

# Catalyst Project FINAL Report

## Grower Information

<b>Grower Name:</b>	Brian Dore
<b>Entity Name:</b>	Dore & Co
<b>Trial Farm No/Name:</b>	F7077, F7755, F2081
<b>Mill Area:</b>	Tully
<b>Total Farm Area ha:</b>	663.69 Ha
<b>No. Years Farming:</b>	30+
<b>Trial Subdistrict:</b>	Euramo (F7077, F7755) & Murray Upper (F2081)
<b>Area under Cane ha:</b>	663.69 Ha including Fallows

## **Background Information**

### **Aim:**

We are testing if we can create a variable rate herbicide application map to reduce the amount of pre-emergent herbicide used on the farm, without compromising weed control.

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

Guinea grass we would consider to be the major weed on our farm, and our herbicide rates used on a block is quite often determined by our impression of the weed status of the block e.g. dirty or clean. This leads us to two scenarios. The first is if we consider the block to be dirty, ie has a reasonable quantity of guinea grass, we would traditionally use the top rate or a high rate of pre-emergent herbicide across the entire block. In the second scenario we would consider the block to be reasonably clean, we would then use a lower rate of pre-emergent herbicide. Both of these scenarios have flaws. The first scenario, we will use much more herbicide than is necessary on the majority of the field, the second scenario means that the small areas with guinea grass, may continue to expand so in later ratoons the block is then considered dirty.

In this project, we are recording where we are spot spraying our stools of guinea grass. From this we are buffering each point for a radius of 20 m and then developing a variable rate prescription for herbicide application. This will then allow us to use a higher rate of pre-emergent just in the areas where guinea grass is present, allowing us to maintain good weed control within the crop.

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

If this strategy works it will reduce the amount of pre-emergent herbicide being used in the immediate crop and in the future ratoons. If the block is too heavily infested and we follow the block, we will then be able to use knockdown herbicides to control the guinea grass instead of a pre-emergent, so that we can clean up the problem areas before planting the block back to cane.

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

Expect to be able to use less imazapic or Balance across the farm for the control of Guinea Grass.

