2024

Case Study

Plant Sugarcane Fallow to Legumes Aiming to Reduce Nitrogen Application in Subsequent Plant Sugarcane Crops

LANDHOLDER	CSMW010006
LOCATION	Homebush
CATCHMENT	Plane Creek
RAINFALL	1500 mm
PROPERTY SIZE	38.28 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 Planted to Legume Cover Crop

Old Ratoon Block and Water Samplers to Capture Runoff

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Plant Sugarcane Fallow to Legumes Aiming to Reduce Nitrogen Application in Subsequent Plant Sugarcane Crops

Goal

To plant and establish a productive crop of Sunn Hemp to fallow blocks aiming to reduce Nitrogen fertiliser application to the plant sugarcane crop cycle and deliver benefits of soil health, suppression of pest and weed populations, reduce potential for erosion and improve the water quality leaving the paddock therefore reducing downstream environmental effects.

Fallow Block Planted to Sunn Hemp Cover Crop - under water (after 600mL rainfall event)

Overview

The farm is dryland therefore, the grower will monitor extremely close to weather forecasts to ensure the optimum planting time for legumes.

The grower plans to plant the legume Sunn Hemp to fallow blocks. Fallow managment of blocks will be to ratoon spray-out using knockdown herbicides for grass, broadleaf, nutgrass and vines.
The majority of the farm is planted to Q208 with Podzolic being the main soil type.
Podzolic soils are a sandy clay loam topsoil over a brown clay subsoil. They range from moderately well drained to imperfectly drained depending on subsoil texture and slope. Topsoils are hard-setting and can be prone to compaction.

Podzolic Soil Type

Action

The old sugarcane ratoon block including any weeds were cultivated in. This practice also acted as a preventative measure in lowering weed pressure for any future crops. The block was planted to Sunn Hemp by air seeder and speed tiller and the block was rolled to set the seed. The seed commenced germination within 2 weeks 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 January 2023 with 600mL of rainfall. Unfortunately the Sunn Hemp was flooded and remained under water for a period of time and subsequently 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. 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 practice changes in 2 years.

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