

Catalyst Project Report

Grower Information

Grower Name:	Tony Bugeja
Entity Name:	BUGEJA J & J PTY LTD ATF J & J BUGEJA & SONS
Trial Farm No/Name:	MKY-04074B & MKY-04074D
Mill Area:	Mackay
Total Farm Area ha:	324
No. Years Farming:	50
Trial Subdistrict:	Palmyra & Rosella
Area under Cane ha:	256

Background Information

Aim:

To improve nitrogen use efficiency on soils with high yield and moderate organic carbon levels.

Background:

The Walkley-Black wet oxidation technique is the most widely used commercial assay to report soil organic carbon. For the sugar industry, the use of Walkley-Black organic carbon analysis is of significance. The industry endorsed BMP (Best Management Practice) utilises the 'SIX EASY STEPS' (6ES) nutrient management program. This program provides the industry with a set of soil and district-specific guidelines to manage N inputs based on a combination of district yield potential (DYP), organic carbon (%).

In the current 6ES framework, the contribution of N mineralized from soil organic matter available to the crop is based on the soil OC. Results from other sites have indicated a poor correlation between soil-organic carbon levels and potential soil mineralisation.

Because of this reason many growers are apprehensive lowering their Nitrogen rates to 6 Easy Steps level.

This trial has chosen two sites that are consistently high yielding over several years. The trial will compare different rates of N application compared to the 6ES requirements for yields and NUE.

Potential Water Quality Benefit:

Expected Outcome of Trial:

Service provider contact: Farmacist

Where did this idea come from: Grower/Farmacist

<u>Plan - Project Activities</u>	Date : (mth/year to be undertaken)	Activities :(breakdown of each activity for each stage)
Stage 1	August 2018	Harvest paddocks to collect normal paddock yield
Stage 2	September 2018	Apply fertiliser treatments
Stage 3	April 2019	Conduct biomass sampling to assess nitrogen uptake
Stage 4	September 2019	Harvest trials

Project Trial site details

Trial Crop:	Sugar Cane
Variety: Rat/Pit:	2R Q 208 & 1R; KQ 228
Trial Block No/Name:	12-01 & 03-01
Trial Block Size Ha:	7.1 & 7.4
Trial Block Position (GPS):	-21.237854, 149.127842 -21.230092, 149.079841
Soil Type:	Sandiford

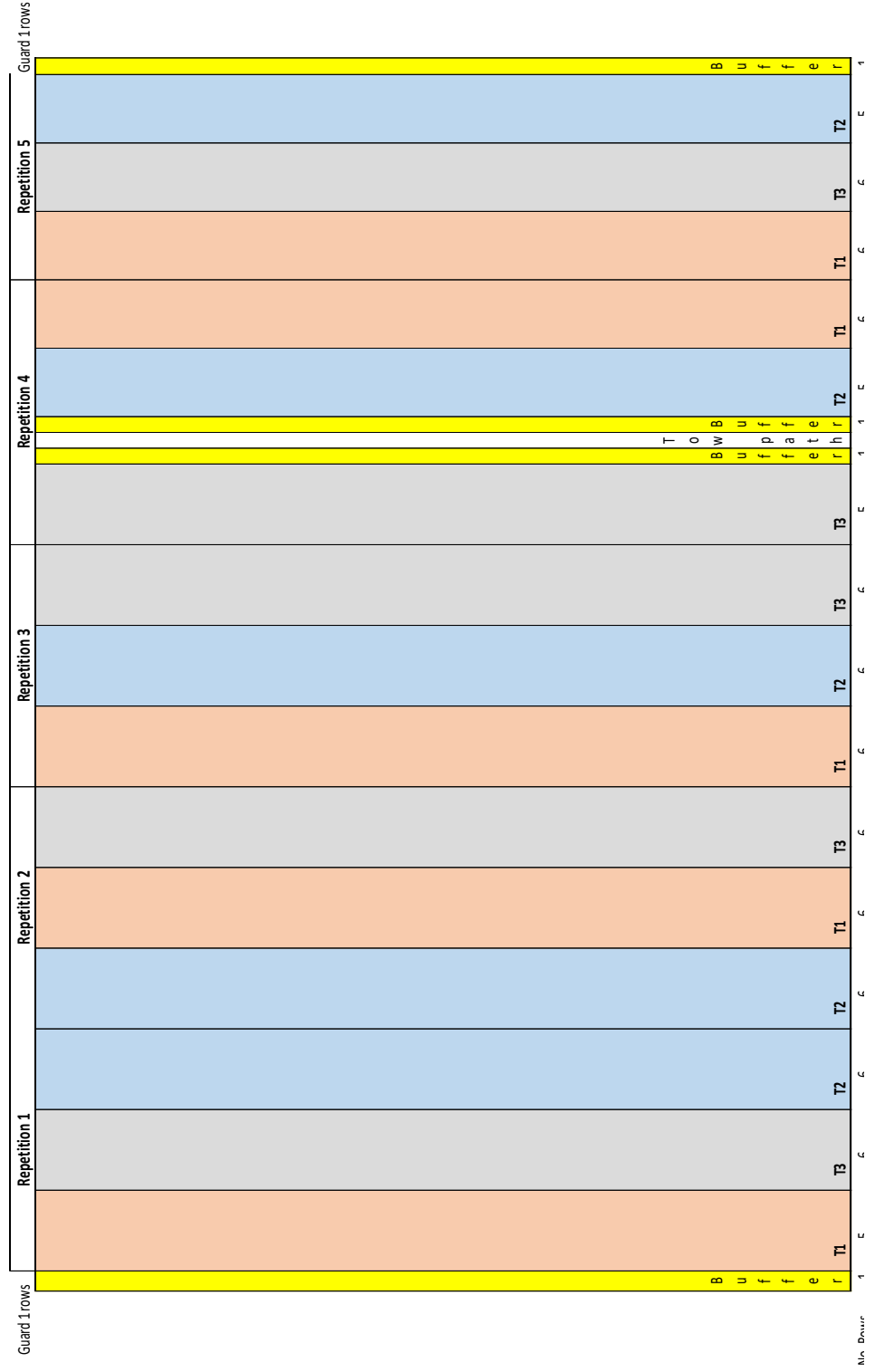
Block History, Trial Design:

