

# Project Catalyst Final Report

## Reducing N rate in Older Ratoons

### **Grower Information**

<b>Grower Name:</b>	Sam Marano
<b>Entity Name:</b>	Myola Farming Co
<b>Trial Farm No/Name:</b>	BKN-02145A
<b>Mill Area:</b>	Inkerman
<b>Total Farm Area ha:</b>	23.1
<b>No. Years Farming:</b>	
<b>Trial Subdistrict:</b>	Iona
<b>Area under Cane ha:</b>	

### **Trial Status**

- Completed

## Background Information

**Aim:** To determine whether reducing fertiliser rates on older ratoons (3R onwards) will maintain productivity, reduce grower costs and reduce the risk of applied nitrogen leaving farms.

### **Background: (Rationale for why this might work)**

Sugarcane is generally a 4-6 year crop, depending on the number of times a grower will ratoon his blocks. As the crop ages, yields also tend to decrease; this may be due to a number of factors. Harvester damage, compaction, soil degradation and soil pathogens can contribute towards yield decline. Due to the crop producing less, it follows reason to suggest that it may also require less fertiliser.

No trial work has been conducted into reducing fertiliser rates on old ratoon (3R onwards) cane; however, anecdotally, there have been a number of occurrences where growers have reduced rates and maintained their normal productivity levels on these blocks – thus saving them money and reducing the risk of nitrogen losses.

The Burdekin currently has two district yield potentials in the 6 Easy Steps Recommendations: 180tonnes of cane per hectare and 150tonnes of cane per hectare. The majority of growers apply fertiliser at 180t/ha yield potential rates on all of their blocks. This project will compare the effect of 180t/ha and 150t/ha 6 Easy Steps fertiliser rates on the yield of older ratoon blocks.

### **Potential Water Quality Benefit:**

If the cane does not require high rates of fertiliser as it ages, the unused fertiliser is at a higher risk of loss through run off and leaching. By reducing rates on these older ratoon blocks, there will be less fertiliser available for loss.

### **Expected Outcome of Trial:**

Applying the 150t/ha yield potential rates to 3<sup>rd</sup> ratoon (and onwards) blocks will not show a productivity loss when compared to the 180t/ha yield potential fertiliser rates.

**Service provider contact:** Billie White (0409 477 359, [billiew@farmacist.com.au](mailto:billiew@farmacist.com.au))

**Where did this idea come from:** Anecdotal evidence suggests that fertiliser rates on old ratoons can be reduce without losses to productivity; this trial aims to show scientifically valid support for this practice.

<b>Plan - Project Activities</b>	<b>Date : (mth/year to be undertaken)</b>	<b>Activities :(breakdown of each activity for each stage)</b>
<b>Stage 1</b>	<b>November 2016 – October 2017</b>	<ul style="list-style-type: none"> <li>- Trial to be implemented on a 3R block</li> <li>- Trial to be harvested and yield data collected</li> <li>- The grower is recording his irrigations for this block</li> </ul>
<b>Stage 2</b>	<b>October 2017- October 2018</b>	<ul style="list-style-type: none"> <li>- Trial to be implemented on a 3R block</li> <li>- Trial to be harvested and yield data collected</li> </ul>
<b>Stage 3</b>	<b>October 2018 – June 2019</b>	<ul style="list-style-type: none"> <li>- Analyse data and reporting.</li> </ul>
<b>Stage 4</b>		
<b>Stage 5</b>		
<b>Stage 6</b>		

## 2016-2017 Project Trial site details

<b>Trial Crop:</b>	Sugarcane
<b>Variety: Rat/Plt:</b>	3R Q208
<b>Trial Block No/Name:</b>	1-3
<b>Trial Block Size Ha:</b>	3.25ha
<b>Trial Block Position (GPS):</b>	19° 41' 52.00" 147° 22' 33.45"
<b>Soil Type:</b>	Loam

