

Variable N application in practice

Cleave Rogan now has two years experience in applying fertilisers at variable rates in irrigated cotton and is moving ahead in leaps and bounds.

He began in the 2003–04 season on 500 hectares of his St George farm, varying the rate of Big N applied.

He had found crop growth rates and yields were generally higher at the tail drain end of the paddocks and lower at the head ditch end — caused by the gradual leaching of nitrogen down the paddock.

Armed with yield map and soil test information going back five years, he created two to four zones per paddock and varied the nitrogen applied as Big N by up to 30 kg per hectare. In an outstanding year for yields across the farm, the results were impressive.

“Where rates were varied four times across the paddock, the crop was even from head ditch to tail drain,” said Cleave. “It was so even that I didn’t need to apply any Pix to those paddocks.”

The variation in yield across the zones in these paddocks was tiny. In one representative paddock, the lowest yielding zone produced 10 bales per hectare and the highest yielding zone 10.2 bales per hectare.

“In the paddocks where two variations were used, it wasn’t quite enough. We still had rank cotton at the bottom and shorter crops at the top.”

The variation in these paddocks was still minimal, with yields in one representative paddock varying from 9.1 to 10.2 bales per hectare.

“Before I started using variable rates, it wasn’t uncommon for yields to vary from seven to 10 bales per hectare across the paddock,” said Cleave.

GOING FURTHER

The major improvement led Cleave to go further in 2004–05. He planted 850 hectares of irrigated cotton and used variable rates of fertilisers across all of it. Most paddocks were split into five zones from head ditch to tail drain, with the zones based on soil type, soil test results, paddock history and previous yield results.

And this time, his starter fertiliser was applied at variable rates as well, adding another layer of planning.

His Granulock ST-Z and potash blend was applied at rates from 70 kg per hectare to 40 kg per hectare. Big N was applied at rates from 230 kg per hectare down to 145 kg per hectare.

“While all the cotton yielded very well in the 2003–04 season, I wanted to go further and grow a more even crop that would be easier to manage,” said Cleave. As harvest approaches, Cleave is quietly optimistic about the results.

His experience highlights the need for detailed soil, paddock and crop history information before using variable rate application to fine-tune crop management.

In fact, his advice to cotton growers interested in pursuing variable rate application of nitrogen is to start with yield mapping, then arrange EM surveys or bare soil aerial photography to show different soil types.

“Looking for the causes of yield responses or reductions is the first step. The rest will follow,” he said.

WATER USE EFFICIENCY


Three to four years ago, Cleave would have said variable rate application of fertilisers was his main focus in working towards getting better results across the farm. Now, he’s turning to water use efficiency.

“The area planted to cotton has been reduced in the past few years due to limited water and it has really but the focus on water use efficiency,” he said.

“It’s about knowing when it should be applied, how much water is applied to the paddock, how long it stays on the paddock and how much is coming off to optimise flood irrigation.”

Cleave relies on his local Incitec Pivot Dealer, Queensland Cotton, SciAg and Incitec Pivot’s Big N field service team for technical and agronomic assistance.

A Viper from Raven Industries is used to apply variable rates of Big N and starter fertiliser simultaneously. It works with his existing Raven flow controller to offer multi-product variable rate application.

“I’m down to a single screen in the cabin of the tractor, which is great,” said Cleave. 



Cleave Rogan’s cotton was planted with variable rates of Big N and variable rates of his starter fertiliser, a Granulock ST-Z and Muriate of Potash blend this year.