COMPARING LATE APPLICATION OF RESIDUAL VS ZONAL APPLICATION OF TARGETED RESIDUAL

Sugar Research Australia

Grower: Frank Hughes, Tully

Tully: Bilyana area
Ratoon: 5 Variety: Q208(ɒ
Harvested: June 5 2017
Row spacing: 1.65m

Known issues: Older ratoon, increasingly high Calopo pressure at end of row, beginning to creep into block. Treatment 2 is designed to control the Calopo, using a minimum amount of hexazinone, a PSII herbicide that Frank has been avoiding due to environmental concerns. This approach puts the hexazinone in the area of highest pressure only. The block also has medium pressure grasses, sickle pod and various broadleaf weeds. Frank rotates chemicals over the crop cycle to avoid resistance while also paying attention to weed pressure.

Treatments applied

T1: GROWERS CURRENT PRACTICE	T2: PROPOSED ZONAL CONTOL	CONTROL
1 September 2017 2,4-D @ 1 L/ha Picloram & 2,4-D /Tordon @0.5L/ha – applied with boom **COST: $15/ha**	1 September 2017 2,4-D @ 1 L/ha Picloram & 2,4-D /Tordon @0.5L/ha – applied to whole row with boom Imazapic & hexazinone (Bobcat Imaxx) Paraquat 20m application on end of both rows with octopus legs **Cost: $35/ha**	No treatment applied
14 February 2018 Imazapic @ 400g/L (Flame, Spark etc.) Paraquat @1.2L/ha applied through octpus legs 2,4-D @ 1.5L/ha Picloram/2,4-D (Tordon, Trooper) applied with boom **COST: $25/ha**	14 February 2018 2,4-D @ 1 L/ha Picloram & 2,4-D /Tordon @0.5L/ha – applied to whole row with boom Imazapic & hexazinone (Bobcat Imaxx) 20m application on end of both rows with octopus legs **COST: $35/ha**	No treatment applied
Spot spray glyphosate @ $10/ha **Total cost: $50/ha**	Spot spray glyphosate @ $10/ha **Total cost: $80/ha**	

Two applications in one pass.

Franks' spray rig has two tanks connected to a flat boom and octopus legs allowing two treatments to be applied at one time, controlled by a GPS variable rate controller.

TREATMENT 1	TREATMENT 2
All of treatment treated same Pass 1: 2,4-D/Tordon boom only Pass 2: 2,4-D/Tordon through boom and imazapic & paraquat through octopus legs	20m end imazapic & hexazinone + paraquat with octopus legs
	Entire treatment 2,4-D/Tordon with boom
	20m end imazapic & hexazinone + paraquat with octopus legs (repeat for pass 2)

Efficacy for after harvest: Monthly monitoring conducted from post spray through to November. Both treatments were effective, a third knock down pass was not required.

T1:	T2:	CONTROL
Med-high weed pressure early, majority blue top Weed pressure increased significantly with onset of wet season Weed pressure reduced by both sprays, long-term reduction in weed pressure achieved with final residual spray. Limited weed pressure in mid section of cane throughout where shading occurs.	Med high weed pressure early, majority blue top. Improved control on ends evident as weed pressure increased with onset of wet season. Final spray successful in reducing pressure on ends and mid section, with shading reducing weed pressure where knock down chemicals only applied.	Higher weed pressure than both treatments throughout. (knock down chemical applied in

