

Catalyst Project Report

Grower Information

Grower Name:	Henry Ewart
Entity Name:	James Andrew & Henry Wilfred Ewart
Trial Farm No/Name:	PCK-00777A
Mill Area:	Plane Creek
Total Farm Area ha:	192
No. Years Farming:	
Trial Subdistrict:	Koumala
Area under Cane ha:	168

Background Information

Aim:

To Evaluate the use of 6 Easy Steps N Rates on High Organic Carbon % Soils that are low in the landscape

Background: (Rationale for why this might work)

Many growers are apprehensive lowering their Nitrogen rates to the new levels of 6 Easy Steps. This project will be used as an Innovation site to compare the 6 Easy Steps Nitrogen rates to traditional grower standard Nitrogen rates, with the aim of increasing adoption levels. On heavy soils that are prone to waterlogging, concerns around high nitrogen loss conditions (waterlogging and denitrification) and low 6 Easy Steps limits are often raised. This trial should highlight that the lower rates of 6 Easy Steps on these soil types are adequate and won't result in any yield losses.

Potential Water Quality Benefit:

Increased NUE and decreased run off.

Provide evidence of positive practice change for growers to decrease nitrogen rates on a large scale.

Expected Outcome of Trial:

All treatments will yield the same

Service provider contact: Farmacist

Where did this idea come from: Farmacist/Grower

Plan - Project Activities	Date: (mth/year to be undertaken)	Activities :(breakdown of each activity for each stage)
Stage 1	October 2017	Harvest crop
Stage 2	November 2017	Apply fertiliser as per trial design
Stage 3	February 2018	Leaf samples
Stage 4	October 2018	Harvest production
Stage 5	November 2018	Reapply treatments
Stage 6	February 2019	Leaf samples
Stage 7	October 2019	Harvest production

Project Trial site details

Trial Crop:	Sugarcane
Variety:	Q240 P
Rat/Plt:	
Trial Block No/Name:	9-3
Trial Block Size Ha:	9.35
Trial Block Position (GPS):	49.228061, -21.611651
Soil Type:	Bell - black, self-mulching, cracking clay

Block History, Trial Design:

	Rep 1			Rep 2			Rep 3			Rep 4			
W	7 rows	7 rows	3 rows	4 rows	7 rows	3 rows	4 rows	7 rows	9 rows	W	3 rows	3 rows	3 rows
F	T 1	T3	T 2	T 2	T 1	T3	T3	T 2	T 1	F	T 1	T 2	T3
U										U			
R										R			
R										R			
C										C			
W										W			

Figure 1 - Trial plan showing treatments and layout

Three treatments were applied to this paddock repeated four times as shown in Figure 1. Treatments were as shown in Table 1.

Table 1 - Treatments, application rates and nutrients applied

Treatment/Product	Rate	N	P	K	S
T1 - DAP	187.5 kg/ha	34	37.5	0	3
MKY150	3.6m ³ /ha	126	0	105	15
Total		160	37.5	105	18
T2 - DAP	187.5 kg/ha	34	37.5	0	3
MKY110	4.0m ³ /ha	104	0	118	16
Total		138	37.5	118	19
T3 - DAP	187.5 kg/ha	34	37.5	0	3
MKY110	4.0m ³ /ha	82	0	111	13
Total		116	37.5	111	16

Results:

2018 Harvest Yield

As shown in Figure 2 and 3 below, the grower standard of 160 kg of nitrogen per hectare achieved slightly lower yields than the lower nitrogen rates, however this difference was not substantial as a large amount of variation was observed. A similar trend occurred in the sugar yield with the middle nitrogen rate (138 kgN/ha) achieving the highest sugar yield.

