GOA trial site report

Is canola fungicide investment justified in low and medium rainfall environments of NSW?

Grain Orana Alliance

Trial Name	Canola Fungicides
GRDC Code	GOA2404-001RTX
Season	Winter 2025
Location	Ganmain
Trial cooperators	Brill Ag

Keywords

GRDI015, fungicides, sclerotinia, blackleg, alternaria, powdery mildew, rotations.

Take home messages

- Canola diseases can infect crops even in very dry seasons.
- Predicting which fungicide management strategies will result in a yield benefit can be difficult
- Application of a fungicide was not a guarantee of an increase in yield or income.
- Cropping history and in-crop observations need to be combined with other observations (weather conditions) to determine the necessity for fungicide application.
- The use of the SclerotiniaCM and the UCI BlacklegCM[1] apps[2] are useful tools for assisting in canola fungicide management decisions.

Background

Trials have been conducted by Grain Orana Alliance (GOA) and Brill Ag across southern and central NSW's low and medium rainfall zones since 2020 to determine canola's response to management of spring foliar fungal diseases through the applications of fungicide application during flowering. This work was primarily focused on sclerotinia stem rot.

[1] UCI BlacklegCM - Blackleg upper canopy infection management app | Department of Primary Industries and Regional Development https://www.dpird.wa.gov.au/online-tools/uci-blacklegcm/

[2] https://www.dpird.wa.gov.au/online-tools/sclerotinia-cm–sclerotinia-management-app/

The interest in the use of fungicide to control these diseases was supported by the run of good seasons experienced since 2020 as wetter spring conditions are a key requirement. The general findings from the previous work were that multiple diseases were often present including sclerotinia stem rot, upper canopy blackleg (UCB), powdery mildew (PM), and alternaria leaf and pod spot rather than just one single disease.

The work also demonstrated that when diseases were present their incidence could be reduced using foliar fungicides but yield responses were variable. Furthermore, even where disease was reduced and yield improved, their costs were rarely economically justified.

This trial looks to continue to improve our understanding of spring foliar disease management in the low and medium rainfall zones.

Aims

Compare a small range of fungicide management options (product and timing) on disease development, yields and economic returns.

Methodology

The trial was established in a crop that the grower considered good enough for fungicide application if needed, as it was sown on time with a successful establishment, and had good yield potential. The trial site was selected prior to the initiation of flowering in a commercial crop of 44Y94 CL canola, dry sown on the 22nd May 2025. The previous year's crop was narrow leaf lupins with an observed infection of sclerotinia, suggesting the paddock to be at a higher risk of infection in 2025.

The trial used a randomised complete block design with 4 replicates. Treatment products, rate applied and timing are listed in the Table 1 and were applied by a ute mounted sprayer with 140 l/ha of spray mixture.

Prior to, during and post application of the treatments the crop canopy was left as undisturbed as much as possible to avoid any potential influence on disease behaviour.

Two treatment timings were applied based on label recommendations timings of 20-50% bloom.

Timings:

- 20% bloom - 5/09/2025
- 50% bloom - 17/09/2025

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Table 1. Treatment table with products timings and rates. All fungicides were applied with 140 L/ha water with AIXR02 nozzles running at 4 Bar (medium droplet) at 8 km/hour.

TIMING	Product 20% bloom	Rate 20% Bloom (ml)	Product 50% bloom	Rate 50% Bloom (ml)
UTC	UTC			
20% bloom	Prosaro®	450		
50% bloom			Prosaro®	450
20% bloom	Aviator® Xpro®	800		
50% bloom			Aviator® Xpro®	800
20% bloom	Miravis® Star	1000		
20 & 50% bloom	Prosaro®	450	Aviator® Xpro®	800
20 & 50% bloom	Aviator® Xpro®	800	Prosaro®	450

Rainfall: 2025 was a dry season, with in-crop rainfall of approximately 183 mm. Rainfall through flowering and grain fill (Aug- Sept) when foliar diseases are most prominent was well below average with the exception of September, with 62 mm recorded between 8-11 September. Rainfall details are in Table 2.

