

# SANDY CREEK PROJECT

# FIELD TRIAL

Targeting herbicides to weed pressure – an opportunity worth pursuing

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Figure 1: Grower Tony Bugeja is happy with the band sprayed and ends only sprayed results

## BACKGROUND

Applying herbicides to cane paddocks based on weed pressure allows for a more effective and efficient use of herbicides. However, the chosen method of placement and application can alter the potential for off-site movement of the chemical being applied.

This evaluation trial was conducted by the Farmacist Sandy Creek project team on the farm of Tony, John and Mark Bugeja near Homebush. The team investigated three different approaches to herbicide application, tailored to the individual paddock weed pressure.

## METHOD

The trial was conducted by applying 150 g/ha of a herbicide containing isoxaflutole (750 g/kg active ingredient), using three differing application approaches.

- Treatment 1 - standard practice where herbicide was broadcast applied over 100% of the paddock area.
- Treatment 2 - involved raking the trash from the stool to apply herbicide in a banded spray over this raked area only. The product was applied at 150 g/ha in the banded area only – effectively 50% of the paddock area was sprayed.
- Treatment 3 - had herbicide applied to the end 10 m of either end of each row as a blanket residual herbicide treatment, with the remainder of the block remaining unsprayed.

Event sampling equipment was installed in each of the three treatments to collect runoff water samples during runoff events. These were analyzed and compared for differences in losses of the active ingredient isoxaflutole. Runoff water samples were collected from a total of five rainfall events.

## RESULTS

Isoxaflutole concentrations in runoff water for each treatment are presented in Figures 2, 3 and 4 below. Isoxaflutole concentrations generally declined with time after application, although there was a spike in the banded treatment at 70 days after application which is difficult to explain. The end sprayed only treatments were significantly lower than the broadcast and banded treatments at all sampling times. Apart from the result at 70 days, the banded treatments were consistently lower than the broadcast concentrations.

