

F7 Ascochyta Blight (synonym: Blackspot) Management, MRZ Mid North (Hart), SA
F8 Ascochyta Blight (synonym: Blackspot) Management, MRZ Mid North (Pinery), SA
F9 Ascochyta Blight (synonym: Blackspot) Management, LRZ Upper Eyre Peninsula (Minnipa), SA

Aim

To improve the success of early sown field pea crops through identifying foliar fungicides with higher levels of efficacy than the current foliar fungicide of Mancozeb on Blackspot disease.

Treatments

As listed in Table 1.

Table 1. Foliar fungicide treatments and application timings

Treatment	Timing
Nil	
PPT*	
Mancozeb + PPT	8 weeks after sowing (WAS) and early flowering
Chlorothalonil + PPT	Fortnightly in front of rain events from 8 WAS
Fluid Flutriafol	Seeding
Fluid Uniform	Seeding
Aviator® Xpro + PPT	8 WAS and early flowering
Amistar® Xtra + PPT	8 WAS and early flowering
Cabrio® + PPT	8 WAS and early flowering

*PPT = P-Pickle T® seed treatment at 200ml/100kg seed (360 g/L Thiram and 200 g/L Thiabendazole)

*****Some of the pesticide treatments in this research contain unregistered fungicides, application rates and timings and were undertaken for experimental purposes only. The results within this document do not constitute a recommendation for that particular use by the author or author's organisation.***

Other Details

Variety: PBA Coogee
Plant density: 55 plants/m²
Sowing date: Hart – 30th April
Minnipa – 1st May
Pinery – 7th May
Fertiliser: MAP + Zn (2%) @ 90 kg/ha
Seed treatment: Apron® (350 g/L Matalaxyl-M) seeding treatment was applied to all seed to control downy mildew

Results and Interpretation

- Blackspot disease was assessed visually at 9 to 10 node (at early bud development) and at the mid to late flowering stage. Assessment at 9 to 10 node was done as percentage blackspot severity/plot = % of nodes infected on a plant x frequency of infected plants where; 0 = no visual disease and 100 = complete disease.
- The final assessment was conducted on five individual plants selected at random from the centre of each plot and scored for the number of girdled nodes. A disease index (DI) was further developed from these scores (data not presented). Only data from the 9-10 node rating has been presented in this summary, however generally a good correlation between the two scoring systems was found.
- The Hart sowing date corresponded to a medium blackspot risk sowing window, while Pinery and Minnipa sowing dates were within high blackspot risk sowing windows, as forecasted by the Blackspot Manager, DAFWA Crop Disease Forecasts, May 2015.
- The Minnipa trial was spread with infected pea stubble from the previous year after sowing but prior to emergence, and disease onset occurred earlier at this site. This along with a high blackspot risk at the time of sowing led to Minnipa having the highest level of disease infection. On the other hand, similar levels of disease infection were observed at Hart and Pinery.

Blackspot control

- There was a significant fungicide treatment by site interaction for blackspot disease infection as measured by percentage plot disease severity at the 9-10 node stage. This indicated that the level of disease severity varied among treatments but this was site dependent.
- The fluid injection Uniform and PPT treatments showed a similar level of disease infection to the nil treatment at all sites.
- The fluid injection Flutrifol and PPT treatments showed a reduction in disease severity levels when compared to the nil (Table 2).
- Disease severity levels were lower in the Mancozeb and Fluid Flutrifol when compared with the Nil, however this reduction in the Mancozeb treatment was only significant at Hart.
- Fortnightly Chorothalonil treatments reduced disease infection over the nil at Hart and Minnipa only but not at Pinery.
- The Amistar® Xtra treatment reduced infection levels at Hart and Pinery only.
- Cabrio® and Aviator® Xpro treatments showed the highest level of disease reduction over the nil treatments. Both treatments also showed improved control over the Mancozeb treatments at Hart, while Aviator® Xpro improved control over Mancozeb at Pinery.
- At Hart, Aviator® Xpro showed an improved level of blackspot control over all other treatments.

Table 2. Blackspot severity assessed at 9-10 node as a percentage of plot severity under different fungicide treatments at Hart, Pinery and Minnipa, South Australia, 2015.

	Hart		Minnipa		Pinery	
Nil	23.7	a.....	36.6	a...	21.1	a....
Amistar® Xtra + PPT	5.8	....e.	29.7	abc.	13.1	.bcd.
Aviator® Xpro + PPT	3.6	....f	19.1	..cd	7.9	....e
Cabrio® + PPT	6.8	...de.	21.1	.bcd	12.2	..cde
Chlorothalonil + PPT	9.3	..cd..	17.1	...d	14.4	abcd.
Fluid Flutrifol	15.0	.b....	22.9	.bcd	10.4	...de
Fluid Uniform	28.0	a.....	30.0	ab..	19.6	ab...
Mancozeb + PPT	12.2	.bc...	29.7	abc.	16.5	abc..
PPT	28.2	a.....	26.2	abcd	18.2	abc..
Site mean	11.8		25.1		14.2	

*log base 10 back transformed data; letters indicate significance within a site only

Grain Yield

- A significant treatment and site response was found for grain yield indicating grain yields showed a similar response across the treatments and that similar responses in disease infection were observed across the sites.
- Hart and Minnipa had similar grain yields (1.6 t/ha), while Pinery was lower yielding (1.2 t/ha).
- Grain yields showed a very similar response to the mid-flowering disease index score (data not shown) with similar responses obtained in the nil, Mancozeb, PPT and two fluid treatments. All of these treatments had both a higher disease index score and a lower grain yield than the remaining four treatments (Figure 1).