Table 2**.** Monthly rainfall[3] (mm) and long term average (LTA) at trial site

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2025	22	39	16	0	33	32	22	21	65	9	30	38	**327**
LTA	39	36	38	38	39	42	40	41	38	45	42	37	**475**

Extended rain events (rain falling over 3 or more consecutive days) required to support disease progression such as sclerotinia during the flowering and grain fill period only occurred once, just prior to the second fungicide application as illustrated in Figure 1, however the amount was less than 1.5mm/day with a larger ~50mm on the 11/09/2025.

[3] Gridded data for the trial site from: Access Gridded Data | LongPaddock | Queensland Government

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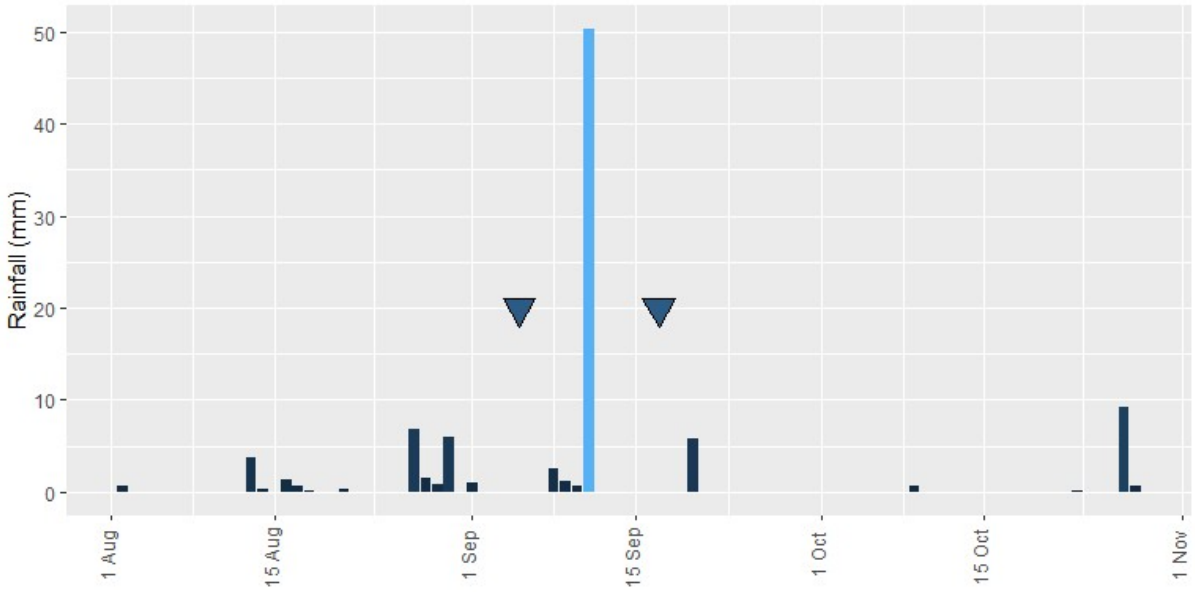

Figure 1. Daily rainfall received (vertical lines) and spray timings (inverted triangles).

Disease incidence was measured around crop windrowing stages of 60-80 seed colour change- using the following measures on two $1m^2$ areas within each plot;

Sclerotinia- % of plants infected by type of infection e.g. basal, mainstem and branch

Table 3. Blackleg and Alternaria scoring system employed for disease assessments

Score	Blackleg[4]	Alternaria[5]
0	no infection observed	no infection observed
0.5	at least one lesion found	at least one lesion found
1	lesions present	lesions present
2	lesions common	lesions common with 1-5% of pod/stem area infected
3	lesions common causing damage	lesions common with 5-15% of pod/stem area infected and low-level early pod senescence
4	lesions common causing branch death	lesions common with >15% of pod/stem area infected and high level of early pod senescence

Powdery mildew – An assessment was made of the percentage of stem area infected with powdery mildew.

