

# Project Catalyst Report

## Alternate Row Irrigation

### Grower Information

<b>Grower Name:</b>	Robert Zandonadi
<b>Entity Name:</b>	
<b>Trial Farm No/Name:</b>	BKN-09460A
<b>Mill Area:</b>	Pioneer
<b>Total Farm Area ha:</b>	80.08
<b>No. Years Farming:</b>	
<b>Trial Subdistrict:</b>	Airville
<b>Area under Cane ha:</b>	72ha

### Trial Status

- Continuing

## **Background Information**

### **Aim:**

This project aims to investigate the effects of irrigating cane in an alternating fashion and assess any positive or negative yield increases or decreases, as well as analyse the costs associated with the change in irrigation practice.

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

There is anecdotal evidence that irrigating every second row in the Burdekin can reduce water use and still maintain crop yields. There are a number of growers using this technique however there is no science behind the water saving or crop factors surrounding this practice. While there may be yield decreases from irrigating every second row, it is thought that irrigating in this fashion will reduce the amount of water applied and therefore reduce pumping costs and therefore increasing net profitability during the sugarcane crop.

### **Potential Water Quality Benefit:**

The potential water quality benefit can be seen through a likely reduction of irrigation runoff along with a potential for decreased nitrates in the runoff water. This is because there is a reduced amount of water running over areas that have had fertiliser applied to the hill.

### **Expected Outcome of Trial:**

The expected outcome is that there will be a reduced amount of cane yield in the alternating row treatments, however the economic benefit of the reduced inputs in the crop will outway the loss of yield leading to a profitable outcome.

**Service provider contact:** Farmacist

**Where did this idea come from:** Advisor

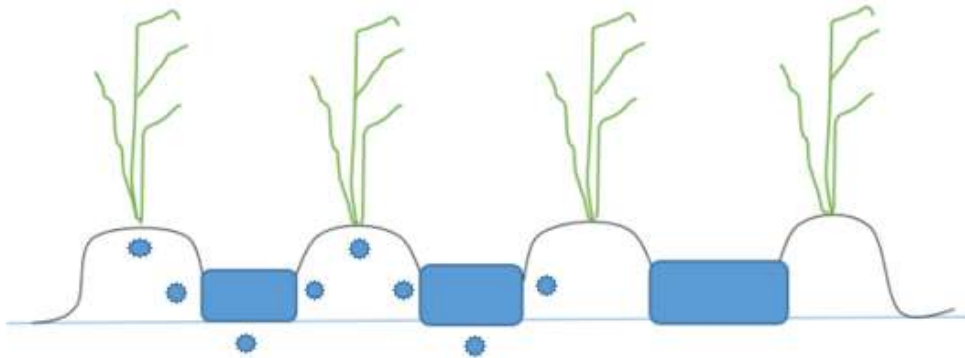
<b>Plan - Project Activities</b>	<b>Date : (mth/year to be undertaken)</b>	<b>Activities :(breakdown of each activity for each stage)</b>
<b>Stage 1</b>	<b>November 2016</b>	<ul style="list-style-type: none"> <li>• Plexus system is installed in each treatment and data recording will begin.</li> </ul>
<b>Stage 2</b>	<b>November/December 2016</b>	<ul style="list-style-type: none"> <li>• Growth measurements will occur</li> </ul>
<b>Stage 3</b>	<b>July 2017</b>	<ul style="list-style-type: none"> <li>• Harvest trial site</li> <li>• Analysis of trial data</li> </ul>
<b>Stage 4</b>	<b>August 2017</b>	<ul style="list-style-type: none"> <li>• Economic Analysis of first year trial complete</li> <li>• Reapplication of trial site year 2</li> </ul>
<b>Stage 5</b>	<b>July 2018</b>	<ul style="list-style-type: none"> <li>• Harvest of year 2 trial</li> </ul>
<b>Stage 6</b>	<b>August 2018</b>	<ul style="list-style-type: none"> <li>• Analysis of trial data</li> <li>• Economic Analysis of second year trial complete</li> <li>• Reapplication of trial site year 3</li> </ul>
<b>Stage 7</b>	<b>August 2019</b>	<ul style="list-style-type: none"> <li>• Harvest of year 3 trial</li> </ul>
<b>Stage 8</b>	<b>September 2019</b>	<ul style="list-style-type: none"> <li>• Analysis of trial data</li> <li>• Economic Analysis of third year trial complete</li> </ul>

