

HART BEAT

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ISSUE 39

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flexi/coil



HART BEAT

Yield Prophet® simulations for 8 sites across the mid-north of SA

The Yield Prophet® simulations featured are not a crystal ball, but provide a realistic prediction of the available soil water and nitrogen status of your crop



HART EVENTS

HART FIELD DAY – 20th September 2016

Spring Twilight Walk – 18th October 2016

Getting The Crop In – March 2017

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www.hartfieldsite.org.au

Definitions

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.

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.

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.

Yield probability curves - display two different nitrogen scenarios for each site. The **green line** displays the actual grain yield with the current soil available nitrogen. The **blue line** represents the grain yield potential with unlimited nitrogen (yield potential). A small difference between these two lines indicates the current soil N level is adequate for the crop to reach its yield potential. Conversely, a large difference between these two lines indicates

additional N fertiliser is required for the crop to reach its yield potential.

The **French & Schultz** formula estimates the rainfall limited grain yield based on the growing season rainfall (GSR). It assumes evaporation of 110mm, includes stored water at sowing (30% of Jan to Mar rainfall) and a maximum grain yield potential of 20 kg/mm/ha.

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

Yield Prophet® has been very accurate throughout Australia, over the past 5 seasons. At the Hart field site 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.

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®*.

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.hartfieldsite.org.au

Site information

Rainfall and soil water characteristics for all sites

Site	Average annual rainfall (mm)	Soil type	Plant Available Water Capacity (mm)	Soil Profile Depth (cm)	Plant Available Water at 15 April (mm)	Pre-sowing soil nitrogen (kg/ha)
Hart	400	Sandy clay loam	206	150	18	105
Spalding	430	Red brown earth	143	150	29	106
Condowie	350	Sandy loam	115	150	4	78
Kybunga	428	Clay loam	262	120	5	106
Farrell Flat	474	Light clay loam	172	120	52	103
Pinery	374	Silty clay loam	79	150	16	98
Eudunda	445	Gravelly loam	96	100	5	98
Tarlee	474	Sandy loam	113	150	50	91

2016 site locations



SANDY CLAY LOAM

Crop growth

Variety: Mace wheat Sowing date: 1st May Nitrogen fertiliser: 40 kg N/ha at seeding + 30 kg N/ha 4th Jul

The season so far

Annual rain to date: 259 mm
 GSR to date: 197 mm (50 mm since last report) GSR decile: 5
 Current predicted PAW: 74 mm (36% full) PAWC: 206 mm

Grain yield predictions (Yield Prophet)

Yield prophet estimate: (Date of report 25/08/2016)

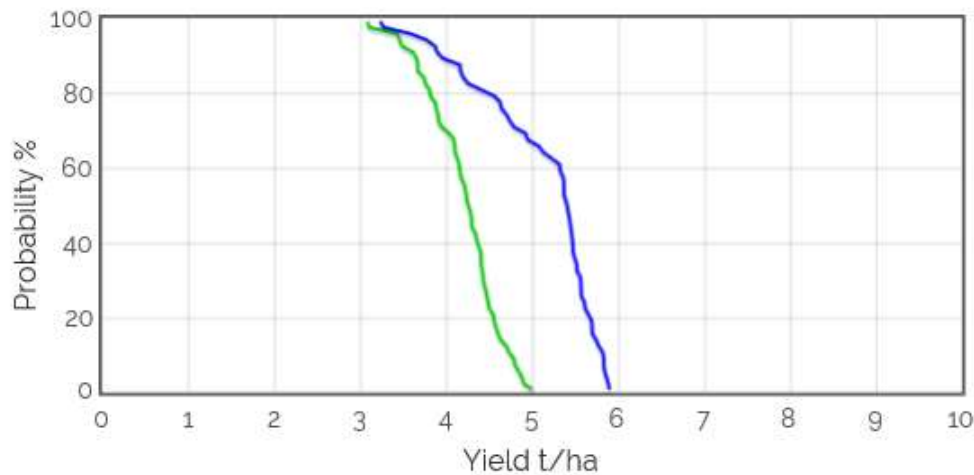
These estimates are based on a 50% probability

Yield t/ha	Sown 1 st May (see graph)	Change since last report	Sown 20 th May	Change since last report
Grain	4.7	0.0	4.2	0.0

