

Determining yield loss in canola following Sclerotinia stem rot infection – an update

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Background

- Sclerotinia stem rot is unpredictable disease
- Broad host range inc. canola and pulses
- Conducive years significant infection
- But – does not always lead to yield loss
- WA bad infection years 2013 and 2016. When will the next occur



Aim

- To determine what level of infection leads to a yield loss in canola, and when there is an economic advantage to controlling SSR with fungicide sprays – results from 2 years of trials



Method

- 2 years
- 4 varieties
- Early-mid flowering, similar maturity, but different growth habits
- Simulated disease loss at 30% & 60% flowering
- Simulated disease loss levels – 0, 13, 21, 43, 60%
 - No. stems to cut calculated from plant emergence/ plot

Beverley 2021

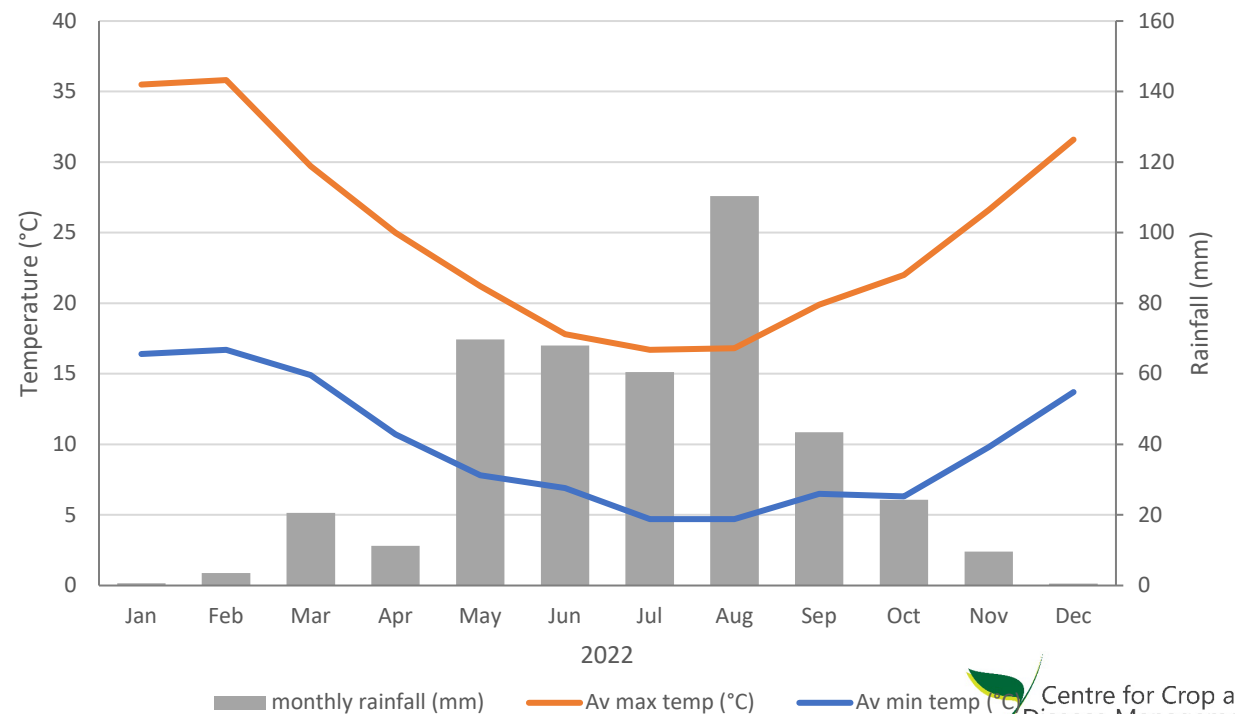
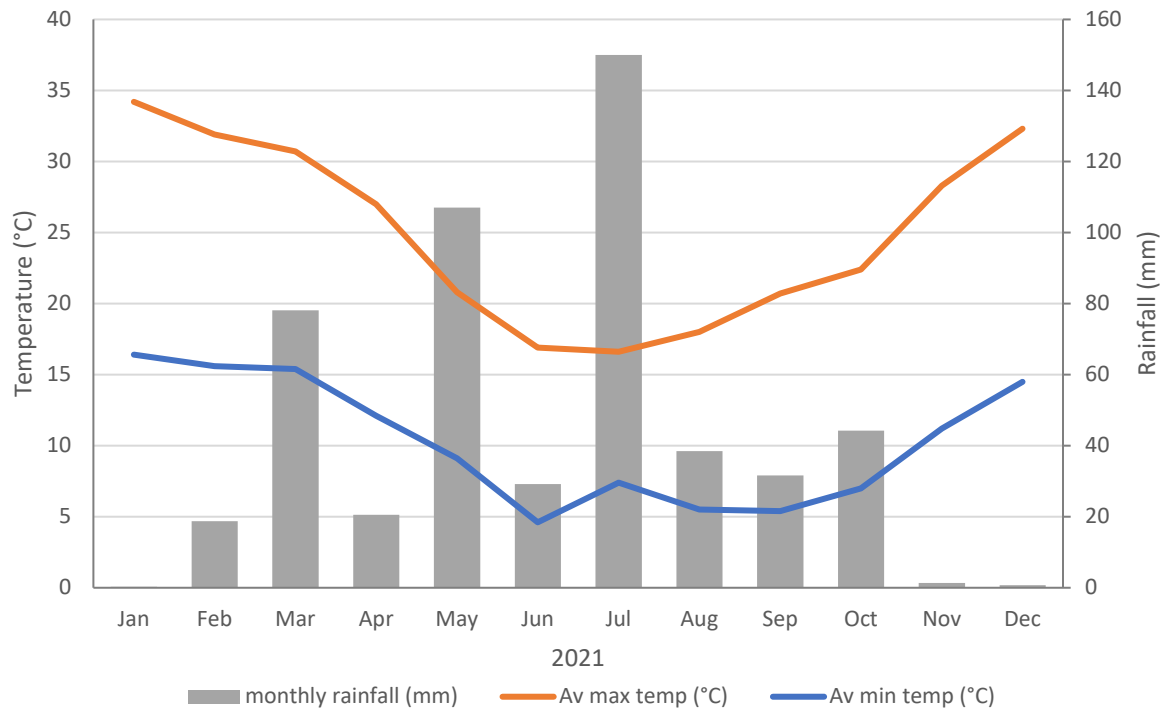
- 4 vars – ATR Bonito, HyTTec Trophy, Pioneer 44Y27, DG408
- Sown 9 May
- 30% - 19 Aug
- 60% - 3 Sep
- Harvested – 17 Nov