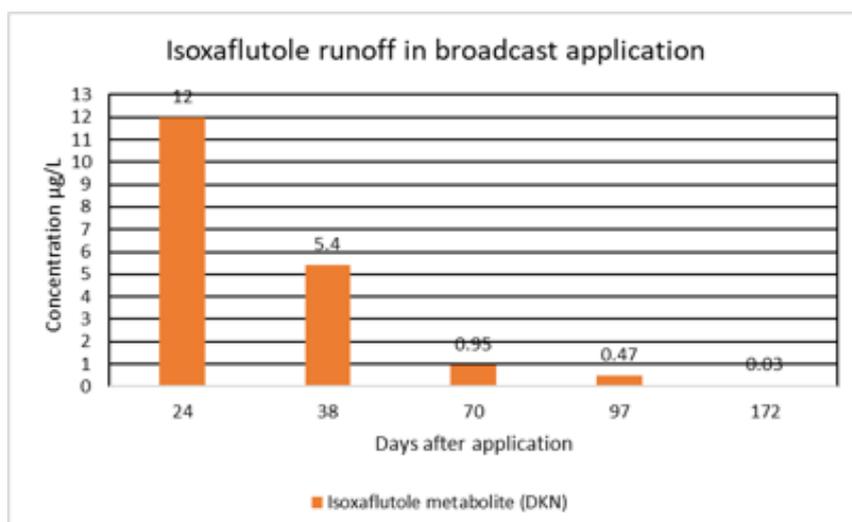


Figure 2: Treatment 1 broadcast sprayed runoff concentrations

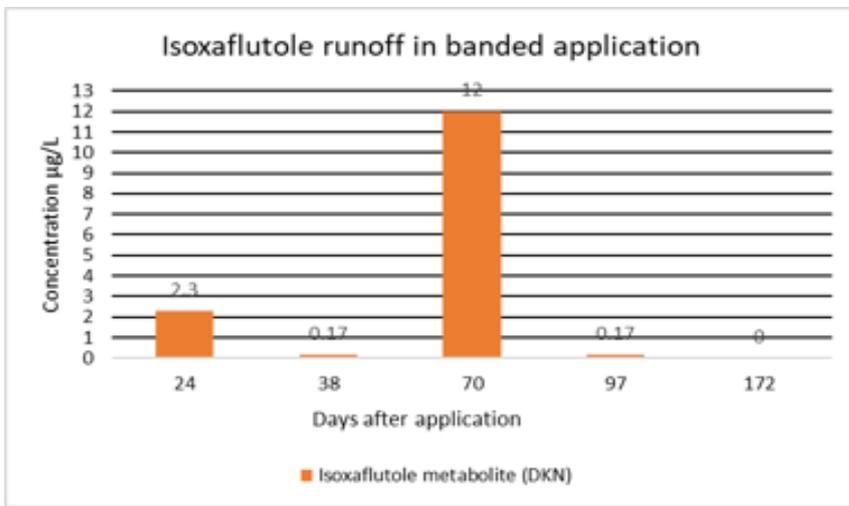


Figure 3: Treatment 2 band sprayed runoff concentrations

Figure 4: Treatment 3 end sprayed runoff concentrations

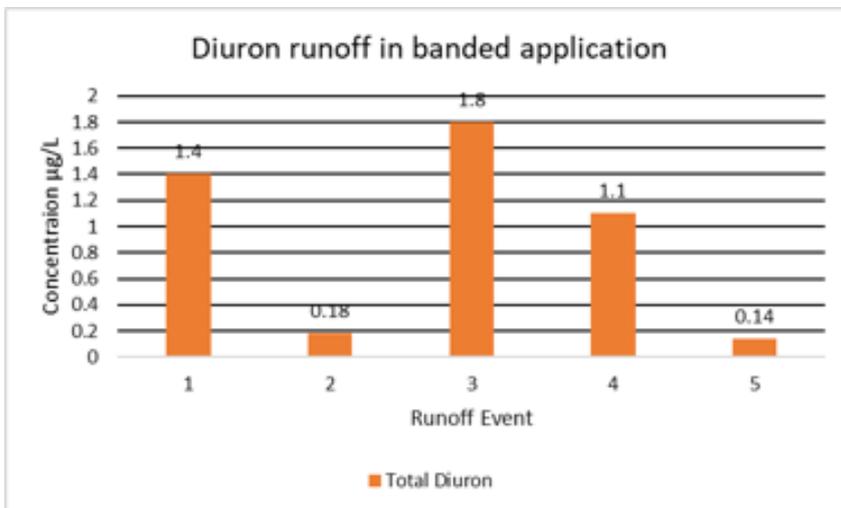
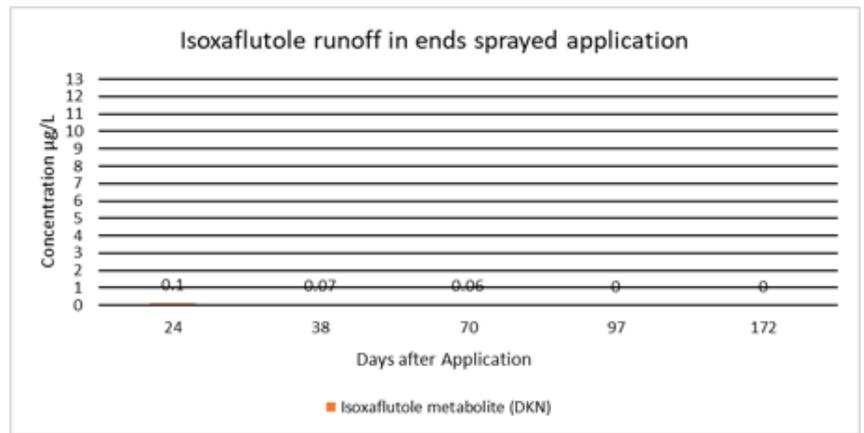


Figure 5: Diuron runoff for banded application which was a first ratoon crop – two years after application

## DIURON LOSSES

For all treatments, there was also an observed diuron concentration found in the runoff water samples. These concentrations ranged from 0.1 to 1.8 µg/L. In all treatments diuron had been applied at 3 kg/ha at out-of-hand (OOH) stage when the paddocks were plant cane. The banded spray treatment was now first ratoon and the broadcast and end sprayed treatments were now second ratoon. This data shows that although diuron had been applied one to two years prior to the runoff water samples been collected, the active ingredient was still able to be detected in runoff water leaving the field.

The Sandy Creek project has been funded by the Queensland Government's Reef Water Quality Program since 2015 after a group of growers sought assistance from the government to identify and better understand pesticide losses from their farms. Since 2018 there has been an increased focus on the Brightly sub catchment within Sandy Creek catchment because of its defined catchment and small number of growers.

