg/ha
Plant available water at sowing (0-90cm): 0mm

Crop growth

Variety: Gladius
Sowing date: 30th April
Nitrogen fertiliser at sowing: 20kgN/ha
Plant density: 162 plants per square metre
Current growth stage: soft dough (85%dough) (GS85)

The graph below 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 30th September 2009

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

The season so far

Rain to date: 386mm
GSR to date: 366mm (104mm since last report)
GSR decile: 8
Maximum temp since sowing: 30.6ºC
Minimum temp since sowing: -3.0ºC (15th Sept)
Average temp accumulation per day: 11.4ºC
Current predicted soil N status: 26kg/ha
Current predicted PAW: 93mm
Current push probe depth: 68cm

Grain & hay yield predictions

Yield prophet estimate: (Date of report 1/10/2009)

These estimates are based on a 50% probability

Yield t/ha	Sown 9th May (see graph)	Change from last report	Sown 15th May	Change from last report
Grain	4.7	0.0	4.8	+0.1
Hay	7.5	-0.2	7.6	-0.4

French & Schultz grain yield estimate:
100% WUE: 5.7t/ha, 80% WUE: 4.6t/ha
This model assumes that there is 110mm of evaporation and decile 5 (31mm) rainfall for the remainder of the growing season.

Pre-sowing soil nitrogen and water

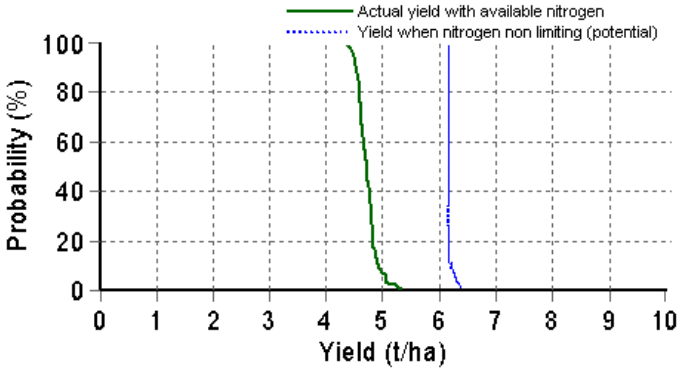
(measured 2nd April)
Soil N prior to sowing (0-90cm): 107kg/ha
Plant available water at sowing (0-90cm): 0mm

Crop growth

Variety: Gladius
Sowing date: 9th May
Nitrogen fertiliser at sowing: 40kgN/ha
Plant density: 182 plants per square metre
Current growth stage: early milk (GS73)
Predicted date of mid dough fill: 4th October

The graph below 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 30th September 2009

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

The season so far

Rain to date: 421mm
GSR to date: 401mm (81mm since last report)
GSR decile: 8
Maximum temp since sowing: 30.1ºC
Minimum temp since sowing: 0.6ºC
Average temp accumulation per day: 11.7ºC
Current predicted soil N status: 21kg/ha
Current predicted PAW: 100mm
Current push probe depth: 66cm

Grain & hay yield predictions

Yield prophet estimate: (Date of report 1/10/2009)

These estimates are based on a 50% probability

Yield t/ha	Sown 1st June (see graph)	Change from last report	Sown 10th May	Change from last report
Grain	5.4	0.0	5.0	0.0
Hay	7.5	-0.1	6.0	0.0

French & Schultz grain yield estimate:
100% WUE: 6.7t/ha, 80% WUE: 5.3t/ha
This model assumes that there is 110mm of evaporation and decile 5 (43mm) rainfall for the remainder of the growing season.

