

Project Catalyst Trial Report

Early Vs. Late Plant in the Wet Tropics with Minimum and Zero Tillage Ground Preparation

Grower Information

Grower Name:	Adrian Darveniza
Entity Name:	South Johnstone Farming
Trial Farm No/Name:	08555
Mill Area:	South Johnstone
Total Farm Area ha:	266
No. Years Farming:	10
Trial Subdistrict:	South Johnstone
Area under Cane ha:	231

Trial Status

Completed

Background Information

Aim: Measure difference between early and late plant

Background: (Rationale for why this might work)

In the wet tropics, disturbed soil represents a great risk for soil erosion in our paddocks and as a result not many farmers will plant early due to the need for cultivation prior to planting. We feel that this is limiting our yields as late plant only allows for a 12month crop at best.

Want to compare the benefits of **Zero and Minimum till early plant** versus **Minimum Tillage late plant**. Most trial work has been done on fallow versus replant but not so much on the timing of planting and would like to know the benefits on productivity and water quality from early plant.

Potential Water Quality Benefit:

Reduced risk of sediment loss in cane planted during May with zero cultivation versus August plant after full or zonal cultivation

Expected Outcome of Trial:

Improved yield in early plant compared to late plant.

Service provider contact:

CANEGROWERS Innisfail, Peter Becke 0436678800

Where did this idea come from:

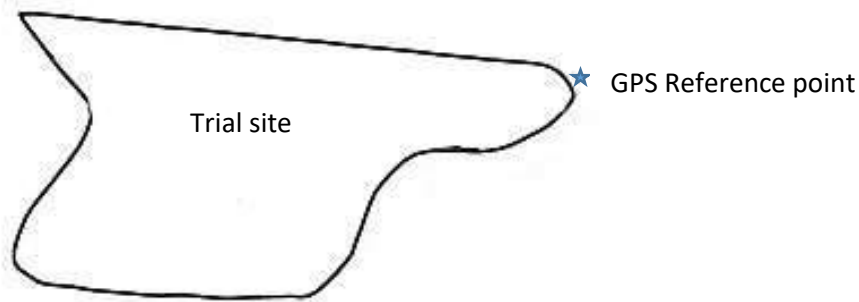
Own observations over the years of trying to change row spacing and adopt more efficient farming practices. Local advisory staff have been helpful along with projects and staff at Johnstone River Catchment Mangement Association.

Plan - Project Activities	Date : (mth/year to be undertaken)	Activities :(breakdown of each activity for each stage)
Stage 1	Dec 2017/Jan 2018	Plan trial design and location 3 reps x 2 treatments Plant legume fallow
Stage 2	May 2018	15-16/5/18 – Early Plant zero & Minimal tillage
Stage 3	July 2018	19/7/18 – Tiller counts early plant
Stage 4	August 2018	29/8/18 - Late Plant minimal tillage
Stage 5	October 2018	29/10/18 – Late Plant Tiller count
Stage 6	January 2019	22/1/19 – Biomass cut Early and Late Plant
Stage 7	Harvest 2019	Measure and record trial plot data at harvest
Stage 8	September 2020	Harvest 1 st Ratoon and record harvest results.

Project Trial site details

Trial Crop:	Sugarcane
Variety: Rat/Plt:	Q208 Plant (2018)
Trial Block No/Name:	Block 23
Trial Block Size Ha:	7.99ha
Trial Block Position (GPS):	-17.587121, 145.974802
Soil Type:	Pin Gin

Block History, Trial Design:



Trial Design

T1 R1
T3 R1
T2 R1
T1 R2
T2 R2
T4 R1
T4 R2

Treatments:

