

## Yield Prophet® performance in 2011

### Key findings

- Yield prophet accurately predicted the final grain yield of 3.0t/ha.
- Predictions made in mid-August using an average finish to the season have been 80% accurate.

### Why do the trial?

Wheat growth models such as APSIM are highly valuable in their ability to predict wheat yield.

Yield Prophet® is an internet based service using the APSIM wheat prediction model. The model relies on accurate soil character information such as plant available water and soil nitrogen levels, as well as historical climate data and up to date local weather information to predict plant growth rates and final hay or grain yields.

The *Yield Prophet®* (YP) wheat growth model has been very accurate throughout Australia over the past 6 years in a range of soil types and seasons. At 4 sites in the Mid-North over the past 5 seasons YP has demonstrated this accuracy by providing accurate yield predictions with an average finish in mid-August (Figure 1).

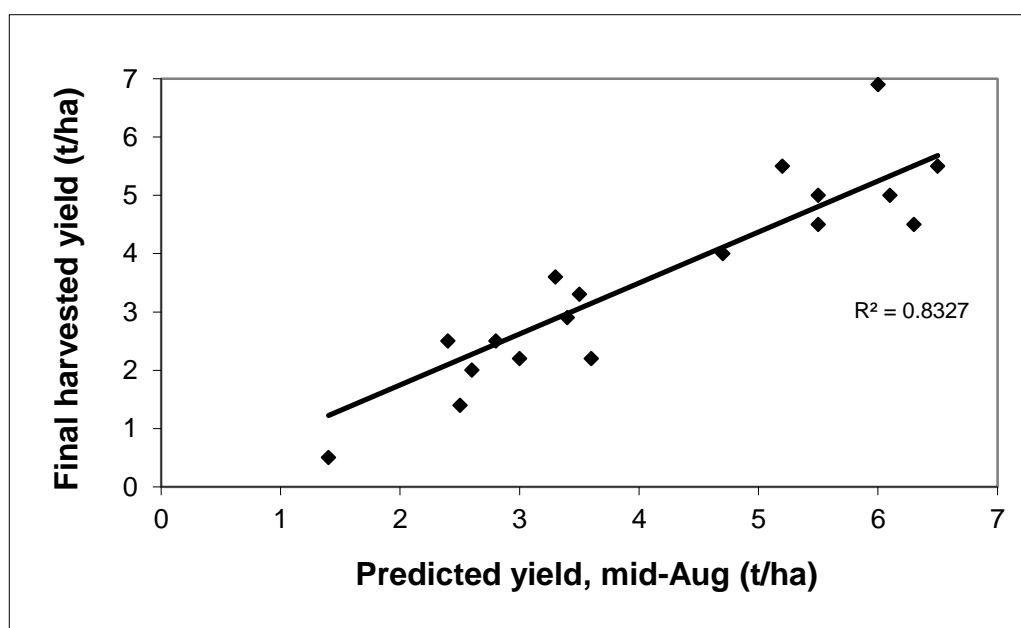


Figure 1. The relationship between predicted yield in mid-August, given an average finish to the season, against harvested grain yield. The sites and seasons include Spalding, Condownie, Tarlee (for 2009 and 2010), and Hart (2005 to 2011).

This early prediction of grain or hay yield potential means it can be used to directly influence crop input decisions. No other tool is currently available to growers which can provide information of this accuracy at such a useful time of the season.

## How was it done?

**Seeding date** 30<sup>th</sup> May 2010

**Fertiliser** DAP @ 50 kg/ha  
UAN @ 70 L/ha 29<sup>th</sup> July

**Variety** Gladius wheat @ 80 kg/ha

Soil samples were taken for soil nitrogen and moisture on the 11<sup>th</sup> May 2011.