Dale 2022

- 4 vars - ATR Bonito, HyTTec Trophy, Pioneer 44Y27, Bindo
- Sown – 16 May
- 30% - 19 Aug
- 60% -5 Sep
- Harvested – 15 Nov

Results

- 2021: Annual rainfall 519 mm, 402 mm in growing season – 2nd highest on record
- 2022: Annual rainfall 422 mm, 375 in growing season – average



Results

- ATR Bonito & HyTTec Trophy

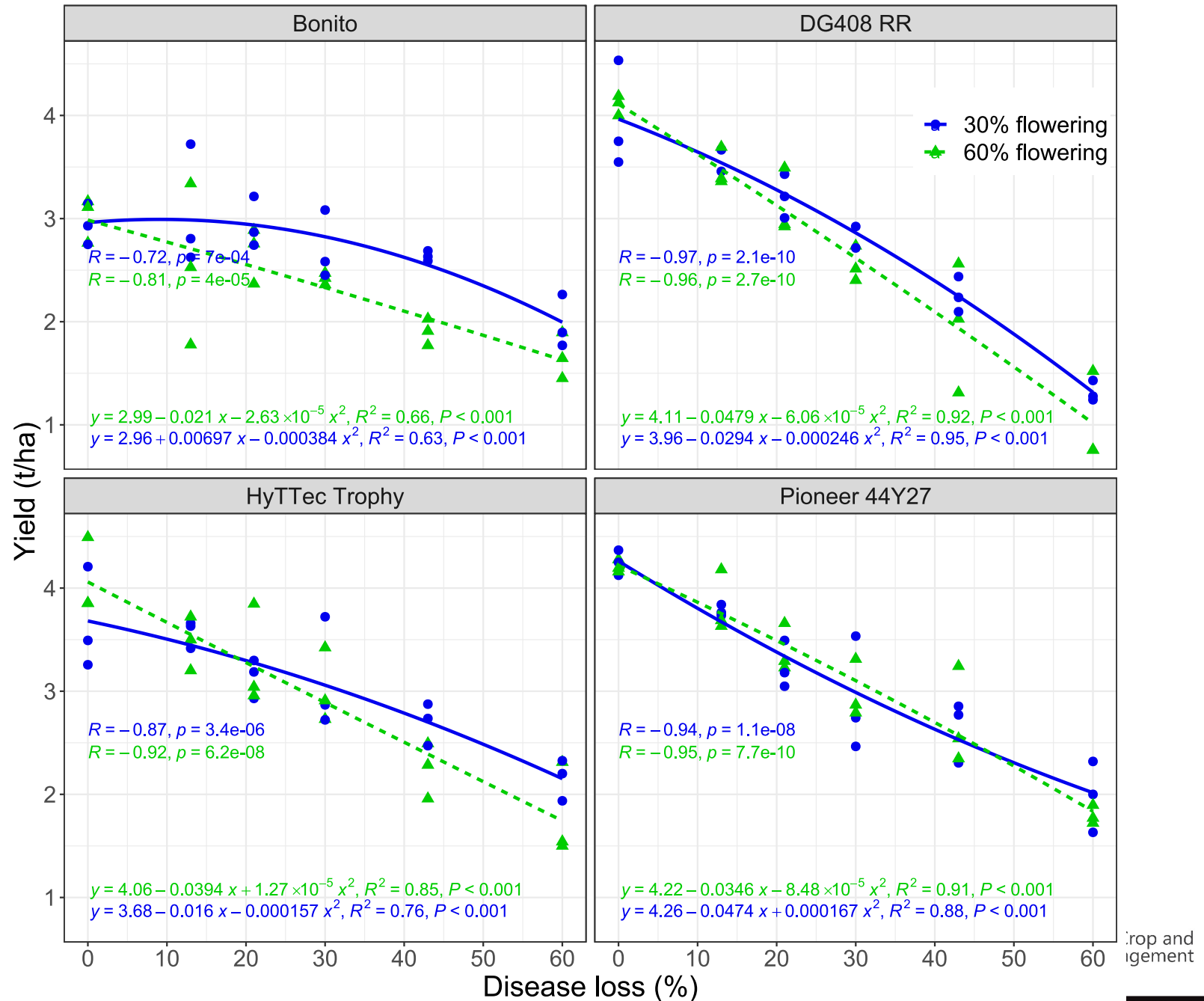
- DG408 RR & Pioneer 44Y27



Results (2021 yield loss)