## Project Trial site details

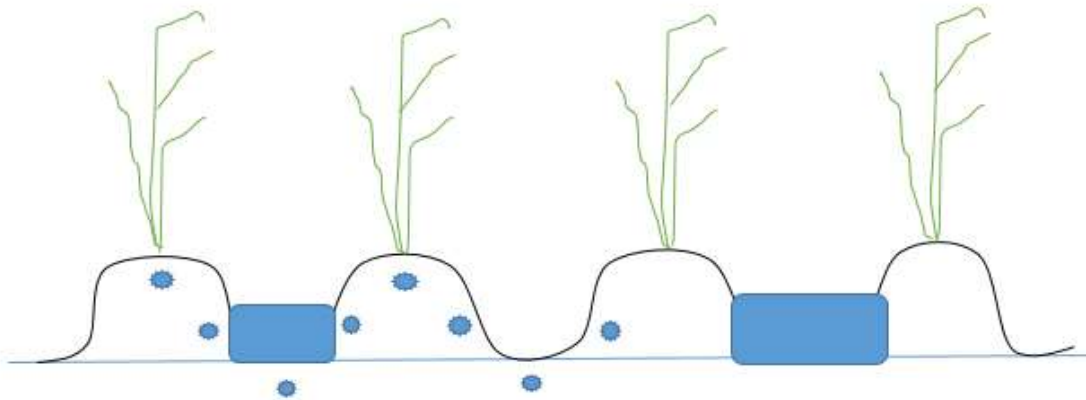
<b>Trial Crop:</b>	Sugarcane
<b>Variety:</b>	Q240
<b>Rat/Plt:</b>	1 <sup>st</sup> Ratoon (when implemented)
<b>Trial Block No/Name:</b>	BKN-09460A-7-2
<b>Trial Block Size Ha:</b>	8.86
<b>Trial Block Position (GPS):</b>	147.349518 -19.642284
<b>Soil Type:</b>	BDba (Top of Block) BUfc (Middle of block) RUgc (Bottom of Block)

## Block History, Trial Design:

### Treatment 1: Conventional



### Treatment 2: Alternate



Paddock is split in half down the centre. Harvesting will include harvesting randomised sections to add replications to the trial.

#### Treatments:

**Treatment 1** : Control- Every row is irrigated

**Treatment 2**: Alternate row irrigation- Cane is irrigated every second drill.

## Results:

### Year one results:

	TC/HA	CCS	Ts/ha
T1R1	165.6	12.1	20.0
T1R2	167.7	12.4	20.8
T1R3	158.3	12.7	20.1
T1R4	165.3	13.0	21.4
T1R5	153.1	12.8	19.5
T1R6	169.1	12.8	21.6
T2R1	160.4	12.5	20.0
T2R2	160.4	12.8	20.5
T2R3	162.5	12.6	20.5
T2R4	160.7	12.7	20.4
T2R5	153.6	12.9	19.8
T2R6	156.9	13.0	20.4