## 2017-2018 Project Trial site details

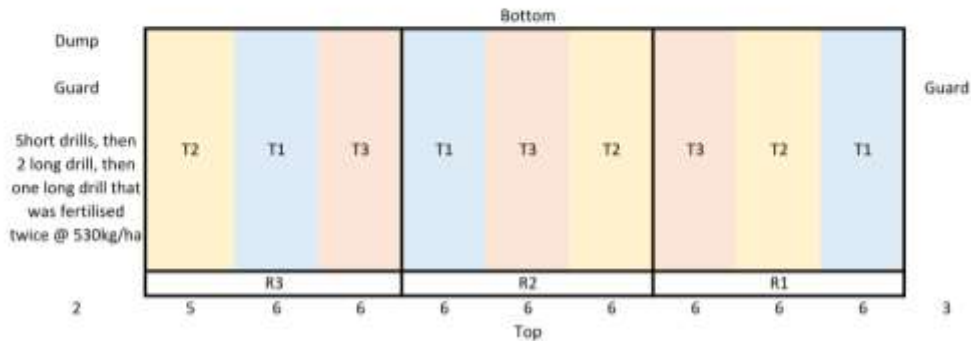
<b>Trial Crop:</b>	Sugarcane
<b>Variety: Rat/Plt:</b>	3R KQ228
<b>Trial Block No/Name:</b>	BKN-01687A Block 5
<b>Trial Block Size Ha:</b>	9ha
<b>Trial Block Position (GPS):</b>	-19.715519, 147.337441
<b>Soil Type:</b>	Clay Loam

## Block History, Trial Design:

The grower only takes his cane to 3<sup>rd</sup> ratoon in his cropping system, thus this trial will need to be reimplemented on a new block each year. The grower rotates legumes with his cane on most blocks.

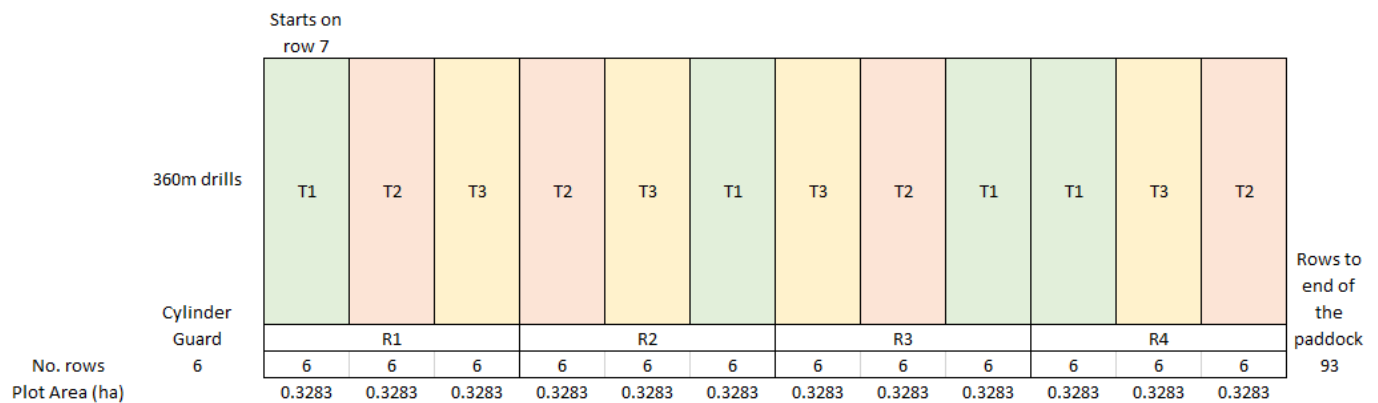
### 2016-2017 Trial Plan:

Sam Marano  
 BKN-02145A  
 Block 1-3  
 Variety Q208  
 Ratoon 3R  
 Date Applied 3/11/2016



### 2017-2018 Trial Plan:

Sam Marano  
 BKN-01652A  
 Block 5-1  
 Variety KQ 228  
 Ratoon 3R  
 Date Applied 8-9/8/2017



Treatment	Product	Rate (kg/ha)	N rate	K rate	S rate	Total Product
1	CK 135 S	710	210	95	25	932.372
2	CK 135 S	610	180	82	22	801.052
3	Urea SS	505	180	0	48	663.166

1 tonne  
1 tonne

### 2018-2019 Trial Plan:

**Treatments:****2016-2017:**

T1 – 210N (Urea SS @ 583kg/ha)

T2 – 190N (Urea SS @ 528kg/ha)

T3 – 170N (Urea SS @ 472kg/ha)

3 Reps

**2017-2018:**

T1 – 210N (CK 135 S @ 710kg/ha)

T2 – 180N (CK 135 S @ 610kg/ha)

T3 – 180N (Urea SS @ 505kg/ha)

4 reps

## Results:



# Soil Sample Analysis Summary Report

<b>Lab Sample Id</b>	<b>21778587</b>
Test Code	FA3
Sample Name	
GPS Name	Sam Marano
Paddock Name	1-3
Sample Depth (cm)	0 - 25
Sampling Date	27/6/2016