Pre-sowing soil nitrogen and water

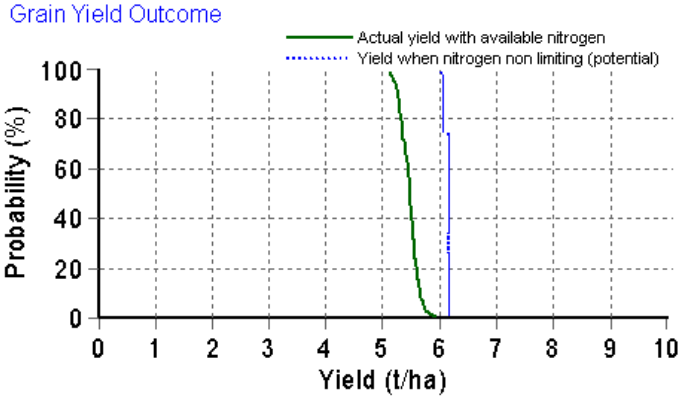
(measured 27th March)
Soil N prior to sowing (0-70cm): 143kg/ha
Plant available water at sowing (0-90cm): 7mm

Crop growth

Variety: Gladius
Sowing date: 1st June
Nitrogen fertiliser at sowing: 50kgN/ha
Plant density: 142 plants per square metre
Current growth stage: mid flowering (GS65)
Predicted date of mid dough fill: 14th October

The graph below 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



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Yield prophet performance at Hart in 2009

On the date of the first simulation, 24th June 2009, yield prophet predicted that Gladius wheat sown on the 18th May with 165 plants per square metre would yield 3.3t/ha in 50% of years. Over the next 2 months the predicted yield increased slightly in July and then by the end of August had dropped 0.7t/ha to 2.6t/ha at the 50% level of probability (Figure 1). Yield predictions continued to drop at a steady rate until significant rainfall events occurred around mid September. At the time of the final yield prophet simulation on the 30th September the predicted yield at the 50% level was 3.7t/ha.

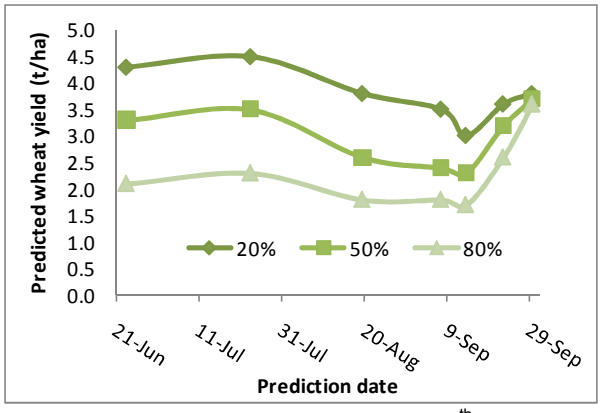

Figure 1: Yield prophet predictions from 24th June to the 30th September for Gladius wheat sown on the 18th May with 60kg/ha DAP. 80%, 50% and 20% represent the chance of reaching the corresponding yield at the date of the simulation.

At sowing plant available water (PAW) measured 0mm (0-90cm). Figure 2 shows that by the 24th of June PAW had increased to 27mm and increased to 47mm by the 24th July. However, as the season progressed PAW started to decline and significant water stress began to occur. Rainfall from the 16th September relieved the stress as PAW increased to 50mm on the 30th September.

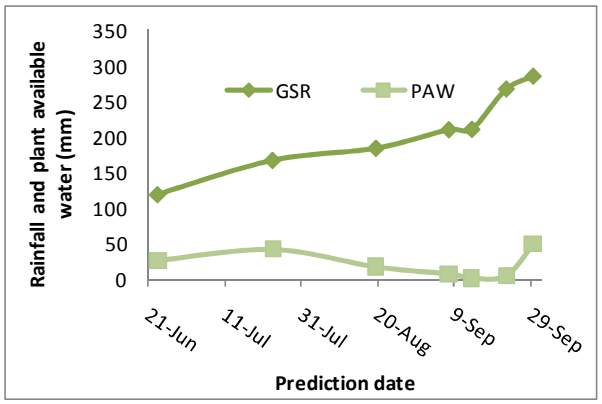

Figure 2: Predicted plant available water and cumulative growing season rainfall from 24th June to the 28th September at Hart in 2009.

Rainfall and soil water characteristics for the WUE sites.

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 rock	383*	263*	120*

*depth to 125cm

Hart field site contact information

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