

Putting it all together

- Trial brings together crop models and PA
- Four commercial paddock sites
- New weed research
- Hart Field Site membership now available

Hart Field Site has always been associated with innovation and securing a Natural Resources Innovation Grant is helping to continue this tradition. In the coming cropping season Hart Field Site will combine the use of Yield Prophet, zone management and in-crop sensing to manage the nutrient inputs in four commercial paddocks across the Upper and Mid North.

Yield Prophet is an advanced, practical crop modelling tool that uses detailed soil characterisation together with 100 years of local, historic rainfall information to predict crop yield and to suggest nitrogen inputs. Currently, the model is suitable for wheat and barley but is being validated for canola and pulse crops.

“We are working in collaboration with Southern Precision Agricultural Association (SPAA) with the aim of demonstrating affordable variable rate management,” explained project manager Peter Hooper.

Crop management zones for each paddock are currently being developed by integrating EM38 survey data, yield maps, digital elevation models and historic in crop satellite imagery. Within each zone soil cores will be analysed for physical and chemical characteristics, with an emphasis on measuring the plant available soil water capacity. The Yield Prophet model uses this to estimate the soils ability to supply water and nutrient requirements, to a calculated crop rooting depth.

Unlike many crop models Yield Prophet can be continuously updated with actual rainfall data through the growing season to produce updated yield predictions and nitrogen recommendations. A unique feature of this project is that in addition to Yield Prophet, in-crop sensors will also be used to assess the spatial variability of the crop's nitrogen requirement.

Each paddock will be sown with a no-till seeder fitted with variable rate controls so seed and fertiliser rates can be varied by zone. The tractors will be fitted with RTK auto steer giving guidance with 2cm accuracy. At harvest both yield and protein data will be recorded

N-Sensor®, GreenSeeker® and Crop Circle® are technologies that can provide on-the go estimates of canopy colour and size and translate this into a fertiliser application rate. Spreaders will apply variable rates of nitrogen during the growing season, according to the paddock production zones and application maps produced by the crop sensors.

The use of variable rate pesticides will also be investigated at some sites.

“We will be running field days at these sites during the year and the Hart paddock will be on show at our main field day on 18th September.”

New trials this year, funded by the GRDC, include a practical assessment of integrated weed management and the control of herbicide resistant weeds, especially grasses. In WA Bill Roy demonstrated that herbicide resistance could be managed by implementing a range of strategies through the year and without the use of selective herbicides. The Hart work will take a similar approach but will also include components that evaluate pre-emergent herbicides with inter row seeding, disc seeders and dry seeding. Growers have experienced difficulties or the results are unknown with each of these combinations and so the trial aims to understand the cause of the problems and develop solutions to them.

On-going work by the Hart Field Site includes their work supported by SAGIT on comparing seeding systems and the timing of nitrogen application.

To help growers keep in touch with the work of the Hart Field Site throughout the year a membership has been developed.

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