

# Project Catalyst Trial Report

## Zonal Application of Imidacloprid

### Grower Information

<b>Grower Name:</b>	Alan and Rebecka Pace
<b>Entity Name:</b>	Pace Farming
<b>Trial Farm No/Name:</b>	F# 708A B# 3-6
<b>Mill Area:</b>	Victoria, Herbert Region
<b>Total Farm Area ha:</b>	2000
<b>No. Years Farming: (Grower Experience)</b>	Over 40 years
<b>Trial Subdistrict:</b>	Coolbie - Rollingstone
<b>Area under Cane ha:</b>	757.16

### Trial Status

**Completed** / Continuing

## **Background Information**

**Aim:** Making prescription maps for cane grub susceptible soil and applying imidacloprid through GPS rate controller to test if imidacloprid can control cane grubs without the traditional blanket approach

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

This trial will test the effectiveness of zonal application of imidacloprid. Placing the product in zones of sandy loamy soils only (which are historically impacted by cane grubs), as opposed to simply placing the product across the entire block.

**Potential Water Quality Benefit:**

Less product used within a block will have a direct correlation with chemical runoff and water quality outcomes.

**Expected Outcome of Trial:**

- Reduction in the use of Imidacloprid.
- Improved water quality due to less pesticide runoff.

**Service provider contact:** Megan Zahmel: 0447 317 102

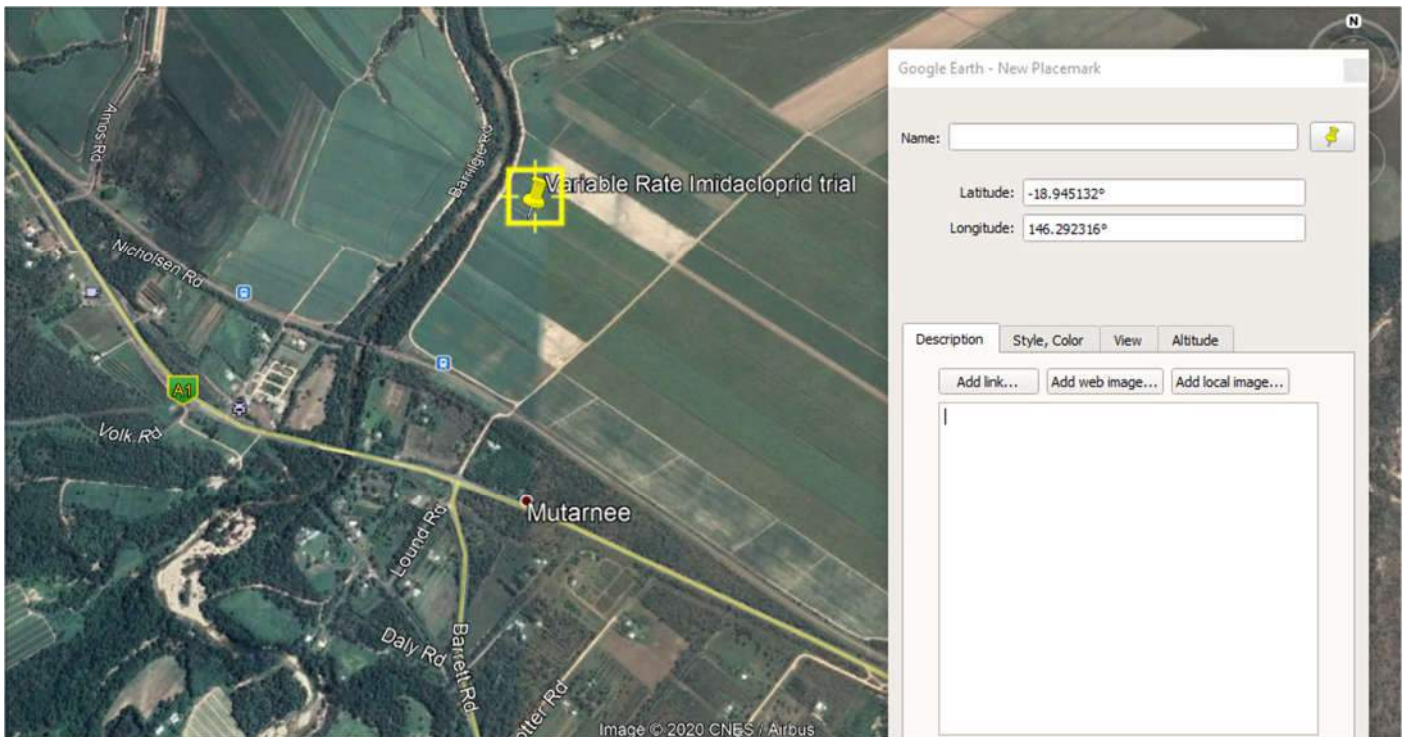
**Where did this idea come from:** Alan Pace

