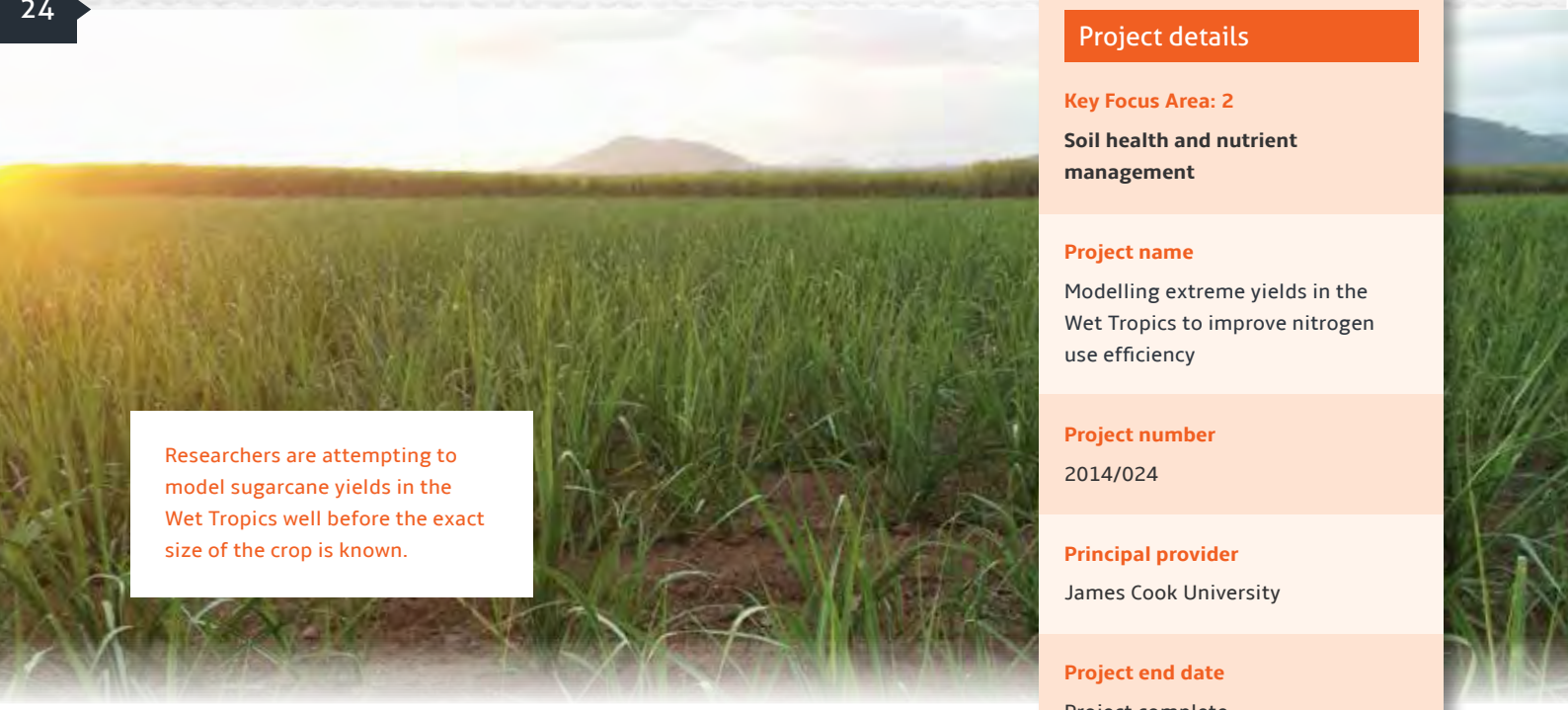

Researchers are attempting to model sugarcane yields in the Wet Tropics well before the exact size of the crop is known.

Project details

Key Focus Area: 2

Soil health and nutrient management

Project name

Modelling extreme yields in the Wet Tropics to improve nitrogen use efficiency

Project number

2014/024

Principal provider

James Cook University

Project end date

Project complete

Early crop forecasts could help improve nitrogen use efficiency

New research in the Wet Tropics is looking at how climate models and the La Nina weather pattern can help predict the size of the crop for the coming year. ***By Brad Pfeffer***

Sugarcane growers, millers, and the greater industry in the Wet Tropics could be a step closer to earlier and more accurate predictions of the size of the coming crop, following recently completed research.

Researchers at James Cook University (JCU) over the last year have investigated a project for the Tully region that looked at modelling the size of the sugarcane crop for the subsequent year.

The researchers undertook the project with the hope of using climate forecasts and models to predict the size of the next year's crop.

By having a more accurate September forecast, this would potentially allow farmers to consider this forecast when making their nitrogen fertiliser application in spring, and therefore increase their nitrogen use efficiency.

The more common attempts at modelling cane yield for the region have usually only started to be acceptably accurate in the early months of the year, and even forecasts in December have been treated cautiously.

But the intent of the research, which was funded by SRA, was to see if crop yield predictions could be brought forward by several months, which would therefore create useful opportunities for crop management.

Chief investigator of the project Dr Yvette Everingham said that having an idea of the crop size in September for the next year could create opportunities to adjust fertiliser rates accordingly.

The research used various climate forecasts and information including the Southern Oscillation Index, as well as historic yields for the Tully region in tonnes per hectare.

The model demonstrated good skill at forecasting extremely low yields as at September 1, but it was challenged to forecast extremely high yields at this time.

"In a La Nina year, we have the skill to say if we are more likely to have a below average crop, or a far below average crop," she said. "In a La Nina year you don't get the radiation and also tend not to have the right combination of rain, temperature and radiation over the growing season," she said.

Therefore the model is currently geared toward predicting lower crops – which in turn would mean decisions around growing and fertilising a smaller crop, milling a smaller crop, and selling it as well, including forward selling.

She said that the model was specific to the Tully region, and research would be needed if it were to be adapted for other regions.

"Tully was chosen because it experiences the largest variability in rainfall in the world, and when you have those large swings in variability this tends to give better predictions."

She has a simple message for growers. "In La Nina years the opportunity exists to reduce the N rate to suit a smaller crop. On the flipside, big crops can still occur when the model predicts a small crop so this uncertainty must be managed."