Analyte / Assay	Units	
Soil Colour		
Soil Texture		
pH (1:5 Water)		7.01
pH CaCl		6.09
ECSE	dS/m	0.473
EC (1:5)		0.055
Chloride	mg/kg	11
Organic Carbon (OC)	%	0.61
Nitrate Nitrogen (NO3)	mg/kg	
Phosphorus (Colwell)	mg/kg	77
Phosphorus (BSES)	mg/kg	141
PBI-Col		47.1
Potassium (Amm-acet.)	Meq/100g	0.17
Potassium	%	1.22
Potassium (Nitric K)	Meq/100g	
Available Potassium	mg/kg	68.1
Sulphate Sulphur (MCP)	mg/kg	7.7
Cation Exchange Capacity	Meq/100g	14.3
Calcium (Amm-acet.)	Meq/100g	10.27
Calcium %CEC	%	72.07
Magnesium (Amm-acet.)	Meq/100g	3.47
Magnesium %CEC	%	24.37
Sodium (Amm-acet.)	Meq/100g	0.33
Sodium % of Cations (ESP)	%	2.34
Aluminium Saturation	%	0
Aluminium (KCl)	mg/kg	
Zinc (HCl)	mg/kg	1.64
Zinc (DTPA)	mg/kg	0.61
Copper (DTPA)	mg/kg	0.88
Iron (DTPA)	mg/kg	34.6
Manganese (DTPA)	mg/kg	10.05
Silicon (BSES)	mg/kg	495
Silicon (CaCl2)	mh/kg	

Min Max

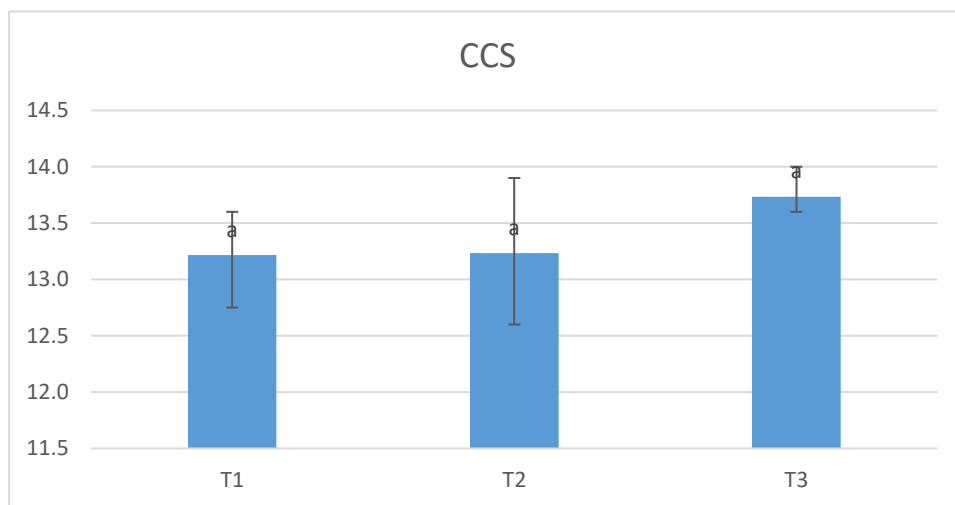
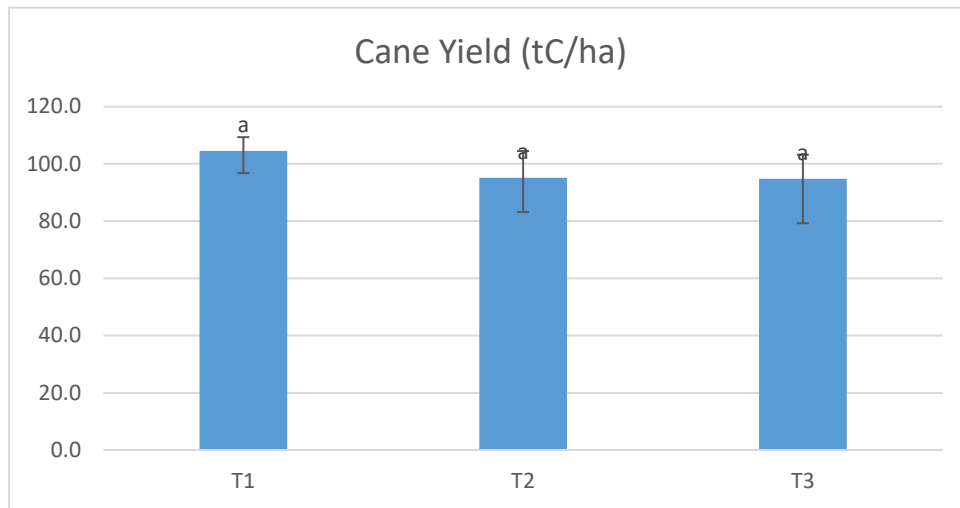
Analyses conducted by Nutrient Advantage Laboratory Services, NATA Accreditation No: 11958

