Catalyst Project Report – Final report

VR herbicide based on soil variability

Grower Information	
Grower Name:	Serge Berardi
Entity Name:	Berardi, Sergio & Sandra Jan ATF The S & SJ Berardi Family Trust
Trial Farm No/Name:	PCK-0746A
Mill Area:	Plane Creek
Total Farm Area ha:	167
No. Years Farming:	
Trial Subdistrict:	Koumala
Area under Cane ha:	146

Background Information

Aim: To evaluate and demonstrate the opportunity to apply variable rate application of Balance herbicide to different soil types within a field, based on soil characteristics identified by EC map boundaries and soil analysis.

Background:

In Queensland, the runoff of PSII inhibitor herbicides (in particular diuron and atrazine) is a major concern due to their potential impact on the Great Barrier Reef. Runoff from farm fields is a potential source of these herbicide residues.

Balance is an alternative soil residual herbicide to replace PSII herbicide products such as Diuron in situations of high grass weed pressure or where grass weed species provide strong competition to cane e.g. guinea grass.

Recent Balance label changes provide for product application rates to be tailored to soils with different characteristics, based on CEC, OC% and clay content. Where these soil properties can be identified, there is an opportunity to reduce Balance application rates leading to reduced risk of runoff, reduced risk of phytotoxicity and improved economics while maintaining effective weed control.

Potential Water Quality Benefit:

Reduced PSII herbicide runoff

Expected Outcome of Trial:

Decrease in herbicide use while maintaining adequate weed control

Service provider contact: Farmacist

Where did this idea come from: Grower/Farmacist

Plan - Project Activities	Date: (mth/year to be undertaken)	Activities :(breakdown of each activity for each stage)
Stage 1	**September 2016**	Apply Balance herbicide
Stage 2	**December 2016**	Weed assessments
Stage 3	**February 2017**	Sensor scan for weed populations
Stage 4	**August 2017**	Harvest production
Stage 5	**October 2017**	Reapply treatments
Stage 6	**December 2017 and March 2018**	Visual weed assessments
Stage 7	**October 2018**	Harvest treatments

Project Trial site details

Trial Crop:	Sugar cane
Variety: **Rat/Plt:**	Q238 3R
Trial Block No/Name:	PCK-0746A-04-01
Trial Block Size Ha:	2.5 ha
Trial Block Position (GPS):	149.231327, -21.601986
Soil Type:	Clay – Clay Loam

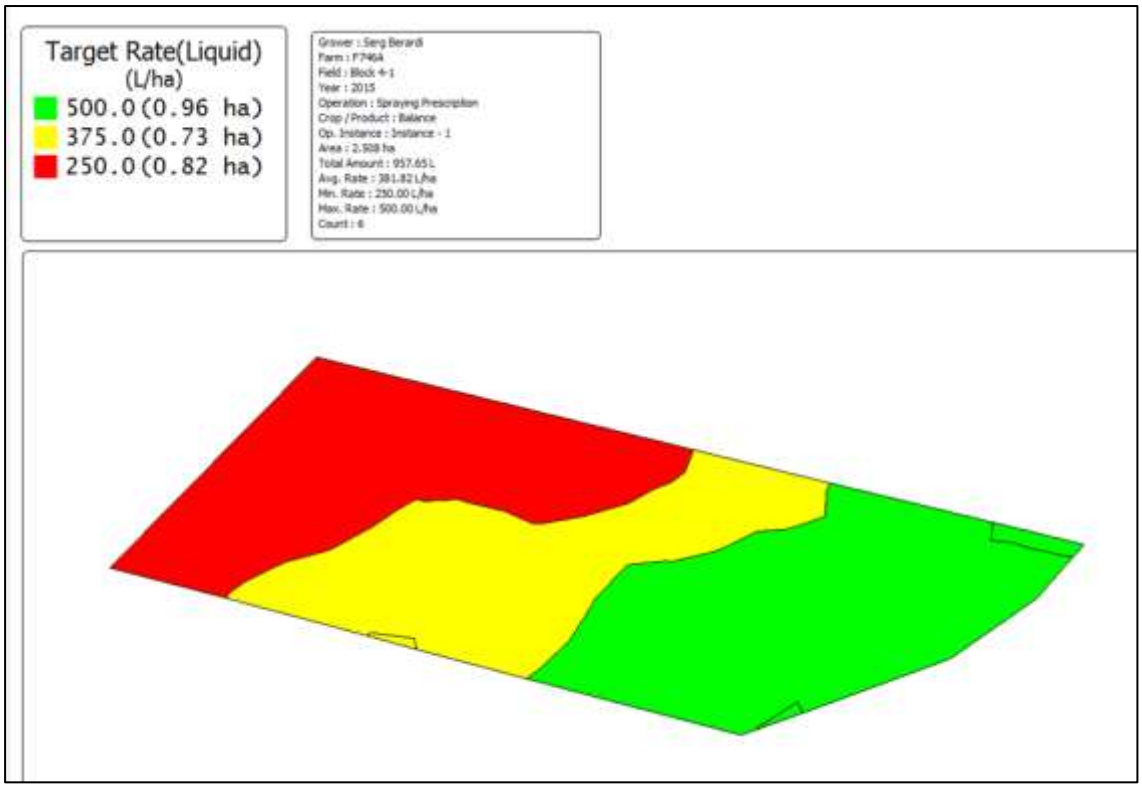
Block History, Trial Design:

Berardi S & SJ

Treatment No	Treatment Name	Balance Low Zone Product Rate g/ha	Water Rate L/ha	Balance Mid Zone Product Rate g/ha	Water Rate L/ha	Balance High Zone Product Rate g/ha	Water Rate L/ha
1	VR Balance	100	250	150	375	200	500
2	Balance 100g/	100	250	100	250	100	250
3	Balance 200g/	200	500	200	500	200	500

North

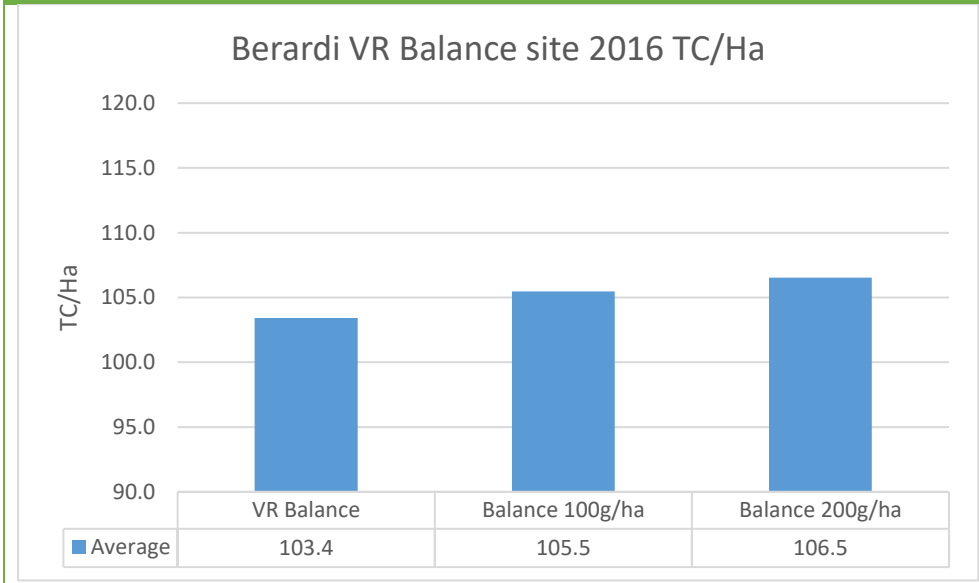
Trial Plan			Balance rate g/ha			Paraquat Rate L/ha			Water Rate			
Rows in strip	Treatment No		100	150	200	0.8	1.2	1.6	Zone 1	Zone 2	Zone 3	
5		Buffer - VR Balance										
5	1	VR Balance							250	375	500	**Rep 3**
5	2	Balance 100g/ha							250	250	250	
5	3	Balance 200g/ha							500	500	500	
5	2	Balance 100g/ha							250	250	250	**Rep 2**
5	3	Balance 200g/ha							500	500	500	
5	1	VR Balance							250	375	500	
5	1	VR Balance							250	375	500	**Rep 1**
5	3	Balance 200g/ha							500	500	500	
5	2	Balance 100g/ha							250	250	250	
1		Buffer - Balance 100g										
51												