Block 4074B 12-1

↑W →N

2018-2019 Catalyst Trial
Tony Bugeja High N rate trial

Location F4074B-12-01
Aim Improve NUE
Treatments



N/A Drive

Block 4074D 3-01

2018-2019 Catalyst Trial
 Tony Bugeja High N rate trial
 Location F4074D-03-01 Q240
 Aim Improve NUE
 Treatments

		Repetition 1						Repetition 2						Repetition 3						Repetition 4						Repetition 5					
No. Rows	1	6ES						6ES + 15%						6ES + 25%						6ES						6ES					
	2	6ES						6ES + 15%						6ES + 25%						6ES						6ES					
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↑ N → E

R e s t o f p a d d o c k #

T o B w B u u f p f f a f e t e r h r T 1

T o B w B u u f p f f a f e t e r h r T 1

B u f f e r T 1

- Treatments**
1. 6ES
 2. 6ES + 15%
 3. 6ES + 25%

Results:

Leaf Sample Results 2019

Leaf samples were taken in March 2019 following the third leaf sampling protocol. Results for both blocks can be found in Figure 1 (Block 12-1) and Figure 2 (Block 3-1) below.

For Block 4074B 12-1 all nutrients, except for potassium, were above critical value, indicating adequate levels of nutrient were present. All nutrient contents were the same across all treatments.