[4] Modified blackleg scoring system

[5] Adapted from the upper canopy blackleg scoring system

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Results

Disease:

Sclerotinia was only observed in one treatment and only on the lower mainstem with an incidence of less than 3 plants in 1000. No other infections were observed in the trial assessments (data is not shown).

Alternaria was present at low levels on pods (none detected on branches), treatments that included Aviator Xpro applied at 50% bloom reduced the infection levels (Table 4).

Upper canopy blackleg (UCB) infections were observed on the branch with a moderate infection measured in the UTC. Five treatments reduced infections compared to the UTC however treatments applied at the 50% bloom timing only, did not result in any reduction in infection. UCB was not observed on pods.

Powdery mildew was present at minor levels in the untreated. Prosaro and Miravis Star (applied at 20% bloom) did not reduce infection levels. PM was not detected in any of the treatments that contained Aviator Xpro.

Lodging was not observed at the time of the disease assessment.

Table 4. Alternaria and upper canopy blackleg infection scores and powdery mildew infections (%). Treatments with the same letter in each variable are not significantly different.

	Alternaria		UCB		Powdery mildew	
Fungicide rate and timing	**pod**		**branch**		**%**	
Aviator® Xpro® 800 mL/ha @ 20% bloom	1.00	a	1.50	c	0.00	c
Prosaro® 450 mL/ha @ 20% bloom	1.12	a	2.13	bc	1.37	abc
Aviator® Xpro® 800 mL/ha @ 20% bloom + Prosaro® 450 mL/ha @ 50% bloom	0.62	abc	1.75	bc	0.00	c
Prosaro® 450 mL/ha @ 20% bloom + Aviator® Xpro® 800 mL/ha @ 50% bloom	0.25	c	1.75	bc	0.00	c
Aviator® Xpro® 800 mL/ha @ 50% bloom	0.38	bc	2.38	ab	0.00	c
Prosaro® 450 mL/ha @ 50% bloom	0.88	ab	2.38	ab	0.12	bc
Miravis® Star 1000 mL/ha @ 20% bloom	0.75	abc	1.75	bc	1.50	ab
UTC	1.00	a	3.00	a	2.00	a
Lsd	0.54		0.87		1.39	

Grain yield:

Canola yields were high, with the average being 3.37 t/ha (Figure 2). There was ~9% yield variability between the highest and lowest yielding treatments with a range of 0.34 t/ha.

Prosaro® 450 mL/ha @ 20% bloom + Aviator® Xpro® 800 mL/ha @ 50% bloom was the only treatment to yield higher than the UTC (Figure 2), all other treatments had no impact on yields.