### **Service provider contact:**

Charissa Rixon – T.R.A.P. Services

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

Brian Dore

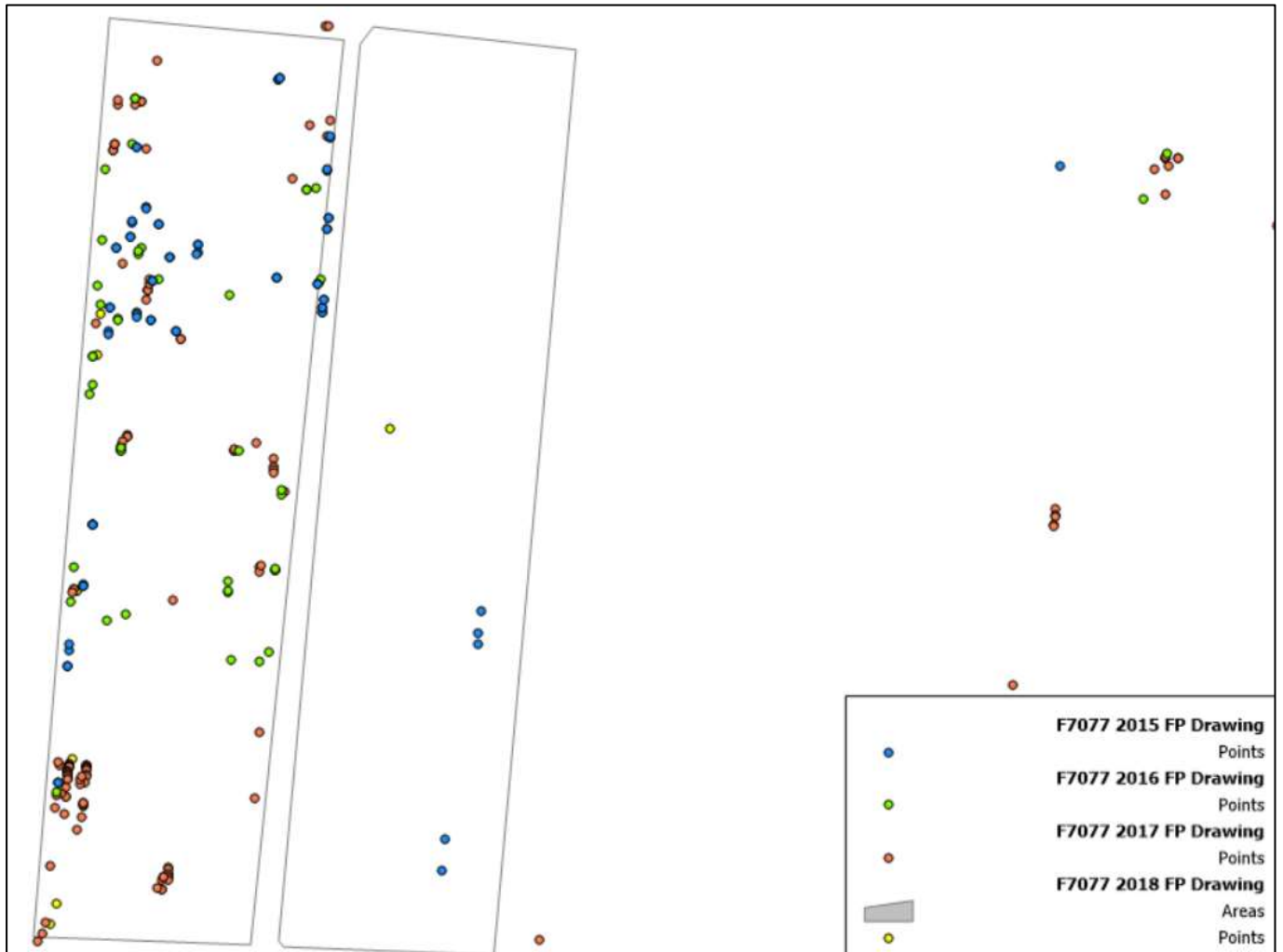
<b>Plan - Project Activities</b>	<b>Date : (mth/year to be undertaken)</b>	<b>Activities : (breakdown of each activity for each stage)</b>
<b>Stage 1</b>	<b>2016</b>	Log spot spray points on the farm Create prescription maps from feature points from the spot sprayer logger Identify suitable tank mixes that can be used as a variable rate application
<b>Stage 2</b>	<b>2017</b>	Conduct variable rate herbicide application from the prescription map Log spot spray points on the farm Analyse changes in spot sprayer data logging points.
<b>Stage 3</b>	<b>2018</b>	Create VRA herbicide maps from 2017 Spot Spray Points Conduct variable rate herbicide application from the prescription map Log spot spray points on the farm Analyse changes in spot sprayer data logging points Identify paddos with and without a prescription map and identify if the VRA application is giving equivalent or superior control compared to the standard blanket herbicide application