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### 2017 Harvest Results:

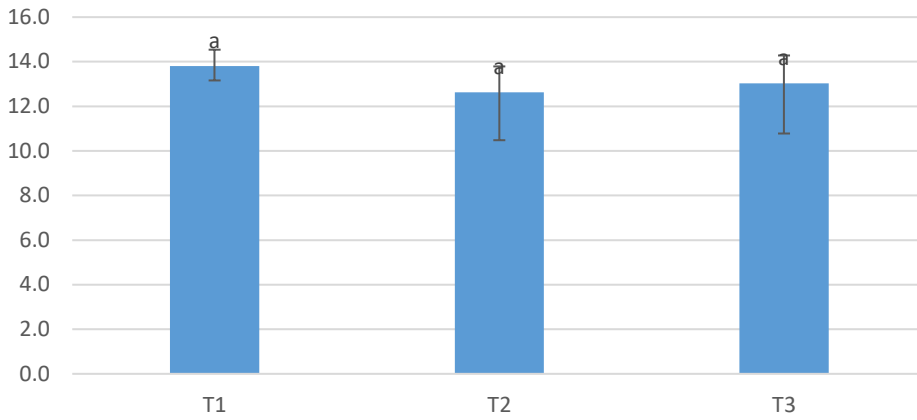
No significant difference between the treatments (cane, sugar and CCS)

	N Rate	tC/ha	CCS	tS/ha
T1	210	104.6	13.2	13.8
T2	190	95.1	13.2	12.6
T3	170	94.8	13.7	13.0