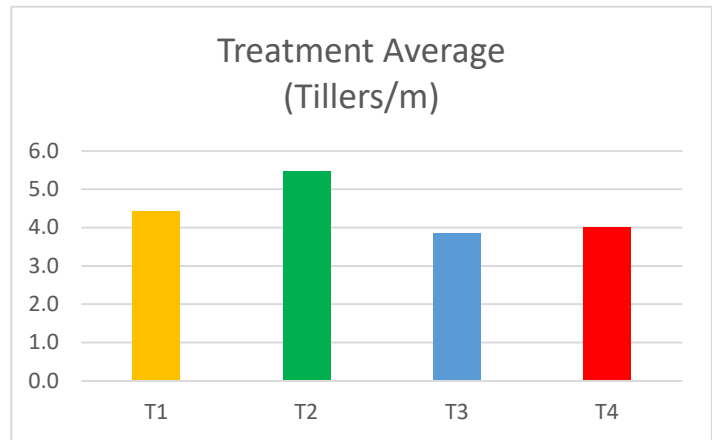
- T1- Zero Till Early Plant
- T2- Minimum Zonal Till Early Plant
- T3- Minimum Zonal Till Early Plant (2 passes)
- T4- Minimum Till Late Plant

Results:

Plant:

Tiller Count 2 months post plant

		Treatment Average (Tillers/m)
T1	Zero Till Early Plant	4.4
T2	Minimum Till Early Plant	5.5
T3	Minimum Till Early Plant (2 Passes)	3.9
T4	Late Plant Minimum Till	4