## Project Trial site details

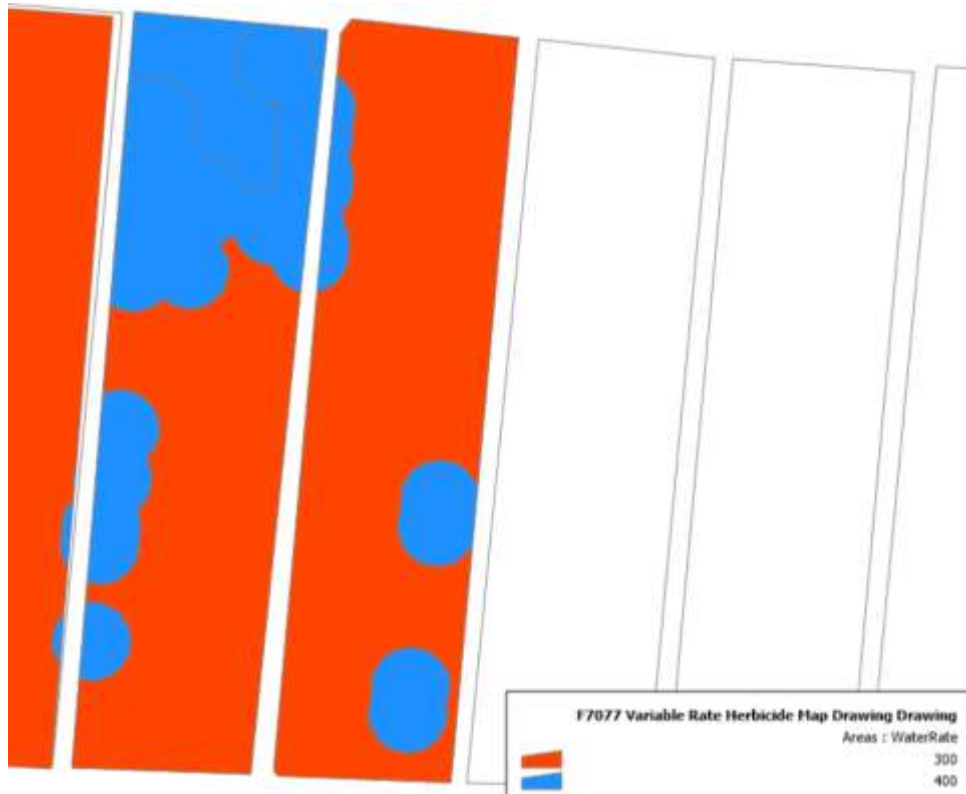
<b>Trial Crop:</b>	Sugarcane
<b>Variety: Rat/Plt:</b>	Various
<b>Trial Block No/Name:</b>	F7077 and F7755 and F2081 Various blocks
<b>Trial Block Size Ha:</b>	N/A
<b>Trial Block Position (GPS):</b>	N/A
<b>Soil Type:</b>	Various

## Block History, Trial Design:

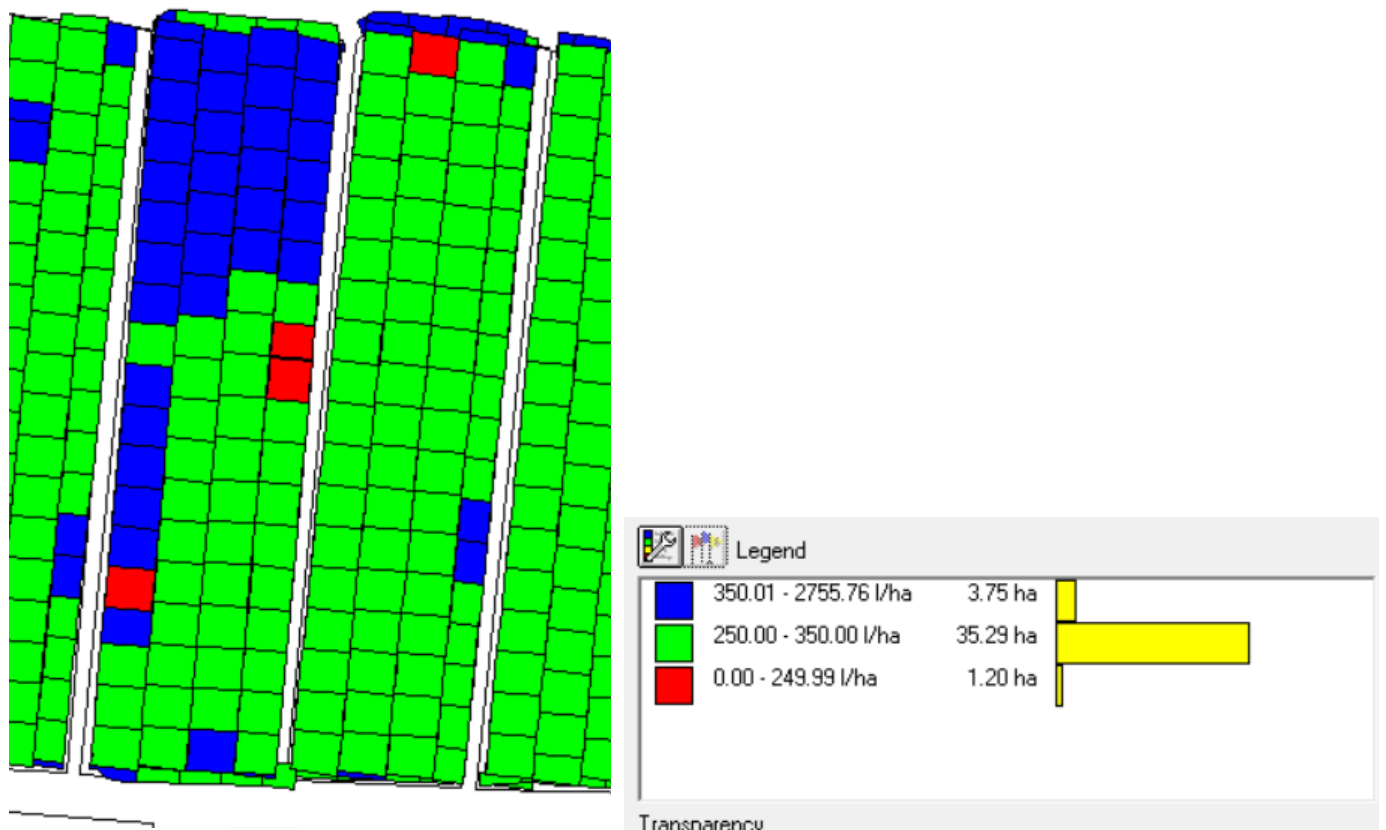
### Recorded Spot Spray points for 2015, 2016, 2017 and 2018



