

SCLEROTINIA RESEARCH UPDATE AND APPROACHES TO IN-SEASON MANAGEMENT

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Regional Development**



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Regional Development



Bonnie Jupp, Alice Butler, Bec Swift, Laurie Wahlsten

DAW00256: Building crop protection and crop production R&D capacity in regional Western Australia

Jean Galloway, Art Diggle, Christiaan Valentine, Fumie Horiuchi, Anne Smith and Ciara Beard

DAW1810-007RTX: Disease epidemiology and management tools for Australian grain growers

Ravjit Khangura, Andrea Hills, Ciara Beard and Anne Smith

UM00051: National Canola Pathogen Program

Geoff Thomas, Ciara Beard and Anne Smith

DAW00229: Improving Grower Surveillance, Management, Epidemiology Knowledge And Tools To Manage Crop Disease – WA

Jean Galloway and Christiaan Valentine

Rapid Pest/Disease surveillance and monitoring using smart technology for crop protection and market access

Overview

- Sclerotinia in lupin research
- Sclerotinia in canola research
 - Sclerotia germination
 - Petal infection
 - Disease development and yield losses in trials
 - SclerotiniaCM App

Sclerotinia in lupin

Sclerotia



Sclerotinia in lupin

- Tends to be an issue in particularly wet years
- Fungicides can provide some disease control and yield responses
- Optimal fungicide application timing is challenging to determine



Sclerotinia in lupin: trials 2016-18, Geraldton

G.Thomas, C.Beard, A.Smith

		Percent plants affected		
Treatment		2016 Trial 1	2018 Trial 1	2018 Trial 2
Infected plants (%)	Nil	33	52	50
	Spray	24	39	26
	P=0.05	ns	*	***
Infected main stem (%)	Nil	27	10	18
	Spray	13	6	7
	P=0.05	*	ns	**
Infected main pods (%)	Nil	5	35	27
	Spray	2	20	13
	P=0.05	*	**	***

Sclerotinia in lupin: trials in 2018, Geraldton

G.Thomas, C.Beard, A.Smith

Is it too late to apply fungicide if you can see disease in the crop?

Same paddock, same fungicide, different trials

Fungicide timing	Control (% of Untreated)			
	Plants affected	Main stem affected	Main stem pods affected	Yield
Start flowering	100	100	86	98
End flowering	50	33	41	104

- Later timing was generally more effective for disease control in 2018

Sclerotinia in canola



Sclerotinia in canola

Research in 2018 – use a range of tools to determine if we can be confident that the SclerotiniaCM app is producing reliable outputs

1. Sclerote depots and apothecia observations
2. Weather monitoring and petal testing
3. Fungicide trials and commercial paddocks where disease development and yield loss were monitored and the SclerotiniaCM app tested

Sclerote depots – monitoring apothecia emergence

- Sclerotia, collected locally in 2017, were placed *within* canola paddocks in 2018. At some sites, sclerotia that formed in the 2016 season were also used. Sclerotia were exposed to natural weather conditions within the crop canopy
- Automated imaging systems used to monitor the start of the disease cycle in multiple locations
- Provide early warning of when apothecia are present and potentially causing petal infection

