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Comparison of commercial standards for the control of sclerotinia in canola

Rick Horbury, Customer Advisory Representative, Bayer Crop Science

PURPOSE

1. Compare the efficacy of Aviator® Xpro® to commercial standards for sclerotinia control.
2. Compare yield and \$return on investment/ha (\$ROI/ha)

Location: Badgingarra
Soil Type: Gravelly loam
Rotation: Oats 2015, Canola 2014

BACKGROUND SUMMARY

- Sclerotinia is a major disease of canola production across Western Australia with yield losses between 10-60% depending on the severity of infection. Sclerotinia sclerotes can survive for 5-6 years in the soil so with current rotations on canola or lupins less than that it will continue to remain an issue in high production zones for the foreseeable future.
- Aviator Xpro contains the high performing triazole prothioconazole + bixafen the first registered SDHI for foliar application. Aviator Xpro is now registered for use in canola for blackleg with a rate range of 550-650 mL/ha. A submission for sclerotinia with a rate range of 550-800 mL/ha has been made and is should be available for use during the 2017 season.
- Aviator Xpro's formulation contains Leafshield™ technology to provide rapid rain fastness and improved spreading and penetration into the plant due to its inbuilt adjuvant system.

TRIAL DESIGN

Plot size: 2.3 x 15 m x 3 replicates
Machinery use: Grower's seeder with Knife point and press wheels
Repetitions: 3
Crop type and varieties used: Hyola 559TT canola
Seeding rates and dates: 2.3 kg/ha 20/04/16

Fertiliser: 20/04/16: 120 kg/ha K-till® + 40 L/ha Flexi-N® + 200 mL/ha copper + 200 mL/ha Intake® Hiloal

Knockdown: 7/04/16: 1 L/ha Roundup® Ultramax® + 120 mL/ha alpha cypermethrin + 100 mL/ha oxyfluorfen + 0.1% v/v LI700®

Pre-emergent: 20/04/16: 1.5 L/ha paraquat + 2.2 L/ha Treflan® + 1.1 kg/ha atrazine + 300 mL/ha chlorpyrifos

Post emergent:

26/4/16: 0.55 kg/ha atrazine + 80 mL/ha Talstar®

1/6/16: 0.85 kg/ha atrazine + 80 g/ha Lontrel + 80 mL/ha

Alpha Forte® + 500 mL/ha clethodim + 1 % AmSul® + 0.5%

Inbound®

Post emergent fungicide:

25% flower: 12/7/16 14.00-15.00: 12.5°C, 77% RH, bottom of crop wet
back pack sprayer @ 130 L/ha, 5 km/h, 2 bar with DG110015 nozzles
55% flower: 10/8/16 13.00-13.40: 15.9°C, 78.8% RH, bottom of crop wet
back pack sprayer @ 150 L/ha, 4 km/h, 2 bar with DG110015 nozzles

SITE OBSERVATIONS

The crop was grower sown and growing well with no waterlogging issues during the trial. The trial was setup with all treatments being used in a “preventative” strategy rather than on high infection or with active sclerotinia white mould which would further disadvantage some of the lower performing products.

Sclerotinia infection levels in the trial were moderate compared to others in the region.

Pre-spray 25% flower: Some apothecia present (hard to find), odd stem lesion along the spreader row with very low leaf infection.

Pre-spray 50% flower: Apothecia present especially in old header rows, stem lesions visible in untreated along with leaf infection and white mould.

Apothecia continued to emerge after rain events with a fresh emergence observed on the 1st September. Peak infection events occurred around periods of high risk captured in the figure below.

