



Case Study

Establish Productive Legume Cover Crops and Reduce Nitrogen Application to Subsequent Sugarcane Plant Crops



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|---------------------------|----------------------|
| LANDHOLDER | CSMW010027 |
| LOCATION | Mirani |
| CATCHMENT | Pioneer |
| RAINFALL | 1541 mm |
| PROPERTY SIZE | 268.20 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.



Fallow block - wet conditions delayed fallow planting of legumes



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●●●● Goal

To plant and establish productive legume crops to fallow blocks. To improve returns, reduce Nitrogen fertiliser application to subsequent plant sugarcane crops, gain associated benefits of soil health, suppression of pest populations and weed establishment. To improve erosion control and the water quality leaving the paddock reducing potential environmental effects.



Fallow block - wet conditions delayed fallow planting of legumes

●●●● Overview

The Farm has limited irrigation and relies on annual rainfall. The two main sugarcane varieties grown on farm are Q208 and Q240.

Soybean is the grower's choice of legume cover crop to plant to fallow blocks due to its key features of ability to fix nitrogen, easy to establish and resistance to root lesion nematodes.

There are five soil profiles across the farms. The Topsoil Descriptions of Soil Types are:

- Podzolic: Massive, brown-grey sandy loams.
- Prairie: Well structured, dark brown clay.
- Non-calcic brown: Grey-brown sandy clay loams.
- Solodic: Grey-brown sandy clay loams.
- Soloth: Massive grey-brown sandy clay loams.



Soil Types: Podzolic, Prairie, Non-calcic Brown, Solodic, Soloth

●●●● Action

Based on the Nutrient Management Plan prepared as part of this project, the opportunity to safely reduce N was identified. The reduction was achieved by changing cogs on the fertiliser box and recalibration. This was an easy and effective operation for the grower to conduct with support from Nutrien Ag Solutions.

A 10kg/ha of Nitrogen reduction was implemented on all ratoon sugarcane blocks across the farm.

In the following season there were several challenges including persistent wet days and conditions not allowing access to field which prevented the grower from implementing his second practice change to plant legume cover crops. This delay presents a cumulative effect delaying any associated benefits of reduced fertiliser application rates to the subsequent sugarcane crop.

The second practice change was implemented in the 2024 harvest season following soil sampling of the fallow blocks before planting the cover crops which provided analysis to assess the status of the soil's requirements. The grower will continue to receive nutrient 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 their farms. The main focus on improving the quality of water leaving the paddock and reducing environmental effects and on the Great Barrier Reef.

A DIN saving of 126kg is projected.

The Grower has been provided with a current Nutrient Management Plan which extends a revitalised Best Management Practice (BMP) approach to farming and the environment. The grower now has the latest advice that allows them to efficiently manage nutrients in response to their own on-farm conditions, crop requirements and farming practices.

The grower has now implemented 5 practice changes and exceeds the practice change pathway goal of 2 new practice changes being adopted.



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