

Clethodim Damage – Canola Variety Tolerance Trial

Trial Code: GOCD00215-3
Season/Year: Winter 2015
Location: “Kurrajong Park”, Coolah
Trial Co-operators: Paspaley Pastoral Company

Keywords

GOCD00215-3, clethodim, damage, canola, ryegrass, herbicide, Coolah

Take home message

In this trial there was no adverse impact of the use of clethodim on canola when **applied within the label rates and timings regardless of variety.**

Background

Increasing levels of Group A – ‘fop’ resistance and the drop in retail pricing of clethodim based herbicides¹ has driven an increase in both the frequency of use and the rates applied of these products in canola. At the same time there has been a marked increase in reports of clethodim damage. It has been long known that clethodim can at times cause some level of crop damage but the conditions that result in this expression or its actual impact on yield have not been entirely clear.

Trial work by GOA from 2013 investigated what might trigger such damage by looking at application rates and timings of clethodim and, in summary, found that damage was generally only evident when clethodim was applied at timings and rates outside of label recommendations. Even when obvious clethodim damage was observed in the crop, yield impacts, if any were often mild.

This is in contrast to research conducted by the Hart Group in South Australia, who found significant yield impacts from clethodim damage when applied outside label recommendations, in addition they also observed some varietal differences in crop tolerance to clethodim.

This led to the question, did some of the varieties used in GOA’s previous work have greater tolerance to clethodim than others, which may have lessened any potential observed responses?

Therefore, this trial was designed to look at a number of common varieties grown in the GOA region and test them for relative tolerance to clethodim. If varieties showed little difference in their response to clethodim, compared to the varieties used in GOA’s previous trials testing rates and timings, growers could be more confident in the findings from that work.

¹ Example trade names- Select®, Platinum®, Status®, Clethodim 240

DISCLAIMER

Following is a report on a scientific experiment. It may contain some herbicide treatments that are not registered for the situation, manner or rate at which they are used in this trial. This document or anything else resulting from, construed or taken from this or by GOA or its representatives should not be taken as a suggestion, recommendation or endorsement of any unregistered herbicide uses.

Aim

Investigate the effect of application of clethodim at various rates and timings on a number of commonly grown canola varieties sown in the GOA region

Methods

The trial was conducted on small plots, using a randomised complete block design with three replicates.

Ten varieties were selected for the trial based on discussions with agronomists, farmers and seed suppliers and are listed in Table 2.

Table 1. Trial site details

Trial Establishment Date	Autumn, 2015		
Crop and Variety	Canola – Various	Targeted plant population	35 plants/m ²
Sowing date	30/4/2015	Harvest Date	9/11/2015
Seedling equipment	Double Boot Tyne	Row Spacing	27.5 cm
Crop Nutrition (kg/ha)	100 MP + 100 Urea	Soil type	Clay Loam
Previous Crop	Wheat	Pre Sowing Stubble Management	Burnt

Treatments consisted of two clethodim application timings of label (pre bud visible) and late (after the bud was visible). At the label timing two rates were applied, a full label rate (500 mL/ha) and double label rate (1 L/ha) while only a label rate was applied at the late timing. The treatments are summarised in Table 3.

Table 2. Varieties tested for susceptibility to Clethodim damage

Variety	Type	Suspected Susceptibility
ATR Gem	Triazine Tolerant	Some susceptibility ²
AV Garnet	Conventional	Some susceptibility ²
Hyola 474 CL	Clearfield	Some tolerance ²
44Y84 CL	Clearfield	Some tolerance ³
Hyola 577	Clearfield	Unknown
Hyola 575	Clearfield	Unknown
Hyola 559	Triazine Tolerant	Unknown
Victory 3002	Conventional	Unknown
45Y86 CL	Clearfield	Unknown
Atomic TT	Triazine Tolerant	Unknown

The trial area had a low population of weeds after establishment but received an early post emergent application of Verdict™ and Lontrel™ to remove any weed burden prior to treatment with clethodim.

Table 3. Treatments

Timing	Rate mL/ha	Date of application	Comments
Label (early)	500	22/6/2015	Crop was at the 4- 6 leaf stage
	1000	22/6/2015	
Late	500	25/7/2015	Crop clearly elongating and bud visible

Results

The trial was assessed for flower abnormality at peak flowering, minimal and inconsistent damage was observed (less than 3%) in only a small number of plots.

In this trial there was no statistically significant yield reductions from the application of clethodim to any variety (Table 4).

Oil content was also measured, only AV Garnett showed a negative oil response when clethodim was applied at double the label rate. In this case the oil content was reduced from 47.5% to 45.7%.

²http://www.hartfieldsite.org.au/media/2013%20TRIAL%20RESULTS/17_Clethodim_tolerance_in_canola_2013HartTrialResultsBook.pdf

³ GOA trials 2013 and 2014

Table 4. Yields (t/ha) from the different varieties, timings and rates. Highlighted data (*) is significantly different to the untreated control (UTC) for that variety.

Variety/Rate (L/ha)	UTC	Label timing		Late timing
		500	1000	500
44Y84 CL	1.8	1.8	1.8	2.0
45Y86 CL	1.8	1.7	1.7	1.8
Atomic TT	1.6	1.5	1.6	1.5
ATR Gem	1.7	1.5	1.7	1.6
AV Garnet	2.0	1.9	1.8	2.0
Hyola 474	2.1	1.9	1.9	2.0
Hyola 559	1.7	1.9	1.7	2.1
Hyola 575	1.9	1.9	1.9	1.9
Hyola 577	1.9	1.7	1.9	1.8
Victory 3002	2.0	1.8	2.0	1.9

Discussion

As detailed above, no variety exhibited any greater level of crop damage, expressed as flower abnormality or showed any subsequent impact on yield when the range of timings and rates of clethodim were tested.

The application of clethodim also had a negligible impact on oil content, except in AV Garnet.

Conclusion

The lack of evidence of observable damage, through visible flower abnormality or yield reduction would suggest there is little varietal response to clethodim applications, when applied as per the label recommendations, however, applications outside label recommendation could increase the risk of damage although from this work that would seem limited.

Despite this lack of response, growers should strive to apply clethodim within label recommendations to minimise the risk of crop damage.

Acknowledgements

The research undertaken as part of this project is made possible by the significant contributions of growers through both trial cooperation and the support of the GRDC, the authors would like to thank them for their continued support. Special thanks goes out to Paspaley Pastoral Company and Andrew McFadyen at Coolah who hosted this trial.