Project Catalyst Final Report

Ezigrade GPS Drainage Trial

Grower Information	
Grower Name:	Brett Coulthard
Entity Name:	Sarona PTY LTD
Trial Farm No/Name:	5679
Mill Area:	Mossman
Total Farm Area ha:	559.23
No. Years Farming:	25+
Trial Subdistrict:	South
Area under Cane ha:	531.3

Trial Status

Completed

Background Information

Aim:

The aim of this project is to test the effectiveness of land smoothing using the program Ezigrade. We will find a block with obvious drainage problems and take levels over the entire block. We will leave one section of the block untreated while grading the rest of the block to gain a comparison between the sections. Data from this trial will be ongoing, each harvest data will be collected from both treatments.

Background: (Rationale for why this might work)

Drainage is a key issue that needs to be addressed on my farm to improve productivity. We have used Ezigrade in the past to level blocks but have not completed any trial comparisons. Mossman Ag Services offer the hire of a GPS Scoop and provide plans to grade blocks on request from growers. We are continually assessing blocks and doing maintenance on drains and headlands – we would like to see evidence to suggest that these plans do work to improve the drainage of block and subsequently the productivity of the farm.

Potential Water Quality Benefit:

Nitrogen is lost from waterlogged soils through both leaching and denitrification, through improved drainage there should be less nitrogen lost and therefore improved plant uptake of the nutrients.

Expected Outcome of Trial:

We expect to see increased yields in the section of the block that has been levelled while the control section yield should be similar to previous years.

Service provider contact:

Mossman Ag Services

Where did this idea come from:

