

Poster paper

Commercial evaluation of a novel fertilisation technique to improve farm profitability and water-quality outcomes

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Traditionally, the fertilizer requirement for a ratoon sugarcane crop is applied as a 'one-shot' application shortly after the crop starts to emerge. This technique of applying the entire crop's nitrogen requirement at such an early stage of crop development increases the chance of loss to the environment through different loss pathways.

After attending an event sponsored by Grains Research and Development Corporation that highlighted that the peak demand for nitrogen in the sugarcane crop was 100-200 days after harvest, Chris Russo thought of a novel approach of applying nitrogen fertilizer - a 'Nitrogen Bar' that is easily interchangeable with the spray boom on a high-clearance self-propelled spray rig. Funding assistance was sought from Reef Trust III to assist with the build.

A commercial-scale replicated field trial was established to validate this proof of concept. The trial was established on a harvested plant-cane paddock of Q240^ϕ and a basal application of 100 kg potassium/ha and 40 kg nitrogen/ha was applied at the traditional time of application. The treatments were: T1 N40, where only the basal rate of nitrogen was applied; T2 N160, where another 120 kg N/ha was supplied the same day as the basal application; T3 N120 where another 80 kg N/ha was applied the same day as the basal application; treatments T4, T5 and T6 where nitrogen was supplied as the basal application and additionally as liquid 'Easy-N' at the rates of 120, 80 and 60 kg N/ha, respectively, 100 days post-harvest via the 'Nitrogen Bar'.

First-ratoon yields showed no treatment effect on cane yield or CCS. Gross margin analysis showed a \$40/ha improvement between the standard application technique and the Nitrogen Bar for the 160 kg N/ha treatments (T2 and T4, respectively). However, this value was not statistically different ($P=0.05$).

We consider that this technique has merit and suggest that the treatments need to be reinstated for the entire crop cycle to effectively evaluate the merit of the 'Nitrogen Bar' as a means of improving nitrogen-use efficiency.

Key words Split fertilizer application, nitrogen-use efficiency