Sclerote depots – monitoring apothecia emergence



J.Galloway,
C.Valentine

**A small proportion
of sclerotia that
germinated in one
season can
germinate again in
a subsequent
season**



2017

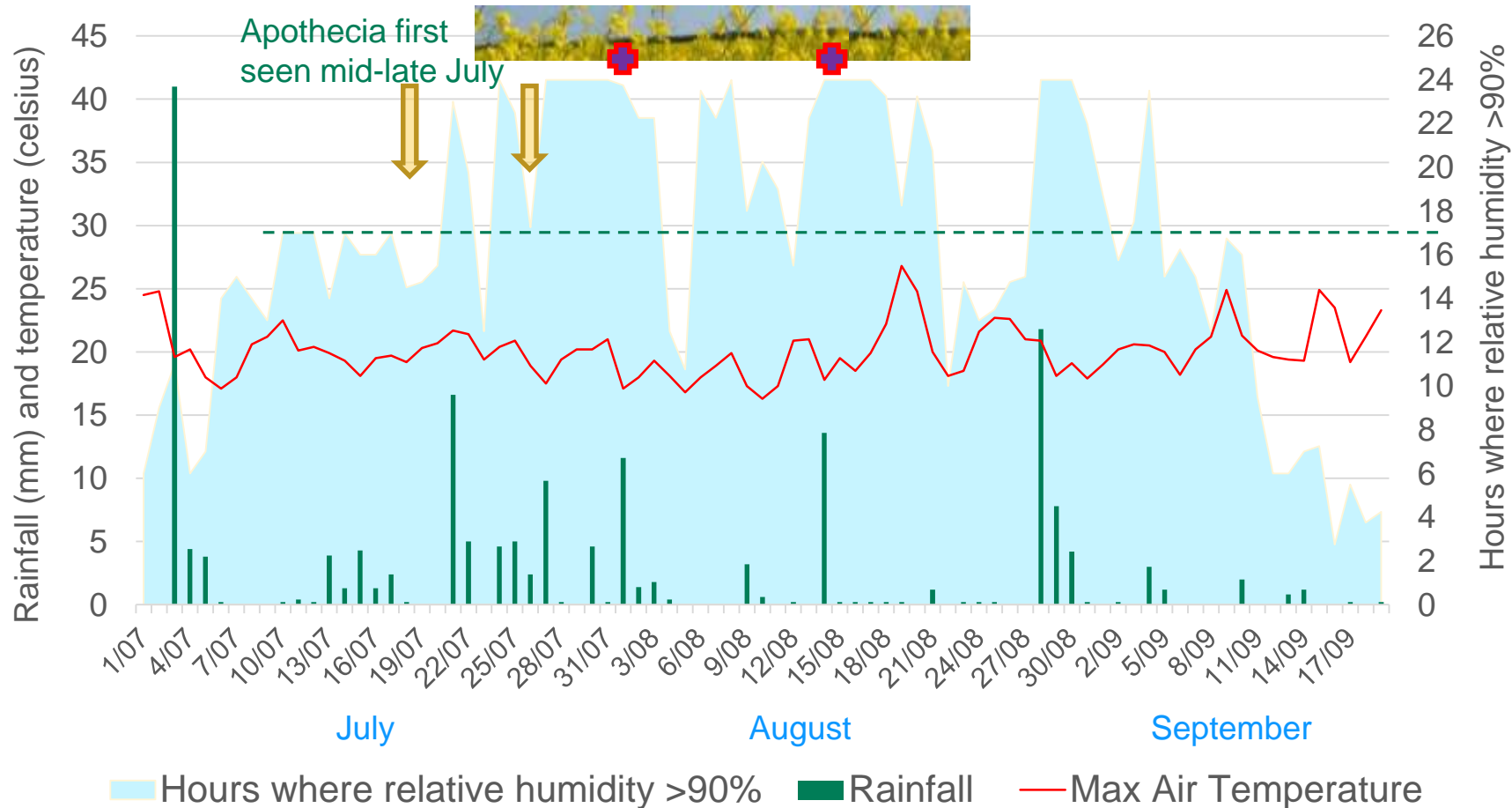


2018

Out of 98 sclerotia
that germinated in
2017, 3%
germinated again in
2018

Geraldton Port Zone

Crop infection seen



Basal infection from soil



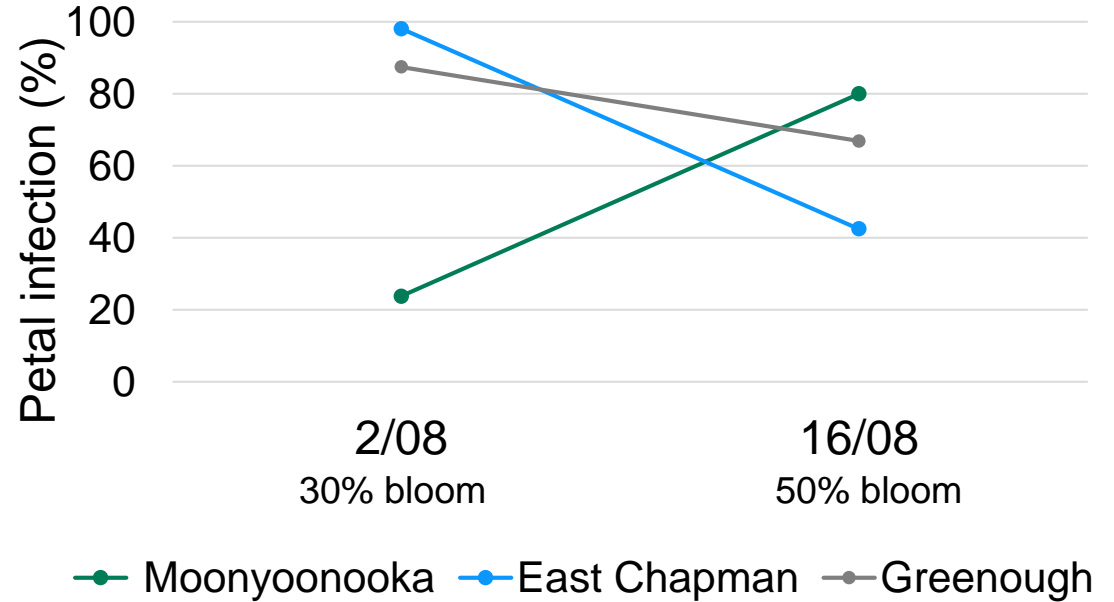
Lower stem infection from senescing lowest leaf



