Building knowledge of farming practices and their impact on water quality

Figure 1 Justin Muscat with his fertiliser applicator.

The Mackay-Whitsunday Cane to Creek project undertakes trial work to measure end-of-paddock water quality run-off from common farming practices. Farming practices to be compared are selected by growers or the Cane to Creek project team and currently have minimal or non-existent water quality data and are evaluated against productivity. Results from the trials will allow growers and agronomists to select farming practices that maintain or improve productivity and are beneficial for the environment, specifically local creeks and inshore waters.

Trial site selection and setup

Trials were set up over three sites throughout the Mackay region, containing six strips with each strip being five to six rows wide and treatments being replicated two or three times per site. Trial sites were selected based on the characteristics of being well drained, low flooding potential, minimal side slope and accessible during all weather conditions.

Run-off water leaving the paddocks during rain events was automatically collected using water monitoring equipment set up at each strip along the trial sites. Samples were subsequently analysed for nutrients, insecticides, and herbicides.

> *"Grower support and assistance was essential to the water monitoring effort as the water sampling equipment and rigour with treatment application are inconveniences for the grower."*
> *– Matt Schembri, Project lead.*

Support from a local grower

Justin Muscat, a local grower from the Pioneer Valley and LiquaForce contractor provided a paddock on his Dows Creek farm where a trial site was established.
At the Dows Creek site (Year 2), a liquid fertiliser/imidacloprid mix was compared to granular fertiliser/liquid imidacloprid application applied to best practice.

Trial results

In year 2 at the Dows Creek site, the sub-surface applied liquid fertiliser showed slightly lower DIN run-off concentrations (0.43 mg/L DIN) than the sub-surface applied granular fertiliser (0.51 mg/L DIN) during the first run-off event. Both fertilisers DIN run-off concentrations were comparable during the second run-off event (0.01 mg/L DIN).

In year 3 of the project at a trial site on Reliance creek, sub-surface applied liquid fertiliser showed lower DIN run-off concentrations than the sub-surface enhanced efficiency fertilizer (EEF) over the measured rainfall events as shown in Figure 2.

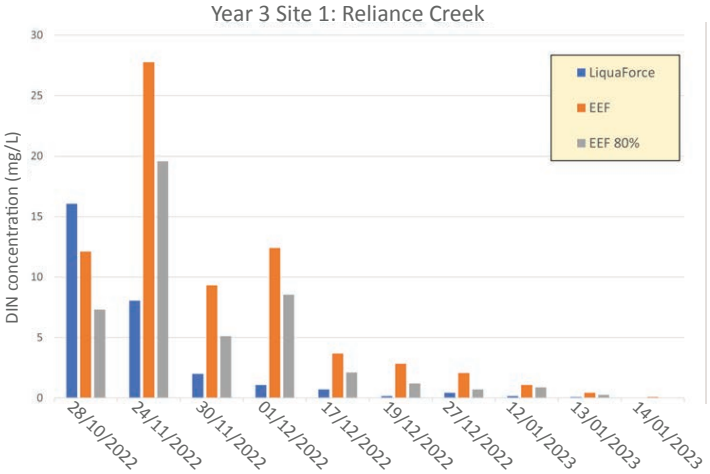

Figure 2 Results from Reliance Creek (Year 3)

Final year's trials

During the final year of the project the Cane to Creek team will undertake trial work to measure, DIN run-off in presence of banded mill mud in ratoons, mechanical incorporation of residual herbicides and liquid imidacloprid v suSCon at planting.

Further results and information

For more information on the results of Liquid from the Cane to Creek project or other trial work being undertaken in the region please visit:

https://sugarresearch.com.au/research/mackay-whitsunday-cane-to-creek/

or visit CaneRise at:
https://www.canerise.com.au/projects/cane-to-creek

The Mackay Whitsunday Water Quality Program began in 2020 and is now in its final year with many projects being completed or in their final stages. While the program is no longer accepting new growers, there is much to be learned from the wealth of experienced and data gained along the way.

The Mackay Whitsunday Regional Water Quality Improvement Program is funded by the partnership between the Australian Government's Reef Trust and the Great Barrier Reef Foundation.

Australian Government | Reef Trust | Great Barrier Reef Foundation | Sugar Research Australia | Reef Catchments