- Yield loss range

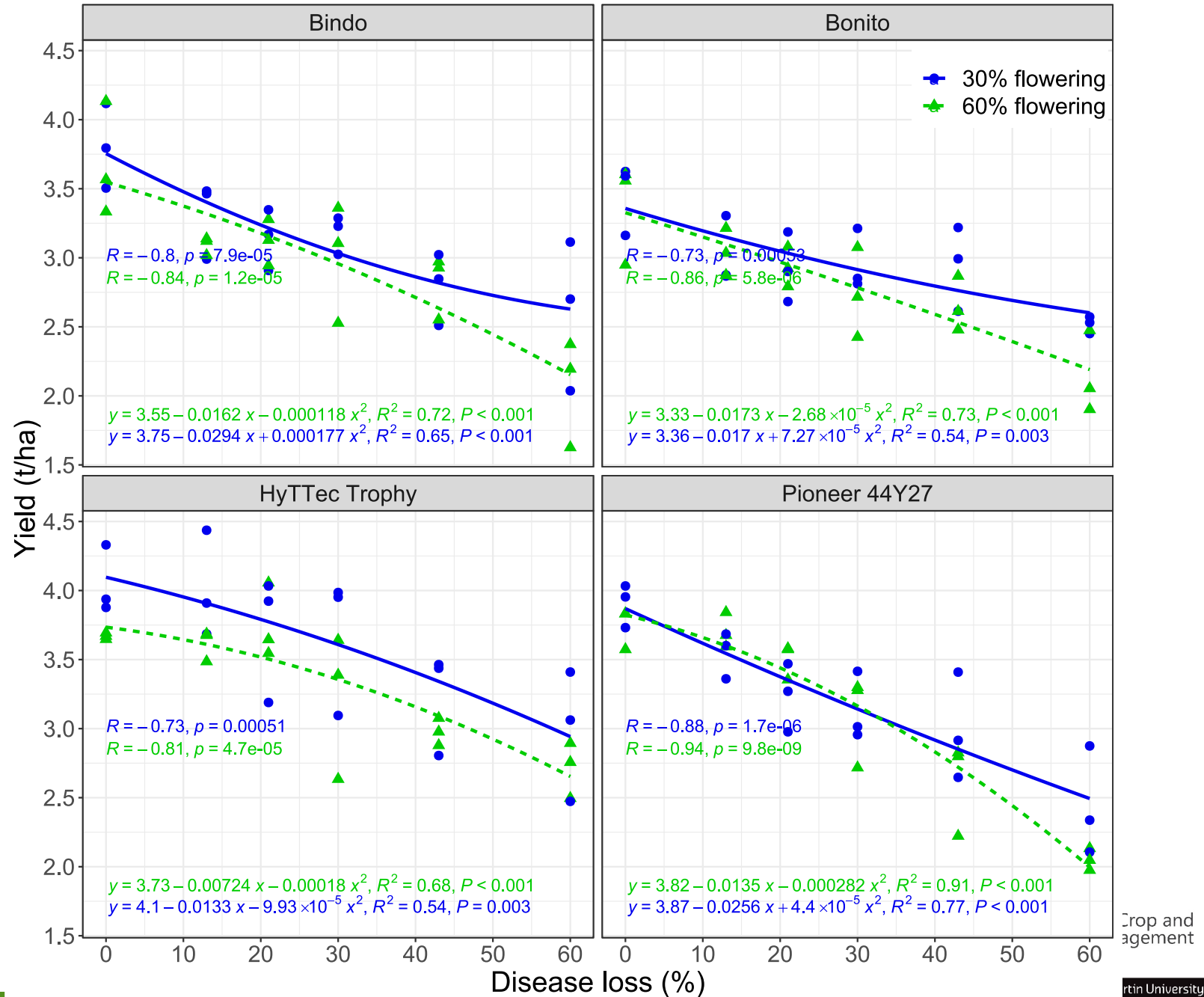
	% Disease	
% flowering	25	60
30	2 - 25%	32 - 67%
60	18 - 30%	45 - 75%



Results (2022 yield loss)