2017/ 18 Frank Hughes Weed Observations

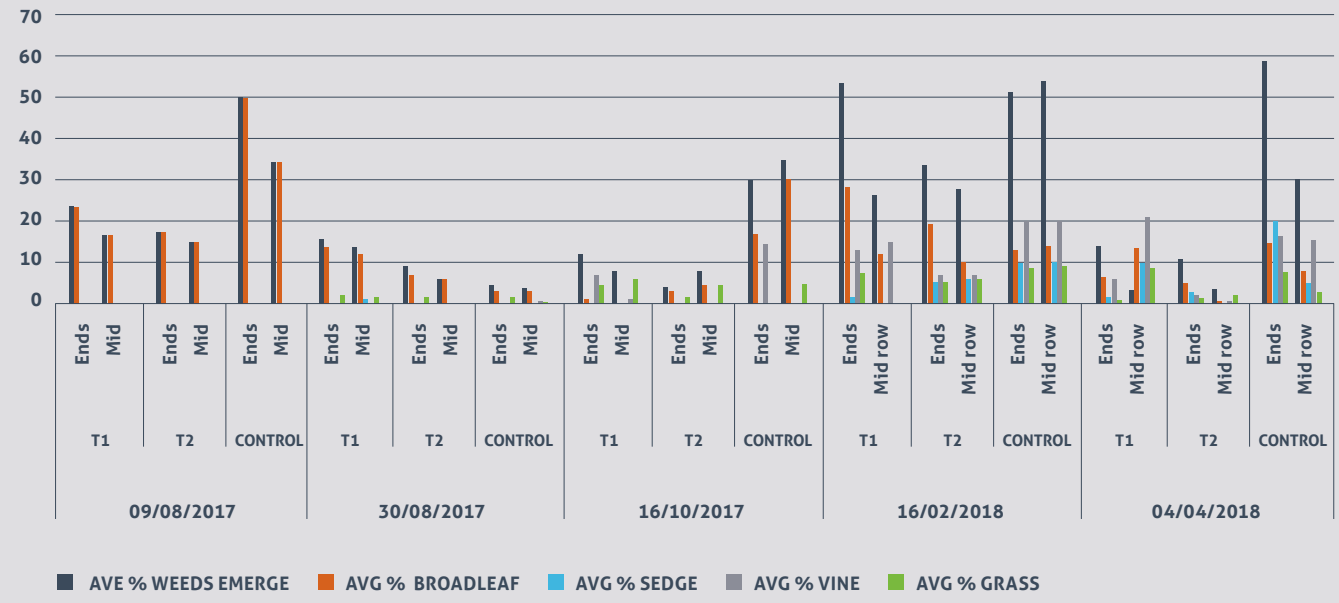


Chart shows percent coverage of monitoring plots of grass, broadleaf, vine and total weeds

Treatment one at 14 February 2018

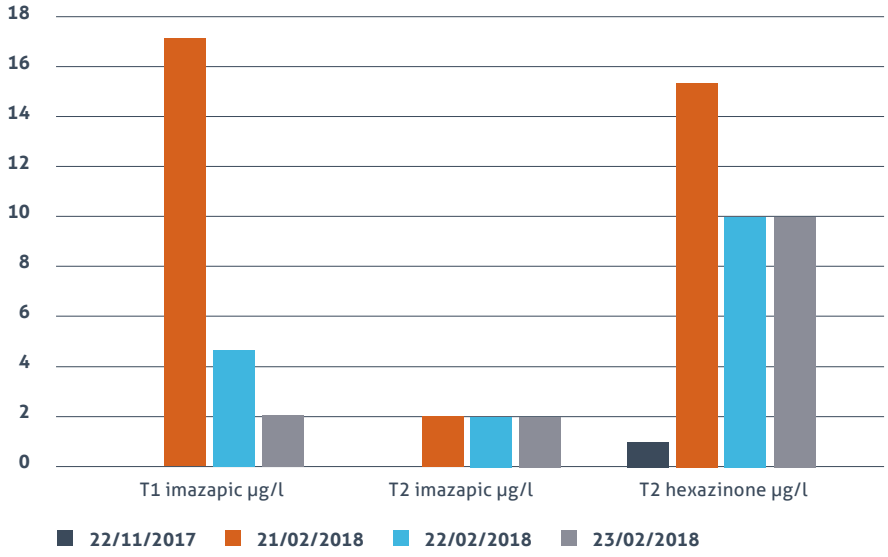
Treatment two at 14 February 2018

Control at 14 Febraury 2018

What about water quality?

First event shows runoff from treatment 2 only, as no residual herbicide had been applied to Treatment 1 at that time. Subsequent events are in February, one week after application of residual chemicals to both treatments.