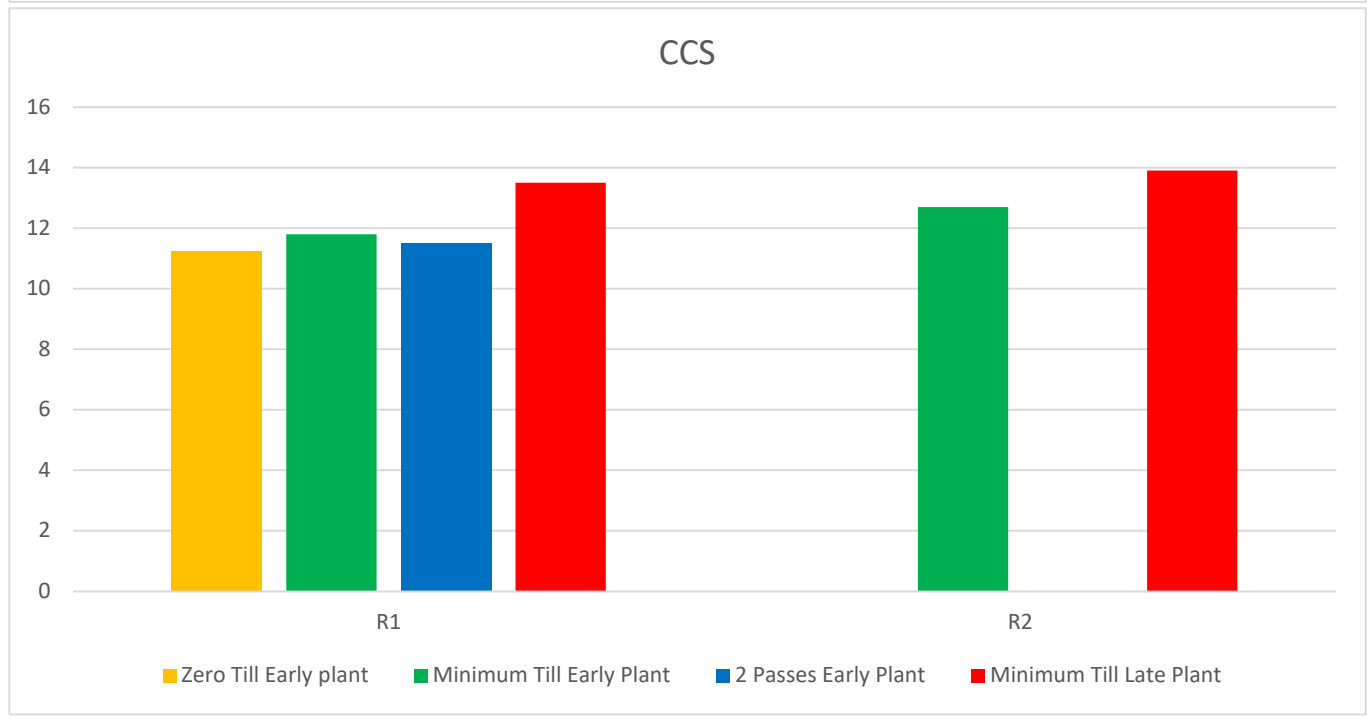
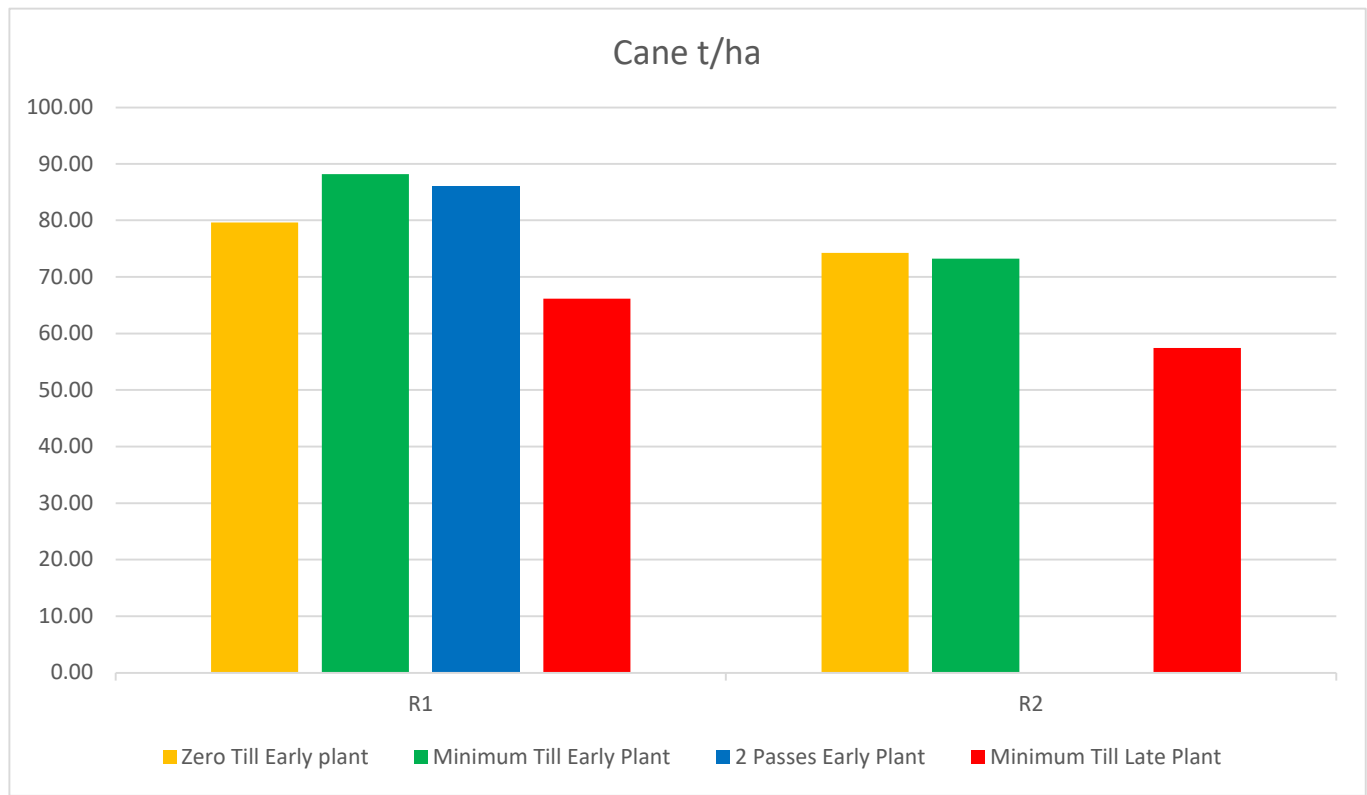
Biomass cuts January 2019