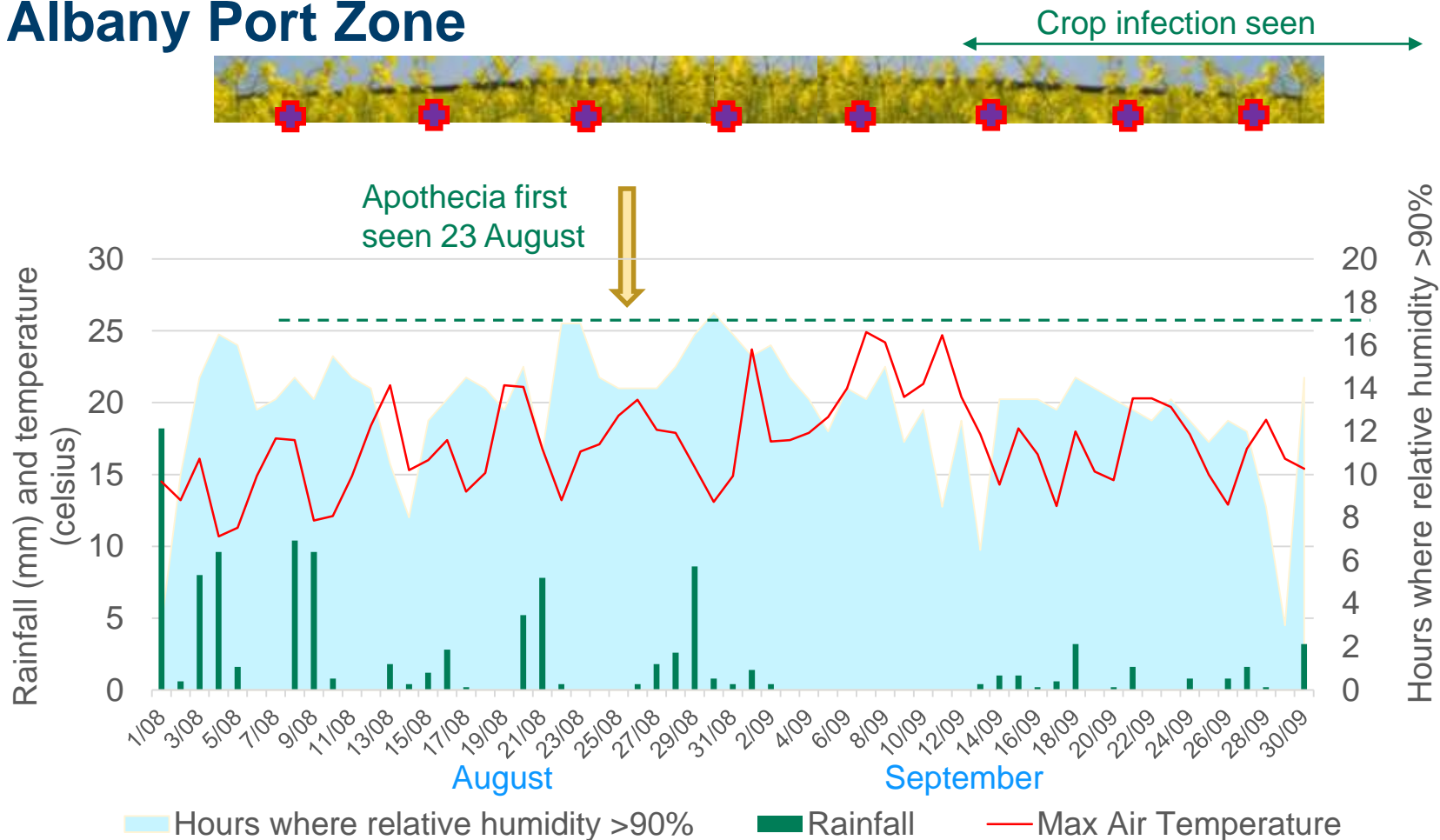
Petal testing



Geraldton Port Zone 2018



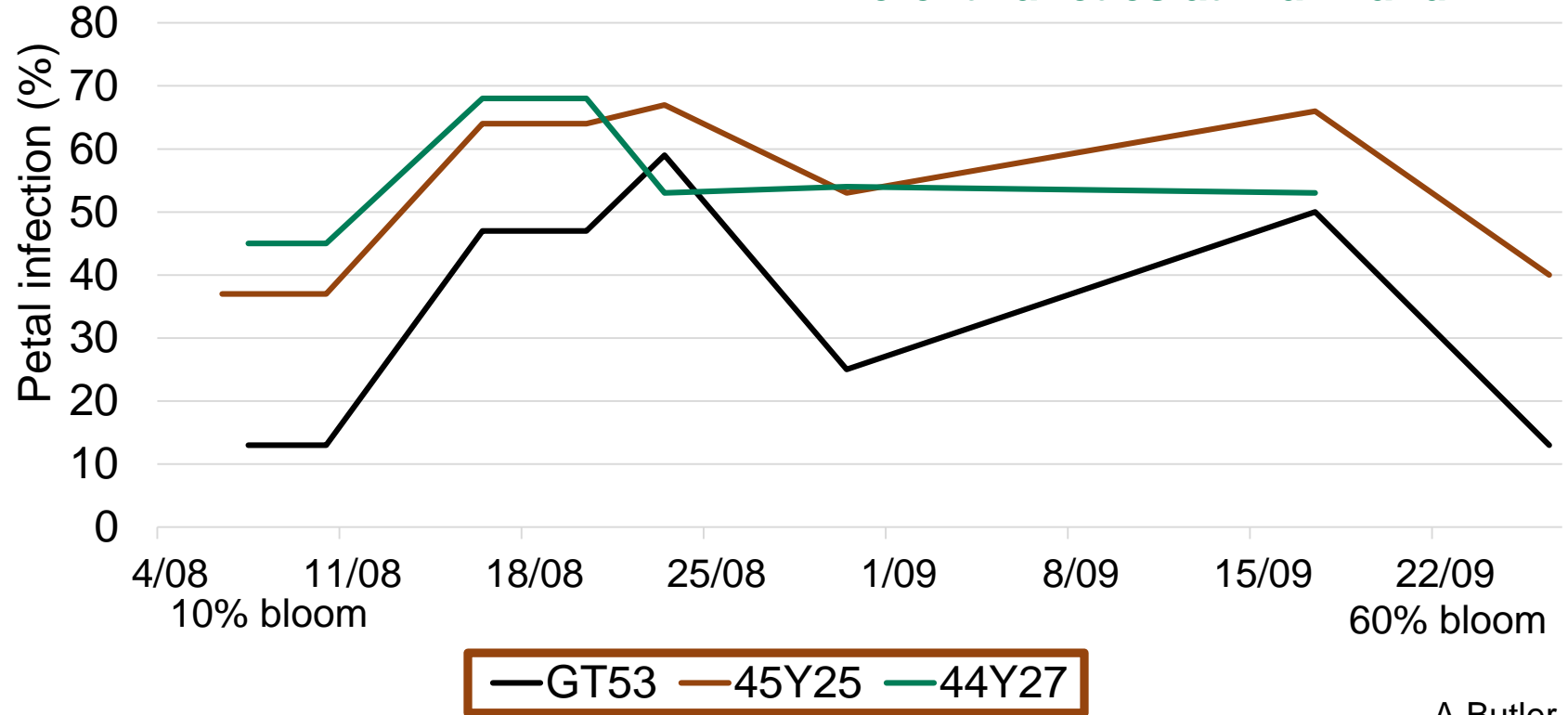
Albany Port Zone



Petal testing

Albany Port Zone, 2018

Different varieties at Frankland

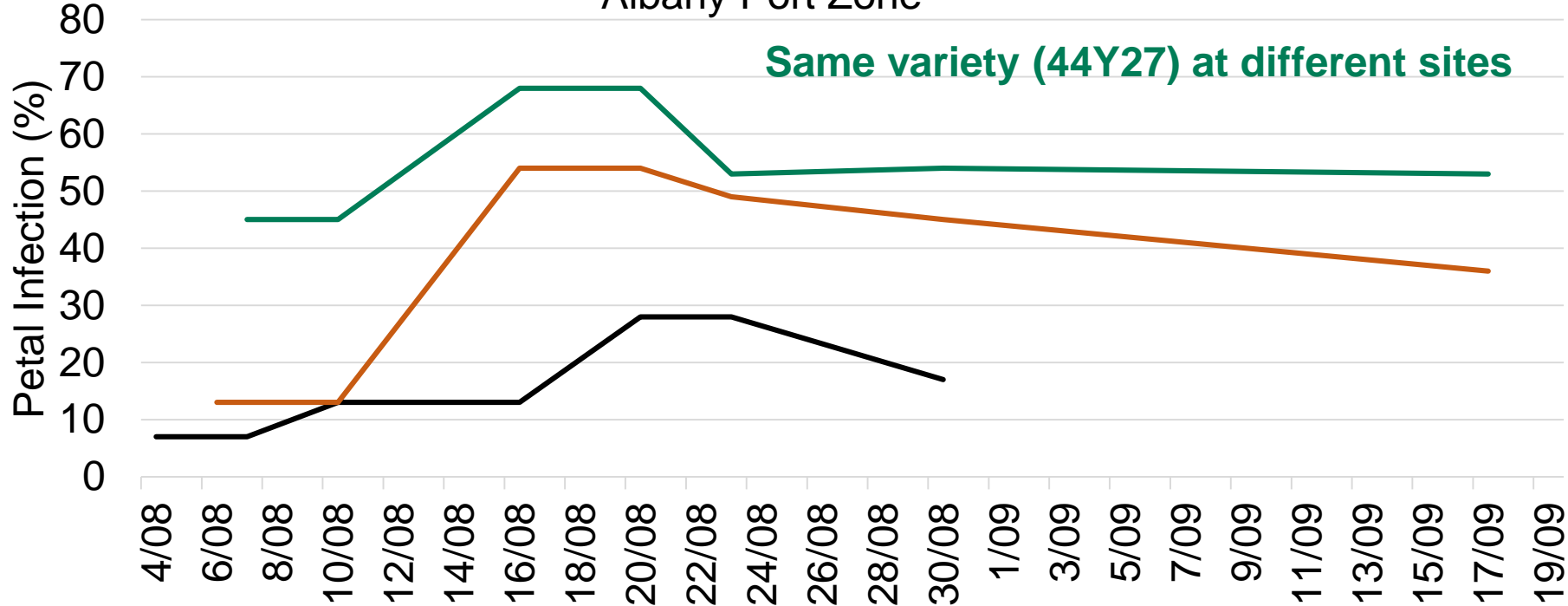


A.Butler

Petal testing

Albany Port Zone

Same variety (44Y27) at different sites



10% bloom — Frankland — South Stirling — Woogenellup 50% bloom
A. Butler

SclerotiniaCM App testing for Albany Port Zone

Mean net return from a single fungicide spray calculated by SclerotiniaCM app for South Coast paddocks at Frankland, Woogenellup, South Stirling and Monjebup for 2 dates at 10-15% flowering based on growers estimated target yields.

Sites	Jul-30	Aug-08
Frankland 1	\$36	\$11
Frankland 2	\$53	\$24
Woogenellup	\$51	\$14
South Stirling	\$44	\$22
