



# Case Study

## Plant Legume Cover Crops to Yield Benefits of Soil Health and Reduce Nitrogen to the Subsequent Plant Crop



<b>LANDHOLDER</b>	PCCCF2023BAV52
<b>LOCATION</b>	Farleigh
<b>CATCHMENT</b>	O'Connell
<b>RAINFALL</b>	1705 mm/year
<b>PROPERTY SIZE</b>	197.78 ha
<b>ON-GROUND PROVIDER</b>	Nutrien Ag Solution

**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.



Sunn Hemp Legume Cover Crop Planted to Fallow Block



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## ●●●● Goal

To plant and establish productive legume cover crops across both farms and address soil constraints presented. To utilise the benefits from cover crops of Sunn Hemp and Soybeans to improve sugarcane yield, soil health, suppression of pest and weed populations, reduce the potential for sediment and DIN leaving the paddock.



Sunn Hemp Legume Cover Crop Planted to Fallow Block

## ●●●● Overview

The Grower has two farms located in Mt Pelion north of Mackay and situated in the O'Connell Catchment Area. The farms are irrigated by a low pressure overhead system. Fallow blocks were planted to legume Sunn Hemp cover crops in preparation for the subsequent sugarcane plant crop. From soil sample results high Aluminium (Al) levels were detected on one farm, therefore, it was recommended to plant Sunn Hemp to fallow blocks, which is more tolerant of Al toxicity, and Soybeans to the other. Planting of these cover crops will reduce Nitrogen fertiliser application to the subsequent plant sugarcane crop and deliver benefits of soil health and improve the water quality leaving the paddock.

## ●●●● Action

Fallow blocks on the farm with high soil Al were planted with Sunn Hemp. It was planned to plant Soybean across fallow blocks on the other farm being more suited to the soils. The Sunn Hemp was managed to high yielding and healthy beneficial crops resulting in supply of nitrogen to the subsequent sugarcane plant crop. Final management of the Sunn Hemp cover crops involved rolling and rotary hoeing. Due to seasonal conditions, the opportunity to plant soybeans did not occur, however, plans are in place for this to occur at the end of the 2024 season. It is anticipated that nitrogen supplied by the Sunn Hemp cover crops is fixed to the soil following the decomposition of the cover crop. Soil sample results for the fallow blocks were used in determining fertiliser type and rate for the subsequent sugarcane plant crop. A product known as "Structure" could be applied to the plant sugarcane crop to address the soil constraint of high Al. Structure has a unique reactive carbon technology formulation which buffer against roots taking up undesirable ions eg Al.

## ●●●● Outcome

With the support of Project Catalyst and Nutrien Ag Solutions the grower has adopted beneficial and sustainable farming practice change across his farms. The main focus has been on improving the quality of water leaving the paddock and reducing the potential impact on the Great Barrier Reef. The Grower has made a projected DIN saving of 41.399kg.

The Grower will be provided with a compliant NMP which forms an important part of a Best Management Practice approach to farming and the environment. The grower will have 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 this practice change and meets the project practice change pathway goal of adopting one new practice change on his farm.



Soil Types: Alluvial and Solodic



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