Project Catalyst Trial Report

Reduced & Zero Cultivation in Ratoon Cane in the Wet Tropics

Grower Information	
Grower Name:	Paul Cecchi
Entity Name:	Quartz Hill Ag
Trial Farm No/Name:	50122
Mill Area:	South Johnstone
Total Farm Area ha:	516
No. Years Farming:	20
Trial Subdistrict:	
Area under Cane ha:	473

Trial Status:
Completed

Background Information

Aim: Improve ratoon cultivation practices to reduce erosion and improve water infiltration

Background: (Rationale for why this might work)
Currently on our heavier lowlying soils we coulter-rip the inter row behind the harvester each year to improve water infiltration rates and reduce the risk of erosion. We feel that this is quite an aggressive practice and can potentially increase erosion risk through preferential water flow along the ripper track. This practice could potentially be improved through the implementation of minimal or no til practices in ratoons using the trash blanket alone or light zonal tillage to improve infiltration and reduce surface water flow rates.

Potential Water Quality Benefit:
Reduced risk of erosion and loss of N & P fertiliser

Expected Outcome of Trial:
Increased profits through improved productivity and reduced costs.

Service provider contact:
CANEGROWERS Innisfail, Peter Becke

Where did this idea come from:
Built on from previous reduced/zonal tillage work; discussions with other farmers and manufacturers in the district as well as own experiences

Plan - Project Activities	Date : (mth/year to be undertaken)	Activities :(breakdown of each activity for each stage)
Stage 1	**March 2018**	Plan trial design and location 3 reps x 4 treatments
Stage 2	**September 2018**	3-4/9/18 – Harvest Ratoon Crop 11-12/9/18 – Cultivation treatments: conventional (coulter-rip), no till, Strip Till1, Strip till2 applied.
Stage 3	**August 2019**	Harvest trial to determine if any differences in productivity/profitiablity
Stage 4	**2019 onwards**	Ratoon, harvest and record trial through crop cycle

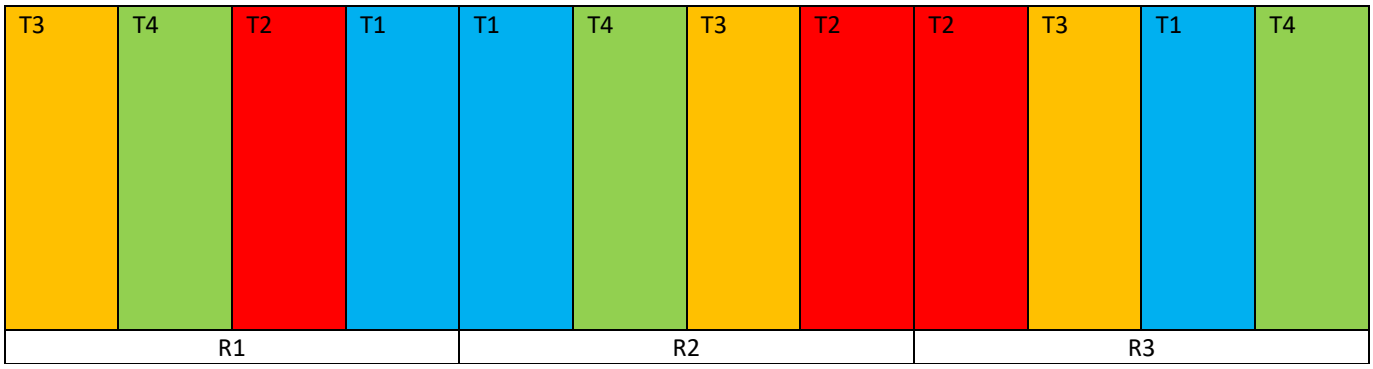
Project Trial site details

Trial Crop:	Sugar Cane
Variety: **Rat/Plt:**	Q200 3rd ratoon
Trial Block No/Name:	13-A
Trial Block Size Ha:	5.4
Trial Block Position (GPS):	-17.5647, 146.0343
Soil Type:	Innisfail

Block History, Trial Design:

Block History:
3rd Ratoon Q200

Trial Design



⬆ Railway

R1 T2 was missed due to miss counted pegs during trail cultivation. Correct order for R1 from Left to Right is T3, T4, T1.