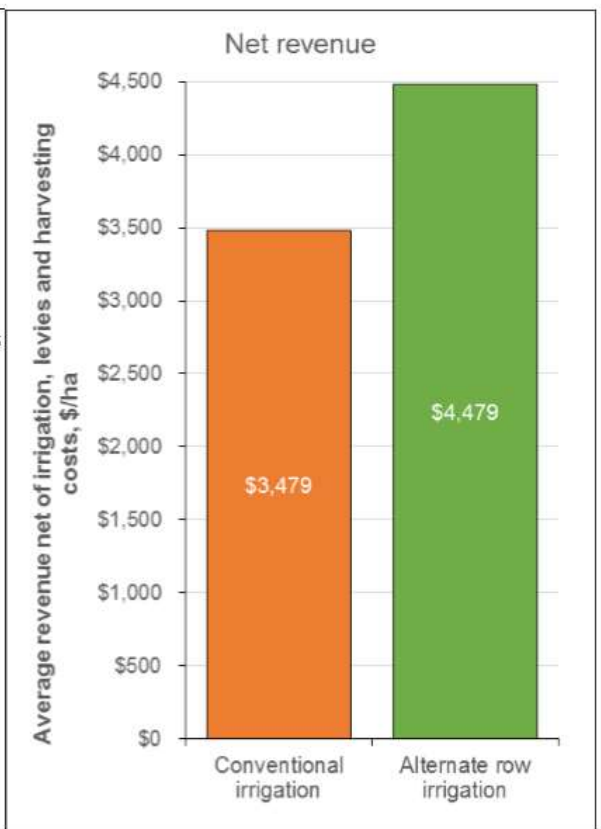
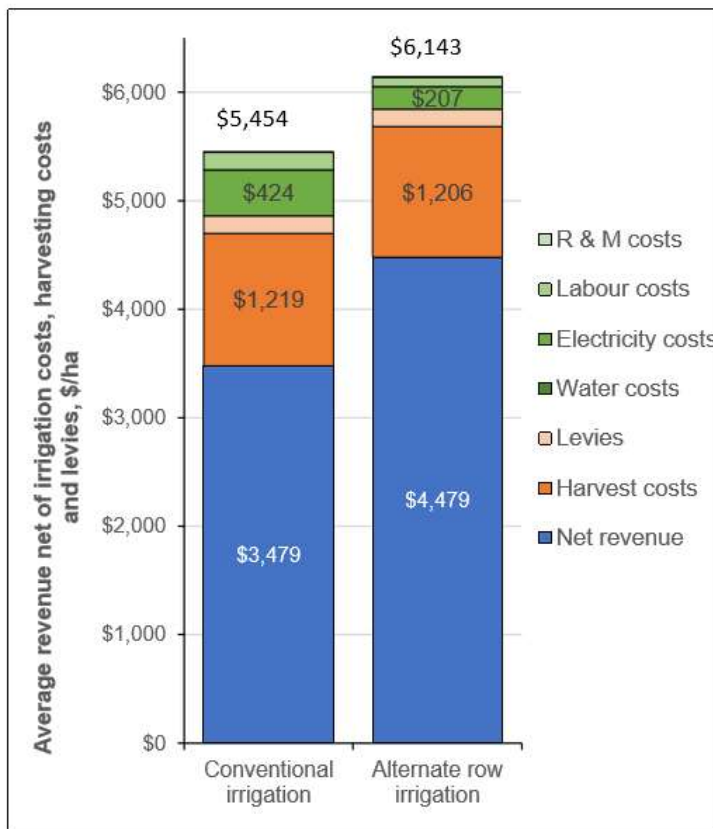
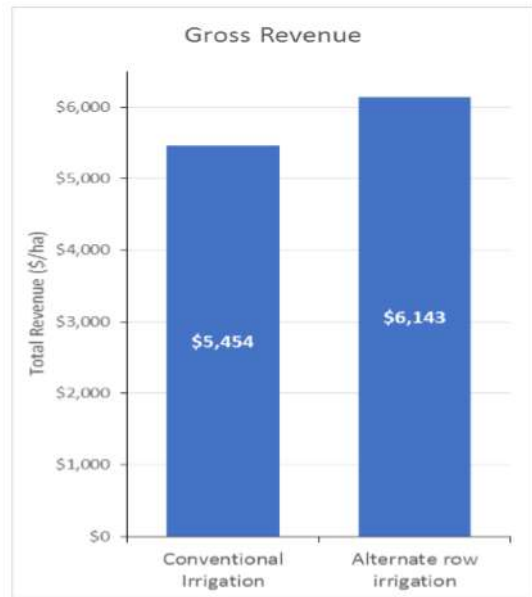
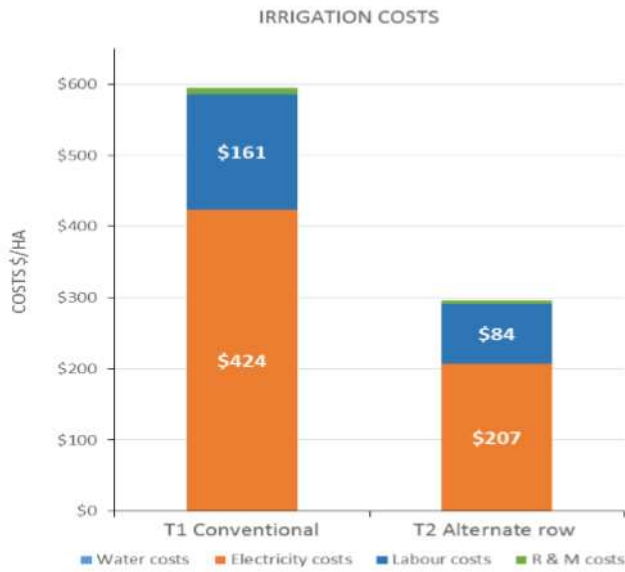
There was no difference between the conventional and alternate row irrigation systems in either tc/ha, CCS or ts/ha. The conventional system used an additional 0.3ML of water in comparison to the alternate row however economically there was no statistical difference between the two systems.

### Year two results:

	TC/HA	CCS	Ts/ha
T1R1	179.45	12.20	21.89
T1R2	160.65	12.50	20.08
T1R3	160.28	12.10	19.39
T1R4	175.26	12.05	21.12
T1R5	181.25	12.30	22.29
T1R6	158.63	12.85	20.38
T2R1	170.89	13.50	23.07
T2R2	165.82	13.70	22.72
T2R3	178.78	13.25	23.69
T2R4	152.23	13.25	20.17
T2R5	172.22	13.50	23.25
T2R6	164.98	13.80	22.77

In 2018, there was no statistical difference between tc/ha or ts/ha, however there was a significant difference between CCS at  $p=0.05$ . The alternate row irrigation had a significantly higher CCS then the conventional irrigation with an average of 13.5 vs 12.3. However if the confidence is set at  $p=1.0$  then there was a significant difference between the ts/ha with the alternate row cutting 1.75ts/ha better then the conventional. The alternate row irrigation used on average 0.6ML/ha per irrigation whilst the conventional was using double at 1.22ML/ha.

In terms of economics, the alternate row was much more profitable then the conventional with much lower input costs and a higher gross revenue as well as net revenue – see below.



This trial has been continued into the third year.

## Conclusions and comments

**Advantages of this Practice Change:**

**Disadvantages of this Practice Change:**

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

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