



Burdekin canegrower Chris Lyne.

## On the hunt for improved NUE options

*A background in split fertiliser application in other industries has led Burdekin canegrower Chris Lyne to investigate enhanced efficiency fertilisers. By Brad Pfeffer*

Burdekin sugarcane grower Chris Lyne has seen record-breaking yields this year, but he also knows that profitable and sustainable farming is about more than billets through the elevator.

That is why MH Premium Farms, where he manages the property, have been an enthusiastic participant in trials looking at Enhanced Efficiency Fertilisers (EEF's). The on-farm work is part of Project Catalyst and run by local private agronomy company, Farmacist.

According to Mr Lyne, there were two main driving motivations for their desire to learn more about these relatively new fertiliser products.

"First, as a business we have to be profitable, but we also need to do it sustainably, and that means looking after the environment and looking at the future," he said.

The trial is looking at products such as Entec and Agrocote in comparison to conventional urea and 2016 is the second year of the trials. The trial is in Q183<sup>0</sup> with six different treatments: 220N urea; 180N urea; 180N Entec; 180N (75 percent Agrocote, 25 percent urea); 180N (50 percent Agrocote, 50 percent urea), and zero N.

These treatments are replicated three times across the paddock.

After the first year of results, Chris said that the economics of the conventional urea versus the new generation fertiliser was comparable, but they were using less fertiliser.

"The preliminary indications are that we can reduce our fertiliser from 220 units of N down to 180 units and still get the same yield," he said.

"The cost is then the same because although the Entec is more expensive, the reduction in fertiliser makes up the difference. Economically we are neutral, but environmentally we are putting on 40 units less of nitrogen."

He said the investigation was about environmental responsibility, and also about being conscious of other issues such as regulation around water quality.

Mr Lyne was also tempted to investigate the enhanced fertilisers after his experience in the cotton industry. Having split nitrogen applications in the past for that crop, as per normal practice, he was keen to investigate options for sugarcane.

The size of cane and its rapid growth created challenges that eventually led him to controlled-release fertilisers as a path for investigation, rather than split application.

SRA is currently investing in several research activities that are looking at controlled-release fertilisers.

This research is assessing whether these products can reduce nitrogen losses such as those occurring through runoff, into the atmosphere, or through leaching.

A crucial aspect of ensuring the products could provide value is matching the release of the fertiliser to the needs of the crop.

Given that EEF's are generally more expensive than traditional fertiliser, the research is targeting the question "where and when will they make a difference?".

In addition, a number of other trials and research is occurring across the industry.

Jayson Dowie with Farmacist said that Chris's trial was one of a series of 12 that is in place across the Burdekin across different soil types – four on sand, four on loam, and four on clays – and different fertiliser application times through the harvest season. "Soil type and timing of application such as early, mid or late can have different outcomes on lost pathways," Jayson said.

Back on farm at Ayr, and Chris Lyne also takes a proactive approach to the farming system for the 500 hectares of cane production.

They run a controlled-traffic system and usually plant soybeans at the end of the crop cycle.

"We irrigate after the harvester has been through, followed by a bed renovator to flatten the top, and a ripper machine through the middle of the bed," he said.

"We then plant soybeans on the side of the bed and harvest for grain at the end of May or early April. Hopefully there is still plenty of moisture in the bed and we will go through with the same bed renovator and then plant cane straight into that."

Blocks are soil tested at the end of the soybeans ahead of the next crop cycle. Cane yields this year have been as high as 210t/ha for plant cane KQ228<sup>ϕ</sup>, along with first ratoon of 176t/ha and second at 160t/ha, all of the same variety.

"And it has all been going mill average sugar, so it is pleasing to see we are not substituting tonnes for sugar and that we are still getting good results."

They grow between 40-50 percent KQ228<sup>ϕ</sup>, with other varieties including Q208<sup>ϕ</sup> and Q183<sup>ϕ</sup>, as well as recently planting a large paddock of Q240<sup>ϕ</sup>.



**Left:** The flumes that measure N loss through the irrigation events on the farm.

**Below left:** An aerial view of the trial site.

**Below right:** Preparing for the trial.

*Photos courtesy of Farmacist.*