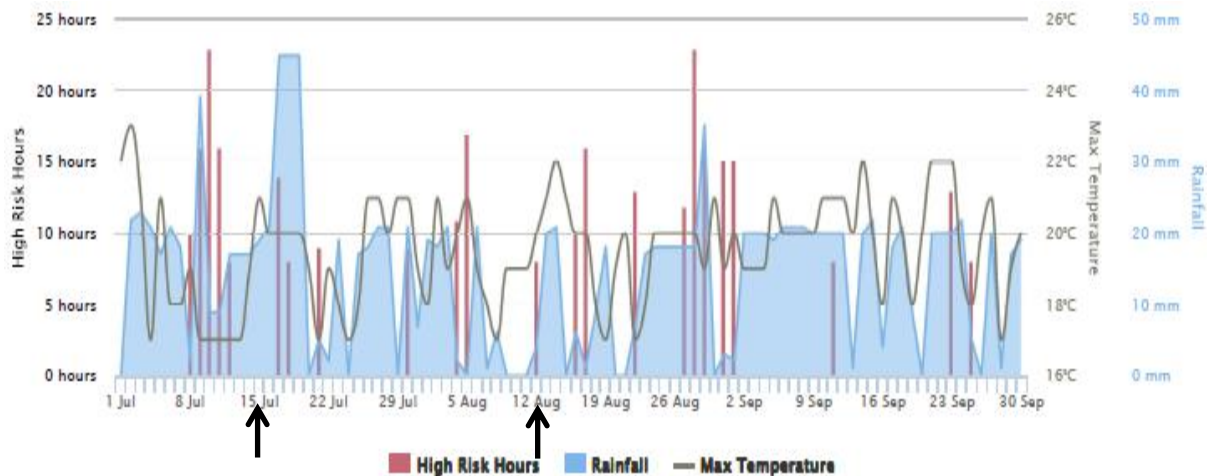


Figure 1. July to September output from theprosaroscale.com.au for post code 6521

The graph above presents days of > 8 hours high risk spore infection periods for sclerotinia. Please note that sclerotinia can continue to develop during periods of moderate risk where infection has already occurred.

Application on the 12 July at 25% flower occurred after a period of 5 high risk days in a row. Application on the 10 August at 50% flower occurred preceding a series of high risk days followed by an intense period of infection in the last couple of days of August and early

September which would be toward the end of the fungicides effective activity on the disease of normally around 2½ to 3 weeks.

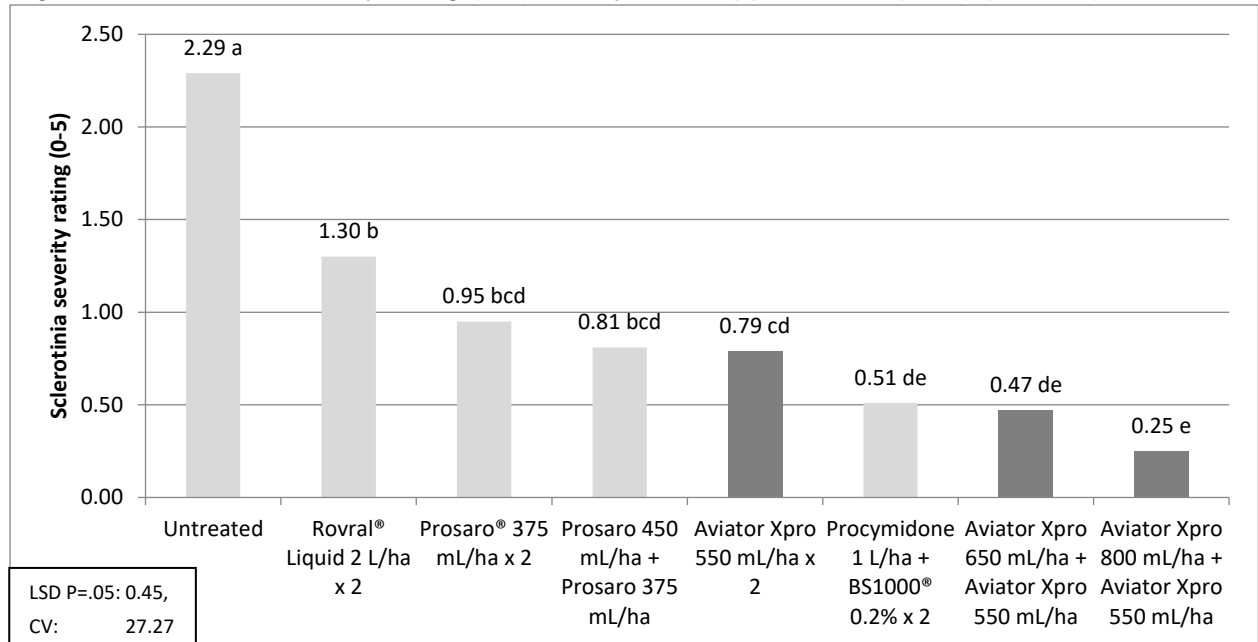
RESULTS

Disease severity score (0-5)

27/9/16: Using the key below 50 plants per plot were assessed to determine the average level of disease severity for each treatment.

