

Yield Prophet® performance in 2010

Key findings

- The actual wheat grain yield at Hart in 2010 was 2.46 t/ha, well under the final Yield Prophet® prediction of 3.70 t/ha.

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 (Figure 1).

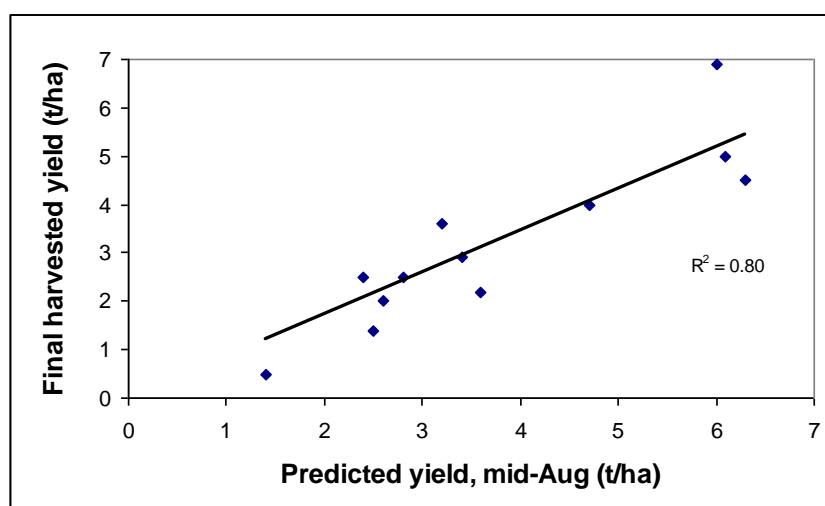


Figure 1. The relationship between predicted yield in mid-August, given an average finish to the season, against harvested grain yield. The sites and seasons include Spalding, Condowie, Tarlee (for 2009 and 2010), and Hart (2005 to 2010). Intercept set through zero.

An early prediction of grain or hay yield potential means it can be used to directly influence crop input decisions.

How was it done?

Seeding date 14th May 2010

Fertiliser DAP @ 50 kg/ha
Urea @ 80kg/h 18th August

Variety Gladius wheat @ 70 kg/ha

Soil samples were taken for soil nitrogen and moisture on the 10th March 2010.

Table 1: Soil conditions at Hart (0-90cm),
10th March 2010.

Available soil moisture	0 mm
Initial soil N	115 kg/ha

Yield Prophet[®] 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 14th May at Hart in 2010 was 3.6 t/ha. This final grain yield is below (20%) the final Yield Prophet[®] prediction (Figure 1). Low grain protein (9.6%) may indicate that more nitrogen fertiliser might have improved the final grain yield.

At the first simulation, 5th July 2010, the Yield Prophet[®] simulation predicted that Gladius wheat sown on the 14th May would yield 3.0t/ha in 50% of years. The predicted grain yield increased steadily throughout the growing season, due to good rainfall and mild temperatures. The final Yield Prophet[®] on the 15th October for grain yield, given an average (50%) finish to the season, was 4.4t/ha. Other wheat plots near this trial did yield 4.0 t/ha.

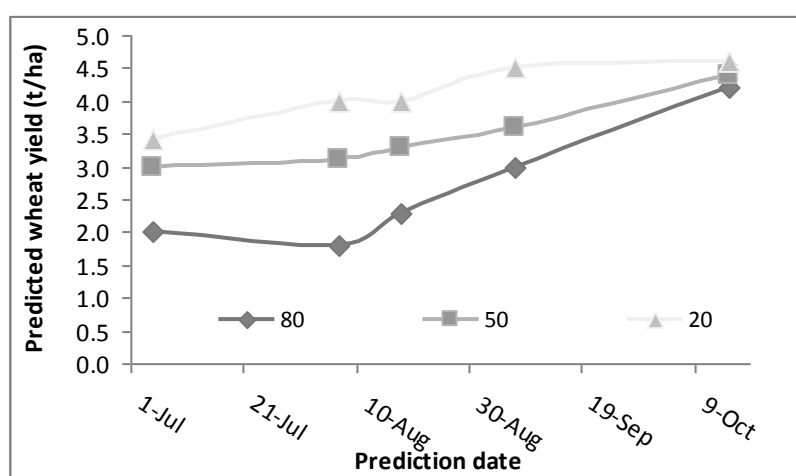


Figure 1: Yield Prophet[®] predictions from 5th July to the 15th October for Gladius wheat sown on the 14th May with 50 kg/ha DAP. 80%, 50% and 20% represent the chance of reaching the corresponding yield at the date of the simulation.

At sowing plant available water (PAW) measured 0mm (0-90cm). Figure 2 shows that at the first simulation on the 5th of July, PAW had increased to over 30mm. PAW increased significantly during August and while it decreased in September and October, with greater crop use and higher temperatures, it remained above 40mm PAW.

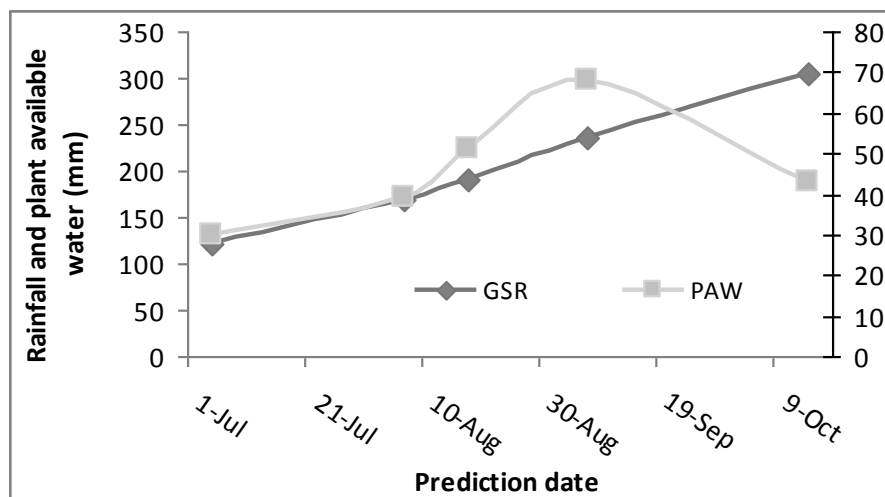


Figure 2: Predicted plant available water and recorded cumulative growing season rainfall from 5th July to the 15th October at Hart in 2010.