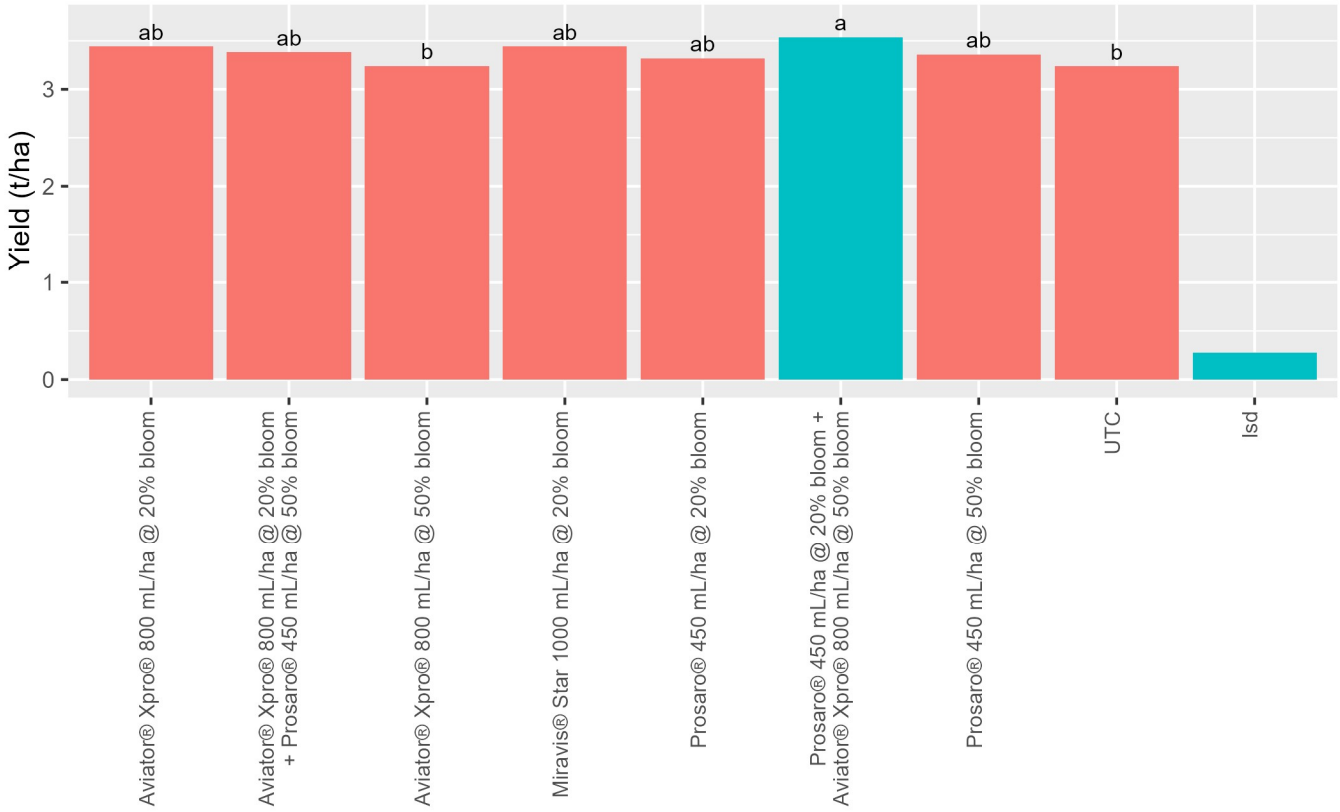

Figure 2. Canola yield (t/ha) in response to a range of fungicide treatments. Treatments with the same letter are not significantly different.

Grain quality:

Average oil content was 46.2% (Figure 3). Prosaro applied at 20% bloom was the only treatment different to the UTC with 0.55 % lower oil.

