Chickpea disease management

Parkes and Canowindra 2021

Key findings

- PBA Drummond$^{\Phi}$ generally had more Ascochyta blight infection than CBA Captain$^{\Phi}$.
- Fungicide reduced Ascochyta blight infection in both varieties.
- At Canowindra on 17 September Ascochyta blight infection was rated as 6.1 in untreated PBA Drummond$^{\Phi}$ (1 = no disease, 10 = disease across whole plot and all plants dying) and 2.5 in untreated CBA Captain$^{\Phi}$.
- Fungicide reduced Ascochyta blight infection in CBA Captain$^{\Phi}$ (rated moderately susceptible [MS] to Ascochyta blight) and PBA Drummond$^{\Phi}$ (rated susceptible [S] to Ascochyta blight) at both Canowindra and Parkes.
- Where fungicide applications were *Delayed* until after the crop had visible signs of Ascochyta blight, yield was lower than the *Complete* fungicide treatment for PBA Drummond$^{\Phi}$ but the same as *Complete* fungicide treatment for CBA Captain$^{\Phi}$ (at both sites).
- The average yield was 1.78 t/ha at Canowindra and 1.49 t/ha at Parkes
- At Parkes the yield of CBA Captain$^{\Phi}$ was 0.7 t/ha higher in the *Complete* fungicide treatment compared to the *Nil*. PBA Drummond$^{\Phi}$ yield increased by 2 t/ha for the same comparison.
- At Canowindra, CBA Captain$^{\Phi}$ yield increased by 1.5 t/ha and PBA Drummond$^{\Phi}$ by 1.3 t/ha from *Nil* to *Complete* fungicide. However, the yield of the CBA Captain$^{\Phi}$ was still more than double the yield of PBA Drummond$^{\Phi}$ in a high disease pressure environment.
- At Canowindra, yield of CBA Captain$^{\Phi}$ with *Nil* fungicide was either equal to or better than PBA Drummond$^{\Phi}$ with fungicide applied. At Parkes, yield of CBA Captain with nil fungicide was higher than both the Budget and Delayed treatment, but lower than the Complete treatment of PBA Drummond$^{\Phi}$.
- These trials show that even a subtle improvement in varietal resistance from susceptible (PBA Drummond$^{\Phi}$) to moderately susceptible (CBA Captain$^{\Phi}$) can take a lot of pressure off fungicide programs in environments and seasons conducive to disease.

Trial details

Table 4: *Trial management and fungicide treatments applied at Parkes and Canowindra in 2021.*

Management	Parkes			Canowindra		
Sowing date	31 May			20 May		
Harvest date	23 December			17 January 2022		
Starter fertiliser	75 kg/ha MAP					
Fungicide strategy	Parkes			Canowindra		
	Date applied	Product	Rate (per ha)	Date applied	Product	Rate (per ha)
Nil		Nil			Nil	
Budget	20 July	Mancozeb 750	1.7 kg	16 June	Mancozeb 750	1.7 kg
	24 September	Chlorothalonil	1.0 L	17 September	Chlorothalonil	0.5 L
	2 November	Chlorothalonil	0.5 L	27 September	Chlorothalonil	1.0 L
	19 November	Mancozeb 750	1.7 kg	2 November	Chlorothalonil	0.5 L
				19 November	Mancozeb 750	1.7 kg
Delayed	24 September	Aviator® Xpro®	600 mL	17 September	Aviator® Xpro®	600 mL
	–	–	–	27 September	Veritas®	1.0 L
	6 October	Veritas®	1.0 L	6 October	Chlorothalonil	1.0 L
	2 November	Chlorothalonil	1.0 L	2 November	Chlorothalonil	1.0 L
	19 November	Veritas®	1.0 L	19 November	Veritas®	1.0 L
Complete	20 July	Mancozeb 750	1.7 kg	16/06/2021	Mancozeb 750	1.7 kg
	23 August	Chlorothalonil	0.5 L	5 August	Chlorothalonil	0.5 L
	16 September	Chlorothalonil	0.5 L	17 September	Aviator® Xpro®	600 mL
	27 September	Chlorothalonil	0.5 L	27 September	Veritas®	1.0 L
	6 October	Aviator® Xpro®	600 mL	6 October	Chlorothalonil	1.0 L
	2 November	Veritas®	1.0 L	2 November	Chlorothalonil	1.0 L
	19 November	Veritas®	1.0 L	19 November	Veritas®	1.0 L

* Mancozeb 750 = 750 g/kg mancozeb; Aviator® Xpro® = 75 g/L bixafen and 150 g/L prothioconazole; Carbendazim = 500 g/L carbendazim; Chlorothalonil = 720 g/L chlorothalonil; Veritas® = . 120 g/L azoxystrobin + 200 g/L tebuconazole

Results

Grain yield

Table 5: *Grain yield of chickpeas under four fungicide strategies at Parkes and Canowindra in 2021.*

Fungicide strategy	Grain yield (t/ha)					
	Canowindra			Parkes		
	CBA Captain	PBA Drummond	Fungicide Mean	CBA Captain	PBA Drummond	Mean (Fungicide)
Nil	1.6	0.1	***0.8***	1.5	0.2	***0.9***
Budget	2.9	1.0	***1.9***	1.8	0.4	***1.1***
Delayed	3.3	0.9	***2.1***	2.4	1.1	***1.8***
Complete	3.1	1.4	***2.3***	2.2	2.2	***2.2***
Mean (Variety)	***2.7***	***0.9***		***2.0***	***1.0***	
l.s.d. (*P* = 0.05) Variety	0.5 t/ha			0.6 t/ha		
l.s.d. (*P* = 0.05) Fungicide	0.3 t/ha			0.4 t/ha		
l.s.d. (*P* = 0.05) Variety × Fungicide	Not significant			Not significant		