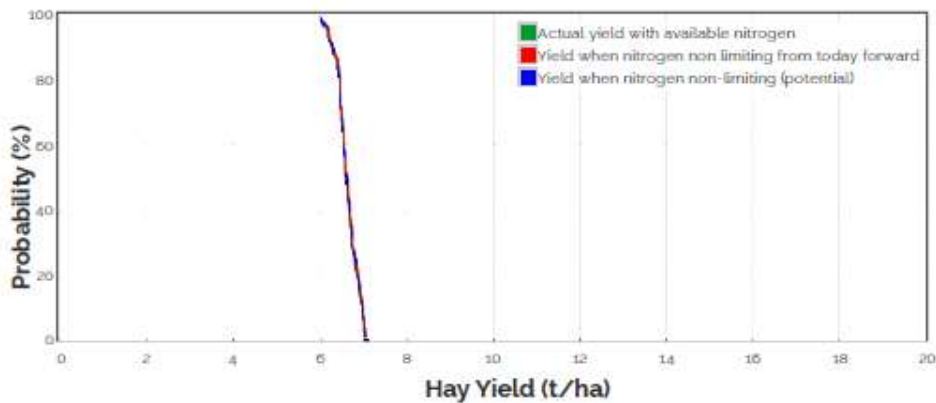
French & Schultz grain yield estimate:

100% WUE:	3.7 t/ha
80% WUE:	2.9 t/ha

This model assumes that there is 19 mm stored moisture, 110 mm of evaporation and Decile 5 rainfall (78 mm) for the rest of the season.



The graphs above and below show 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.



Sharpen®

Herbicide

Improve harvest efficiency in winter pulses.

Now registered for use in chickpeas, faba beans, field peas,
lentils and direct harvested lupins.



Advantages with new option to desiccate pulse crops

The registration of **Sharpen® WG** herbicide as a desiccant for pulse crops provides growers with an excellent option to improve the speed of maturity and improve harvest efficiency.

Sharpen is a true Group G herbicide which moves rapidly through the plant for speedy desiccation and removal desiccation of green biomass in preparation for harvest.

Growers have the opportunity to apply Sharpen to reduce the impacts of uneven crop maturity and harvest cleaner grain samples. The reduction of green biomass in the crop at harvest can help to improve harvest speed and efficiency.

Sharpen is registered on the winter pulse crops of chickpeas, faba beans, field peas, lentils and direct harvested lupins. The use of Sharpen across these crops provides a new mode of action and complements glyphosate and paraquat making it a valuable resistance management tool.

Importantly Sharpen has the ability to control and desiccate a wide range of broadleaf weeds that are hard to kill with the other herbicides. There are 32 weeds listed for standalone weed control on the label of Sharpen herbicide including sowthistle, fleabane, marshmallow, bind weed, prickly lettuce and capeweed.

For a number of seasons Sharpen has been registered for fallow and pre-plant spray programs and growers have noted its rapid burndown of weed species. With the herbicide now available as a harvest aid, the spray application takes out the target crop as well as different weed species and sets the paddock up well for the cropping next phase.

Excellent desiccation and weed control will not only assist during harvest but also conserve valuable moisture that can be stored into the fallow. The timing of desiccation varies from crop to crop and growers are advised to consult their agronomist to ensure they maximise yield and quality.

As a guide for chickpeas, desiccation is recommended when 80 to 85 per cent of the pods in crop have turned a yellow-brown colour. This is normally an indication that the majority of seeds have reached physiological maturity and have changed colour from green to brown.

In faba beans the herbicide should be applied when the hilum, the scar like area where the seed attaches to the pod wall, turns black at the top of the canopy.

Field peas can be desiccated at 30 per cent moisture content or when the lower 75 per cent of pods are brown and leathery with firm seeds.

Lentils should be desiccated when the crop starts to yellow and senesce and lupins can have an herbicide application at around 80 per cent leaf drop.

A rate of 34 grams per hectare is recommended on the label with Sharpen used in conjunction with glyphosate or paraquat for excellent broad spectrum crop and weed control. ALWAYS apply Sharpen WG Herbicide with 1% v/v Hasten Spray adjuvant or high quality methylated seed oil (MSO) and do not harvest the crop until seven days after application.