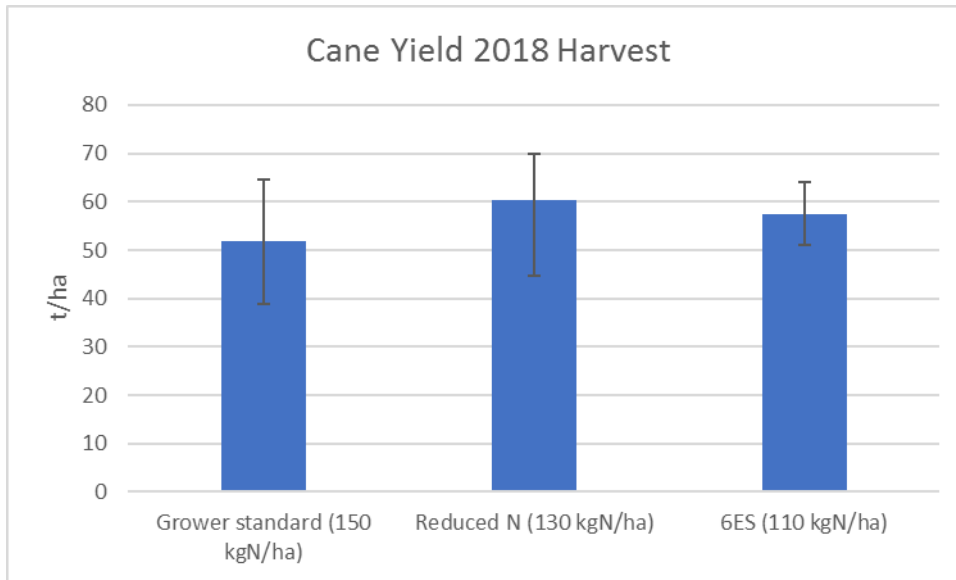


Figure 2 – Cane yield at harvest in 2018

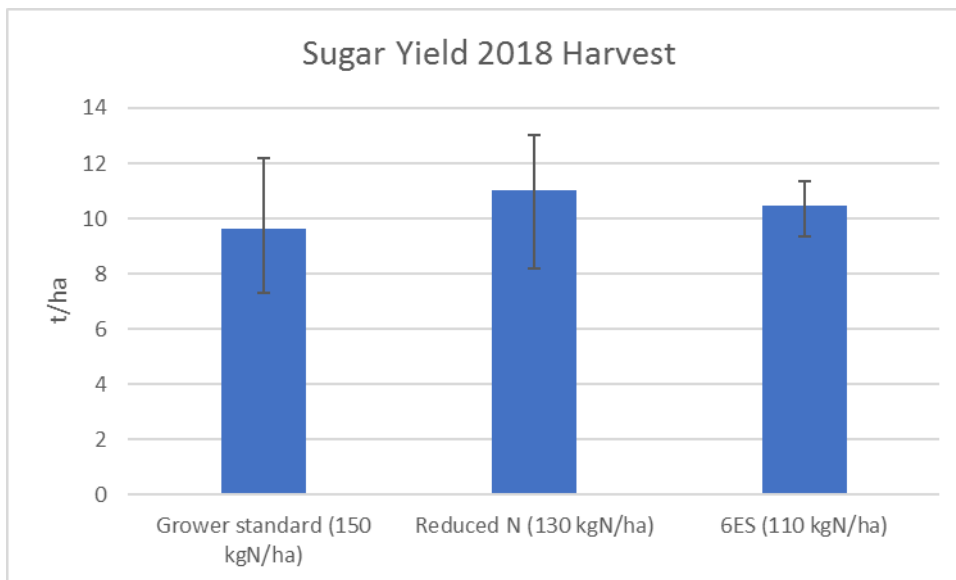


Figure 3 - Sugar yield at harvest in 2018

Biomass samples and nutrient analysis were also undertaken at the time of harvest to assess the amount of nutrient taken up by the crop. Little differences were apparent between the Grower Standard and Reduced N treatments, however the T3 treatment had slightly decreased uptake amounts (Table 1).

Table 2 - Nutrient uptake at harvest 2018

Treatment	Nutrient Uptake (kg/ha)			
	Nitrogen	Phosphorus	Potassium	Sulphur
T1 (160 kgN/ha)	96.1	10.0	78.4	14.4
T2 (138 kgN/ha)	96.2	12.3	101.5	14.9
T3 (116 kgN/ha)	84.4	9.8	67.3	13.1

2019 Leaf Samples

Leaf samples were taken in March 2019 (Figure 4) to assess the differences between nutrient content of plants treated with each nitrogen rate. Most nutrients were present above critical value levels, except for potassium, in all three treatments. This implies that even at 110 kgN/ha, the cane had adequate nitrogen, and it was not restricting growth.