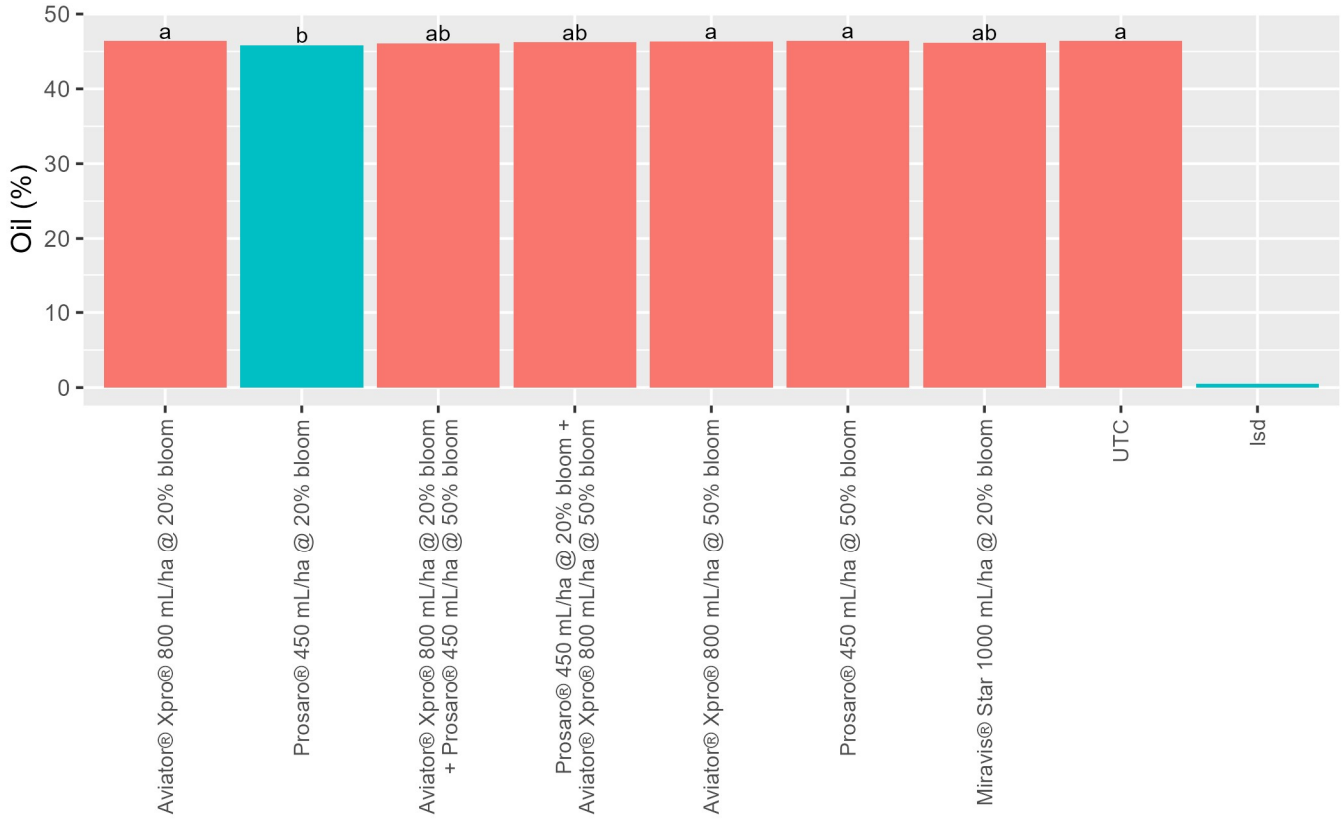

Figure 3. Canola oil (%) in response to a range of fungicide treatments. Treatments with the same letter are not significantly different.

Economics: Statistical analysis of the net economic benefit from all treatments based on the following parameters showed that the was no treatments any different to the UTC. This was regardless of whether a grain price of $550 or $785/t was used in the calculations.

Aviator Xpro @ $43/l, Prosaro @ $22/l and application $13/ha

Discussion

2025 was a below average rainfall year at this site. However, the site still achieved good yields through stored soil moisture in combination with timely rain in September. The rainfall and weather conditions at the site were not sufficient to support a high level of development of many of the common canola diseases, and this was evident in the disease incidences recorded. However, moderate levels of UCB and low levels of Alternaria and PM were still observed.

The application of several fungicides reduced disease incidence of both Alternaria Pod spot and UCI branch infections, but no treatment totally eradicated the disease. For PM, five treatments resulted in reduced incidence, four of which resulted in complete control. It should be noted that the degree of infection in the UTC was very low, measured at 2% of stem areas infected.

Despite the very high disease background risk for sclerotinia, driven by the prior lupin crop, only very low levels of the disease were observed. In contrast, Alternaria and UCB were detected at low levels, indicating they can proliferate at much lower moisture thresholds than sclerotinia.

Only one treatment, Prosaro® 450 mL/ha @ 20% bloom + Aviator® Xpro® 800 mL/ha @ 50% bloom, reduced the levels of all diseases that were present and resulted in an increase in yields. This was the only treatment to result in increased net income.

Conclusions

In the below average rainfall conditions experienced at this site, conditions were less conducive for the development of diseases such as sclerotinia, however it appeared to be sufficient for other diseases to develop such as UCI blackleg and to a lesser extent alternaria.

Fungicides were effective in reducing diseases that were present, but this did not always result in increased yields or profit. Only one treatment resulted in a net economic benefit of $149/ha better than the UTC.