Frank Hughes zonal vs broadcast control over four events



Rainfall: : 22 November 2017 21mm, almost three months after application, subsequent events (21/02/2018: 14mm, 22/02/2018: 109mm, 24/02/2018: 17mm) one week after application and with a wet soil profile.

Proposed freshwater eco-toxicity thresh-holds - the lower the value the greater the toxicity.

ACTIVE	TRADE NAME	99% PROTECTION IN µg/l	95% PROTECTION IN µg/l
Imazapic	Flame, Spark	0.036	0.41
Hexazinone	As part of Barrage, Bobcat Imaxx	0.31	1.1
2,4-D	Amine 2,4-D (only marine values available)	1,040	2,516

Note; no values available for picloram and paraquat.
Waterhouse et al, 2017 Scientific Consensus Statement 2017: A synthesis of the science of land-based water quality impacts on the Great Barrier Reef, Proposed ecotoxicity thresh-holds King, O et al. 2017

Treatment one at 05 March 2018

Treatment two at 05 March 2018

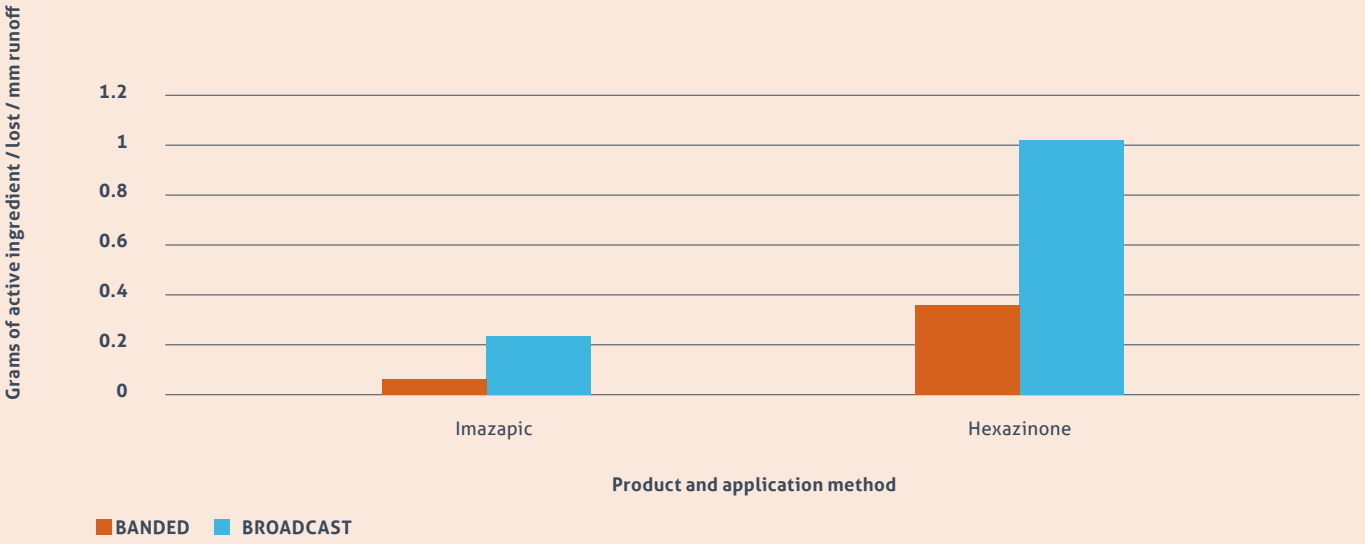
Control at 05 March 2018

Key messages:

Less product on =
less product off, zonal application of herbicides with high environmental risk puts the product only where it is most needed, meaning there is less to lose overall.

Compare these results with Tully Protecting our Chemicals for the Future Rainfall simulation, where the DAF dual herbicide spray bar was used to band Bobcat Imaxx, resulting in half of the plot being sprayed compared to a broadcast application of the same product. Note the higher amounts of hexazinone are due to the higher rate, Bobcat Imaxx is Imazapic 95g/ha, hexazinone 475g/ha.

Banding vs Broadcast study, Tully 2017



Protecting our Chemicals for the Future Through the Acceleration of Best Management Practices.

For more information

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