PATHWAYS TO WATER QUALITY IMPROVEMENTS IN THE MYRTLE CREEK SUB-CATCHMENT

2018/2019 WET SEASON - SITE 4

SITE DETAILS

BLOCK SIZE: 3.8ha

SAMPLED AREA: 2,352.11m^2

ROW SPACING: 1.575m

VARIETY: Q200$^{(l)}$

CROP CLASS: 2R

HISTORICAL ANNUAL YIELD: 130tph

SOIL TYPE: Conway (Brown Chromosol)

LOCATION IN SUB-CATCHMENT: Hamilton Plains

NUTRIENT AND PESTICIDE APPLICATION DETAILS

Insecticide application date: 6 October 2018.
Fertiliser application date: 6 October 2018.
Herbicide application date: 11 October 2018.

Sampler 4-1

- Bobcat *i-MAXX* applied at 3.8L/ha:
  - *Active ingredients:*
    - *Imazapic 25g/L*
    - *Hexazinone 125g/L*

Sampler 4-2

- Flame applied at 360ml/ha and Atradex applied at 2.2kg/ha:
  - *Flame active ingredient is imazapic - 240g/L*
  - *Atradex active ingredient is atrazine - 900g/L*

- Western portion of block where Bobcat *i-MAXX* was applied was irrigated on 20/10/2018 and 21/10/2018 (high pressure overhead). No runoff was generated.
- Eastern portion of block where Flame and Atradex were applied was irrigated on 14/10/2018 and 15/10/2018 (high pressure overhead). No runoff was generated.
- Block is typically irrigated twice via winch (high pressure overhead) following fertiliser and pesticide applications to water products in however, due to dry conditions experienced over the 2018/2019 wet season, grower could only irrigate once.

Insecticide Application:

- 2018:
  - Imidacloprid (Confidor) applied on 6/10/2018 at a rate of 1.1L/ha. Applied via stool splitter fertiliser box and applied by a contractor.

- *Active ingredient of 350g/L*
- Stool splitter followed with a field roller (completes three rows at a time) to cover stool splitter slot with soil.

Fertiliser Application:

- Incitec custom blend applied on 6/10/2018 at a rate of 610kg/ha. Applied via stool splitter fertiliser box and applied by a contractor.
- Incitec custom blend 45931 analysis:
  - 26.3 % N, 0 % P, 19.5 % K, 1.7 % S
- Applied nutrients: 160 kg/ha N, 119 kg/ha K, 10 kg/ha S

Tested for:

- Dissolved Inorganic Nitrogen (DIN)
- Filterable Reactive Phosphate (FRP)
- Atrazine including desethyl atrazine and desisopropyl atrazine
- Imazapic
- Hexazinone
- Imidacloprid

RUNOFF EVENT DATA

EVENT	DATES	DAYS FROM FERTILISER APPLICATION	DAYS FROM PESTICIDE APPLICATION	DAYS FROM IMIDACLOPRID APPLICATION
1	9 November 2018	34	29	34
2	7 to 14 December 2018	62	57	62
3	16 to 18 December 2018	64	59	64
4	8 to 11 January 2019	87	82	87
5	28 TO 31 JANUARY 2019	107	102	107

- Grower's rainfall data was used to calculate run-off volumes.
- Event 1 runoff was solely generated from flood irrigation. A total of 2.34ML/ha was applied to the block. Event 2 began as flood irrigation whereby irrigation commenced on 6/12/2018 at approximately 5:30am. Approximately 2.0ML/ha of irrigation water was applied. This was then followed by rainfall which generated the remaining runoff for this event. All remaining runoff events were generated via rainfall.
- Irrigation water was tested via a Neci Handheld Photometer on 14/11/2019. This water was obtained from the portion of Myrtle Creek which abuts this property and that is used for irrigation. The results showed a nitrogen level of 0.19ppm. No further testing of this water was conducted throughout the 2018/2019 wet season.