Monjebup	-\$18	-\$28

SclerotiniaCM App testing for Geraldton Port Zone

Mean net return from a single fungicide spray at 20% flowering calculated by SclerotiniaCM app for Geraldton port zone paddocks at Moonyoonooka, East Chapman and Greenough.

Site	Jul-26 (first/single spray)
Moonyoonooka	\$98
East Chapman	\$73
Greenough	\$88

Yield gain comparison between predictions from the SclerotiniaCM app and the Greenough spray trial

Treatment (spray decision)	Yield (t/ha)	% Yield gain (Trial result)	% Yield gain (App prediction)
Do not spray (No spray)	2.1	-	-
Apply a single spray at 20% bloom	2.5	16	16
Lsd (5%)	0.351		

Sclerotinia management is challenging



- The sclerote depots, petal testing and paddock history provide an indication of potential disease pressure in a season but do not guarantee disease will occur in crop.
- Disease development is very dependent on weather conditions during crop flowering and in the 2-3 weeks after spraying

SclerotiniaCM App

- The SclerotiniaCM app offers an easy and useful tool for making decisions on whether or not to apply fungicide for sclerotinia management in a given paddock and season.
- Input paddock history, yield expectation, grain price, recent rainfall and rain forecast to determine the likely profitability of applying a fungicide spray
- Testing of the app in commercial crop situations showed it gave an accurate estimate of the value of applying a single fungicide or not in the 2018 season.
- The app is available now on the app store and Google play



A.Diggle, J.Galloway, F.Horiuchi

Thank you

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