Score	0	1	2	3	4	5
Disease level	Nil	lateral lesion	Primary lesion	Lateral death	Upper Primary death	Basal plant dead

Figure 2. Sclerotinia severity rating (0-5) 77 days after application A (DAA) (48 DAB).



Means followed by same letter do not significantly differ (Duncan's New Multiple Range at 5% significance level).

Using a disease severity score is the most accurate measure of a treatments performance for sclerotinia infection as it takes into account the severity and incidence of disease. Using just the incidence of sclerotinia stem infection does not take into account if it is a minor lateral infection on an upper branch or a more severe infection down low on the primary stem which has greater implications for final yield.

All treatments significantly ($P \geq 5\%$) reduced sclerotinia infection levels compared to the untreated.

Aviator Xpro 800 mL/ha in the first spray followed by 550 mL/ha recorded the lowest level of disease severity.

Table 1. Yield (t/ha), %Oil, Gross \$/ha and \$ \$ROI, Hyola 559TT canola

Treatment	Treatment			25% flower + 50% spray			
	Application: 25% flowering	Cost \$/ha	Application: 50% flowering	Cost \$/ha	Yield t/ha	Oil %	Gross \$/ha
Aviator Xpro 800 mL/ha	\$43.60	Aviator Xpro 550 mL/ha	\$29.98	4.20 a	47.8	\$2,411.53	\$292.07
Prosaro 450 mL/ha	\$32.85	Prosaro 375 mL/ha	\$27.38	4.09 ab	48.2	\$2,359.38	\$253.28
Aviator Xpro 550 mL/ha	\$29.98	Aviator Xpro 550 mL/ha	\$29.98	4.10 ab	47.9	\$2,355.74	\$249.90
Aviator Xpro 650 mL/ha	\$35.43	Aviator Xpro 550 mL/ha	\$29.98	4.08 abc	47.7	\$2,338.10	\$226.82
Prosaro 375 mL/ha	\$27.38	Prosaro 375 mL/ha	\$27.38	3.95 bcd	48.3	\$2,282.38	\$181.75
Procymidone 1 L/ha + BS1000 0.2% v/v	\$30.50	Procymidone 1 L/ha + BS1000 0.2% v/v	\$30.50	4.02 a-d	46.6	\$2,267.74	\$156.86
Rovral Liquid 2 L/ha	\$30.00	Rovral Liquid 2 L/ha	\$30.00	3.83 d	48.3	\$2,213.34	\$107.46
Untreated	\$0.00	Untreated	\$0.00	3.61 e	46.4	\$2,031.88	\$0.00
CAN Kwinana del. 9/11/16	\$528.00	LSD P=.05		0.192			
Application cost \$/ha	\$7.00	Standard Deviation		0.111			
Oil bonification at 1.5% over 42%	\$7.92	CV		2.79			

Means followed by same letter do not significantly differ (Duncan's New Multiple Range at 5% significance level).

All treatments significantly ($P \geq 5\%$) increased crop yield compared to the untreated. All Aviator Xpro treatments and Prosaro 450 mL/ha + Prosaro 375 mL/ha yielded significantly higher than Rovral Liquid.

Aviator Xpro 800 mL/ha applied at the first 25% flowering application timing recorded the lowest levels of sclerotinia infection (0.25 severity score) which translated into the highest yield of 4.20 t/ha and best \$ROI/ha of \$292.07/ha in this trial.

Final Comments

Using the highest label rate of either Aviator Xpro or Prosaro in the first application for sclerotinia lowered the level of sclerotinia infection and recorded a higher \$ROI/ha in this trial. Increasing the rate of fungicide increases early activity on active disease but will also increase the length of protection from reinfection.

The use of higher rates under high sclerotinia disease pressure is recommended not only in a single spray application to extend the window of protection but as recorded in this trial it can provide benefits to a two spray strategy. Improvements in length and strength of sclerotinia control from the use of a higher rate in the first application have been recorded across multiple commercial trials conducted by Bayer Crop Science across Australia in the 2016 season.

ACKNOWLEDGMENTS

Thanks to the Scotney family for hosting the site and to Living Farm for the harvest of the trial.

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E: rick.horbury@bayer.com, Mob: 0429 055 154, Twitter: @HorburyRick