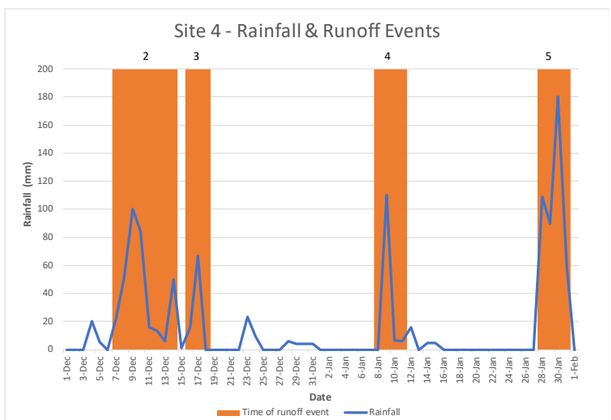
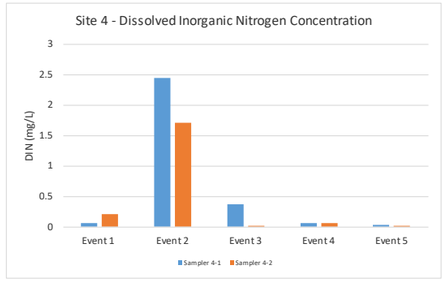
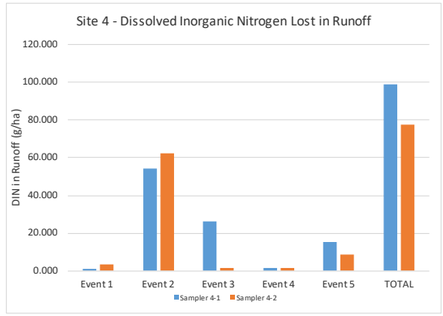


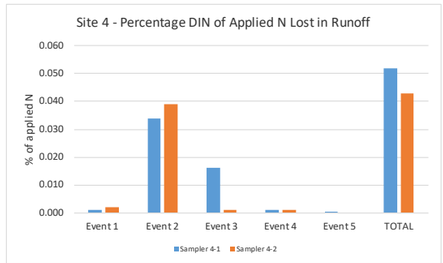
Figure 1 Rainfall data and corresponding runoff events

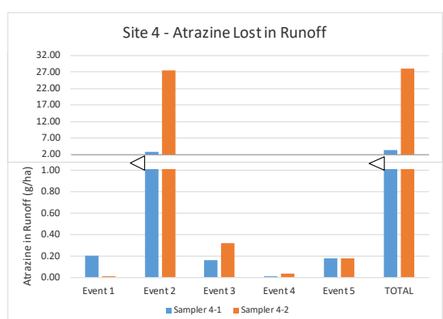
RESULTS

NOTE: Nutrient and pesticide loads are estimates only. Freshwater ecotoxicity thresholds cannot be applied to paddock scale monitoring. Freshwater PC95 values are referenced only for discussion.

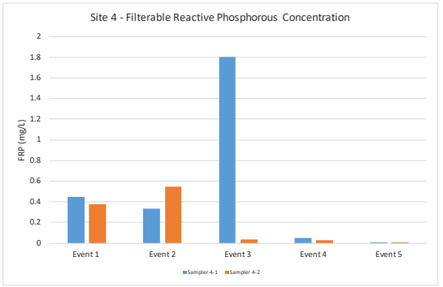


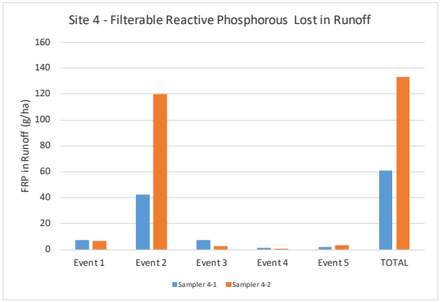




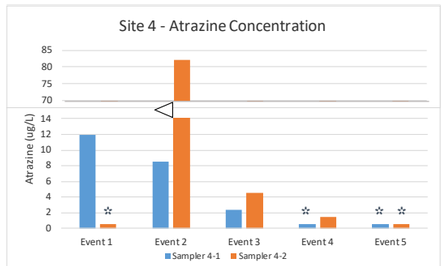


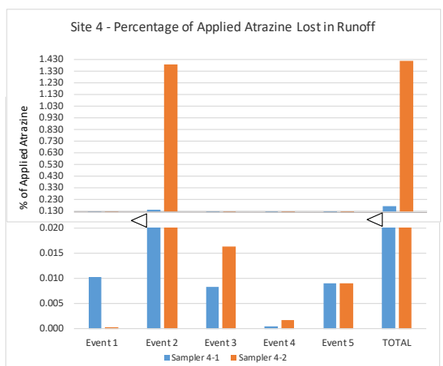
For reference, the PC95 freshwater pesticide ecotoxicity threshold value for atrazine is 1.1ug/L

