# WhopperCropper
## Climate data to help you manage risk

The highly variable climate of Australia's northern cropping systems exposes farmers to risk. Variable crop yields, commodity prices and farm incomes threaten the economic viability of these cropping systems and dependent rural communities. WhopperCropper can help you to manage risk.

## What is WhopperCropper?

WhopperCropper is a simple software tool that facilitates simulation-aided discussion of growers' exposure to risk when comparing management decision options. The simulations utilise the 100-year climate record to predict the year-to-year variability in outcomes associated with management options. The charts produced provide insights into the effect of various management inputs in a generic manner. These are learning opportunities for farmers directly or conversation pieces for advisors to use with their farmer clients in relation to the significant decisions they face. The data base of pre-run simulations from the APSIM model captures the power of the crop modelling and climate forecasting capability in a tool that is simple and market-relevant.

## How does it work?

WhopperCropper is a database of pre-run simulations of the APSIM computer model. Combinations of typical management inputs and resource levels such as sowing date and soil water at sowing can be adjusted in the model to suit your own scenario. Simply select your region and enter the parameter levels that are of interest to you Parameter options include: soil water-holding capacity, available soil water , variety, sowing date, sowing density and fertiliser nitrogen. The probability ranges of yield, gross margin and other physical factors can be plotted as required. The effect of SOI phase can also be included in the analysis. Tinker with one or combinations of your input data to see what effect they have on yield probabilities. For example, changes in planting soil moisture and planting date can considerably alter yield outcomes In this way, you can use the simulator to predict how yield probabilities, and hence your risks, change throughout the planting window.

## Multiple crops!

The simulator contains cropping information for a range of summer crops, including sunflower, sorghum and maize. Run the simulator for a range of crops at the same time, to compare yield probabilities of the various crops under the same planting conditions. Again, you can alter your inputs to see how this might affect the yields of various crops.

## Advanced features

Advanced features of the software include calculation of gross margins. Input your own variable costs and price per tonne scenarios to get an output of probable gross margins for the simulation conditions you provide.