<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>	Establish trial 2019	17/10/2019 – Blocks chosen, and trial design made. Prescription map made for Variable rate imidacloprid to be applied. 22/10/2019 – Applied Imidacloprid to trial as per trial design. 19/12/2019 – KPI water samplers installed
<b>Stage 2</b>	Sampling 2020	24/02/2020 – Trial site flooded and compromised all applied treatments. 31/30/2020 – Discussion with the grower and decided to restart trial in a block that will not be affected by flood waters. 31/03/2020 – KPI water samplers are unreliable, and a decision was made to use SRA water samplers in the next wet season to capture more accurate data. 31/03/2020 – A new block will be chosen to set the trial up on after 2020 harvest.
<b>Stage 3</b>	Sampling 2020	25/08/2020 – New trial site has been harvested 29/09/2020 – EM mapped the new trial site to determine variability. 29/09/2020 – Zonal prescription made for the application of Imidacloprid to the block 6/10/2020 – Confidor applied @ 120L/ha 7/12/2020 – SRA water samplers installed to trial site before the wet season begins. 29/12/2020 – 1 <sup>st</sup> set of water samples collected and stored. 75ml of rain recorded.
<b>Stage 4</b>	Sampling 2021	12/01/2021 – 2 <sup>nd</sup> set of water samples collected and stored. 128ml rain recorded. 19/01/2021 – 3 <sup>rd</sup> set of water samples collected and stored. 26ml recorded. 10/02/2021 – Samples sent to TropWaters lab for analysis. 17/05/2021 – Drone flight to inspect for grub damage. 17/05/2021 – Ground inspections for cane grubs was conducted. No grubs found. 24/09/2021 – Drone flight to inspect crop before harvest. 1/11/2021 – Trial was harvested for yield and CCS. 9/12/2021 – Imidacloprid was reapplied to the trial as per original design 9/12/2021 – Water samplers were re-installed to trial in preparation for the beginning of the wet season.
<b>Stage 5</b>	Sampling 2022	29/01/2022 – 1 <sup>st</sup> set of water samples collected for analysis. 125ml rain recorded.

		04/02/2022 – 2 <sup>nd</sup> set of water samples collected for analysis. 36ml of rain recorded.
Stage 6		
Stage 7		

## Project Trial site details

<b>Trial Crop:</b>	Sugarcane
<b>Variety:</b>	Q208 planted 2019
<b>Rat/Plt:</b>	
<b>Trial Block No/Name:</b>	B# 3-6
<b>Trial Block Size Ha:</b>	7.08ha
<b>Trial Block Position (GPS):</b>	Refer to google earth map
<b>Soil Type:</b>	Sandy Loam



## Block History, Trial Design:

**History:** Blocks along the creek system have a history of grub problems.

**Trial Design:**

Trial Design		B# 3-6									
B#3-6		Crystal Creek									North East
		Rep 1	Rep 2	Rep 1	Rep 2	Rep 3	Rep 4	Rep 3	Rep 4		
		Plot 1	Plot 2	Plot 3	Plot 4	Plot 5	Plot 6	Plot 7	Plot 8		
	Bruce Highway	18 Guard rows	9 rows	9 Rows	9 Rows	9 Rows	9 Rows	9 Rows	9 Rows	Guard Rows	
		Standard Rate	Standard Rate	VR Rate	VR Rate	VR Rate	VR Rate	Standard Rate	Standard Rate	6 guard rows	
			6 inter-row WM#1		6 inter-row WM#2	6 inter-row WM#3		5 inter-row WM#4			
		Headland									

**Treatments:**

Trt 1 – Variable Rate Imidacloprid

Trt 2 – Standard Rate Imidacloprid

## Results:

### Cane Grub area map – Pink zone: cane grub susceptible soils

Soil maps and EM mapping was used to determine where cane grub susceptibility could potentially be targeted. Literature states that creek lines and sandy loam soils are more susceptible to cane grub damage than heavy clay soils. The grower has previous knowledge of where cane grub damage has been observed. Using these facts, a prescription was created so that pesticide could be targeted into specific zones.