Cropping history and crop observations need to be combined with other observations and forecasts such as weather conditions to determine the necessity for fungicide application. The use of decision support tools such as the SclerotiniaCM[6], and UCI BlacklegCM[7] Apps can be useful tools for assisting in sclerotinia fungicide management.

Acknowledgements

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DISCLAIMER — TECHNICAL

[6] Sclerotinia CM – Sclerotinia management app | Department of Primary Industries and Regional Development https://www.dpird.wa.gov.au/online-tools/sclerotinia-cm–sclerotinia-management-app/

[7] UCI BlacklegCM - Blackleg upper canopy infection management app | Department of Primary Industries and Regional Development https://www.dpird.wa.gov.au/online-tools/uci-blacklegcm/

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Products may be identified by proprietary or trade names to help readers identify particular types of products but this is not, and is not intended to be, an endorsement or recommendation of any product or manufacturer referred to. Other products may perform as well or better than those specifically referred to.

ANNEX

Results - in crop and harvest observations

Description	Sclerotinia								Alternaria				Upper Canopy Blackleg									
	basal		mains tem-low		mains tem-high		branch		pod		branch		pod		branch		Powdery mildew		Yield		Oil	
	%								score								%		(t/ha)		(%)	
UTC	0	a	0	a	0	a	0	a	0	a	1.00	a	3.0	a	0	a	2.0	a	3.2	b	46.4	a
lsd	0		0		0		0		0		0.54		0.9		0		1.4		0.3		0.5	
Aviator® Xpro® 800 mL/ha @ 20% bloom	0	a	0	a	0	a	0	a	0	a	1.00	a	1.5	c	0	a	0.0	c	3.4	ab	46.4	a
Aviator® Xpro® 800 mL/ha @ 20% bloom + Prosaro® 450 mL/ha @ 50% bloom	0	a	0	a	0	a	0	a	0	a	0.62	abc	1.8	bc	0	a	0.0	c	3.4	ab	46.1	ab
Aviator® Xpro® 800 mL/ha @ 50% bloom	0	a	0	a	0	a	0	a	0	a	0.38	bc	2.4	ab	0	a	0.0	c	3.2	b	46.3	a
Miravis® Star 1000 mL/ha @ 20% bloom	0	a	0	a	0	a	0	a	0	a	0.75	abc	1.8	bc	0	a	1.5	ab	3.4	ab	46.1	ab
Prosaro® 450 mL/ha @ 20% bloom	0	a	0	a	0	a	0	a	0	a	1.12	a	2.1	bc	0	a	1.4	abc	3.3	ab	45.8	b
Prosaro® 450 mL/ha @ 20% bloom + Aviator® Xpro® 800 mL/ha @ 50% bloom	0	a	0	a	0	a	0	a	0	a	0.25	c	1.8	bc	0	a	0.0	c	3.5	a	46.2	ab
Prosaro® 450 mL/ha @ 50% bloom	0	a	0	a	0	a	0	a	0	a	0.88	ab	2.4	ab	0	a	0.1	bc	3.4	ab	46.4	a

Results – Net income ($/ha) at a canola price of $550 and $785/ton (Aviator Xpro @ $43/l, Prosaro @ $22/l, application $13/ha).

Description	Net income ($/ha) @$550/ton		@$785/ton	
UTC	1897	a	2707	a
lsd	157		224	
Aviator® Xpro® 800 mL/ha @ 20% bloom	1969	a	2831	a
Aviator® Xpro® 800 mL/ha @ 20% bloom + Prosaro® 450 mL/ha @ 50% bloom	1906	a	2750	a
Aviator® Xpro® 800 mL/ha @ 50% bloom	1850	a	2661	a
Miravis® Star 1000 mL/ha @ 20% bloom	1924	a	2784	a
Prosaro® 450 mL/ha @ 20% bloom	1912	a	2738	a
Prosaro® 450 mL/ha @ 20% bloom + Aviator® Xpro® 800 mL/ha @ 50% bloom	1963	a	2831	a
Prosaro® 450 mL/ha @ 50% bloom	1950	a	2791	a