



Case Study

Enhancing Soil Condition for Improved Nitrogen Use Efficiency (NUE)



LANDHOLDER	Dale and Karinda Anderson
LOCATION	Calen
CATCHMENT	St Helens
RAINFALL	Average 1460mm/year
PROPERTY SIZE	160 ha
ON-GROUND PROVIDER	Farmacist Pty Ltd Author: Che Trendell

Project Catalyst is a grower led, sugar cane innovation and adoption project that explores, develops and validates farm management practice change to improve the enduring water quality of the Great Barrier Reef.

BROADER ADOPTION VALIDATION & GROWER SUPPORT

Founded in 2009, the project operates in the Mackay Whitsunday, Burdekin and Wet Tropic regions to deliver valued practice change outcomes and develop methods for industry adoption. Under the Broader Adoption and Grower Support program, professional on-ground service providers assist selected growers to adopt and validate appropriate change practices. Service providers continue to monitor implementation benefits and derived environmental performance improvements. Through targeted extension activities, the program seeks to accelerate the uptake and broader adoption of improved farming practices at local, regional and industry levels.



Fig.1 Karinda Anderson (L), Che Trendell (M) and Dale Anderson (R)



Fig.2 Dale Anderson and faithful dog supervising the harvest



●●●● Goal

To improve crop NUE by tailoring ameliorant and nutrient applications to block yield potential.

●●●● Overview

Dale and Karinda aim to use nitrogen (N) fertiliser as efficiently as possible on their farm to increase profitability and reduce losses. They sought to reduce inputs on blocks with poor yield potential.

These areas were identified using farm records/ history, soil test results, and landscape characteristics such as known sodic areas.

The Anderson's investigated the potential of applying fertiliser rates based on farm yield potential rather than district yield potential and adjusted inputs accordingly.



Fig. 4 Stockpile of mill ash to spread on fallow blocks with sodic constraints.



Fig.3 The Andersons use a stool splitter for granular fertiliser application

●●●● Action

During the 2020 season, Farmacist worked with the Anderson's to tailor a nutrient plan with targeted fertiliser rates based on yield potential. Areas with a history of poor production were identified and recommended N rates were reduced.

A focus was also placed on identifying areas demonstrating constraints to growth and adjusted their fallow management accordingly, where practical, in 2020.

A program of lime, gypsum and mill ash was used to improve soil condition. These soil ameliorants addressed low pH, high sodium and/or Aluminum level issues. Improved soil condition improves plant access to nutrients applied and, therefore, nitrogen use efficiency (NUE) is enhanced.

"By improving the soil properties, and applying the fertiliser under the ground, we are giving the crop the best opportunity to take up and use the N and other fertiliser being applied," provided Dale.

●●●● Outcome

A nutrient plan that identified yield constrained areas of the farm, and provided recommendations to address these issues, was developed in consultation with Farmacist.

Mill ash, gypsum and lime have all been extensively applied on both fallow and ratoon blocks during late 2020 and early 2021. A variety of products and variation of rates is being used to address different yield constraints and extent of yield impact.

The plan will be updated in 2021 following an analysis of block yield achieved in 2020, and assessments of the coming growing season.

The Andersons recently purchased a spreader to provide greater flexibility and control of ameliorant and fertiliser application scheduling. For further information contact Che Trendell (Farmacist) Mb 0439 588 627.