

# Yield Prophet<sup>®</sup> performance in 2014

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## Key findings

- Yield prophet<sup>®</sup> closely predicted a final grain yield of Mace at 5.5 t/ha in the Hart area.
- Good season rainfall meant the difference between 20% and 80% of years started at 0.8 t/ha in late June and was only 0.1 t/ha by mid-October.

## Why do the trial?

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

Yield Prophet<sup>®</sup> 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.

This early prediction of grain 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?

<b>Seeding date</b>	1 <sup>st</sup> May 2014	<b>Fertiliser</b>	30 kg N/ha 1 <sup>st</sup> May 46 kg N/ha 15 <sup>th</sup> July
<b>Variety</b>	Mace wheat @ 180 plants per square metre		

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 actual grain yield for Mace wheat sown on the 8<sup>th</sup> May at Hart in 2014 was 5.01 t/ha. This final grain yield was 0.5 t/ha below the Yield Prophet<sup>®</sup> prediction (Figure 1) of 5.5 t/ha.

At the first simulation, 19<sup>th</sup> June 2014, the Yield Prophet<sup>®</sup> simulation predicted that Mace wheat sown on the 1<sup>st</sup> May would yield 4.9 t/ha in 50% of years. The predicted grain yield increased by 0.6 t/ha by the 16<sup>th</sup> July due to an increase in rainfall of 80 mm. This yield was closely maintained up until mid-October. Interestingly all other sites (except Kybunga) had a yield prediction decrease between September and October of 0.8 – 1.4 t/ha compared to Hart which was only -0.1 t/ha (see Hart Beat Newsletter no. 31).

The Yield Prophet<sup>®</sup> simulation on the 13<sup>th</sup> October for grain yield, given an average (50%) finish to the season, was 5.5 t/ha as was the finish for 80% of years. Early in the season up until September the Hart rainfall ranged from decile 8 to 9 which meant the variation in grain yield between 20%, 50% and 80% was small. As the season dried out the variation in grain yield for the Hart site was even smaller (Figure 1).

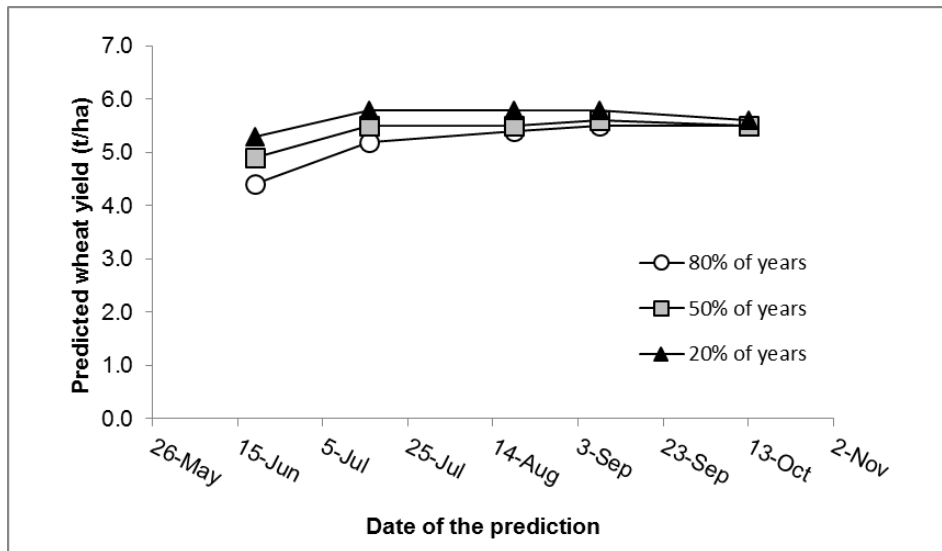


Figure 1. Yield Prophet® predictions from 19<sup>th</sup> June to the 13<sup>th</sup> October for Mace wheat sown on the 1<sup>st</sup> May, 2014. 80%, 50% and 20% represent the chance of reaching the corresponding yield at the date of the simulation.

Plant available water (PAW) (0-90cm) when the first simulation was run at the beginning of June was 98 mm. Plant available water had increased significantly when the second Yield Prophet® simulation was run on 16<sup>th</sup> of July (Figure 2). Plant available water slowly decreased until mid-August and from then on decreased faster due to lack of rainfall towards the end of the season. At the final simulation date of 13<sup>th</sup> of October there was still 28 mm of PAW (Figure 2). The 2014 season favoured earlier districts resulting in above average yields and grain quality. Additional rainfall in many of the later districts was required to finish the season and reduce screening levels, although generally grain yield and quality were good in areas unaffected by frost damage.

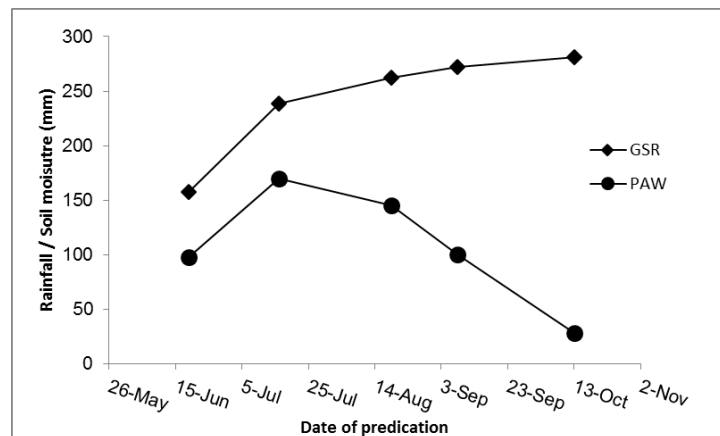


Figure 2. Predicated plant available water (PAW) and recorded cumilative growing season rainfall from 19<sup>th</sup> of June to 13<sup>th</sup> of October at Hart in 2014.