2024

# Case Study

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

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| **LANDHOLDER** | CSMW010013 |
| **LOCATION** | Koumala |
| **CATCHMENT** | Plane Creek |
| **RAINFALL** | 1500 mm |
| **PROPERTY SIZE** | 51.44 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 Crops Panted to Fallow Blocks

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## 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.

Soybean Cover Crops Panted to Fallow Blocks

## 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 three main soil profiles across the farms - 1. Koumala (Km) - Yellow duplex soil, 2. Bell (Bx) - Black cracking clay and 3. Hector (Ht) - Gravelly brown duplex soil

Koumala, Bell and Hector Soil Profiles

## Action

The Grower engaged a neighboring contractor who provided the legume planter and conducted the planting of the Soybeans (Variety:Leighhardt) to fallow blocks across both farms.
Prior to planting the Soybeans the old ratoons were sprayed out using appropriate herbicides. Following the planting of Soybeans an application of pre-emergent herbicides for grasses, broadleaf, and convolvulus vines was made.

The soybeans were then managed to a high yielding healthy crop. The benefits yielded to the grower were to reduce Nitrogen application by 10kg/ha across the 2023 plant blocks without impacting the sugarcane crop yield and reducing fertiliser costs.
Soil samples of the fallow blocks following the 2022 ratoon harvest and prior legume planting, were able to provide analysis of current status of the soil nutrient requirements. The grower will receive recommendations based on six easy steps for the subsequent sugarcane plant crop.

## Outcome

With the support of Project Catalyst and Nutrien Ag Solutions the grower has adopted beneficial and sustainable farming practice changes across his farms. The main focus has been on improving the quality of water leaving the paddock and reducing environmental effects and on the Great Barrier Reef. A DIN saving of 25.8kg was achieved.

The grower has been provided with a compliant Nutrient Management Plan which guides a Best Management Practice approach to farming and the environment. The grower has taken advice that has helped to efficiently manage nutrients in response to their own on-farm conditions, crop requirements and farming practices.

The grower has now implemented 4 practice changes and exceeds the project practice change pathway goal of 2 new practice changes being adopted.

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