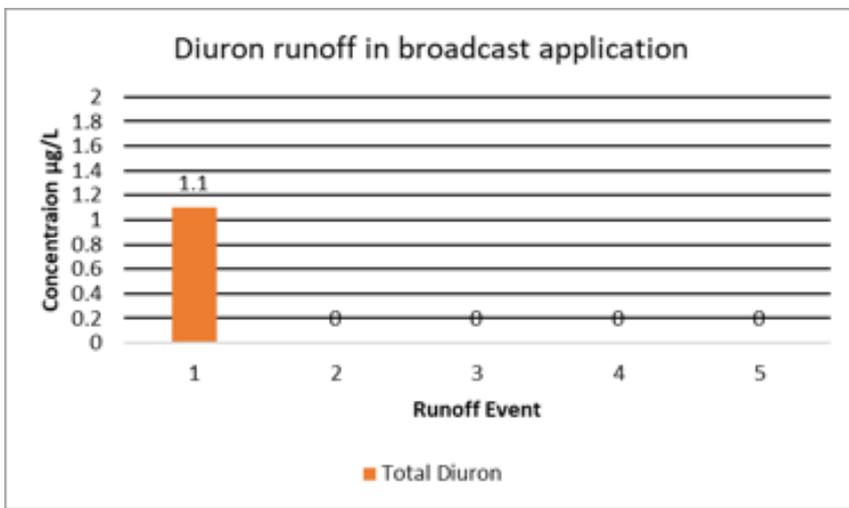
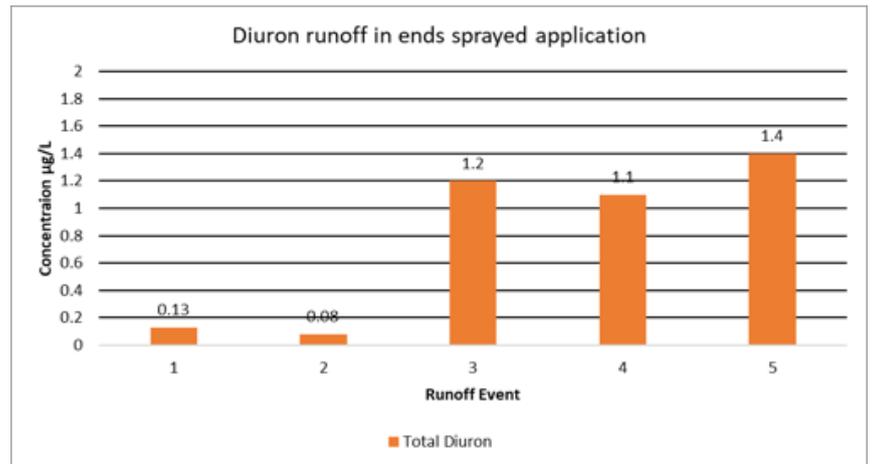


Figure 6: Diuron runoff in broadcast application which was a second ratoon crop – three years after application

Figure 7: Diuron runoff in ends sprayed application which was a second ratoon crop – three years after application



## TAKE HOME MESSAGES

- Keeping a clean fallow and plant cane reduces weed pressure in ratoons and opens up the opportunity to reduce herbicide use, saving money and reducing water quality risks
- Well grown crops producing a thick trash blanket provide additional shading of the soil which supports increased length of residual weed control of applied herbicides
- If less herbicide is applied, there is less available to runoff from rainfall events
- The longer time between herbicide application and a runoff event, the lower the risk of herbicide losses
- Persistent herbicides may still leave the field in runoff water several years after application.

## ABOUT THE PROJECT

The Sandy Creek Project will:

- ▶ monitor sub-catchment water quality
- ▶ conduct paddock scale run-off trials
- ▶ direct extension activities to growers across the Sandy Creek sub catchment to improve chemical management practices
- ▶ provide a chemical management plan and targeted one-on-one agronomic services to all engaged growers in the Brightly south branch sub-catchment
- ▶ utilise grower led sub-catchment groups to promote WQ results and improved practices
- ▶ communicate the project, the outcomes and lessons learned to the broader Sandy Creek landholders
- ▶ apply strategies to overcome barriers to management practice change.



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