



Case Study

Applying the Six-Easy-Steps (6ES) Recommended Nitrogen (N) Rates to Maintain Yield on High Organic Carbon Soils



LANDHOLDER	Henry Ewart
LOCATION	Koumala
CATCHMENT	Plane Creek Rocky Dam Creek Sub catchment
RAINFALL	1500mm
PROPERTY SIZE	192ha
ON-GROUND PROVIDER	Farmacist Pty Ltd Author: Laura Sluggett

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.



Fig.1 Location soil map highlighting 30% of farm area are high OC soils



Fig.2 Henry Ewart has reduced N inputs on his high organic carbon soil



●●●● Goal

To reduce the risk of N losses by applying the 6ES recommended rates and using high N use efficiency (NUE) sugarcane varieties on high organic carbon soils.



Fig.3 View while harvesting the 2019 High OC Trial site

●●●● Overview

The 6ES framework recommends reduced rates of N on high organic carbon soils. This soil type occurs low in the landscape, making them prone to water logging.

A combination of high soil nitrate from mineralisation of the soil organic matter, and prolonged water logging, results in N being lost in a gaseous form via a biological process called denitrification.

Growers can be apprehensive about reducing N fertiliser rates because of potential yield impacts.

●●●● Action

Farmacist supported Henry to conduct trials from 2018 to 2020.

Three N fertiliser treatment rates were established.

The results demonstrated that the 6ES recommended rate yielded equally against the same fertiliser at a rate 20kg/ha above the recommendation.

This provided Henry with the confidence that the 6ES step rate Farmacist was recommending would maintain his yield on his high organic carbon soils.

In consultation with Farmacist, Henry is investigating NUE sugarcane varieties, such as Q242 or SP80, for his high organic soil areas. These varieties will allow him to potentially reduce his N fertiliser rate again, mitigating N loss further during prolonged wet periods.

●●●● Outcome

The results of this trial provided Henry with the confidence that the reduced 6ES N rate recommended for his high organic soils was not going to impact yield.

He is currently considering new NUE varieties for these areas of his farm.

Henry continues to work with Farmacist to develop his nutrient plans.

Improved drainage is another option Henry can potentially explore in the future.

By mitigating loss of N via denitrification, costly inputs are not wasted and water quality of the local catchment is not impacted.

For further information contact Laura Sluggett (Farmacist) Mb. 0429 474 698.



Fig.4 High OC soils require conventional tillage between crop cycles