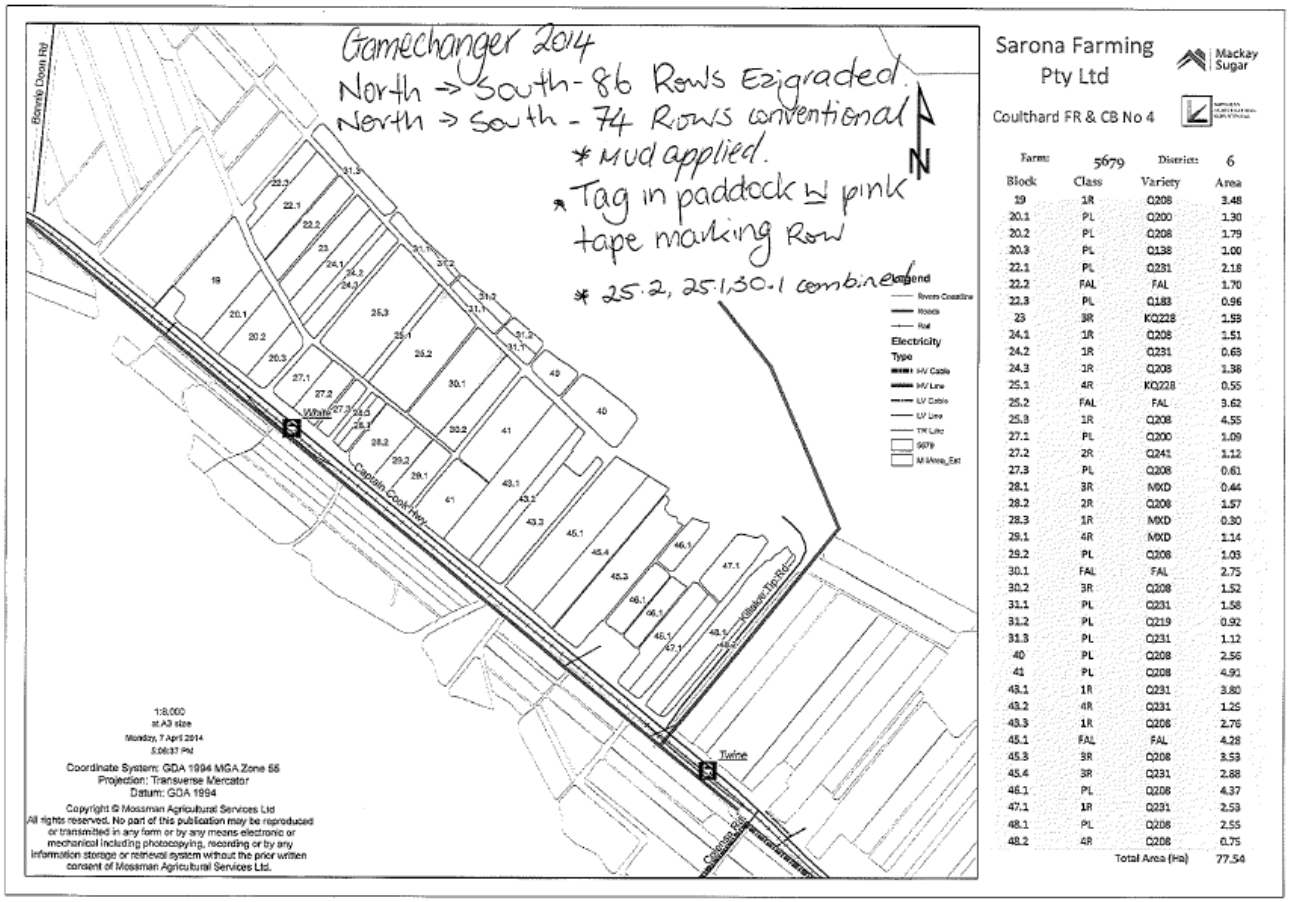
Mossman Ag Services agronomy staff

Plan - Project Activities	Date : (mth/year to be undertaken)	Activities :(breakdown of each activity for each stage)
Stage 1	June 2014	Choose suitable trial site with grower and MAS staff. Install field equipment (equipment purchases to align with project application). Seek agronomic advice for trial design. Develop workplan for trials. Soil and product testing (if applicable). Set up trial sites.
Stage 2	July 2014	Take GPS levels of block and prepare a Ezigrade plan for the block. Ongoing management of trial site: Monitor trials and keep accurate records of trial results, field operations, chemical and fertiliser inputs, crop yield and quality (as relevant to project), and provide to Terrain.
Stage 3	July 2014	Set out trial with grower. Monitor Trial Facilitate site access for Terrain NRM staff to observe trial results.
Stage 4	August 2015	Harvest Trial, keeping records of strips cut, bin numbers in order to get bin weights and CCS samples from the mill.
Stage 5	August 2016	Harvest Trial, keeping records of strips cut, bin numbers in order to get bin weights and CCS samples from the mill.
Stage 6	August 2017	Harvest Trial, keeping records of strips cut, bin numbers in order to get bin weights and CCS samples from the mill.
Stage 7	August 2018	Harvest Trial, keeping records of strips cut, bin numbers in order to get bin weights and CCS samples from the mill.

Project Trial site details

Trial Crop:	Cane
Variety: **Rat/Plt:**	Q208
Trial Block No/Name:	25.1, 25.2, 30.1
Trial Block Size Ha:	6.92
Trial Block Position (GPS):	-16.482361815241088 145.41344046592712
Soil Type:	Clay Loam

Block History, Trial Design:



Sarona Farming Pty Ltd

Mackay Sugar

Coulthard FR & CB No 4

Farm: 5679 District: 6

Block	Class	Variety	Area
19	1R	Q208	3.48
20.1	PL	Q200	1.30
20.2	PL	Q208	1.79
20.3	PL	Q138	1.00
22.1	PL	Q231	2.18
22.2	FAL	FAL	1.70
22.3	PL	Q183	0.96
23	3R	KQ228	1.58
24.1	1R	Q208	1.51
24.2	1R	Q231	0.68
24.3	1R	Q208	1.38
25.1	4R	KQ228	0.55
25.2	FAL	FAL	3.62
25.3	1R	Q208	4.55
27.1	PL	Q200	1.09
27.2	2R	Q241	1.12
27.3	PL	Q208	0.61
28.1	3R	MXD	0.44
28.2	2R	Q208	1.57
28.3	1R	MXD	0.30
29.1	4R	MXD	1.14
29.2	PL	Q208	1.03
30.1	FAL	FAL	2.75
30.2	3R	Q208	1.52
31.1	PL	Q231	1.58
31.2	PL	Q219	0.92
31.3	PL	Q231	1.12
40	PL	Q208	2.56
41	PL	Q208	4.91
43.1	1R	Q231	3.80
43.2	4R	Q231	1.25
43.3	1R	Q208	2.76
45.1	FAL	FAL	4.28
45.3	3R	Q208	3.53
45.4	3R	Q231	2.88
46.1	PL	Q208	4.37
47.1	1R	Q231	2.53
48.1	PL	Q208	2.55
48.2	4R	Q208	0.75
		Total Area (Ha)	77.54

Treatments:

Half of the block has been graded and half of the block has been left as is.

Results:

Table 1. Results of drainage trial.

2017 trial results

Treatment	Tonnes cane/ha	Tonnes sugar/ha
Graded	92	13.3
Not Graded	99	14.4

Conclusions and comments

It is possible the block didn't have a detrimental drainage problem to start with – the results show the side that was not graded actually gained better yields.

No harvest data from 2018, could not obtain mill information, bins were not allocated.

Advantages of this Practice Change:
Although it was difficult to obtain actual data, the growers benefitted from using the gear and being able to see the difference in the sections. Better drainage means higher yields and potentially less nitrogen losses.

Disadvantages of this Practice Change:
Cost/timing of grading blocks.

Will you be using this practice in the future:
Yes

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