

Catalyst Project Report

Grower Information	
Grower Name:	David Ellwood
Entity Name:	DT Farming
Trial Farm No/Name:	MKY – 3181A
Mill Area:	Mackay Sugar
Total Farm Area ha:	55
No. Years Farming:	40 – 3 rd Generation
Trial Subdistrict:	Victoria Plains
Area under Cane ha:	105

Background Information

Aim: To evaluate the reduction of nutrients on late-harvested crops which have a lower yield potential

Background: (Rationale for why this might work)

The 2016 harvest season in the Mackay Sugar mill area did not finish until December. The blocks cut late in the year will have reduced yield in the 2017 season simply due to the fact that the growing season has been shortened by the late cut. This trial will investigate the possibility of reducing fertiliser on blocks with an expected reduction in yield potential.

Because the crop has compromised yield, applying lower rates of nutrients should have no negative impact on crop growth. Better matching fertiliser use to the yield potential can lead to increases in nutrient use efficiency, reduced losses and increased profitability.

Potential Water Quality Benefit:

Reduced risk of nitrogen run-off from farm

Expected Outcome of Trial:

There will be no significant yield difference between the treatments

Service provider contact: Farmacist

Where did this idea come from: Grower

<u>Plan - Project Activities</u>	Date : (mth/year to be undertaken)	Activities :(breakdown of each activity for each stage)
Stage 1	26/11/2016	2016 crop harvested
Stage 2	December 2016	Nutrients applied as per trial design
Stage 3	October 2017	Harvest production
Stage 4	November 2017	Reapply treatments on new trial block
Stage 5	September 2018	Harvest production
Stage 6	September 2018	Reapply trial as per previous year
Stage 7	September 2019	Harvest Production

Project Trial site details

Trial Crop:	Q208
Variety: Rat/Plt:	2017 Class 2R
Trial Block No/Name:	2-1
Trial Block Size Ha:	5.2
Trial Block Position (GPS):	21°11'54.24"S 148°59'23.48"E
Soil Type:	Wollingford

Block History, Trial Design:

Project Catalyst - Reducing Nitrogen on Late Harvest Ratoons												
F3180 2-1 Q208 2R												
3	6	6	6	6	2	1	6	6	6	6		
G U A R D	0.54	0.528	0.51	0.495	G U A R D	W A T E R F U R R O W	G U A R D	0.468	0.468	0.468	0.44	0.44
R1				R2		R2			R3			
T1 - MKY 150 @ 3.4m3 & SuPerfect @ 150 kg/ha - 109 N, 13 P, 90 K, 30 S, 50 Ca												
T2 - MKY 150 @ 4m3 & SuPerfect @ 150 kg/ha - 128 N, 13 P, 106 K, 32 S, 53 Ca												
T3 - MKY 150 @ 4.7m3 & SuPerfect @ 150 kg/ha - 151 N, 13 P, 124 K, 35 S, 56 Ca												

Figure 1 - Trial layout of treatments and repetitions

The trial consists of three treatments, repeated three times across the paddock as shown in Figure 1.

Treatments:

1. Mky 150 @ 3.4m3 and SuPerfect @ 150kg/ha – 109N, 13P, 30S, 50Ca
2. Mky 150 @ 4m3 and SuPerfect @ 150kg/ha – 128N, 13P, 106K, 32S, 53Ca
3. Mky 150 @ 4.7m3 and SuPerfect @ 150kg/ha – 151N, 13P, 124K, 35S, 56Ca

Results:

Results from 2017 Harvest

The following graph (Figure 2) shows the tonnes of sugar/hectare produced from the three different treatments.

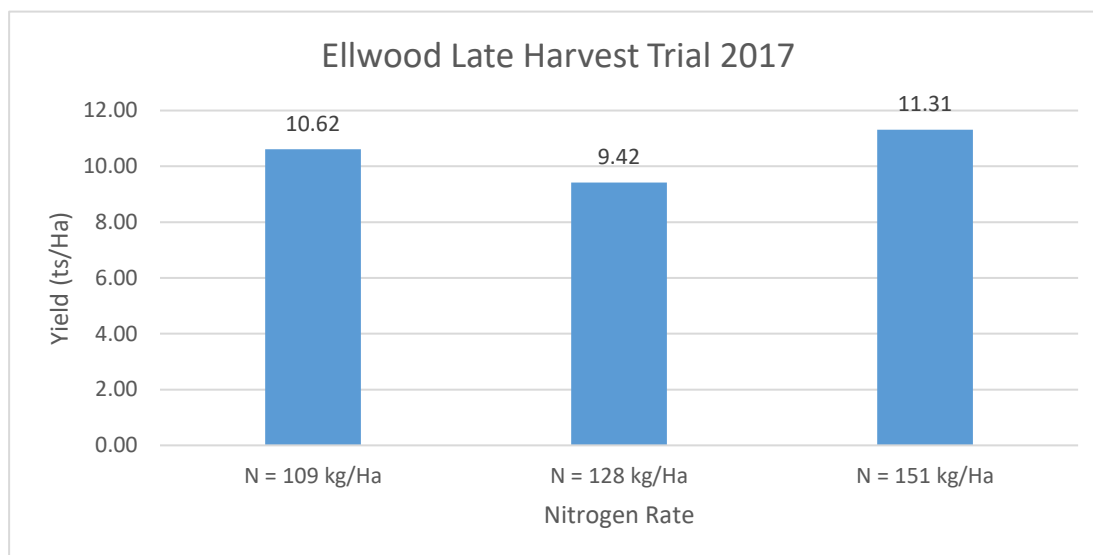


Figure 2 - Sugar yield from harvest 2017

Results from 2018 Harvest

The following figures show the harvest yield (Figure 3) results and nitrogen uptake data (Figure 4) from the 2018 harvest.

