



# Case Study

## Reduce Nitrogen Fertiliser Application to Sugarcane Plant Crops Following Good Legume Crops



<b>LANDHOLDER</b>	CSMW010016
<b>LOCATION</b>	Oakenden
<b>CATCHMENT</b>	Plane Creek
<b>RAINFALL</b>	1500 mm
<b>PROPERTY SIZE</b>	64.20 ha
<b>ON-GROUND PROVIDER</b>	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.



Cowpea Legume Cover Crop Prior Subsequent Sugarcane Crop



Sugarcane Plant Crop - following Legume Cover Crop



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●●●● Goal

To plant and establish productive legume crops to fallow blocks. Aim to improve returns while reducing Nitrogen fertiliser application to the plant sugarcane crop 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.



Nitrogen Reduction to Fallow Plant following a good quality Legume Crop

●●●● Overview

The farm is located in the Oakenden area and is situated in the Plane Creek Catchment Area. Planting of legumes to fallow blocks was a focus across the farm in preparation for the subsequent 2022/23 plant crop. The concept behind legume fallow (cowpea) is that Nitrogen requirements are reduced in plant cane following well nodulated legume crops. The legume fallow improves soil structure, boosts in soil organic Nitrogen, reduces disease pathogen pressure and improves weed control. Planting legumes (cowpea) in the fallow forms part of the Improved Farming System (IFS) strategy and also fits with Best Management Practices adopted on farm. The two main soil types are Solodic and Grey Clay.



Soil Profiles: Solodic and Grey Clay

●●●● Action

Legume fallow consisting of cover crops were planted across fallow blocks on the farm. The legume cover crops were managed to a high yielding and healthy beneficial crop, supplying Nitrogen to the subsequent sugarcane plant crop. Management of the legumes bio-mass involved spraying out following cultivation. Due to good available moisture and perfect environmental growing conditions, the cowpea germinated generating a second crop. Final management of the legume involved spraying out and cultivation in preparation for the subsequent plant sugarcane crops. The nitrogen fixed by the legume is added to the soil following the decomposition of the crop. Soil samples were taken from fallow blocks to assess the current nutrient status of the soil within each of the growers fallow blocks, therefore, assisting in determining fertiliser type and rate. The grower received nutrient recommendations based on 6EasySteps taking into account a good legume crop. A reduction in fertiliser application of 12kgN/ha on plant blocks was implemented.

●●●● Outcome

With the support of Project Catalyst and Nutrien Ag Solutions the grower has adopted beneficial and sustainable farming practice changes across his farm. The main focus has been on improving the quality of water leaving the paddock and reducing the potential impact on the Great Barrier Reef. A DIN saving of 3.21kg was made. The grower has been provided with a compliant Nutrient Management Plan which forms an important part of a Best Management Practice 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 implemented 6 practice changes which exceeds the project practice change pathway goal of "2 new practice changes adopted in 2 years".

Additional changes includes reduction of N by 10kg/ha on late ratoons and changes to mill mud application area and rates.



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