

## **Faba Bean, Pre-sowing fungicides, cercospora leaf spot, HRZ South East (Bool Lagoon), South Australia**

### **Authors**

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### **Aim**

To evaluate the effectiveness of fungicide seed dressings and in-furrow treatments against cercospora leaf spot in faba bean.

### **Background**

Cercospora leaf spot, caused by the fungal pathogen *Cercospora zonata*, is a leaf disease of faba beans. The disease is frequently observed in faba bean crops grown in the southeast region of South Australia. This disease is most common in paddocks with a long-term history of faba bean production due to a build-up of soil borne inoculum. All faba bean varieties are susceptible to this disease and can cause 10-15% yield loss in unprotected crops. *Cercospora zonata* infects the crop at the seedling stage during wet and cold conditions. Severe infections can result in total defoliation of the crop. Foliar fungicides can effectively control early onset of the disease. For instance, tebuconazole (permit PER13752 registered as Veritas®) and carbendazim (registered for chocolate spot control in faba beans). Further, there is rising interest from the industry for fungicidal seed dressings and in-furrow treatments.

### **Treatments**

Fungicide strategies

Treatments <sup>1</sup>	Fungicide	Active ingredient concentration (g/l)	Rate of application (ml/ha)	Time of application
Nil	Fungicides are not applied	Not applicable (NA)	NA	NA
Standard	Genfarm Blast®	Tebuconazole (430)	145	Applied with grass spray at 6 node stage
	Adama Howzat®	Carbendazim (500)	500	Applied immediately before canopy closure and early pod set
Systiva	BASF Systiva®	Fluxapyroxad (333)	145	On seed
	Adama Howzat®	Carbendazim (500)	500	Applied immediately before canopy closure and early pod set
Uniform	Uniform®	Azoxystrobin (322) + Metalaxyl-M (124)	400	Applied at seeding
	Adama Howzat®	Carbendazim (500)	500	Applied immediately before canopy closure and early pod set

<sup>1</sup>All plots were treated with a foliar application of carbendazim fungicide immediately before canopy closure (27<sup>th</sup> August) and again in early podding (20<sup>th</sup> September) to prevent chocolate spot infection.

**Table 1.** Trial site details

Bool Lagoon	
Sowing Date	17 May
Fertiliser (kg/ha) <sup>1</sup>	80
Disease Inoculum	Natural infection
Varieties	PBA Samira, PBA Bendoc, PBA Kareema
Sowing rate (plants/m <sup>2</sup> )	24
Replicates	3

<sup>1</sup>MAP (9.2, 20.2, 0, 2.7) + Zn (2.5)

### **Results and Interpretation**

- Key Messages: Tebuconazole foliar fungicide is the superior treatment for controlling this disease, showing that Systiva® seed treatment or Uniform® in furrow were not effective fungicide treatments for control of cercospora leaf spot.

Infection from cercospora leaf spot was high early in the season at eight node stage where Uniform mildly suppressed severity compared to the nil treatment. However, by spring the standard tebuconazole treatment at six node growth stage prevented further spread of the disease.

- **Disease assessment:** Cercospora leaf spot infected early in the season before the tebuconazole foliar fungicide was applied on 13th July. Thus, Severity was scored on 25th July as percentage leaf area diseased on the four bottom leaves when plants were at the 6-7 node growth stage. The plots were scored again on 4th September as percentage plant severity across each plot.

Uniform® in furrow treatment suppressed disease symptoms on lowest four leaves more than any other fungicide strategy (Table 3). The tebuconazole was not effective at this stage since infection occurred before the foliar fungicide was applied. However, the second assessment on 4th September demonstrated that tebuconazole effectively stopped the further spread of cercospora leaf spot. Uniform® mildly suppressed the disease compared to nil and Systiva® treatments.

In the early assessment PBA Zahra had significantly more disease than the other two varieties, but at the second assessment there were no varietal differences (Table 3a).

- **Grain Yield:** The yields were not affected during the trial. Tebuconazole spray earlier in the season controlled cercospora leaf spot resulting in better grain yields.

**Table 3.** Effects of fungicide treatments on levels of Cercospora leaf spot disease symptoms on leaves of different varieties of faba bean in Bool Lagoon

<b>Fungicide treatment</b>	<b>Percentage of diseased area on lowest four leaves (25<sup>th</sup> July)</b>	<b>Percentage of the disease severity per plot (4<sup>th</sup> September)</b>
Nil	31.7a	26.3A
Uniform®	17.8c	18.9B
Systiva®	26.4a	25.9A
Standard	26.9a	8.0C
LSD (p<0.001)	5.3	6.3

**Table 4.** Occurrence of Cercospora leaf spot disease symptoms on leaves of different varieties of faba bean in Bool Lagoon

<b>Varieties</b>	<b>Percentage of diseased area on lowest four leaves (25<sup>th</sup> July)</b>	<b>Percentage of the disease severity per plot (4<sup>th</sup> September)</b>
PBA Bendoc	32.5	21.9
PBA Samira	21.7	20.3
PBA Kareema	22.9	17.1
LSD (p<0.001)	4.6	ns

ns: not significant

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