



# Case Study

## Reduce Nitrogen Application by Introducing an Enhanced Efficiency Fertiliser to the Farm



LANDHOLDER	PCCF2022BAV43
LOCATION	Ayr
CATCHMENT	Burdekin
RAINFALL	936 mm/year
PROPERTY SIZE	512.18 ha
ON-GROUND PROVIDER	Nutrien Ag Solutions (Ayr)

**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.



Great Barrier Reef Foundation



## Goal

To identify whether reductions in Nitrogen could be made by applying enhanced efficiency fertiliser, without incurring productivity penalties and reduce off-farm environmental effects. To introduce the use of enhanced efficiency fertiliser to reduce nitrogen losses on light soils with a low cation exchange capacity, whilst also reducing the nitrogen application rate.

## Overview

The entire nitrogen (N) requirement for a particular crop class is supplied within the first 2-3 months of planting, which means that bulk N is often available at a time when crop demand is low. When unused N remains in the soil, nitrate-N is known to dominate. Nitrate-N is vulnerable to loss via both leaching and denitrification pathways, whereas ammonium-N is not. Use of fertiliser products containing nitrification inhibitors, such as Entec, increases the amount of time that nitrogenous fertilisers remain in ammonium form and therefore reduces losses. This can mean that less nitrogen fertiliser is required while improving the quality of water leaving paddock and reducing environmental effects on the Reef.



Soil Types: Cracking Clay and Sodic Clay



## Action

The Nutrient Management Plan was updated and a replant block was identified as having a very light soil type with a low cation exchange capacity. The potential for loss of nitrate-N on this block is significant.

It was recommended that a product containing Entec, a nitrification inhibitor, be applied at the time of side-dressing. Given that the block is also destined for use as planting material, it was recommended that the application rate of nitrogen be reduced by 40kg/ha, as a means to prevent the incidence of plant lodging.

## Outcome

With support of Project Catalyst and Nutrien Ag Solutions a DIN saving of 1550kg was able to be achieved, and the grower did not have to compromise on crop productivity.

This grower is on a pathway to adopting beneficial and sustainable farming practice changes across the farm. The main focus has been on improving the quality of water leaving the paddock and reducing environmental effects on the Great Barrier Reef.