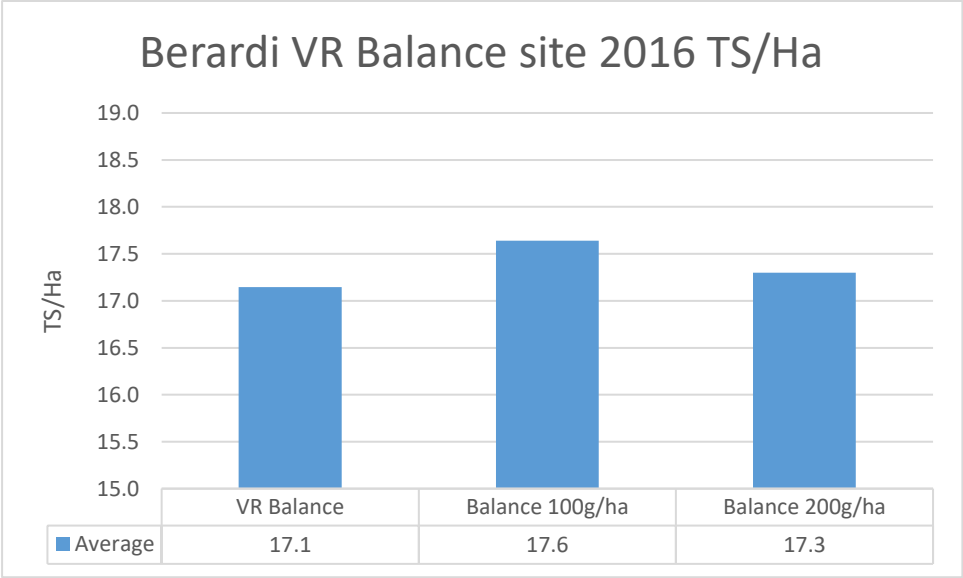


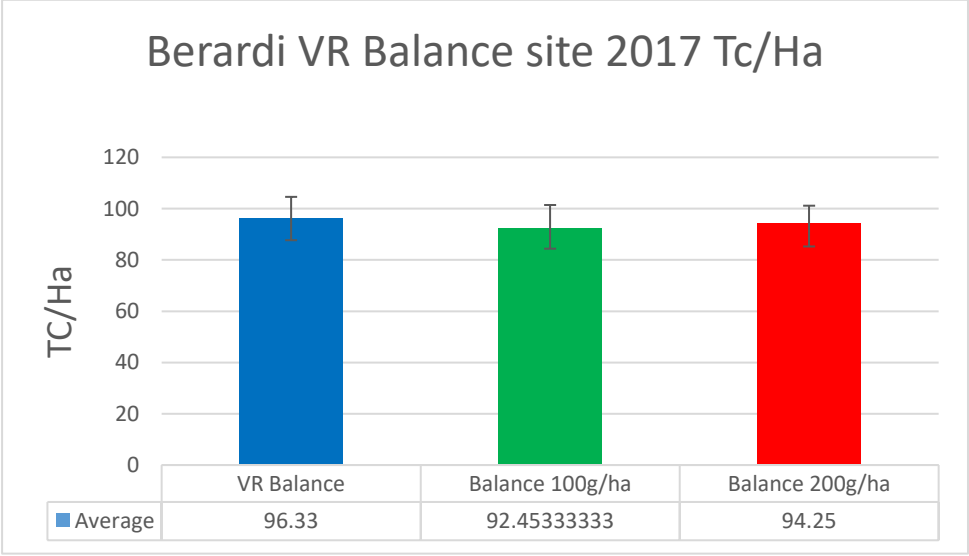
Treatments:

1. Variable Rate Balance according to soil type
2. Balance applied at 100g/ha
3. Balance applied at 200g/ha

Results:


Berardi VR Balance site 2016 TC/Ha
120.0
115.0
110.0
105.0
100.0
95.0
90.0
TC/Ha
VR Balance
Balance 100g/ha
Balance 200g/ha
Average
103.4
105.5
106.5


Berardi VR Balance site 2016 TS/Ha
19.0
18.5
18.0
17.5
17.0
16.5
16.0
15.5
15.0
TS/Ha
VR Balance
Balance 100g/ha
Balance 200g/ha
Average
17.1
17.6
17.3


Berardi VR Balance site 2017 Tc/Ha
120
100
80
60
40
20
0
TC/Ha
VR Balance
Balance 100g/ha
Balance 200g/ha
Average
96.33
92.45333333
94.25

Weed Assessments – March 2018

Unlike the first 2 years of this trial, the 2017-2018 season saw the appearance of small amounts of weeds. The table below shows that a small percent of weed coverage was noted in each treatment in one of the repetitions. This can be expected in an older ratoon crop as weed pressure builds up over the course of the crop cycle which is then reduced with a fallow period.

	VR Balance	100g/ha Balance	200g/ha Balance
Rep 1	0	2%	1%
Rep 2	2%	0	0
Rep 3	0	0	0

Harvest Results 2018

Conclusions and comments

Applying variable rate balance had no negative impact on weed pressure or cane yield over the course of the trial. Cost savings can be significant over a large area over a number of years**.** Varying the rate of Balance to soil type is an easy way to reduce pesticide use, chemical toxicity and environmental impacts.

Advantages of this Practice Change:

A reduced amount of herbicide applied to the paddock, reducing amount that could run off in rainfall events. Increased profitability.

Disadvantages of this Practice Change:

Risk of increased weed pressure, however this was not evident in this trial.

Will you be using this practice in the future: Yes
% of farm you would be confident to use this practice: In locations where soil variability warrant the use of variable rate applications.
Project site Complete.