SPALDING

RED BROWN EARTH

Crop growth

Variety: Mace wheat Sowing date: 1st May Nitrogen fertiliser: 40 kg N/ha at seeding + 30 kg N/ha 4th Jul

The season so far

Annual rain to date: 328 mm
 GSR to date: 222 mm (59 mm since last report)
 Current predicted PAW: 93 mm (65% full)

GSR decile: 6
 PAWC: 143 mm

Grain yield predictions (Yield Prophet)

Yield prophet estimate: (Date of report 25/08/2016)

These estimates are based on a 50% probability

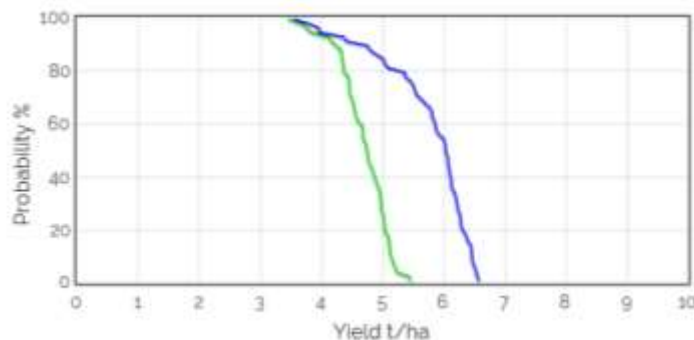
Yield t/ha	Sown 1 st May (see graph)	Change since last report	Sown 20 th May	Change since last report
Grain	5.3	0.0	4.6	+0.4

French & Schultz grain yield estimate:

100% WUE: 4.6 t/ha
 80% WUE: 3.7 t/ha

This model assumes that there is 32 mm stored moisture, 110 mm of evaporation and Decile 5 rainfall (88 mm) for the rest of the season.

Grain yield outcome graph



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.

CONDOWIE

SANDY LOAM

Crop growth

Variety: Mace wheat Sowing date: 1st May Nitrogen fertiliser: 40 kg N/ha at seeding + 30 kg N/ha 4th Jul

The season so far

Annual rain to date: 291 mm
 GSR to date: 211 mm (77 mm since last report)
 Current predicted PAW: 59 mm (51% full)

GSR decile: 8
 PAWC: 115 mm

Grain yield predictions (Yield Prophet)

Yield prophet estimate: (Date of report 25/08/2016)

These estimates are based on a 50% probability

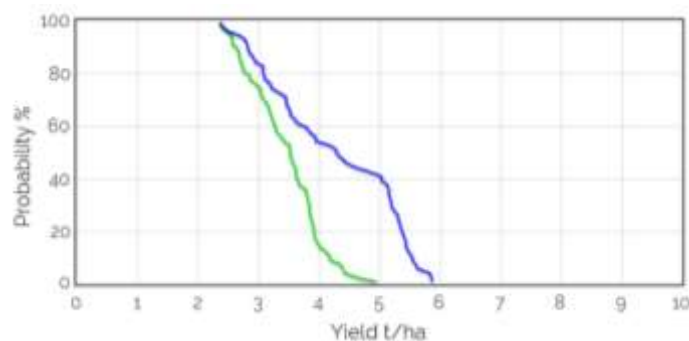
Yield t/ha	Sown 1 st May (see graph)	Change since last report	Sown 20 th May	Change since last report
Grain	3.9	+0.4	3.0	+0.3

French & Schultz grain yield estimate:

100% WUE: 4.4 t/ha
 80% WUE: 3.5 t/ha

This model assumes that there is 24 mm stored moisture, 110 mm of evaporation and Decile 5 rainfall (94 mm) for the rest of the season.

Grain yield outcome graph



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.

Crop growth

Variety: Mace wheat Sowing date: 1st May Nitrogen fertiliser: 40 kg N/ha at seeding + 30 kg N/ha 4th Jul

The season so far

Annual rain to date: 411 mm
 GSR to date: 313 mm (90 mm since last report)
 Current predicted PAW: 154 mm (59% full)

GSR decile: 10
 PAWC: 262 mm

Grain yield predictions (Yield Prophet)

Yield prophet estimate: (Date of report 25/08/2016)

