# Enhanced efficiency fertiliser trials rolling out on a major scale

*A major collaborative project is underway assessing the role of enhanced efficiency fertilisers in the sugarcane farming system.* ***By Nick Hill, SRA, Mackay***

Enhanced efficiency fertilisers (EEFs) consist of two main types: nitrification inhibitors and coated products.

Nitrification inhibitors maintain nitrogen (N) in the ammonium form which is available to the crop but is less likely to be lost than nitrate. Coated products delay N release based on the properties of the coating and, ideally, the timing of N release from the product is matched with the timing of N uptake by the crop.

EEF products potentially improve nitrogen use efficiency (NUE) which may result in increased yield or the ability to reduce fertiliser rates.

However, further validation and demonstration is required to determine where and when they are likely to work and the benefits that they offer to the sugarcane industry.

The EEF60 project is looking to assess the benefit of EEFs at 60 sites within Queensland's major cane growing districts. Funding for this project is provided by the Commonwealth Department of the Environment and Energy (Reef Trust 4), and the Queensland Department of Environment and Heritage Protection.This project was awarded to Queensland CANEGROWERS with trial activities to be managed by SRA. A range of agencies, including productivity services organisations, are providing extension support.

SRA, in conjunction with local extension providers and collaborators, has identified, and is in the process of establishing paddock scale strip trial sites across Queensland to identify the benefits of EEFs over a three-year period with trial site activities concluding in 2020.

At each trial site, four N treatments are being applied:

1. SIX EASY STEPS N rate using urea;
2. 80 percent of the SIX EASY STEPS N rate using urea;
3. 80 percent of the SIX EASY STEPS N rate using a 1/3 nitrification inhibitor and 2/3 polymer coated urea; and
4. A wildcard treatment, which is any EEF at 80 percent of the SIX EASY STEPS N rate. Thus far these have included: Entec® and Entrench® and Urea and polymer coated blends.

Sites also include small zones with no N fertiliser to determine the amount of N available from the soil.

Activities at each site include: soil coring to one metre to identify current nutrient status and characterise the site; development of trial site and whole of farm nutrient plans; fertiliser application; in-crop monitoring of N uptake; and, assessment of the impact of the treatments on cane yield, CCS and sugar yield through commercial harvesting.

Economic analyses and an assessment of NUE will also be performed.

Industry will be kept informed of trial outcomes at project events and via general extension materials, as well as from CANEGROWERS and SRA.

Burdekin grower, Joe Linton, has one of the 60 trials on his property at Home Hill and is looking forward to learning more about EEF technology and how it could deliver efficiencies for his business.

He already uses the SRA SIX EASY STEPS nutrient management guidelines and added that he had a focus on finding the most efficient way possible to grow the crop.

"EEF products have been identified as one way to do that," Mr Linton said. "I have also looked at a number of alternative fertiliser options, but at this stage this technology sits well within the current thinking of cane growing."

**Below (left inset):** SRA Research and Adoption Officer, Nick Hill, at the establishment of Joe Linton's trial site in September. It has been a busy few months for the research team as the 60 sites are established across Queensland.

**Below (right inset):** SRA Technician Prakash Adhikari establishing the trial with Joe Linton, who is keen to learn more about EEFs and how they fit into his farming system.

**Opposite:** Burdekin Extension Officer on the project Jasmine Connolly, BPS, with Nick Hill, SRA, and Prakash Adhikari, SRA.

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