- Yield loss range

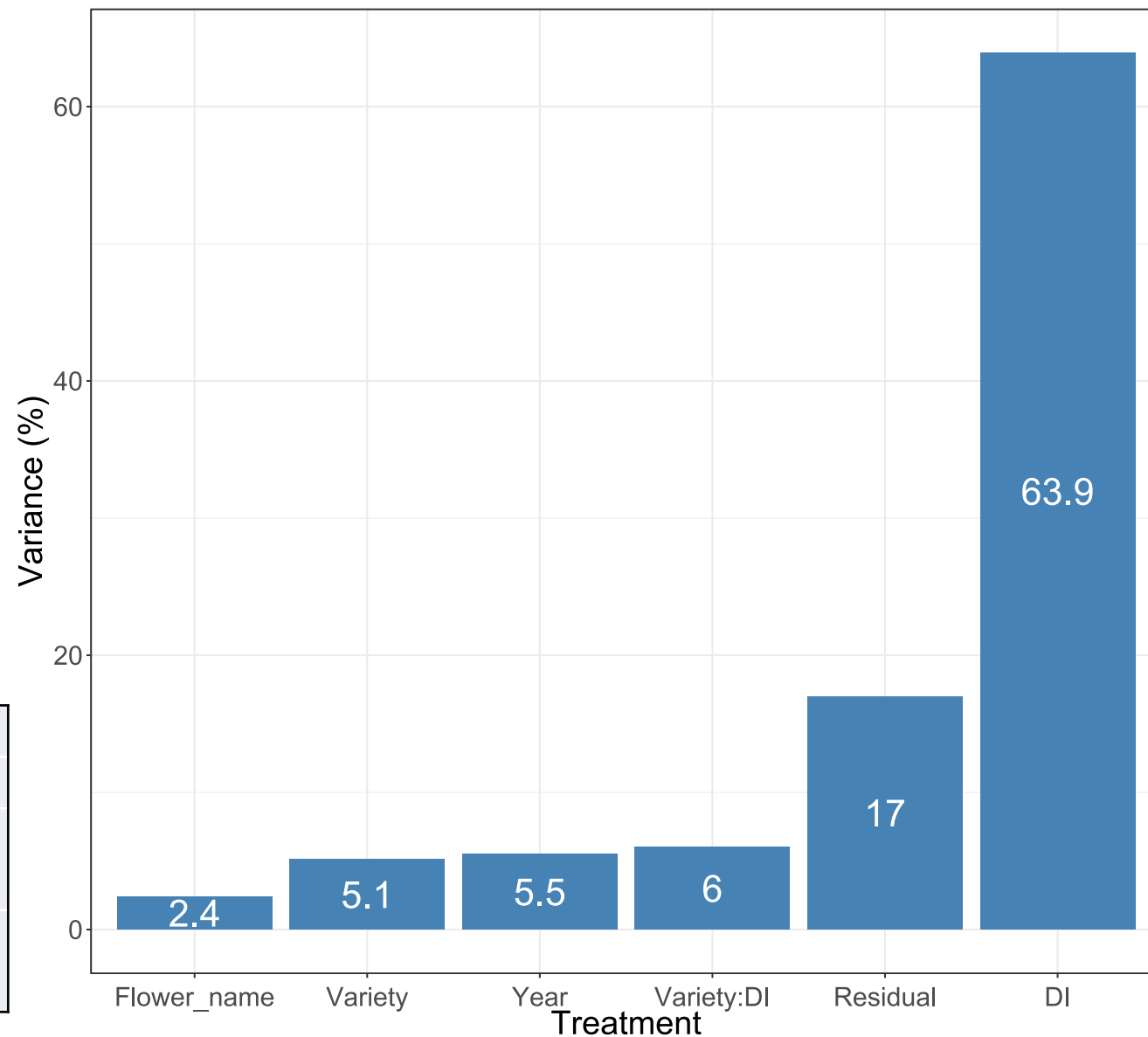
	% Disease	
% flowering	25	60
30	10 - 17%	22 - 44%
60	8 - 13%	29 - 48%