*Table 1: Soil conditions at Hart (0-90cm), 11<sup>th</sup> May 2011.*

Available soil moisture	70 mm
Initial soil N	157 kg/ha

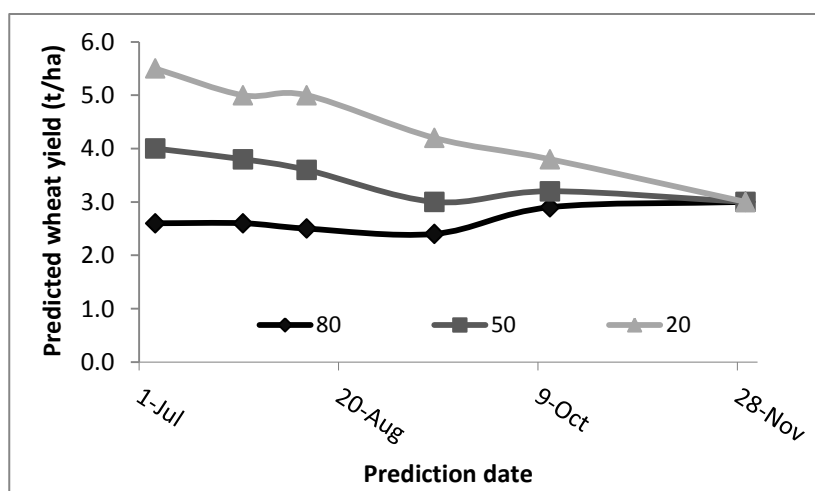
Yield Prophet<sup>®</sup> simulations were run throughout the season to track the progress of wheat growth stages and changes in grain yield predictions.

20%, 50% and 80% levels of probability refer to the percentage of years where the corresponding yield estimate would have been met, according to the previous 100 years of rainfall data.

## Results

The grain yield for Gladius wheat sown on the 30<sup>th</sup> May at Hart in 2011 was 3.0 t/ha. This final grain yield matched the Yield Prophet<sup>®</sup> prediction (Figure 1).

At the first simulation, 5<sup>th</sup> July 2011, the Yield Prophet<sup>®</sup> simulation predicted that Gladius wheat sown on the 30<sup>th</sup> May would yield 4.0t/ha in 50% of years. The predicted grain yield decreased steadily throughout the growing season, due to only moderate winter rainfall rain and mild temperatures. The Yield Prophet<sup>®</sup> on the 9<sup>th</sup> October for grain yield, given an average (50%) finish to the season, was 3.2 t/ha.



*Figure 1: Yield Prophet<sup>®</sup> predictions from 1<sup>st</sup> July to the 28<sup>th</sup> November for Gladius wheat sown on the 30<sup>th</sup> May with 50 kg/ha DAP. 80%, 50% and 20% represent the chance of reaching the corresponding yield at the date of the simulation.*

At time of sowing plant available water (PAW) measured 0mm (0-90cm). Figure 2 shows that at the first simulation on the 5<sup>th</sup> of July, PAW was over 60mm due to high levels of stored moisture from summer and autumn rains. PAW decreased significantly during August and continued to drop until boosted by further rains in September and October. With greater crop use and higher temperatures, it dropped to below 10mm PAW by the end of October.

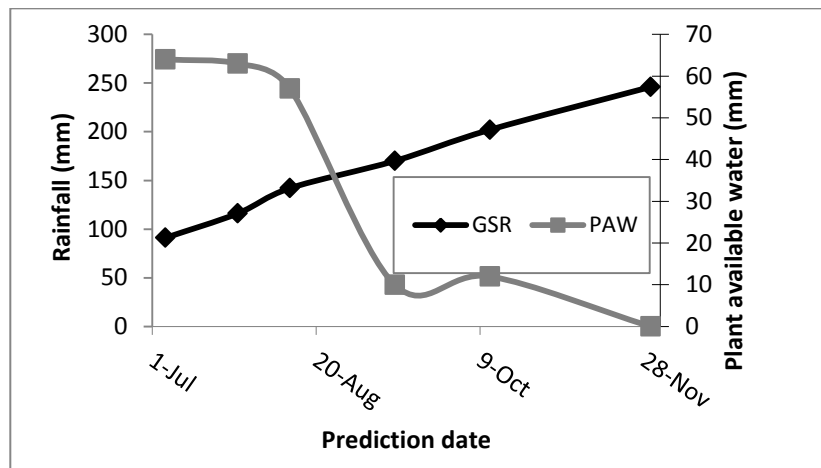


Figure 2: Predicted plant available water and recorded cumulative growing season rainfall from 5<sup>th</sup> July to the 28<sup>th</sup> November at Hart in 2011.



Getting The Crop In seminary 2011