2021

PROJECT CATALYST

Case Study

Soybeans & Tillage Radish Boost Soil Health and Serve as an Additional Source of Nutrients in Ratooning Sugarcane

LANDHOLDER	David Russell
LOCATION	Brandon
CATCHMENT	Burdekin
RAINFALL	948mm
PROPERTY SIZE	41ha
ON-GROUND PROVIDER	BPS

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 bene its 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.

Tillage radish in ratoon cane

Kuranda soybean and tillage radish in ratoon cane

Australian Government | REEF TRUST | Great Barrier Reef Foundation | THE Coca-Cola FOUNDATION | WWF

2021

Soybeans & Tillage Radish Boost Soil Health and Serve as an Additional Source of Nutrients in Ratooning Sugarcane

Goal

To investigate the use of planting soybean and tillage radish into young ratoon cane to help increase soil health and gain beneficial nutrients.

Seed applicator planting Kuranda soybean on the hill

Overview

David Russell's farm is located near the township of Brandon where he farms just over 40 hectares. David has recently become interested in using legumes as a fallow crop in his farm rotation and has implemented this for the last few years. He has now expressed interest in planting legumes on the shoulder of the row in a young ratoon cane block that has historically had issues to see if he can increase his soil health by breaking the cane monoculture. Tillage radish was also an interest of David's in the inter row between his ratoon cane crop to help provide additional nutrients to the sugarcane but to also improve his soil health.

Growth of the inter-row crops before the cane canopy covered in

Action

The trial consisted of three treatments:
1. Soybean
2. Radish
3. Soybean and radish

Each treatment consisted of six rows and was replicated three times randomly across the block. David used his Napier seed planter to spread the companion crop seeds, this was calibrated for each treatment due to the difference in seed size.

He voluntarily reduced his fertiliser nitrogen rate by 70kg/ha to account for the nutrients that the soys would provide. No chemical was used to control for weeds either due to the shade out effect that the companion crops provide.

Outcome

Due to the size of the tillage radish seeds and the plates available, it was difficult to calibrate the seeds to the correct output. Therefore, the planting rate of the tillage radish was quite high and some radish may have competed for space.
The cane will be harvested in July/August 2021 and the treatments will be compared to each other in TCH, CCS and TSH.
We observed that the tillage radish did not grow as large as we expected, we assume this is due to competition for light with the soys and the cane, it may also we due to compacted soil as we saw many tap roots were angled as if they'd hit a hard pan. The soys acted as we suspected, they were elongated and not very this would be due to competition for light.
Overall there may be more work to do with companion planting i.e, calibrating more effectively, placement on the hill and timing.

Australian Government | Reef Trust | Great Barrier Reef Foundation | The Coca-Cola Foundation | WWF