

UNFS

YIELD PROPHET® SIMULATIONS



As part of the GRDC RiskWi\$e Project, UNFS is running Yield Prophet® simulations to support in-season decision making around nitrogen management and seasonal risk. This year, two paddocks have been selected across the Upper North.

At Brenton Vanstone's property near Wandearah, two monitoring sites have been established within the one paddock—one on a lower-lying saline area where elevated salt levels constrain crop growth and rooting depth, and the other on a higher-producing loamy soil with greater yield potential.

A second monitoring paddock has been established at Ballantyne's property near Laura. The soil is a reddish-brown alkaline loam topsoil over a red alkaline clay loam subsoil with slight sodicity and salinity at depth yet this will not be yield limiting for wheat.

Stefan Schmitt will be managing the Yield Prophet® modelling for the Wandearah site, and Ziek Kay will manage the Laura site.

These Yield Prophet® simulations will provide a valuable addition to our RiskWi\$e discussions around in-season nitrogen decisions and build on the work Barry Mudge delivered with Yield Prophet® across the Upper North in previous years.

BACKGROUND ON YIELD PROPHET®

Yield Prophet® is an internet-based service that uses the APSIM crop simulation model.

The model relies on accurate soil, crop, historical climate and current local weather information to predict crop growth and final grain or hay yield. These predictions are specific to the site being analysed and are intended as a guide to seasonal prospects for paddocks with similar soil types and rainfall patterns, rather than exact predictions for every individual situation.

Using current season climate data and using the APSIM computer model, Yield Prophet® simulates soil water, nitrogen processes and crop growth within a paddock up to the day the model is run. Then using historic climate data, Yield Prophet simulates crop growth and resource availability from the day on which the report was generated to the end of the season. This process is repeated once for each year of climate record (~130 years) providing 130 separate yield outcomes (Figure 1). These yields are then plotted as a probability curve (Figure 2), providing growers with an estimate of the probabilities of obtaining a range of yields.

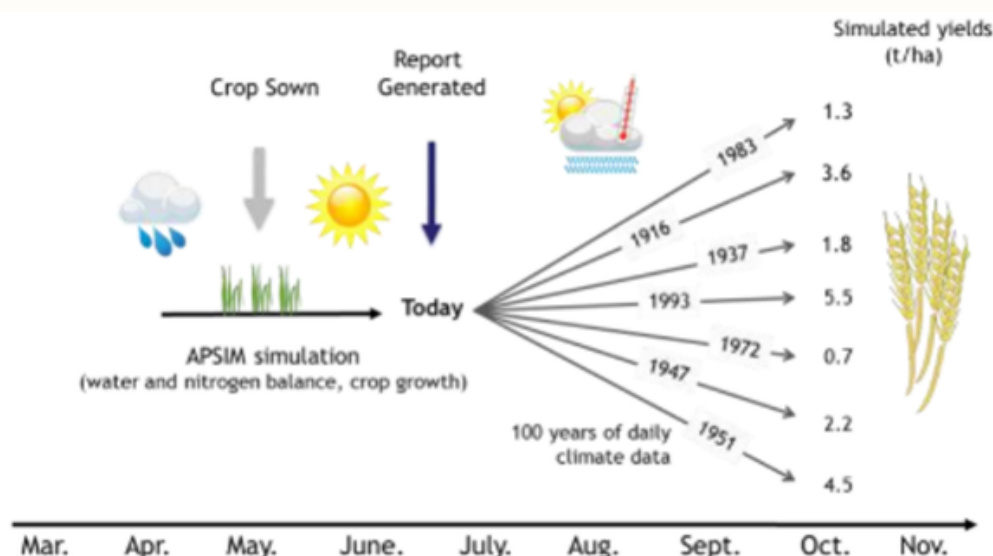


Figure 1: Visual representation of the Yield Prophet simulation process

Grain Yield Outcome

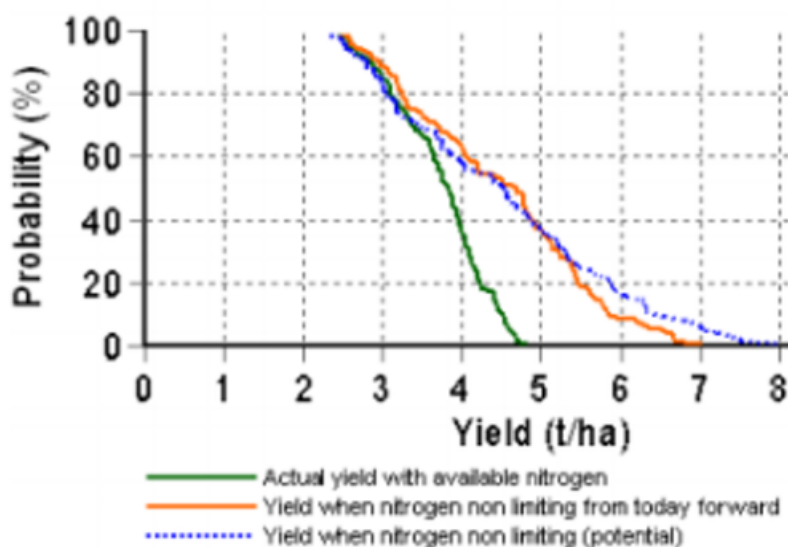


Figure 2: A yield probability curve, the principal output of Yield Prophet.

HELPFUL DEFINITIONS FOR YIELD PROPHET®

Plant Available Water Capacity (PAWC) – The difference between the drained upper limit of the soil and the lower extraction limit of a crop over the rooting depth. It represents the maximum amount of water available to a crop for a particular soil type.

Plant Available Water (PAW) – The amount of water contained in the soil at a given time, minus the crop lower limit.

Growing Season Rainfall (GSR) – Rainfall received between and including April and October.

Decile – A measure of seasonal rainfall on a scale of 1 to 9. For example, in a Decile 7 year, 70% of previous years were drier, while in a Decile 3 year, only 30% of previous years were drier.

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 the full Yield Prophet® reports for UNFS focus paddocks, click the link:
www.unfs.com.au/other-resources/

RiskWi\$e

– the National Risk Management Initiative

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If you are interested in using Yield Prophet® on your own paddocks, **Yield Prophet® Lite** is a free online tool that estimates potential crop yield under different rainfall scenarios and nitrogen application rates. More information is available at:

<https://www.yieldprophet.com.au/yplite>

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