Importance of variables

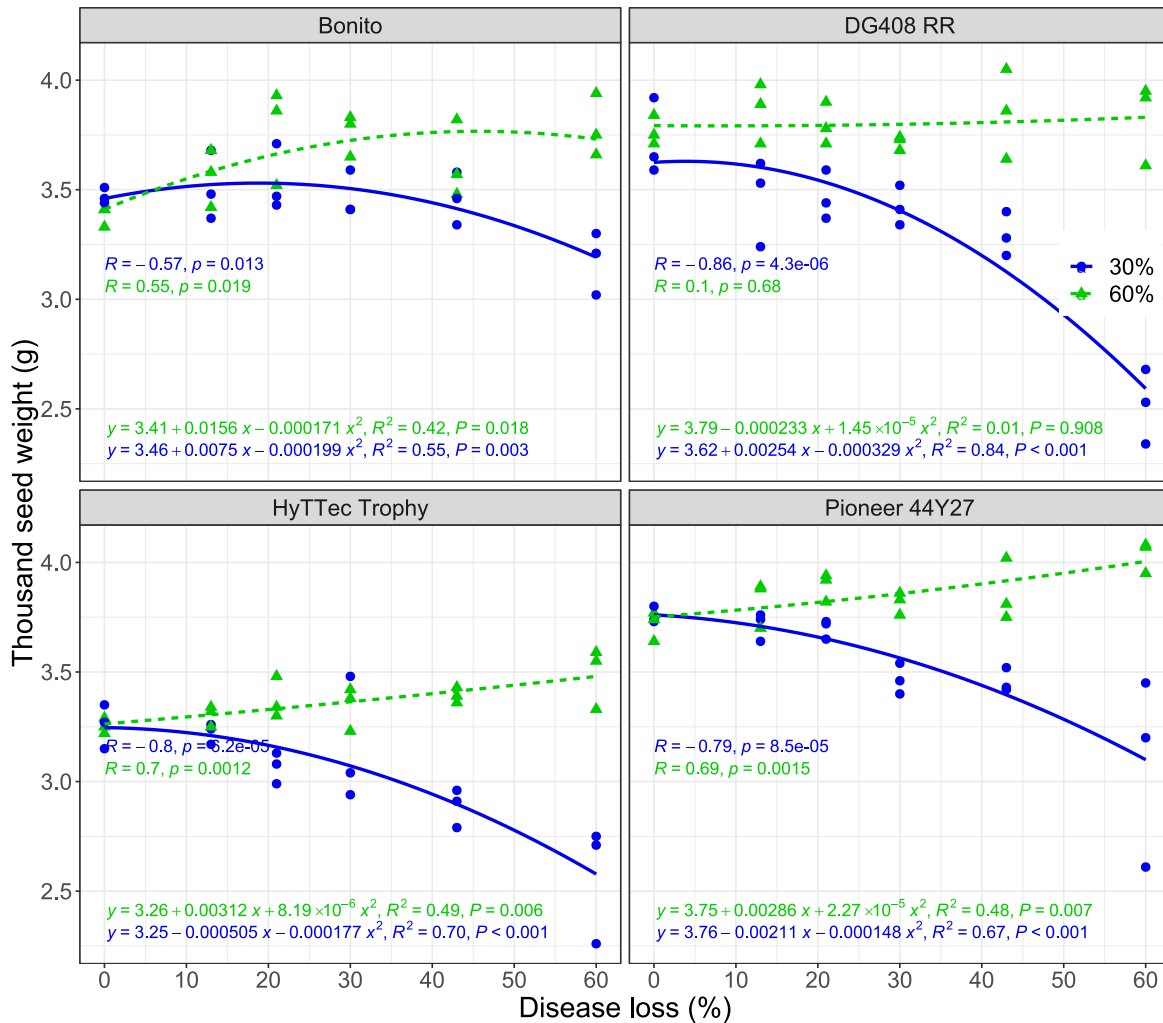
% flowering	% Disease	
	25	60
30	2 - 25%	22 - 67%
60	8 - 30%	29 - 75%

% flowering	% Disease	
	25	60
30	0.1 - 1% loss per 1% disease	0.4 - 1.1% loss per 1% disease
60	0.3 - 1.2% loss per 1% disease	0.5 - 1.25% loss per 1% disease