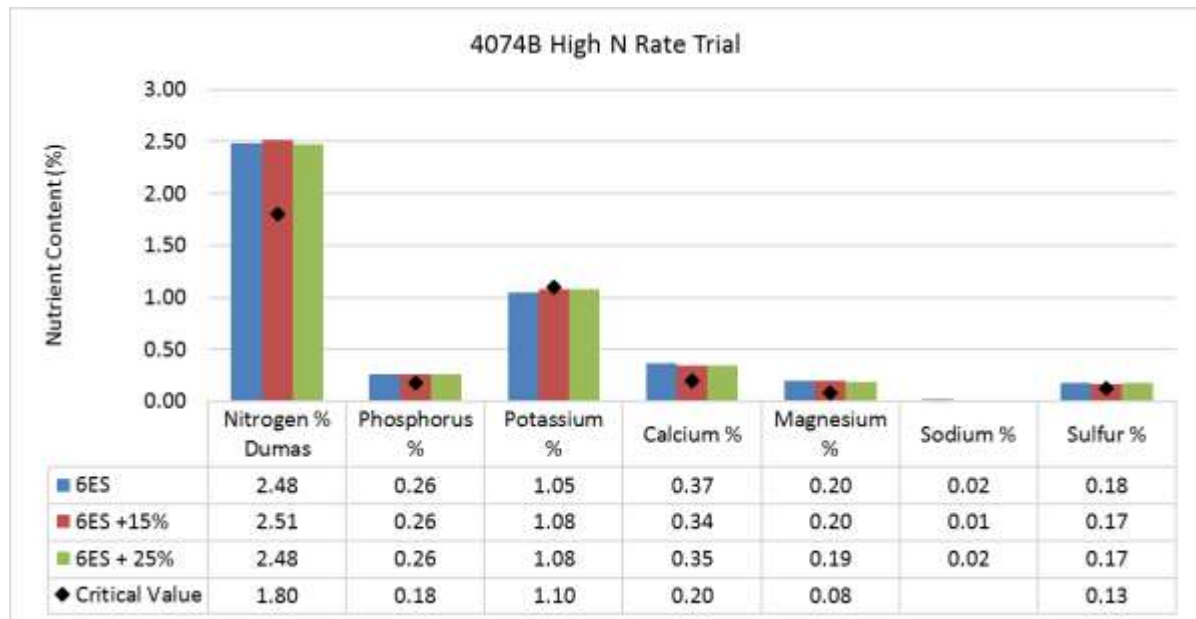


Figure 1 Leaf results 2019 block 4074B 12-1

Results from block 4074D 3-1 showed all nutrients were close to or above the critical values. Nitrogen content in the plant increased as the nitrogen fertiliser rate increased, however this may not necessarily have an impact on final cane yield. All other nutrients remained the same across all treatments.

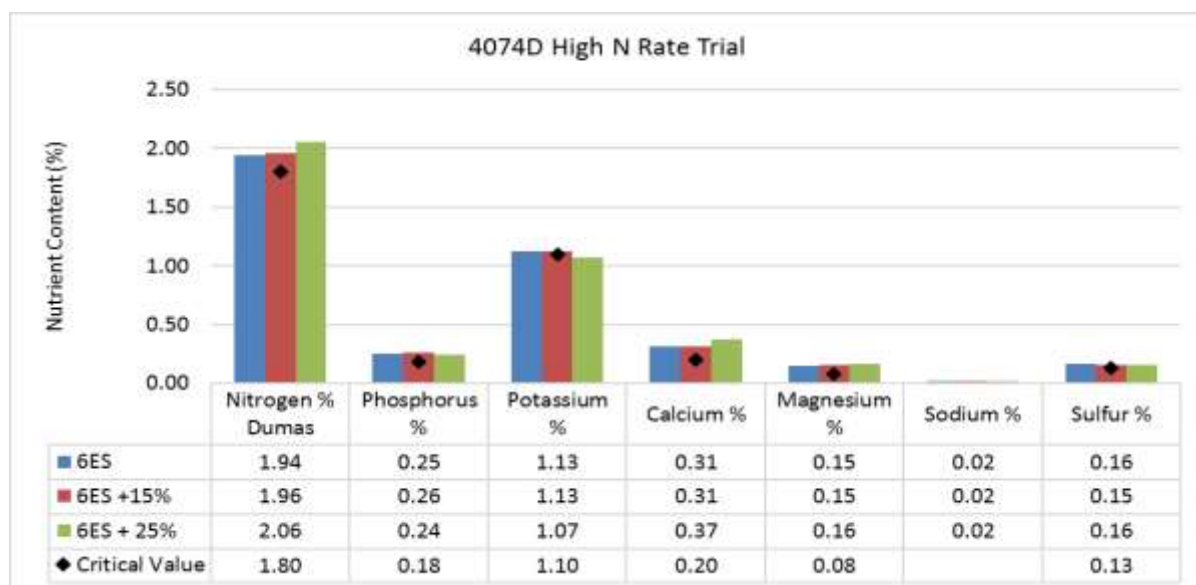


Figure 2 Leaf results 2019 block 4074D 3-1



Conclusions and comments

Established in 2018

Advantages of this Practice Change:

Disadvantages of this Practice Change:

Will you be using this practice in the future:

% of farm you would be confident to use this practice :

