

Catalyst Project Report

Grower Information

Grower Name:	Con Christofides
Entity Name:	Christofides Brothers Trust
Trial Farm No/Name:	9082A (Orlandi's)
Mill Area:	Kalamia
Total Farm Area ha:	117
No. Years Farming:	This family currently farm over 700ha in the Jarvisfield region of the Burdekin delta. The Christofides family have farmed in this region since the 1920s.
Trial Subdistrict:	Kalamia Mill
Area on this farm under cane (ha)	108

Background Information

Aim: To assess the runoff characteristics of Isoxaflutole (DKN) and Imazapic under furrow irrigation conditions in the Burdekin

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 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.

<u>Plan - Project Activities</u>	Date : (mth/year to be undertaken)	Activities :(breakdown of each activity for each stage)
Stage 1	12/09/2017	Flame and Balance treatments applied
Stage 2	15/09/2017 25/09/2017 03/10/2017 11/10/2017 18/10/2017 20/10/2017	Samples collected on these dates and sent to Qld Health for analyses

Project Trial site details

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

Block History, Trial Design:

This farm has had a long history of wild sorghum issues with the farm being abandoned for 2 years prior to purchase. The current grower has only had this farm for 15 months and is trying to develop economically viable solutions to keeping the wild sorghum (*Sorghum arundinaceum*) under control.

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

The paddock had been extensively levelled prior to being planted in April 2017. Soil structure was significantly deteriorated from the levelling process and even with the addition of 4t/ha gypsum, water penetration proved to be a significant issue.

This was exacerbated by the dry conditions in late 2017 and the pure (low EC) irrigation water which causes dispersion of the particles of the soil surface and tends to limit water infiltration on parts of the paddock.

Treatments:

Following treatments applied on 12/09/2017 following the irrigation post fertilising and hilling up of the plant cane.

- (A) 175g/ha Balance + 300g/ha Mentor + 2.0kg/ha Gesaprim + 0.5kg/ha Baton 1.5 l/ha Gramoxone
- (B) 300ml/ha Flame + 300g/ha Mentor + 2.0kg/ha Gesaprim + 0.5kg/ha Baton 1.5 l/ha Gramoxone

Results:

Table 1: Concentrations of Isoxaflutole (DKN) and Imazapic from 4 irrigation and two rainfall events in late 2017 in the Lower Burdekin

Date of sampling events	Balance Diketonitrile (DKN) µg/l	Flame (Imazapic) µg/l
15/09/02/17	29.5	6.9
25/09/2017	11.0	1.8
3/10/2017	2.9	0.7
11/10/2017	1.7	0.8
18/10/2017	15.0	3.2
20/10/2017	11.9	2.1
Total µg/l	74.9	15.5

The quantities of DKN detected in the runoff water from the 6 events was 74.9µg/l; hence given an assumed runoff of 20% of 0.5ML/ha this equates to 100,000l/ha of runoff water.

Therefore $74.9\mu\text{g/l} * 100,000\text{l} * 6 \text{ events} = 44.9\text{g/ha}$ lost as runoff

from an application of 175g of Balance/ha or 131g ai/ha (Balance containing 750g/kg of Isoxaflutole) or 34% of the applied product lost as runoff.

In contrast, the concentration of Imazapic in the runoff from the 6 events was 15.5µg/l, and assuming similar runoff characteristics to the Balance treatment a concentration of 15.5µg/l will equate to $15.5\mu\text{g/l} * 100,000 * 6 \text{ events} = 9.3\text{g/ha}$ lost as runoff from an application of 300ml/ha or 72 gai/ha (Flame containing 240g/kg Imazapic) or 12.9% of the applied product lost as runoff.

Conclusions and comments

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

This trial was repeated in August 2017 in the Jarvisfield Burdekin delta beginning in September 2017.

The proportion of chemicals leaving the field in runoff water is quite acceptable at less than 2% of applied.

Advantages of this Practice Change:

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

Disadvantages of this Practice Change:

If no recyle pit then use imazipec, 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.