These estimates are based on a 50% probability

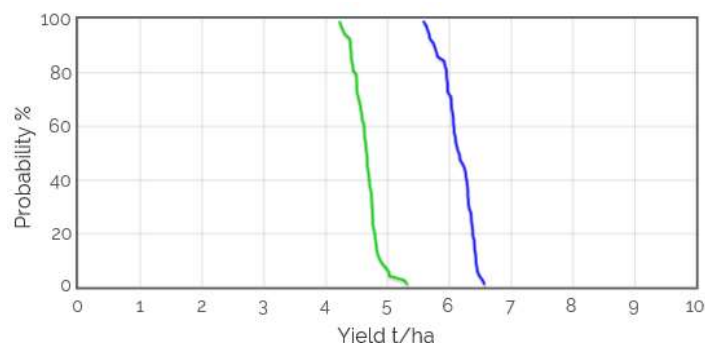
Yield t/ha	Sown 1 st May (see graph)	Change since last report	Sown 20 th May	Change since last report
Grain	5.4	-0.2	5.6	+0.2

French & Schultz grain yield estimate:

100% WUE: 7.0 t/ha
 80% WUE: 5.6 t/ha

This model assumes that there is 29 mm stored moisture, 110 mm of evaporation and Decile 5 rainfall (113 mm) for the rest of the season.

Grain yield outcome graph



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.

FARRELL FLAT

LIGHT CLAY LOAM

Crop growth

Variety: Mace wheat Sowing date: 1st May Nitrogen fertiliser: 40 kg N/ha at seeding + 30 kg N/ha 4th Jul

The season so far

Annual rain to date: 402 mm
 GSR to date: 292 mm (60 mm since last report)
 Current predicted PAW: 169 mm (98% full)

GSR decile: 8
 PAWC: 172 mm

Grain yield predictions (Yield Prophet)

Yield prophet estimate: (Date of report 25/08/2016)

These estimates are based on a 50% probability

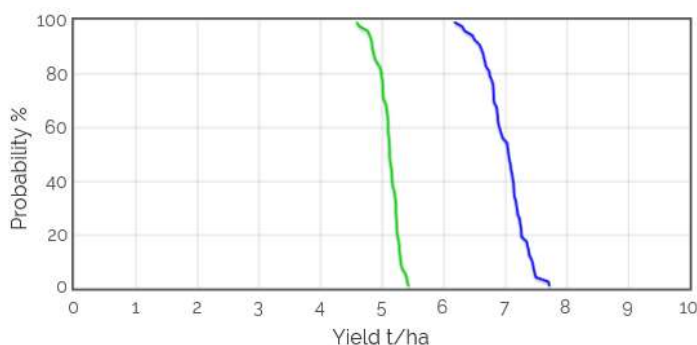
Yield t/ha	Sown 1 st May (see graph)	Change since last report	Sown 20 th May	Change since last report
Grain	6.0	0.0	6.2	+0.1

French & Schultz grain yield estimate:

100% WUE: 6.4 t/ha
 80% WUE: 5.1 t/ha

This model assumes that there is 33 mm stored moisture, 110 mm of evaporation and Decile 5 rainfall (105 mm) for the rest of the season.

Grain yield outcome graph



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.

SILTY CLAY LOAM

Crop growth

Variety: Mace wheat Sowing date: 1st May Nitrogen fertiliser: 40 kg N/ha at seeding + 30 kg N/ha 4th Jul

The season so far

Annual rain to date: 334 mm
 GSR to date: 234 mm (34 mm since last report)
 Current predicted PAW: 35 mm (44% full)

GSR decile: 6
 PAWC: 79 mm

Grain yield predictions (Yield Prophet)

Yield prophet estimate: (Date of report 25/08/2016)

These estimates are based on a 50% probability

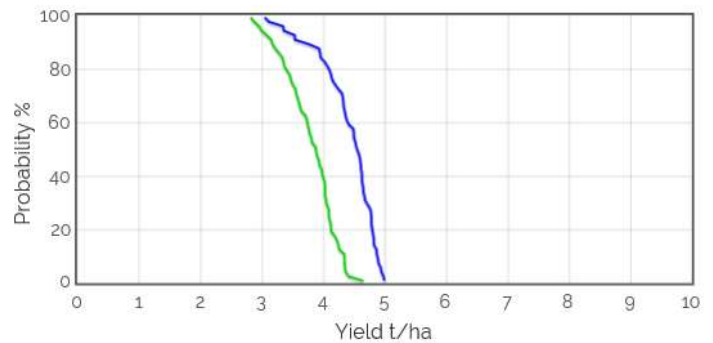
Yield t/ha	Sown 1 st May (see graph)	Change since last report	Sown 20 th May	Change since last report
Grain	4.2	-0.1	3.7	-0.4

French & Schultz grain yield estimate:

100% WUE:	4.8 t/ha
80% WUE:	3.8 t/ha

This model assumes that there is 30 mm stored moisture, 110 mm of evaporation and Decile 5 rainfall (86 mm) for the rest of the season.