Each treatment concists of 5 rows of cane and 6 Furrows with a guard row between each treatment.

Treatments:
T1- Coulter rip
T2- No Cultivation
T3- Niffty Ag Strip tiller (P50)
T4- Agrovator Strip Tiller

Results:

Tractor: NewHoland-Ford 8560 160Hp

Cultivator	Treatment Area total (ha)	Time	Fuel Use (L)	Fuel Use (L/ha)	Work Rate (ha/hr)	Speed & Rpm
Strip Tiller	1.47	28	8	5.4	3.17	12 – 1700
Agrovator	1.49	39	8	5.4	2.29	7 – 1500
Coulter Ripper	1.47	63	12	8.2	1.40	5.5 – 2200

Work Time

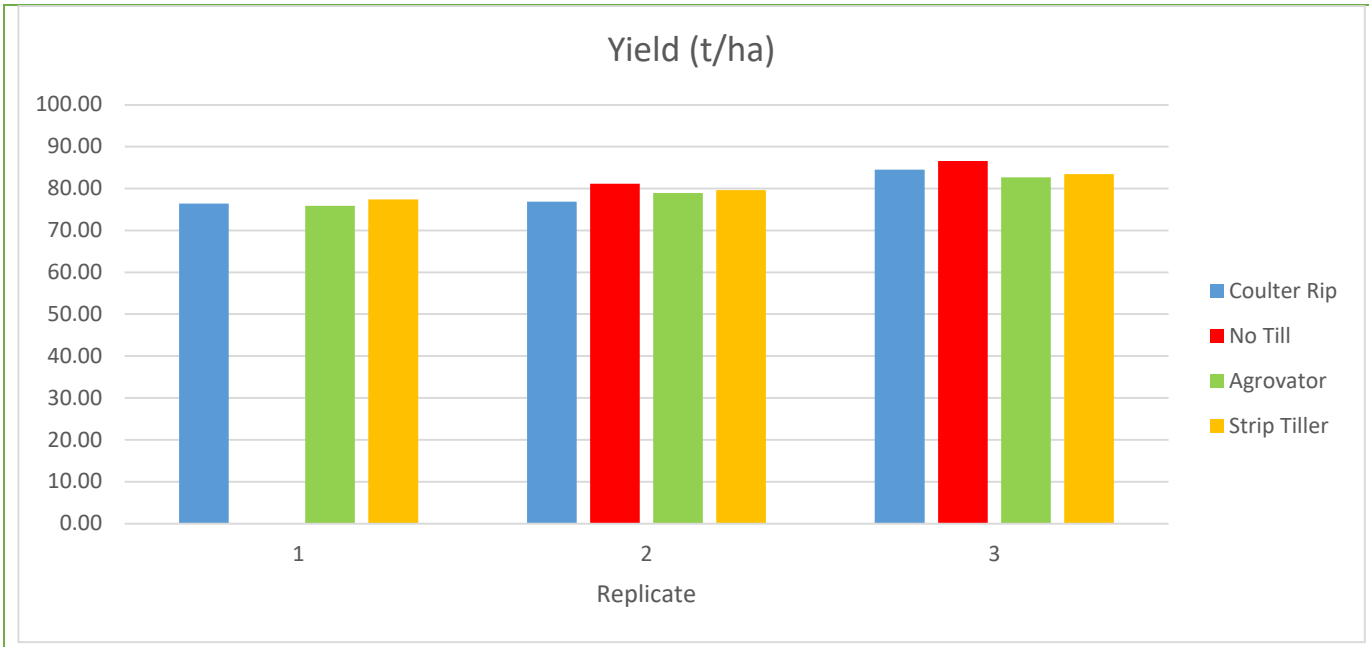
Cultivator	Start	Finish	Total
Strip Tiller	1:30	1:58	28
Agrovator	3:40	4:19	39
Coulter Ripper	2:07	3:10	63

