

'Propheta' cropping using seasonal forecasting tools

July 2004 – November 2006



Location: Victoria

Principal investigator

Dr Harm van Rees, Birchip Cropping Group (BCG)

The need

If climate change results in increasing levels of variability in rainfall and temperature, farmers will need to adopt new and innovative methods to survive and prosper. Currently, most input costs in a cropping operation occur upfront at seeding—this is also the time of year when current forecasts have low skill. We need to develop new cropping practices that are more flexible and allow farmers to be more opportunistic as the season progresses in relation to crop inputs, and even consider crop manipulation.

Crop simulation can assist farmers in making better decisions before sowing and during the life of the crop in relation to sowing opportunities, inputs and risk management. Yield Prophet® is a web interface for the crop production model, APSIM. It simulates crop growth based on paddock-specific inputs of soil type, pre-sowing soil water and nitrogen, rainfall, nitrogen fertiliser applications, irrigation and climate data. Using local meteorological records, it can be used to determine the likely impact of management decisions, such as nitrogen (N) fertiliser applications, on crop yield and profit. It is also a valuable tool for evaluating the effect of different climate forecasts (SOI, GESS etc) on potential production and likely income.

How this project fits with MCV objectives

The Yield Prophet, using locally developed APSIM technology, provides Australian farmers with a unique tool for managing crop production systems in a highly variable climate, and results in reduced risk and increased profitability. This is aligned with the MCV objectives to provide farmers with tools and services to better manage climate risk and to increase the adoption by farmers of climate risk management.

Project objectives

The project will increase adoption of climate risk information in Australian farming. Its aims are:

1. to expose members of grower groups around Australia to climate risk management using the FarmBis funded APSRU developed training modules for a) soil resource monitoring, b) seasonal climate forecasts (SCF), c) APSIM simulations, and d) on-line Net meetings
2. to assess, with participating grower groups, the applicability of current and new SCF systems and establish credibility for APSIM simulations as a tool for adding value to SCF in the context of locally relevant issues
3. to create market awareness and demand for climate risk information through active demonstration and regional communication within both extension and commercial networks



Methods

- › We created the Yield Prophet website <www.yieldprophet.com.au>, which enabled farmers and advisers to gain access to APSIM and run online climate risk reports for site specific crops and paddocks.
- › We tested Yield Prophet in detail at the BCG field day sites in Victoria. We established plots to test simulation outcomes, evaluate the effect of seasonal conditions on yield, test forecasts, and review management options for optimising returns. We assessed these on a monthly basis and communicated to BCG members.

Desired outcomes

- › Market awareness and acceptance for a routine commercial service providing delivery of climate risk information
- › The major farm groups in western and southern Australia using SCF tools linked to production modelling, and communicating this to their members and the wider rural community, leading to wider industry adoption of this technology
- › Better farm management decisions resulting in improved bottom lines

Achievements to date

- › Farmer and adviser use of the Yield Prophet

2005 was the third year of Yield Prophet's commercial delivery, and 338 paddocks were subscribed to the service. Subscriptions directly involved 236 growers, 38 agronomic consultants, eight government extension and research officers, and eight grower groups. Users generated 6813 reports from 5 April to 1 December 2005, with most demand experienced during nitrogen top-dress decision-making time in August and September.

- › The 'Yield Prophecy'

We presented the simulation outcomes as a monthly fax out called the 'Yield Prophecy'. For three sites, the fax contained updates for:

- crop performance and likely yield outcome
- current nitrogen and water status
- potential return on additional nitrogen fertiliser inputs
- climate risk assessment and potential outcomes based on the SOI and GESS

The 'Yield Prophecy' was sent to over 500 members of the BCG and to associated farm groups in Victoria, South Australia and Western Australia.

What is left to do?

The Yield Prophet is open for subscriptions in 2006. The website and reporting functions have been revamped and APSIM simulations incorporating SCF tools are now widely available to farmers and agribusiness service providers in southern and western cropping regions.

MCV is a collaborative program between the Grains, Rural Industries and Sugar Research and Development Corporations; the Australian Government Natural Heritage Trust and Department of Agriculture, Fisheries and Forestry; Dairy Australia; Meat & Livestock Australia; and Land & Water Australia. The National Farmers Federation and Australian Wool Innovation Limited are associate partners.

For more information on MCV, visit <http://www.managingclimate.gov.au>
Land & Water Australia is the managing agent for MCV.
Land & Water Australia
Level 1, 86 Northbourne Avenue, Braddon ACT 2612
GPO Box 2182, Canberra ACT 2601
Phone: +61 2 6263 6000 Email: managingclimate@lwa.gov.au