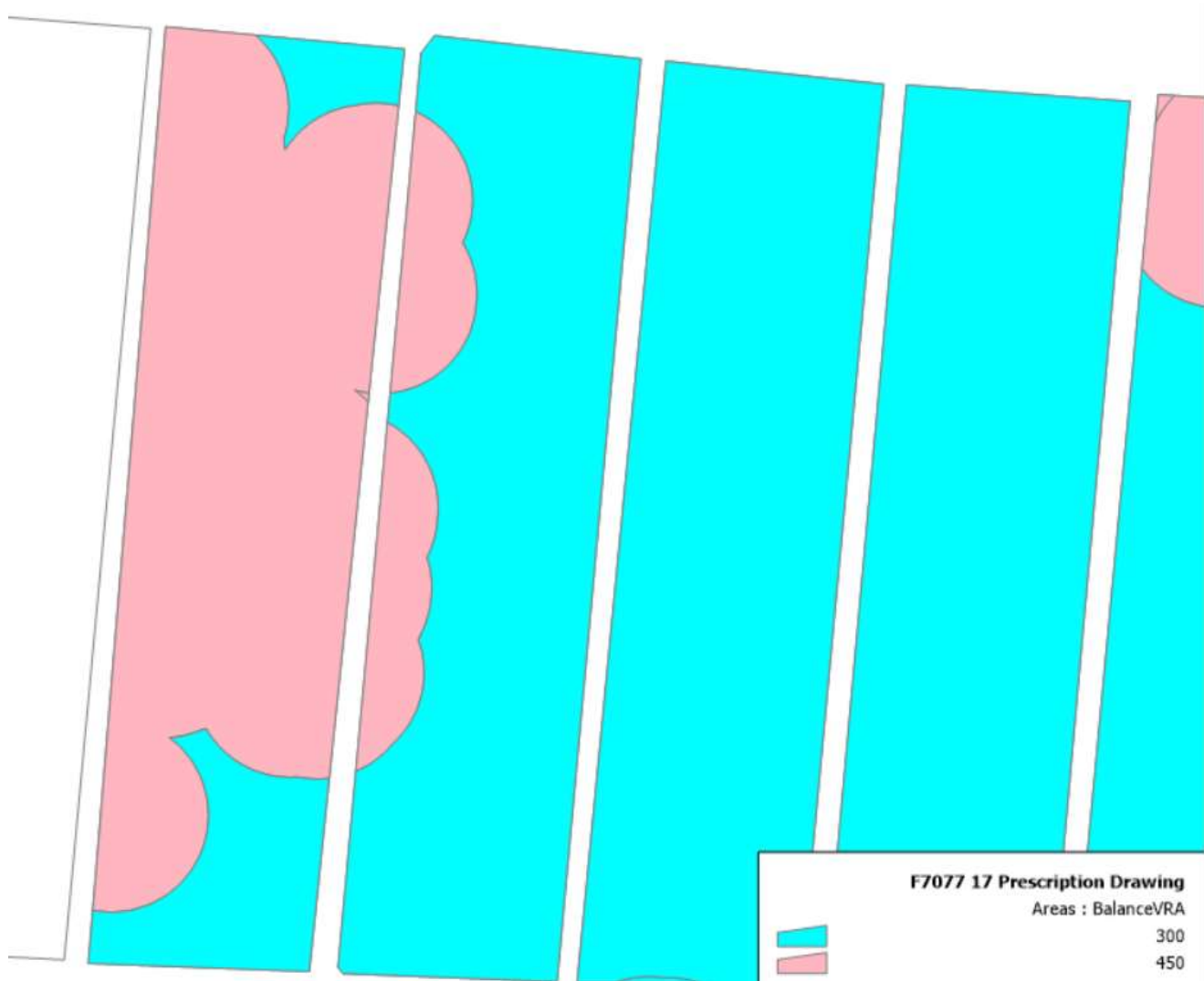
Prescription developed in 2016 from 2015 Feature Points recorded from spot sprayer