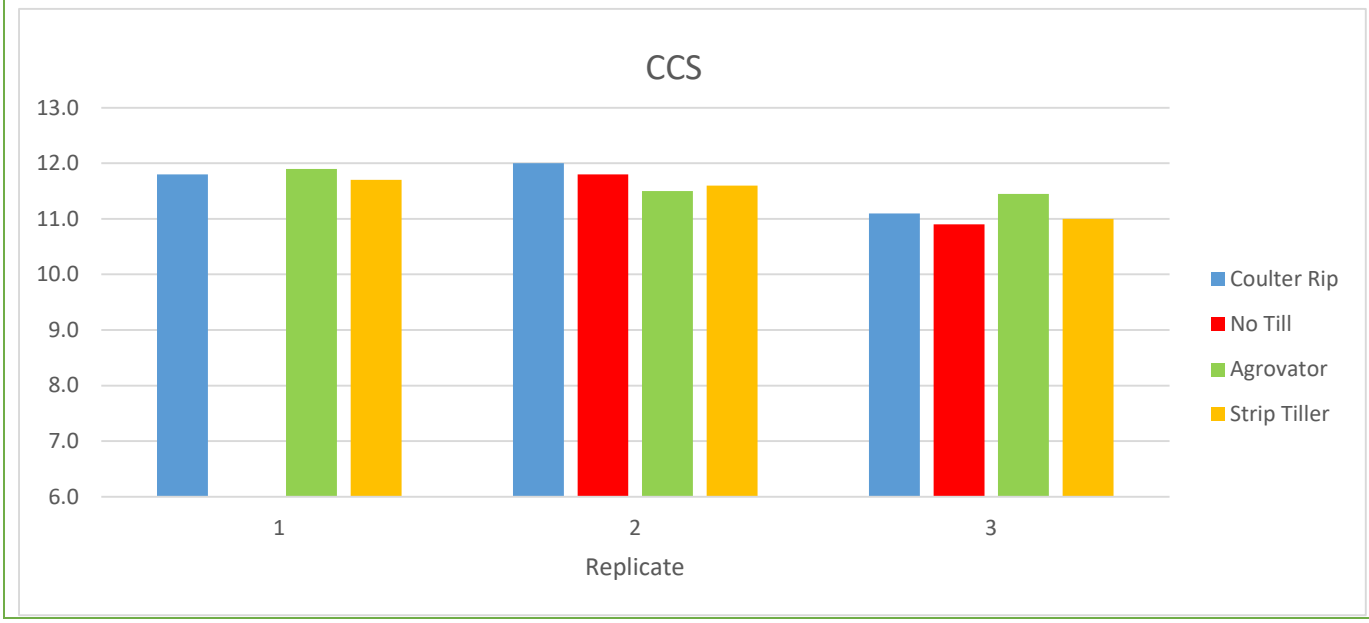
Areas

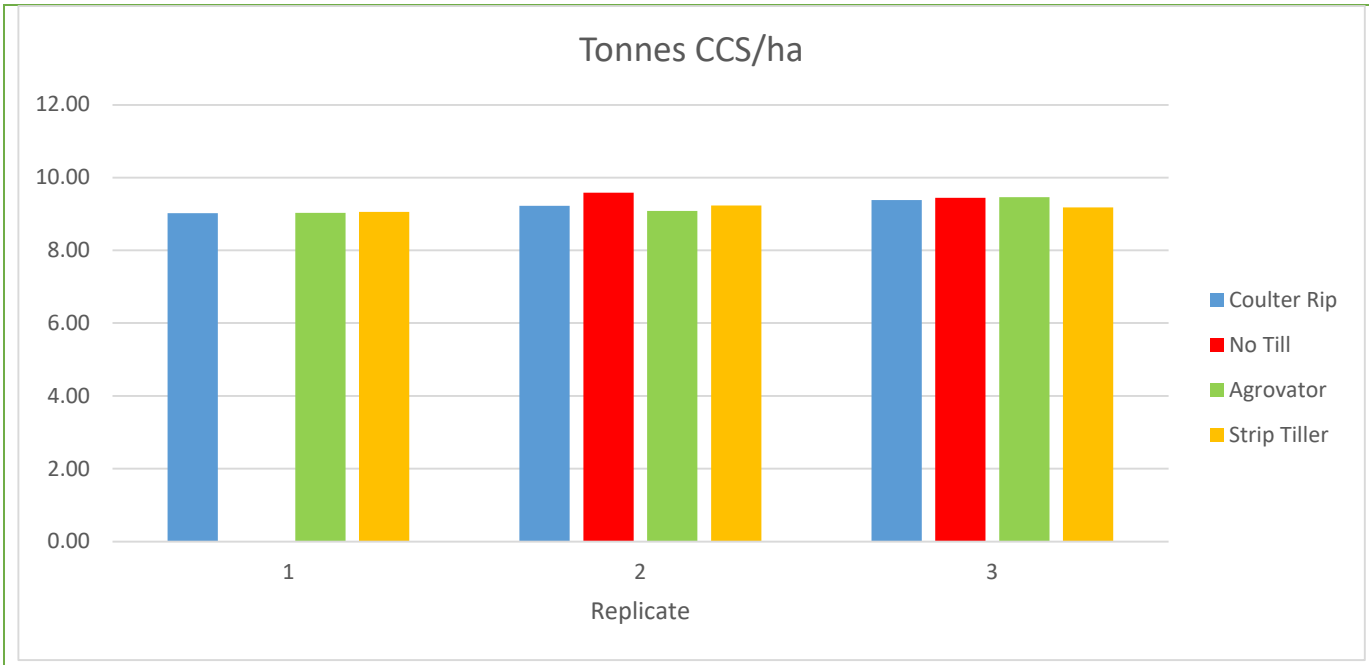
	R1	R2	R3	Total
1 (Coulter Ripper)	0.51	0.49	0.46	1.47
2 (No Tillage)	0	0.48	0.47	0.95
3 (Agrovator)	0.54	0.48	0.47	1.49
4 (Strip Tiller)	0.53	0.49	0.46	1.47

Yield:

Treatment	Rep 1		Rep 2		Rep 3	
	t/ha	CCS	t/ha	CCS	t/ha	CCS
1	76.4	11.8	76.9	12	84.5	11.1
2	-	-	81.2	11.8	86.6	10.9
3	75.9	11.9	78.9	11.5	82.6	11.5
4	77.4	11.7	79.6	11.6	83.5	11.0


Yield (t/ha)
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
1
2
3
Replicate
Coulter Rip
No Till
Agrovator
Strip Tiller


CCS
13.0
12.0
11.0
10.0
9.0
8.0
7.0
6.0
1
2
3
Replicate
Coulter Rip
No Till
Agrovator
Strip Tiller


Tonnes CCS/ha
12.00
10.00
8.00
6.00
4.00
2.00
0.00
1
2
3
Replicate
Coulter Rip
No Till
Agrovator
Strip Tiller

Conclusions and comments

The No till treatment on average had slightly higher cane yields than the other treatments, however there was no significant difference in sugar yields between the four treatments. This trial was conducted over a relatively dry wet season and Paul believes that if it had been a wetter wet season that the cultivated treatments would have performed better. As a result of this trial and already owning the Agrovator Paul is planning on using the Agrovator in place of the coulter ripper.

Advantages of this Practice Change:

The paddock is much smoother for spraying and fertilising after using the Agrovator compared to the coulter-ripped as well as reduced operation time and fuel use.

Disadvantages of this Practice Change:

Risk of waterlogging if paddocks do not drain.

Will you be using this practice in the future:

Yes, all of the heavier lowlying paddocks on the farm that have been coulter ripped in the past will now be cultivated using the Agrovator. These blocks will be monitored for water logging during the wet season.

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

All heavier lowlying blocks.