

# Catalyst Project Report

## Grower Information

<b>Grower Name:</b>	Frank Mugica
<b>Entity Name:</b>	
<b>Trial Farm No/Name:</b>	9305A
<b>Mill Area:</b>	Kalamia
<b>Total Farm Area ha:</b>	119
<b>No. Years Farming:</b>	Since 2013 in Kalamia, previously farmed in Clare and Dalbeg
<b>Trial Subdistrict:</b>	Kalamia Mill
<b>Area under Cane ha:</b>	119

## **Background Information**

### **Aim:**

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

The UV stable residual herbicides, Isoxaflutole and Imazapic are commonly being used in the Burdekin (and other cane growing regions) to control difficult to kill grasses such as wild sorghum, guinea grass and Rhodes grasses. The runoff characteristics of these herbicides under furrow irrigation need to be evaluated so growers can minimise the chances of these products and their breakdown products entering the estuarine and marine environments.

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

Identify the runoff characteristics under a furrow irrigation system of the UV stable products, Balance (Isoxaflutole) and Flame (Imazapic).

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

Recommendations on use and capture of tailwater from blocks sprayed with these UV stable residual herbicides

### **Service provider contact:** Evan Shannon

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

There are no comparisons of the runoff characteristics of these products.

<b><u>Plan - Project Activities</u></b>	<b>Date : (mth/year to be undertaken)</b>	<b>Activities :(breakdown of each activity for each stage)</b>
<b>Stage 1</b>	<b>31/1/17</b>	Flame and Balance applied
<b>Stage 2</b>	<b>1/2/17 7/2/17 17/2/17 14/3/17 18/3/17</b>	Samples collected on these dates and sent to Qld Health for analyses
<b>Stage 3</b>		
<b>Stage 4</b>		
<b>Stage 5</b>		

## Project Trial site details

<b>Trial Crop:</b>	Sugarcane
<b>Variety: Rat/Plt:</b>	Q183 2R
<b>Trial Block No/Name:</b>	8-1
<b>Trial Block Size Ha:</b>	18.27
<b>Trial Block Position (GPS):</b>	
<b>Soil Type:</b>	Fine sandy loam/clay loam

## Block History, Trial Design:

This farm has had a long history of wild sorghum issues. The current grower has only had this farm for 3 years and so is really trying to develop economically viable solutions to keeping the wild sorghum at bay.

The products being tested are likely long term control agents but the runoff characteristics of these products are unknown.

### Treatments:

#### Following treatments applied on 31/1/17:

- (A) 175g/ha Balance + 600g/ha Mentor + 1l/ha Agritone + 1.4 l/ha Gramoxone
- (B) 300ml/ha Flame + 600g/ha Mentor + 1l/ha Agritone + 1.4 l/ha Gramoxone

## Results:

**Table 1:** Mean herbicide concentrations from 3 irrigation and one rainfall events on Farm 9305A

Date of events	Mentor (Metribuzin) $\mu\text{g/l}$	Balance Diketonitrile (DKN) $\mu\text{g/l}$	Flame (Imazapic) $\mu\text{g/l}$	Diurex (Diuron) $\mu\text{g/l}$	Dual Gold (Metolachlor) $\mu\text{g/l}$
1/02/17	37	10.5	0.21	0.36	0.17
7/02/17	4.3	2.5	0.07	0.21	0.12
17/02/17	4.1	4.2	0.09	0.10	0.07
18/02/17 (after rain)	0.8	1.2	0.025	0.03	0.06
<b>Total <math>\mu\text{g/l}</math></b>	<b>46.2</b>	<b>18.4</b>	<b>0.405</b>	<b>0.07</b>	<b>0.42</b>

The current guidelines for DKN and Imazapic for freshwater bodies are 0.79  $\mu\text{g/l}$  and 2.2  $\mu\text{g/l}$ , respectively (O.King DISITI 2017).

None of the samples showed Imazapic levels at this threshold, whilst all of the four samples had DKN above the guideline figure.

The total quantity of DKN detected in the runoff water from the 4 events was 18.4  $\mu\text{g/l}$ ; hence given an assumed runoff of 20% of 1ML/ha this equates to 200,000l/ha per runoff event or 800,000l in total. Therefore  $18.4 \mu\text{g/l} * 800,000\text{l} = 14.72\text{g/ha}$  lost as runoff.

The application rate of Balance was 175g/ha or 131g ai/ha (Balance containing 750g/kg of Isoxaflutole) or 10.8% of the applied product was lost as runoff.

In contrast, the concentration of Imazapic in the runoff water from the 4 events was 0.405  $\mu\text{g/l}$ , and assuming similar runoff characteristics to the Balance treatment this 800,000l of water with a concentration of 0.405  $\mu\text{g/l}$  will equate to  $0.405 \mu\text{g/l} * 800,000 = 0.081\text{g/ha}$  lost as runoff from an application of 300ml/ha or 72 gai/ha (Flame containing 240g/kg Imazapic) Therefore, only 0.44% of the applied Flame applied was lost as runoff.

The Metolachlor and Diuron values were background values. Metolachlor was last applied on this block in August 2014, approximately 30 months earlier than the sampling period. Similarly, Diuron had been applied months previously. The current guidelines for Metolachlor are 1.3 $\mu\text{g/l}$  and Diuron was 0.2 $\mu\text{g/l}$ , although the Diuron figure is in review as of Sept 2017.

## Conclusions and comments

Initial results would suggest much less Imazapic leaving the paddock than Isoxaflutole or rather DKN its' breakdown product.

Furthermore, the guidelines values for freshwater bodies are 0.79µg/l and 2.2µg/l or Balance (DKN) and Imazapic, respectively. The **Balance (DKN)** values were **exceeded** in each event whilst the **Imazapic** values **did not** reach the guideline value at any event.

This trial is being repeated in the Burdekin delta in September/October 2017.

### Advantages of this Practice Change:

Raised awareness of loss of balance. Need to capture in recycle pits if possible.

### Disadvantages of this Practice Change:

If no recycle pit then use imazipep, early straight after fertilising after harvest.

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

Yes

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

Only where *S. arundinaceum* (wild sorghum) is a problem weed.