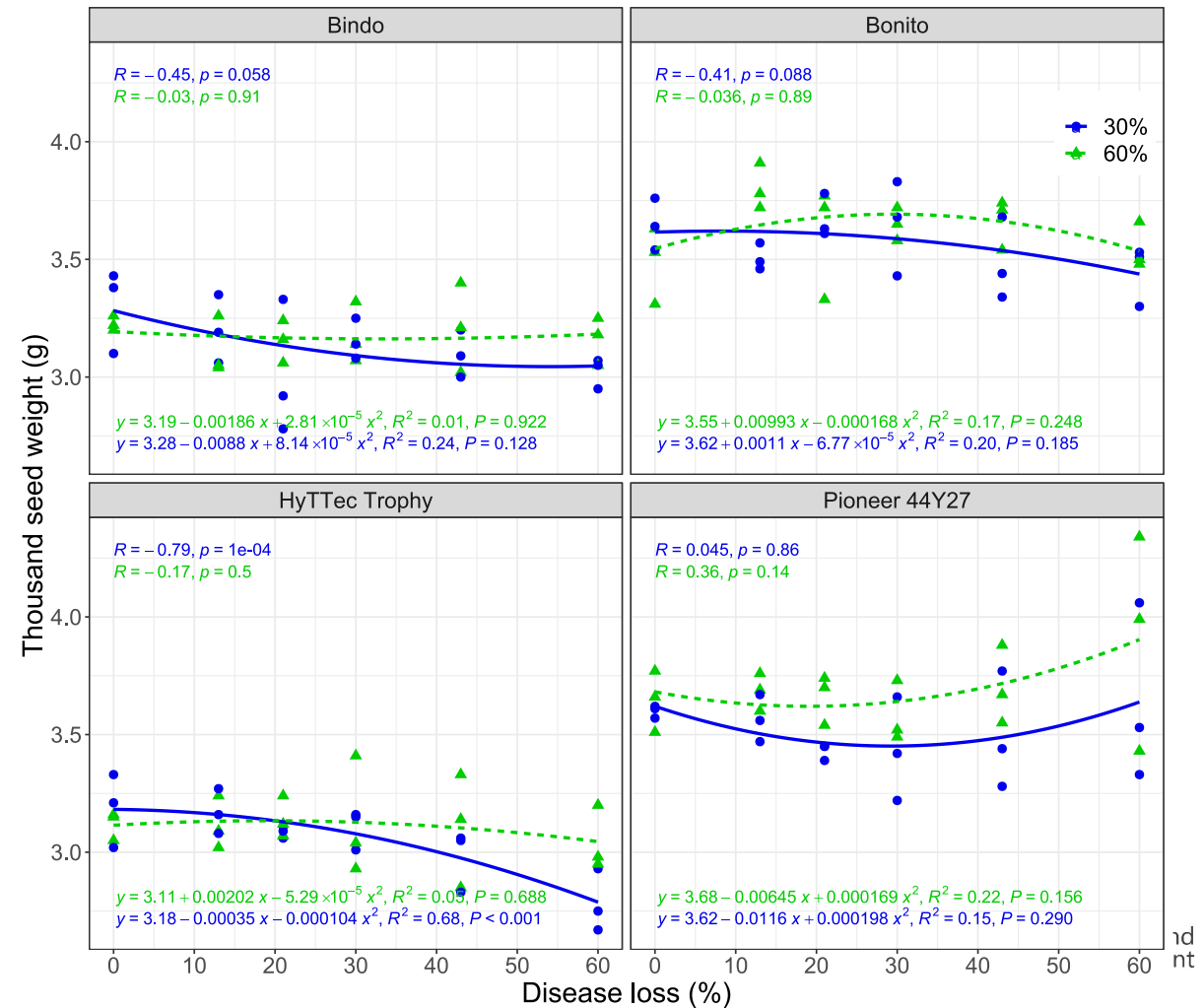


Results (1000 seed weight)

2021



2022



Economics

Based on;

- a spray cost of \$42/ha,
- 10-yr av. canola price of \$500/ha
- Est. yield of 2 t/ha,
- Economically beneficial to spray with more than 10% Sclerotinia disease incidence (assuming greater than 0.5% loss/ 1% disease)
- But last 2 years infection levels in WA much lower despite wet winters
- Highlights fine line between no yield loss and a yield penalty
- When future infection risk incorporated into equation becomes even more complex

Conclusion

The impact of SSR infection increased as % diseased plants increased;

- significant loss at 13% infected plants
- maximum of 1.25% yield loss per 1% infection at 60% infected plants
- Economically beneficial to spray at 10% or greater infection
- Note: Impact of high rainfall and long season;
- compensation ability in canola in some seasons?
- recommended repeat in mid and lower rainfall site (aim of 2022)

Acknowledgements

- Research team
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THANK YOU

Questions?