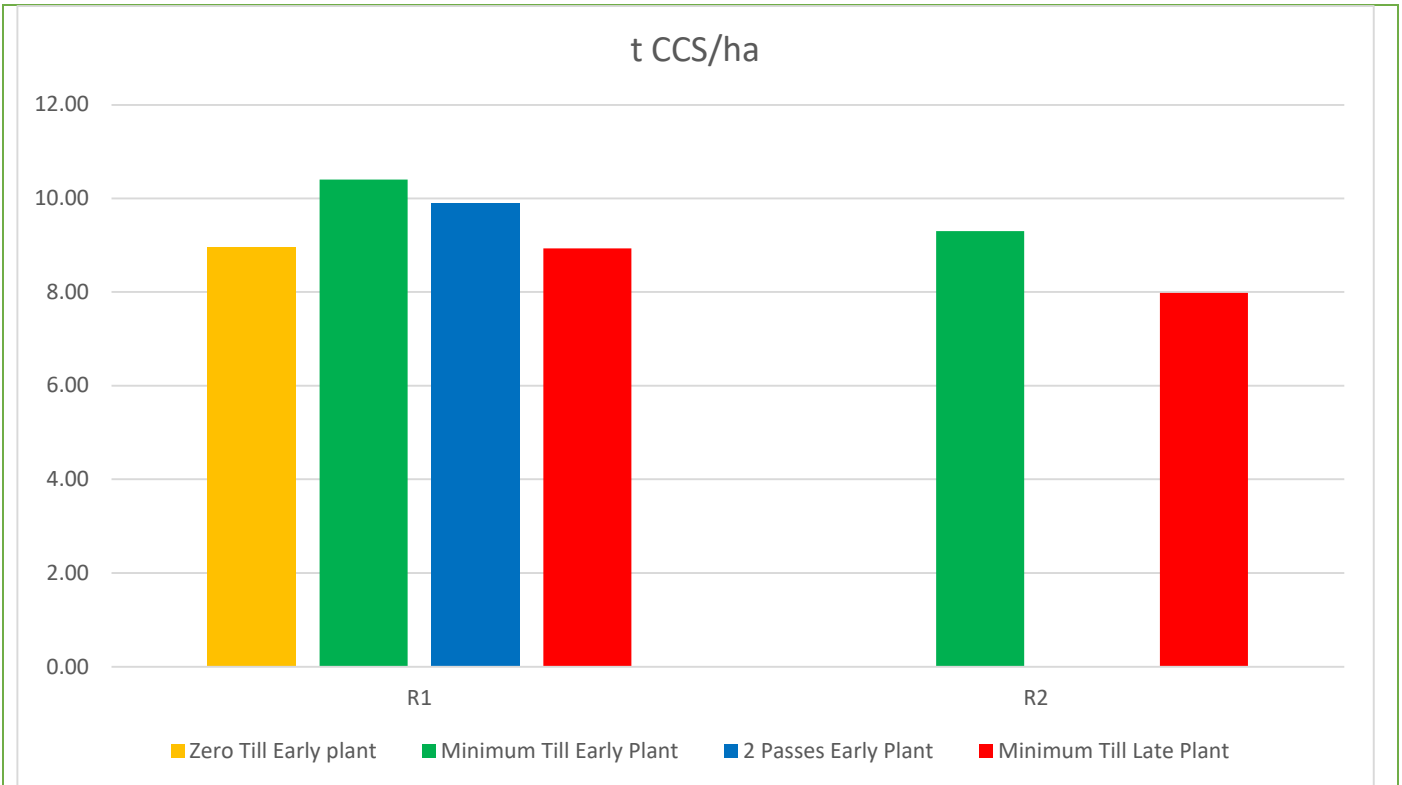
Samples were collected on 22/1/19 across all treatments by cutting and weighing 1m samples from each treatment replicate, 14 samples in total were collected and weighed.

Samples were collected from both the top and bottom of each treatment to account for the variation from top (higher and drier) and Bottom (lower and wetter).