Grain yield outcome graph



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.

GRAVELLY LOAM

Crop growth

Variety: Mace wheat Sowing date: 1st May Nitrogen fertiliser: 40 kg N/ha at seeding + 30 kg N/ha 4th Jul

The season so far

Annual rain to date: 360 mm
 GSR to date: 250 mm (47 mm since last report)
 Current predicted PAW: 52 mm (54% full)

GSR decile: 6
 PAWC: 96 mm

Grain yield predictions (Yield Prophet)

Yield prophet estimate: (Date of report 25/08/2016)

These estimates are based on a 50% probability

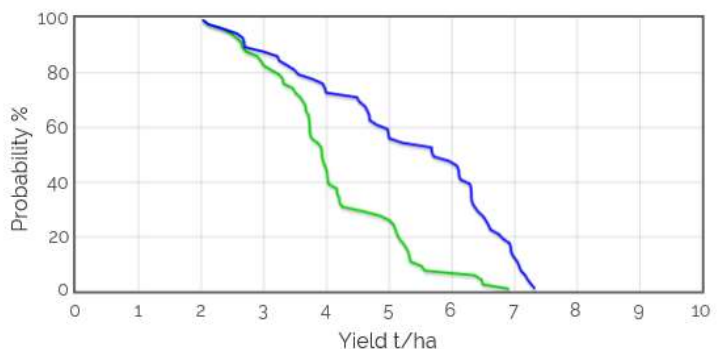
Yield t/ha	Sown 1 st May (see graph)	Change since last report	Sown 20 th May	Change since last report
Grain	4.8	- 0.4	3.9	-0.6

French & Schultz grain yield estimate:

100% WUE:	5.4 t/ha
80% WUE:	4.3 t/ha

This model assumes that there is 33 mm stored moisture, 110 mm of evaporation and Decile 5 rainfall (97 mm) for the rest of the season.

Grain yield outcome graph



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.

Crop growth

Variety: Mace wheat Sowing date: 1st May Nitrogen fertiliser: 40 kg N/ha at seeding + 30 kg N/ha 4th Jul

The season so far

Annual rain to date: 485 mm
 GSR to date: 370 mm (75 mm since last report) GSR decile: 10
 Current predicted PAW: 99 mm (88% full) PAWC: 113 mm

Grain yield predictions (Yield Prophet)

Yield prophet estimate: (Date of report 25/08/2016)

These estimates are based on a 50% probability

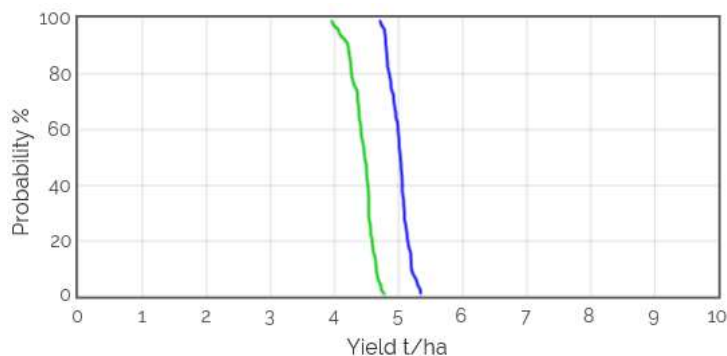
Yield t/ha	Sown 1 st May (see graph)	Change since last report	Sown 20 th May	Change since last report
Grain	4.9	0.0	5.0	-0.1

French & Schultz grain yield estimate:

100% WUE: 8.0 t/ha
 80% WUE: 6.4 t/ha

This model assumes that there is 34 mm stored moisture, 110 mm of evaporation and Decile 5 rainfall (107 mm) for the rest of the season.

Grain yield outcome graph



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.

Hart Field Day 2016

September 20th

International Year of Pulses

Author & chef **Simon Bryant** (pictured)

'Eat what you grow' – it really is easy to cook with pulses

International guest speaker

Bert Vandenberg

Canadian pulse researcher

Lunch time guest speaker

Peter Wilson

Pulse Australia chairman

Plus the broad range of cereal, oilseed, herbicide, variety and agronomy trials you expect.