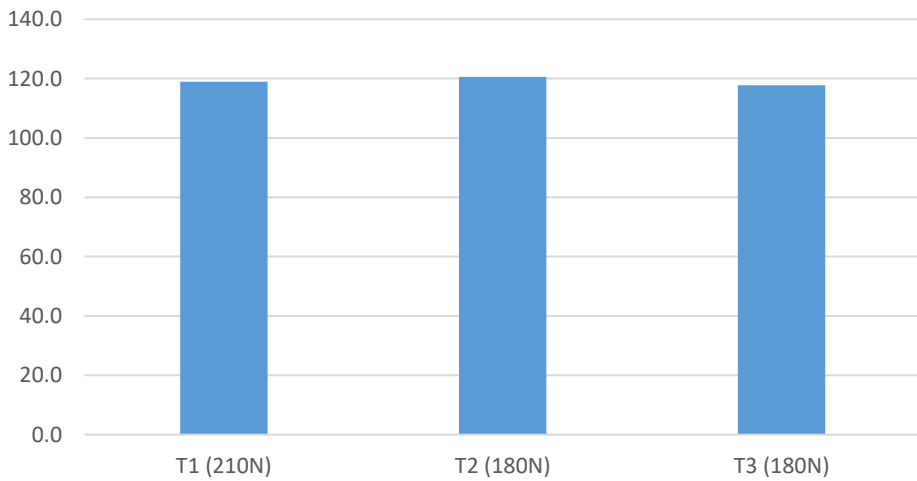


### Sugar Yield (tS/ha)

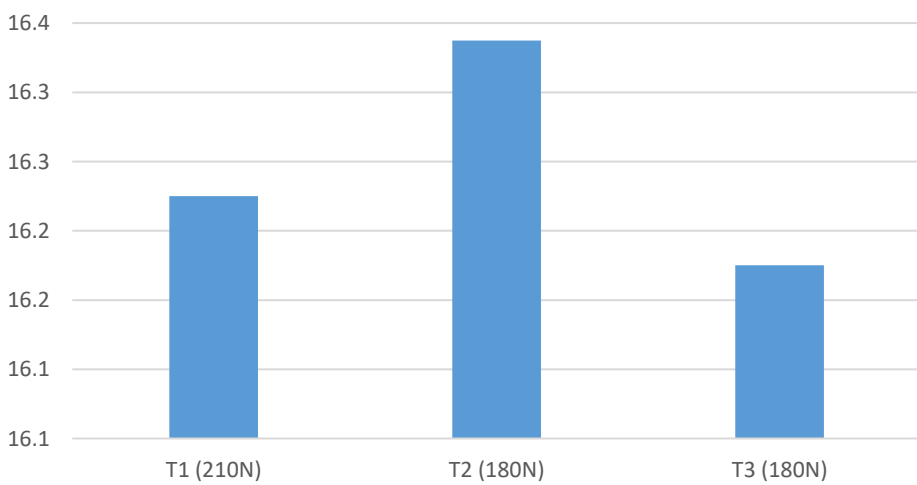


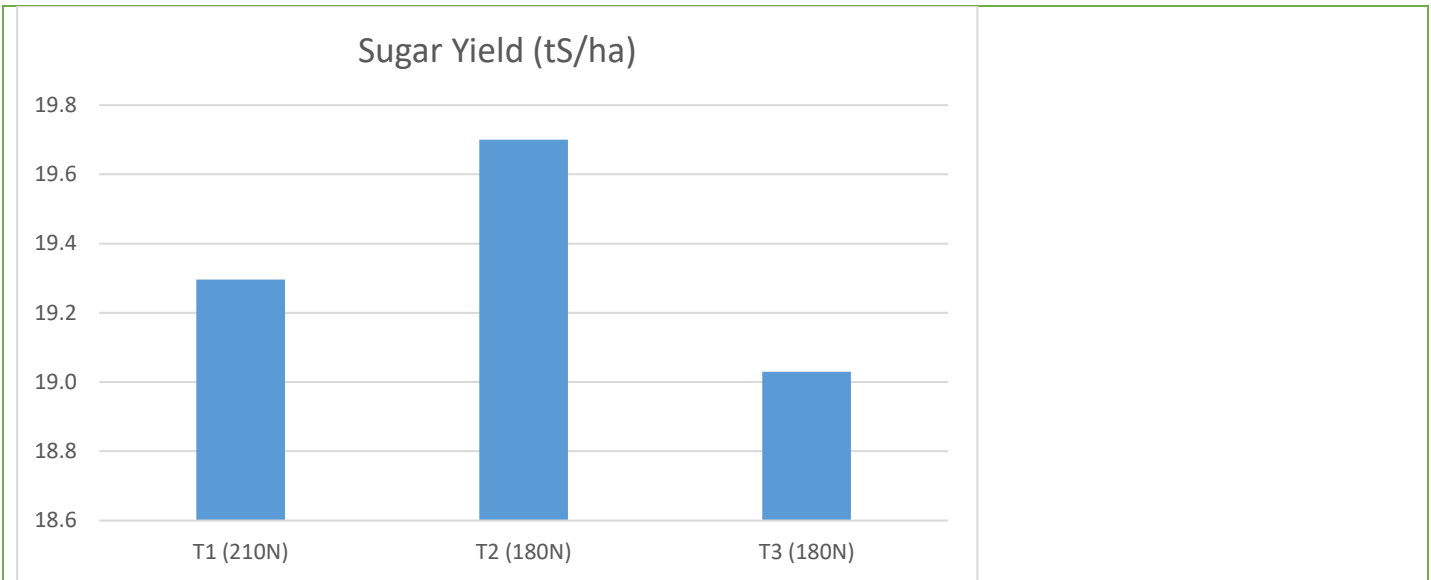
### 2018 Harvest Results:

### Cane Yield (tC/ha)



### CCS





Average	Cane Yield (tC/ha)	CCS	Sugar Yield (tS/ha)
T1 (210N)	118.9	16.2	19.3
T2 (180N)	120.6	16.3	19.7
T3 (180N)	117.8	16.2	19.0

**There was no significant difference between the yield data of each treatment. This indicates that the reduced N-rate in the 3<sup>rd</sup> Ratoon crop for this grower has no negative impact on yield.**

**This project has been completed as both of the trial sites were ploughed out after harvest.**

## Conclusions and comments

In this grower's case, there was no difference between the yields of the high and the low N rates in either of the trial sites. This is likely due to the lower yield potential of the older ratoon crops (the result of factors such as compaction and harvester damage, among others).

### Advantages of this Practice Change:

Reducing the N rates on older ratoon crops has the advantage of yielding the same (as if the standard N rate had been applied), and applying less fertiliser. This equates to economic savings and reduced synthetic fertiliser applied – reducing the risk of nutrient losses.

### Disadvantages of this Practice Change:

There is a risk that if the crop yields higher than expected, the reduced N rate will limit the yield potential.

### Will you be using this practice in the future:

The trials conducted through the project have given the grower the confidence to implement this practice on his farms.

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

The grower applies this practice on 20% of his farm (3R blocks).