Averages			
Treatment	Top	Bottom	Total
T1 (Zero till Early Plant)	5.31	11.77	8.54
T2 (Minimum Till)	8.51	8.11	8.31
T3 (Minimum Till 2 passes)	7.38	13.76	10.57
T4 (Minimum Till Late plant)	3.43	5.47	4.45

2019 Harvest Results:

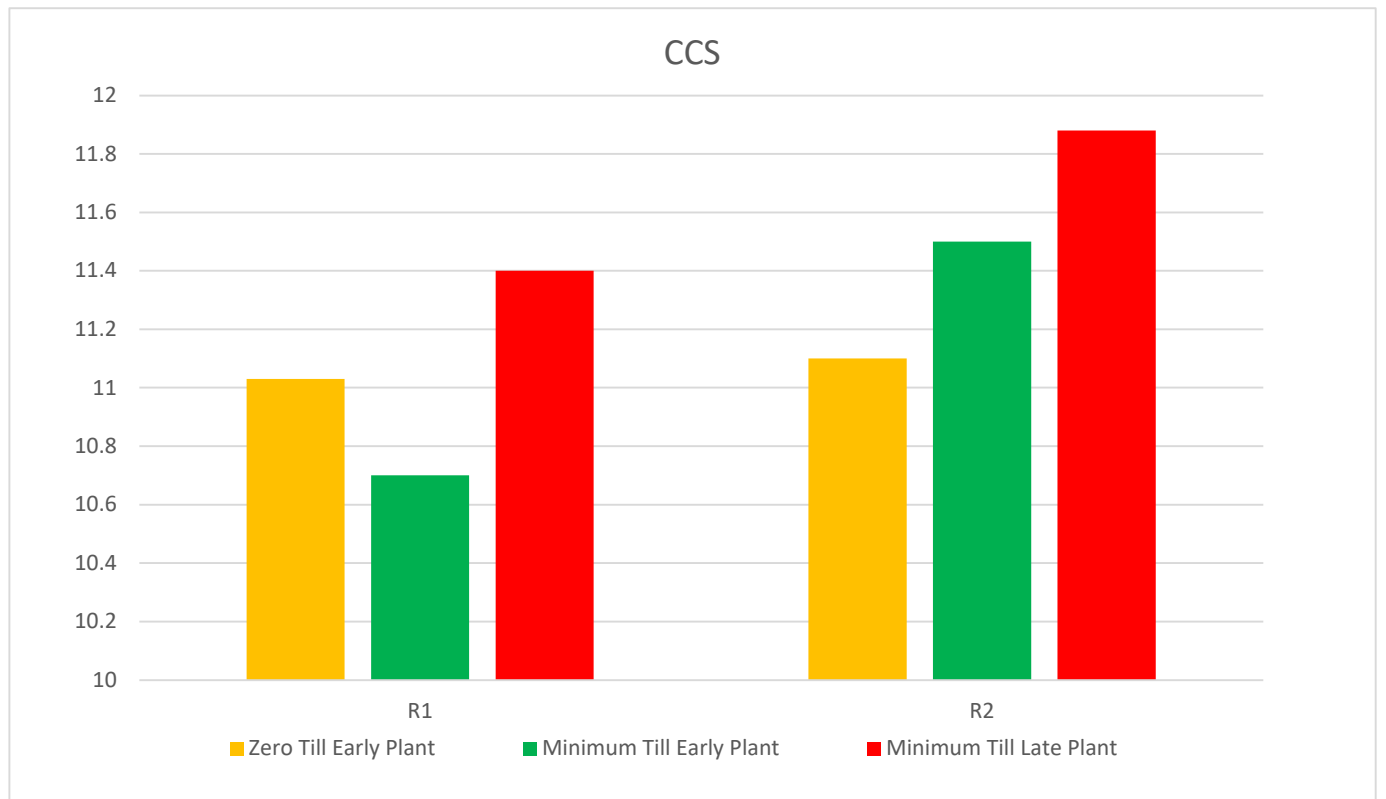
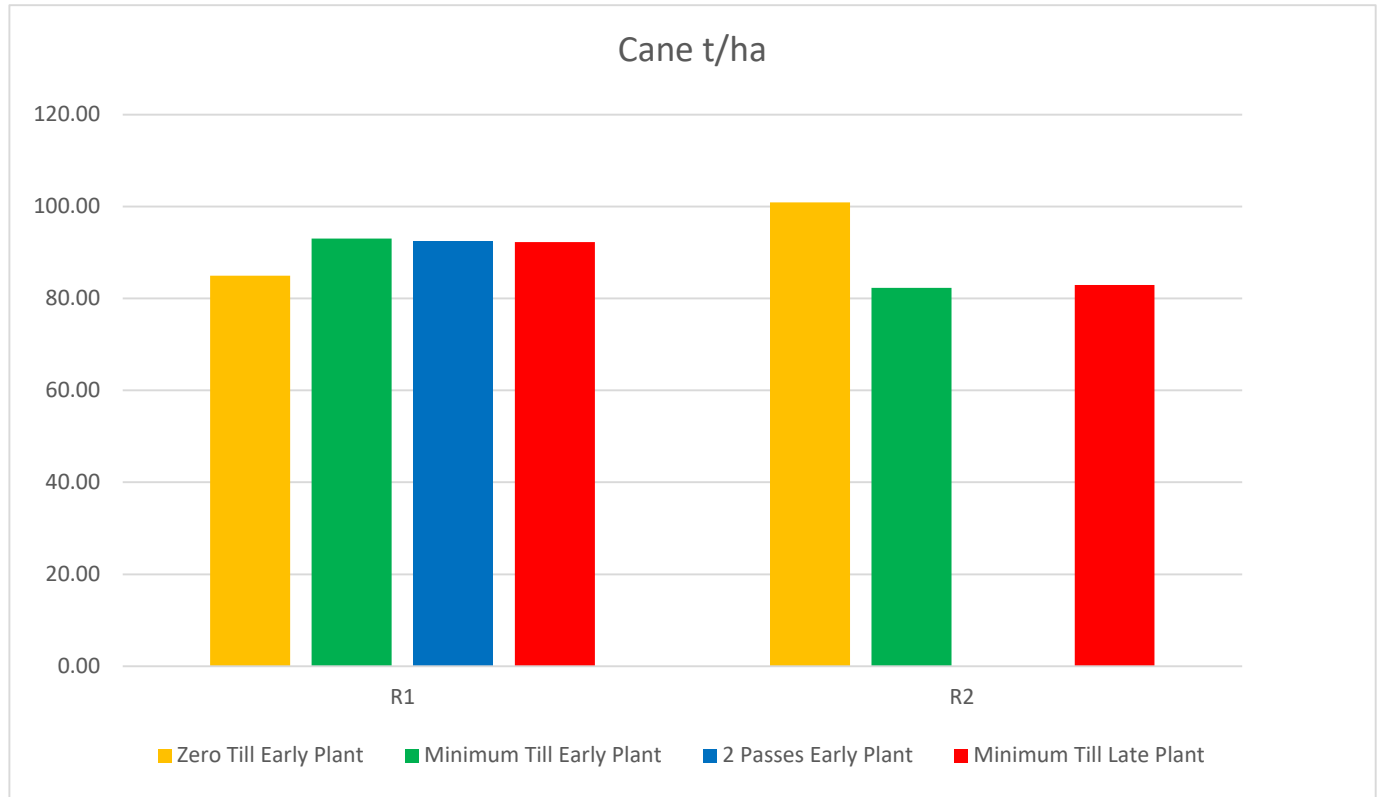