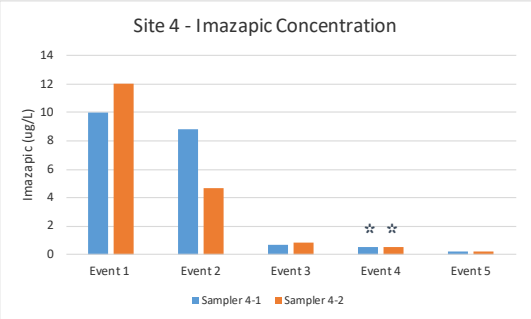


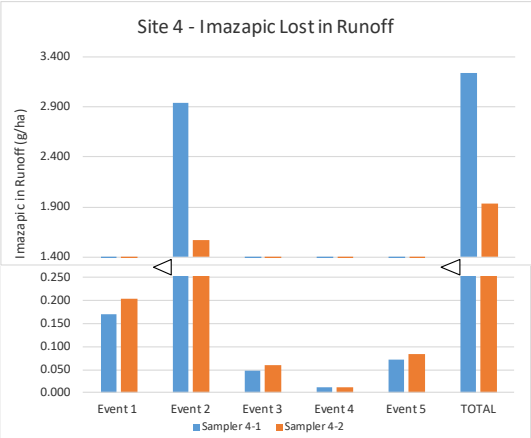


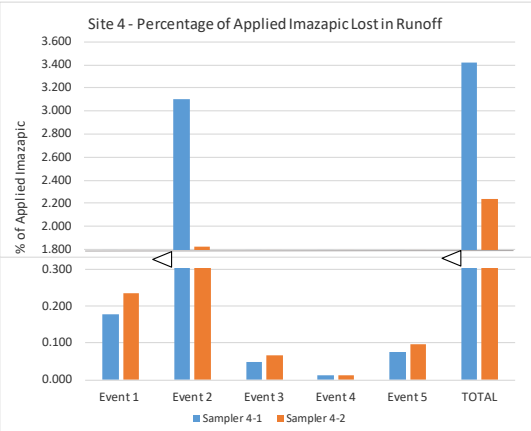
NOTE: P concentrations are indicative and are likely to be slightly lower than actual concentrations.



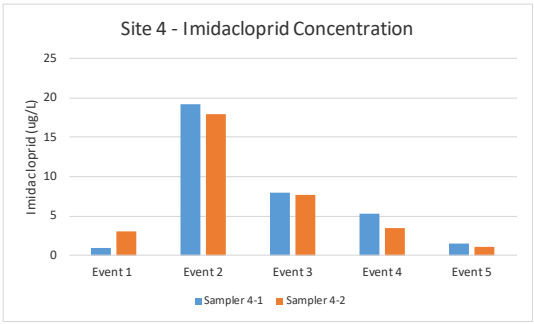


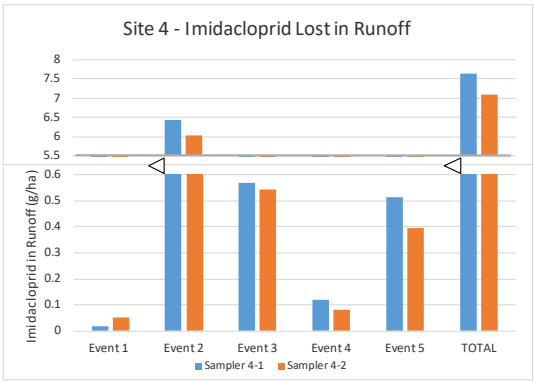


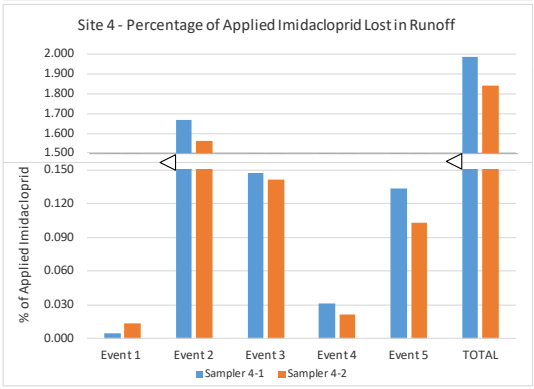




For reference, the PC95 freshwater pesticide ecotoxicity threshold value for imazapic is 0.41ug/L







For reference, the PC95 freshwater pesticide ecotoxicity threshold value for imidacloprid is 0.11ug/L

Note:

⁎ chemical concentrations were below the analysis instruments level of reporting (LOR) for all samples of Diuron and Isoxaflutole. In these cases, concentrations are presented as half the LOR to provide an estimate.

FOR FURTHER INFORMATION PLEASE CONTACT

Molly O'Dea **E** mo'dea@sugarresearch.com.au **M** 0439 619 082

This project is funded through the Queensland Government Reef Water Quality Program.

Queensland Government

Sugar Research Australia

SSP