Analyse your scenarios by including seasonal climate forecasts or phases of the SOI to get a better prediction of the effect of climate on growing conditions for the current season.
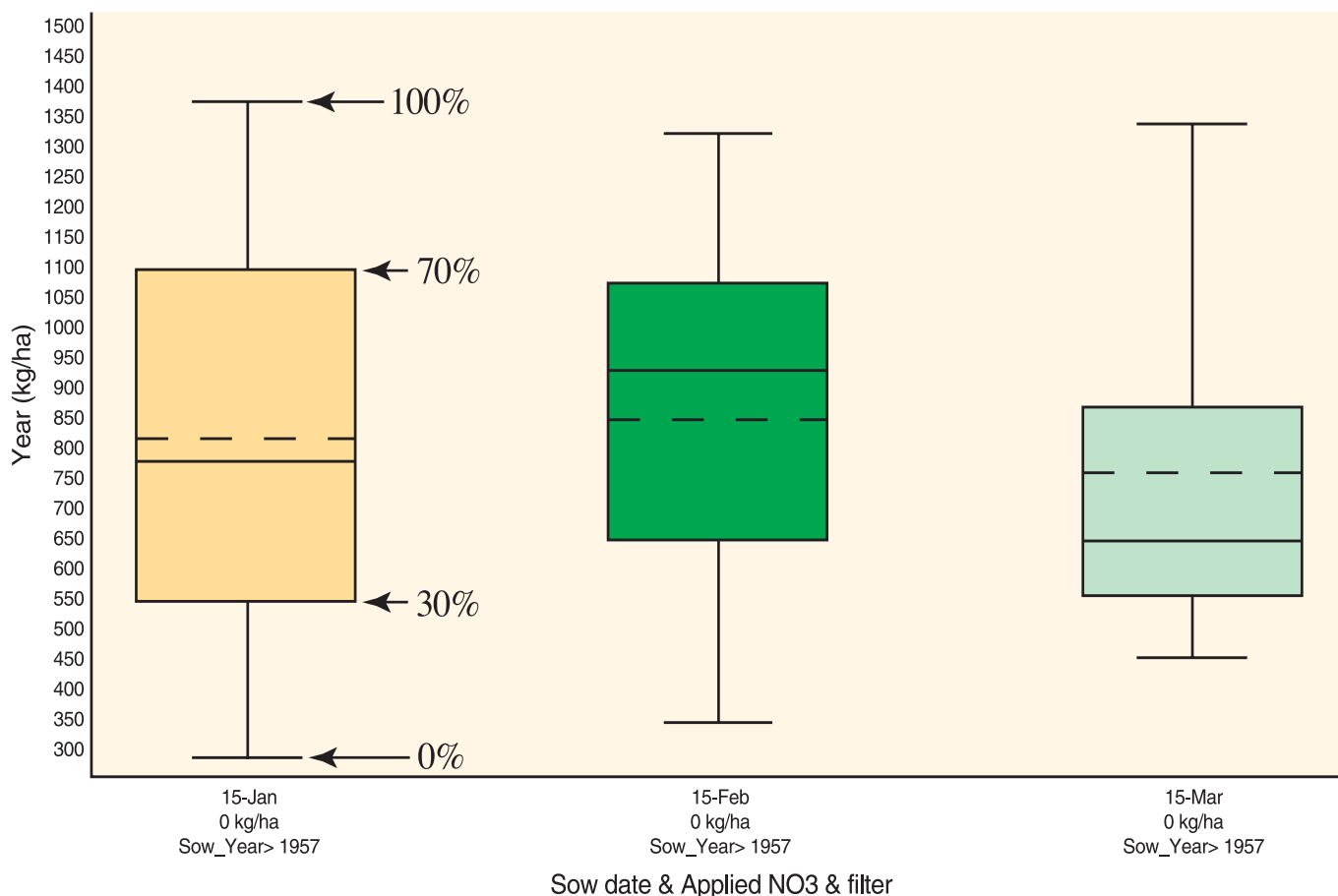
## Who is it for?

The WhopperCropper computer program was intended for use by Extension Officers and Agricultural Advisors, to assist growers with crop choice and crop management decisions. The program is relatively easy to "drive" and could be accessed by individual growers, or through a trained advisor. Whatever a growers choice, the strength of Whopper Cropper is the speed with which a number of management scenarios can be compared, thereby taking at least some of the mystery out of management decisions.

## Who Developed WhopperCropper?

WhopperCropper has been the outcome of many years of crop modelling capability within the Queensland Department of Primary Industries and its subsequent partnership in the joint venture - Agricultural Production Systems Research Unit (APSRU).

This information should be read in conjunction with the regional recommendations included in the infomation pack.

# EFFECT OF PLANTING DATE ON SUNFLOWER YIELD IN THE CLERMONT AREA



## HOW TO READ THESE GRAPHS

The black line is the median yield (50% of all years have this 'yield' or less). The dashed line is the average yield. When the 'average' line is above the 'median' line it means that a few high-yielding years have occurred that has increased the average.

The upper edge of the 'box' is 70% probability. This is read as "In 70% of years, yields will be less than this yield'. The lower edge is the 30% probability value ie. "In 30 % of years, yields will be less than this". The upper and lower short horizontal lines represent 100% and 0% probabilities respectively.

The above graphs show a wide range of potential yields for three different planting dates, 15th January, 15th February and 15th March. Notice that the range of yields is greatest, 300-1100kg/ha, for a January plant, and that while yield probabilities are similar for January and February plantings, the potential for yield is better for a February planting. i.e. in 40% of years, yields range from 650-1100kg/ha for a February plant, a hundred kg greater than for a January plant where the range is 550 - 1100kg/ha. The March planting generally results in lower yield probabilities. Note that this scenario may be quite different with changes to the assumptions, such as starting moisture, fertilizer, varieties, sowing density etc.

**Note:** There are several other graph types in WhopperCropper that can be used to get a different perspective on the analysis.