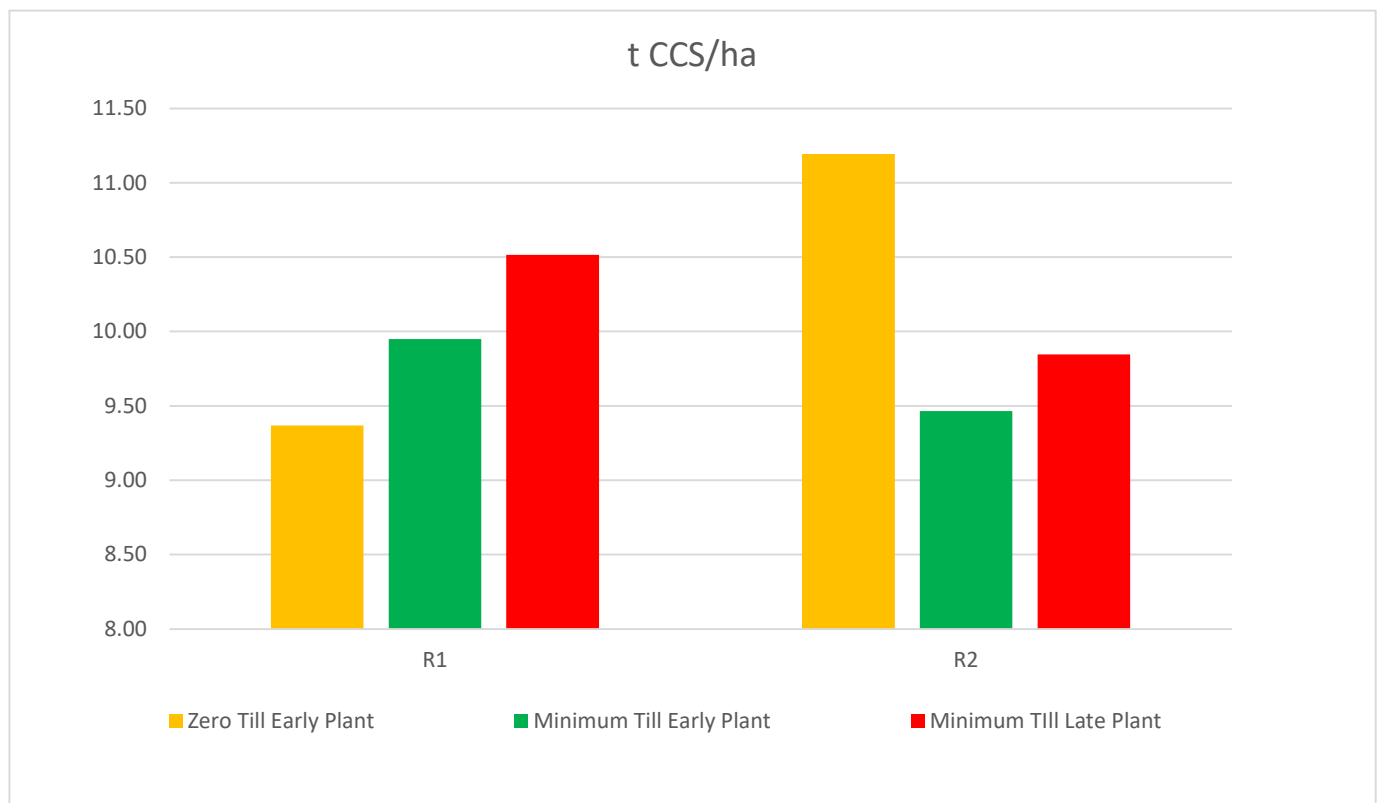


Only 1 replicate for 2 Passes Early Plant treatment and there was a missed CCS sample for Replicate 2 Zero Till Early Plant

2020 Harvest Results:

1st Ratoon:





Average Cane yield (t/ha)	2019	2020
No Cultivation	76.9	92.9
1 Pass Early	80.7	87.64
2 Passes	86.0	92.52
1 Pass Late	61.8	87.56

Average Sugar Yield (t CCS/ha)	2019	2020
No Cultivation	8.96	10.28
1 Pass Early	9.85	9.71
2 Passes	9.90	-*
1 Pass Late	8.45	10.18

*Only one replicate of 2 passes early plant was included in this trial

Conclusions and comments

There was no significant differences at the 95% confidence interval in cane yield for the plant and 1st ratoon crops in this trial however, in the plant crop the cane yields for both early plant treatments were better and significantly different to the late plant treatment at the 20% confidence interval and may be worth further investigation. Due to a missed CCS sample, a statistical analysis was not carried out on plant cane sugar yield (t CCS/ha) however there was no significant difference in sugar yield in the first ratoon.

Advantages of this Practice Change:

Being able to plant using reduced cultivation means that more area can be planted in the short dry spells in May due to the reduction in time required for cultivation. Being able to plant prior to harvest season also reduces farmer workload during the season.

Disadvantages of this Practice Change:

Risk of plant failures and erosion during wet season.

Will you be using this practice in the future:

Yes

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

100%