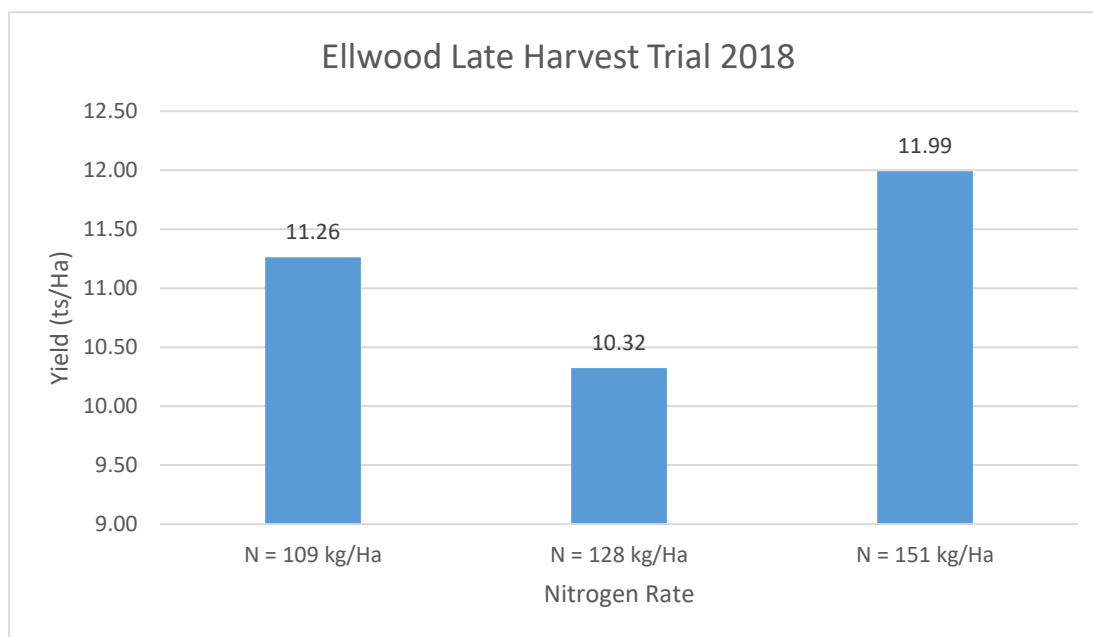


Figure 3 - Sugar yield from harvest 2018

Overall the yields in 2018 were slightly greater than those achieved in 2017, however the same trends were followed. The highest yielding treatment was the full rate 6ES treatment (151 kgN/ha), followed by the 109 kgN/ha then the 128 kgN/ha treatments but the difference between treatments is not significant.

Nitrogen Uptake

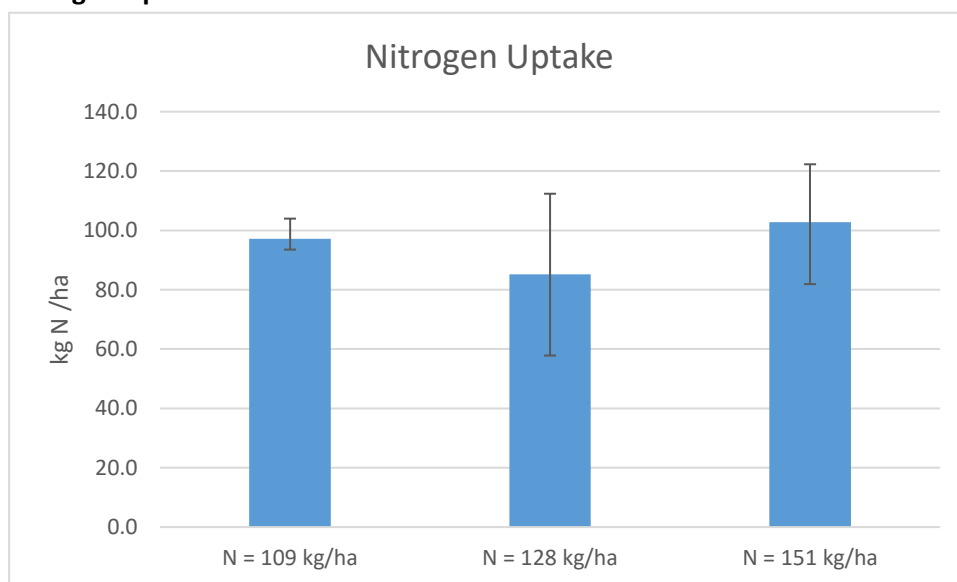


Figure 4 - Nitrogen uptake at time of harvest

The nitrogen uptake followed the same trend as the yield, indicating that nitrogen content results were similar across all treatments and the differences in uptake have been influenced by yield.

Treatments have been reapplied and will be assessed in the 2019 harvest.

Conclusions and comments

As seen from the first two years of data, there is little difference between the treatments, however the highest nitrogen rate (150kg/ha) has achieved slightly higher yields. Results from the 2019 harvest will provide further information to assist the conclusions.

Advantages of this Practice Change:

An advantage of this practice change is that the same or similar yields can be achieved, even when reduced nitrogen has been applied. This leads increased nitrogen use efficiency and profitability.

Disadvantages of this Practice Change:

There is the potential that yield could be impacted if soil stores are run down or particular seasonal variances expose the crop/paddock to substantial nitrogen losses.

Will you be using this practice in the future:

Yes

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

Continuing 2019