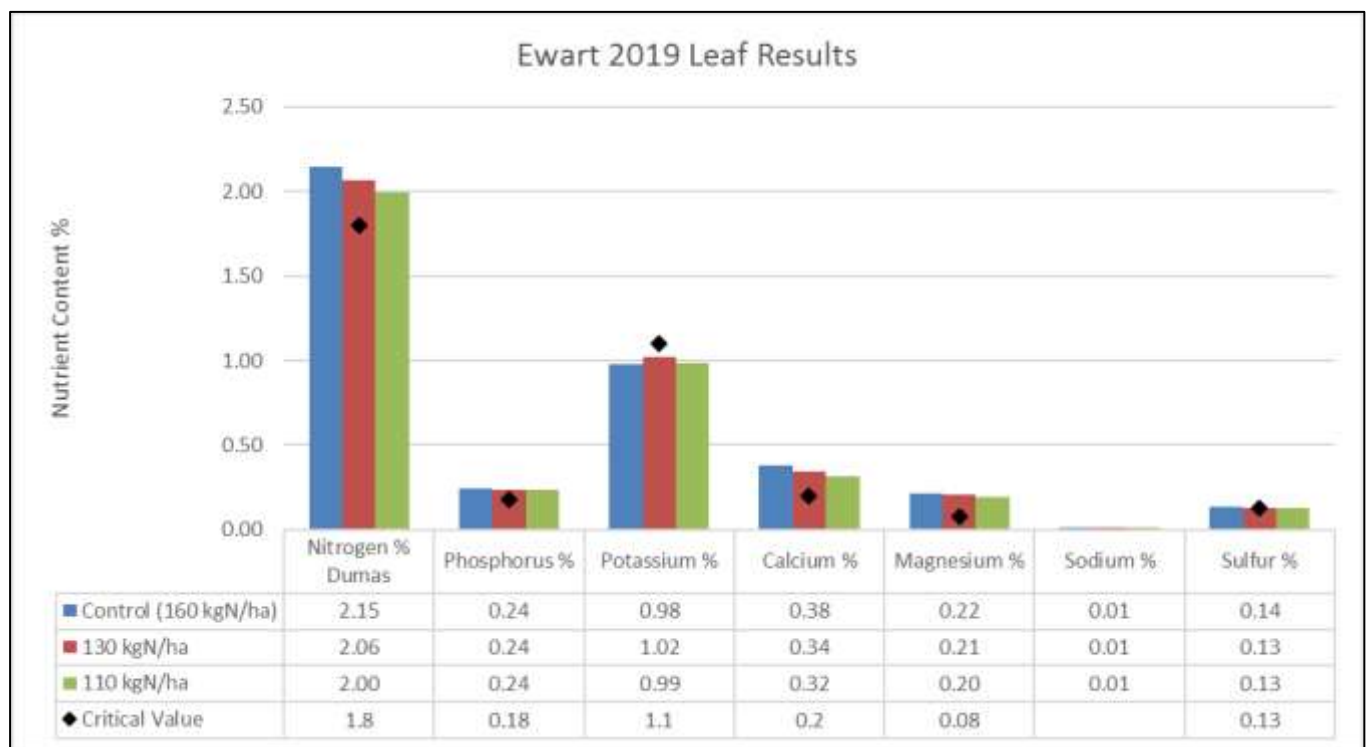


Figure 4 Leaf samples March 2019

Conclusions and comments

Yields across the paddock were reasonably low due to dry seasonal conditions which could have impacted the results, as the cane was not grown to its full potential. This trial should be repeated in ideal conditions where full potential can be achieved to provide a clearer insight to the ideal nitrogen rates.

Overall, the Reduced Nitrogen rate of 138 kgN/ha was the best performing treatment, however the difference was not substantial. More results will be collected in the 2019 season.

Advantages of this Practice Change:

Increased nitrogen use efficiency, leading to less in run off

Disadvantages of this Practice Change:

Risk of yield penalty when conditions are ideal

Will you be using this practice in the future:**% of farm you would be confident to use this practice:**

Project site is continuing 2019