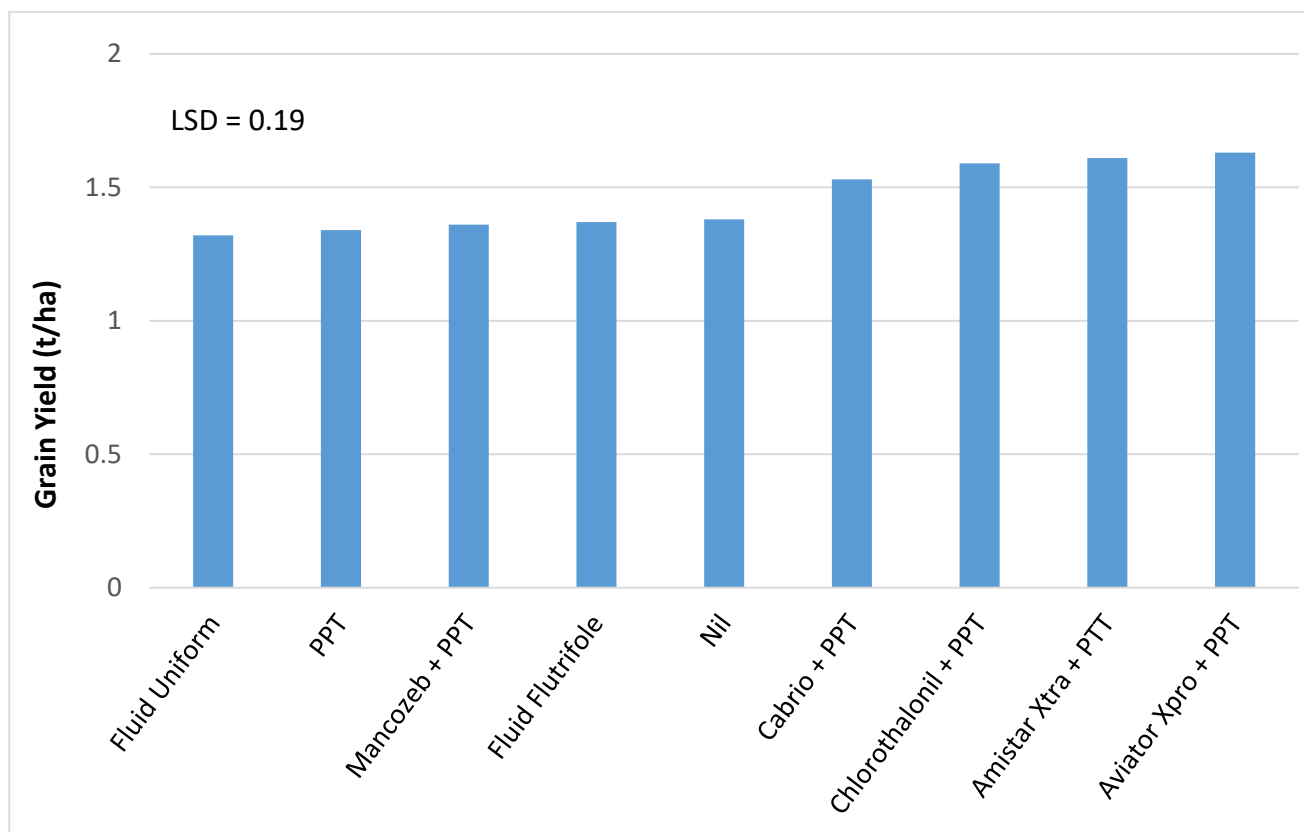


Figure 1. Mean yield (t/ha) of PBA Coogee under different fungicide treatments, averaged across three field sites in South Australia, 2015

****Some of the fungicide treatments in this research contain unregistered fungicides, application rates and timings, and were undertaken for experimental purposes only. The results within the document do not constitute a recommendation for that particular use by the author or author's organisation.**

Key Findings and Comments

- Weather patterns experienced early in 2015 resulted in growers in many districts being advised by DAFWA's Blackspot Manager Prediction model to delay sowing of field peas in SA. This sowing was often out of alignment with optimal sowing times based on best agronomic practice for some districts.
- Under high disease risk situations, growers in low rainfall areas may be best suited to choose alternative break crop options to field peas to avoid significant yield losses through delayed sowing or disease infection. If field pea remains the preferred crop it is important that growers consider the current recommended fungicide strategy of PPT and Mancozeb treatments, selecting paddocks with little or no field pea history, avoiding close proximity to previous field pea stubbles, and delaying sowing as long as possible.
- Several experimental fungicides with greater efficacy than Mancozeb showed improved blackspot control and significant yield increases over the nil and Mancozeb treatments in 2015.
- Disease progression and grain yield were both reduced by dry and hot spring conditions in early October at all sites in 2015. Further evaluation is warranted in years and environments with more favourable spring conditions. Earlier application timings than the 8 week treatment used in these experiments may also be warranted, along with additional 'spring' treatments in longer more favourable seasons.
- A number of industry support groups have reported the economic benefit of using fungicide in controlling blackspot in field pea. Results in 2015 showed the current fungicide application strategy, using PPT and two Mancozeb applications suppressed blackspot at most sites, but previous yield benefits reported from this treatment were not realised due to the hot and dry spring conditions experienced in 2015.
- New fungicide actives and formulas being evaluated showed significant increases in efficacy for controlling blackspot compared to untreated plots and those treated with Mancozeb. Furthermore, a significant yield benefit (approx. 15%) were also identified in these treatments this year. Further trials are planned in 2016 to explore these results.