**Water sampling data captured 2020/2021 wet season.**

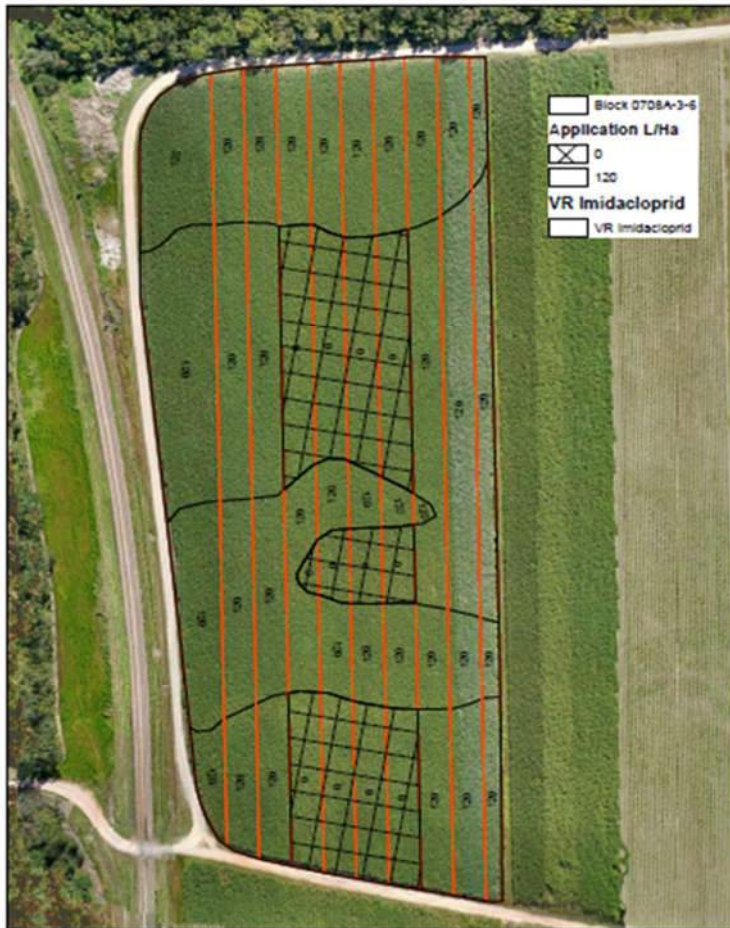
Sugar Research Australia water samplers were used to collect below run-off results.

Sample	Sample	IMIDACLOPR	Rainfall
Description	Date	ID	
		µg/L	ml
Standard Confidor	29/12/2020	0.04	75
Variable Confidor	29/12/2020	0.05	75
Standard Confidor	12/01/2021	0.33	128
Variable Confidor	12/01/2021	0.15	128
Variable Confidor	12/01/2021	0.03	128
Standard Confidor	12/01/2021	1.02	128
Standard Confidor	19/01/2021	0.32	26
Variable Confidor	19/01/2021	0.49	26
Variable Confidor	19/01/2021	1.77	26
Standard Confidor	19/01/2021	0.38	26



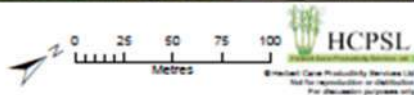
### Drone Image captured in May 2021

Drone footage was used to check for grub damage. Ground truthing by accessing areas using GPS guidance that had zero application of imidacloprid was determined by digging for grubs using Herbert Cane Productivity grub sampling protocols. No grubs were found upon inspection.



