



# Case Study

## Reducing Nitrogen Application in Sugarcane Plant Crops across the Farm Following Productive Legume Crops



LANDHOLDER	CSMW010012
LOCATION	Koumala
CATCHMENT	Plane Creek
RAINFALL	1500 mm
PROPERTY SIZE	48.90 ha
ON-GROUND PROVIDER	Nutrien Ag Solutions

**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.



Soybean Cover Crop - Failed due to constant rainfall



Soybean Cover Crop - Rainfall event making conditions too wet



Great Barrier  
Reef Foundation



## Goal

To plant and establish productive soybean crops to fallow blocks. Aim to improve returns while reducing Nitrogen fertiliser application to the plant cane crop cycle and gaining associated benefits of soil health, suppression of pest populations and weed establishment. Erosion control and improving the water quality leaving the paddock will also reduce potential environmental effects.

## Overview

The farm is located near Koumala south of Mackay and is situated in the Plane Creek Catchment Area. The farm is dryland having no irrigation and relies 100% on rainfall. The grower is aiming to plant legume cover crops to the 2022 fallow blocks in preparation for the 2023 plant crop. The benefits of planting legume cover crops is that Nitrogen requirements can be reduced in the subsequent plant cane. The legume fallow will improve soil structure, boost soil organic Nitrogen, reduce disease pathogen pressure and improve grass weed control. There are two main soil profiles on this farm 1. Bell (Bx) - Black cracking clay - Soil group: Black earth and 2. Koumala (Km) -Yellow duplex soil - Soil group: Yellow podzolic.



Bell and Koumala Soil Profiles



Soybean - Legume Crop

## Action

The sugarcane ratoon block including any weeds were sprayed out using appropriate herbicides. This practice also acted as a preventative measure in lowering weed pressure for any future crops. The block was planted to Soybeans of the variety Leichhardt. The seed commenced germination as good soil moisture was available with follow up showers. The planting of a leguminous cover crop would enable a reduction of nitrogen fertiliser requirements in the subsequent sugarcane plant crop. Adopting this practice change will enable the grower to secure benefits in reducing Nitrogen application without impacting crop yield and achieve immediate cost savings. Soil samples were taken from fallow blocks after ratoon harvest, providing analysis to assess the current nutrient status and soil nutrition requirements. The grower received nutrient recommendations based on 6EasySteps, with an option to reduce the Nitrogen application rate to the plant crop of sugarcane 'IF' the legume cover crop was successful.

## Outcome

An extreme wet weather event occurred in Jan2023 with 600mL of rainfall. Unfortunately the Soybean cover crop was flooded and died out. The grower plans to plant another cover crop when the opportunity arises and incorporate this practice change into his future farm management plans. With the support of Project Catalyst and Nutrien Ag Solutions the grower has adopted beneficial and sustainable farming practice changes across the farm. The main focus being on improving the quality of water leaving the paddock and reducing environmental effects and on the Great Barrier Reef. A DIN saving of 11.5kg was achieved. The Grower has been provided with a compliant Nutrient Management Plan which extends a revitalised BMP approach to farming and the environment. The grower has now applied 3 practice changes and meets the project pathway goal of 2 practice changes in 2 years.