Spray coverage map from GPS after application in 2018 of Imazapic using the 2016 prescription (incorrect prescription was loaded for spraying)



Prescription developed in 2017 for Balance post Harvest based on 2016 Feature points.



**Treatments:**

N/A

## Results:

To date, two tank mixtures have been identified as being suitable for VRA herbicide application for pre-emergent control of Guinea Grass.

1. Imazapic @ 100 ml/100L + Paraquat at 400 ml/100L applied at 300 L/ha in low pressure areas and at 400 l/Ha in high pressure areas.
2. Balance @ 26.66 g/100L + Paraquat at 300 ml/100L applied at 300 L/ha in low pressure areas and at 450 l/ha in high pressure areas.

Imazapic is used in the lighter soils where OC and CEC is low. In heavier soils with and OC >2 and a higher CEC Balance is the product of choice.

We have been able to successfully log the spot sprayer application points and create VRA maps, however, due to screen issues with the GPS in 2017, we were unable to do any VRA applications in 2017. In 2018 a VRA application of Imazapic tank mixture was used in some fields, however, the incorrect prescription was loaded. This highlights the importance of having a standardized naming regime. Despite using the 2016 prescription in 2018, the application of a higher rate of pre-emergent in these selected areas has reduced the amount of spot spraying required in this field in 2018.



## Conclusions and comments

The project appears to have promise, and a feat analysis shows that for a large farm especially where GPS technology is already in use, it is a viable option financially.

The creation of the prescription maps at this point is still slow and clumsy, however it is improving with practice. If attempting to do this, it is advisable to have an advisor available to help create the prescription maps until you are confident doing it yourself.

### **Advantages of this Practice Change:**

The advantage of being able to map the weed distribution of guinea and hamil grass, is that it will assist with farm planning and reduce our herbicide useage. Traditionally if a block is considered "Dirty" the entire block would be sprayed with the top rate of pre-emergent, whereas with this set up we only need to spray the problem areas within the block with the high rate of pre-emergent. If there are large areas on the map to be sprayed with in a block, we may fallow the block earlier than planned and use knockdowns in a legume fallow to control the grass rather than persisting with pre-emergents in crop. This will help to improve productivity of the farm overall.

### **Disadvantages of this Practice Change:**

Need someone with the technical expertise to convert the data points into a prescription map that will work when uploaded back into the sprayer GPS

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

We will continue to trial and evaluate this practice providing that the prescription maps and GPS is working.

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

All spot spraying is being logged across the farm, and prescriptions are being created and used where possible.