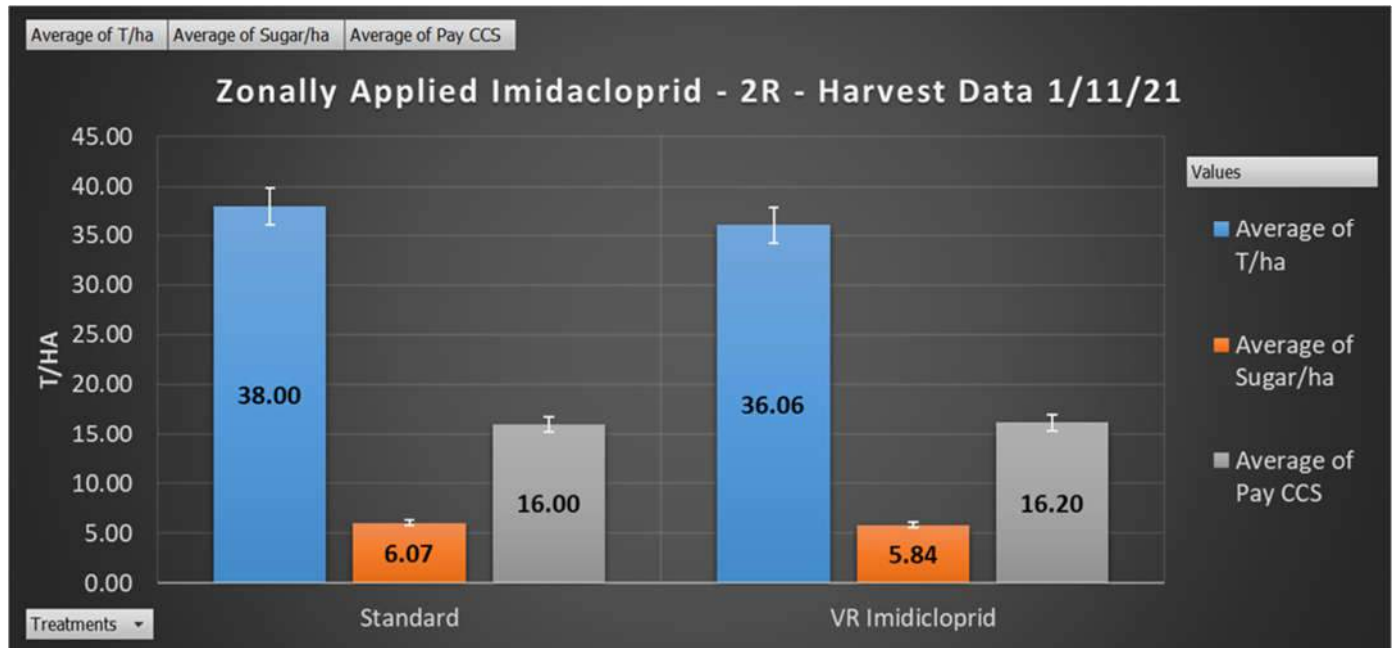
VR Imidacloprid  
0708A-3-6

Drone image 17 May 2021



### Harvest results for 2<sup>nd</sup> Ratoon

Harvest results were collected using cane rakes. Results were collected at Wilmar's Victoria Mill in the Herbert district.



Waiting on 2<sup>nd</sup> set of Water sample results for 2022 wet season.

## Conclusions and comments

**2020/2021** -Trial will continue for another season to capture grub counts, harvest data, and water quality data.

**2021/2022** – The trial is showing success at present with no grubs found when inspections were undertaken in zero imidacloprid application areas. No statistical yield difference between treatments after harvest results were analysed. First wet season 2020/2021 of water sample results suggest an improvement in imidacloprid run-off in zonally applied treatment areas. More sampling will be done this wet season of 2021/2022 to back up this indication.

### Advantages of this Practice Change:

- Less pesticide needed for the block by applying it to problem areas only.
- Less pesticide run-off in water leaving the block.

### Disadvantages of this Practice Change:

Growers will need variable rate control application equipment to implement this practice. VR controlled equipment can be expensive to purchase, and maps need to be generated by a specialist or grower trained to develop maps.

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

Yes

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

On all blocks that require grub control practices.