

Chickpea fungicide trial - Dalwallinu



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GOVERNMENT OF
WESTERN AUSTRALIA

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Key Messages

- 2019 had below average growing season rainfall, which led to very little disease development
- No difference in fungicide treatments was observed due to good environmental control of disease

Aim

To demonstrate the effectiveness of newly registered fungicides on ascochyta in chickpeas.

Background

Since the late 1990's disease issues in chickpea mean that growers are cautious about this crop. Now, varieties with much better disease resistance, along with new fungicides, are supporting a re-emerging industry. As such, growers and their consultants are seeking localised information about how to achieve stable yields whilst managing diseases. This trial aimed to exhibit different fungicide products and timings to demonstrate best practice ascochyta management for the Dalwallinu area.

Trial Details

Property	Harry Hyde, Courtlea Road West, Dalwallinu
Plot size & replication	1.54 m centres x 20 m sown x 4 reps
Soil type	Red-brown clay loam
Soil pH (CaCl₂)	0-10cm: 6.6 10-20cm: 7.8 20-30cm: 8.0
EC (dS/m)	0-10cm: 0.074 10-20cm: 0.112 20-30cm: 0.1
Paddock rotation:	2018: Cereal
Sowing date	7/5/2019
Sowing rate	Variety: Neelam. Target 45 p/m ²
Fertiliser	AgNP 80 kg/ha, treated with 400 mL/ha Impact
Herbicides & insecticides	IBS: 1.2 kg/ha Terbyne Xtreme (875 g terbutylazine/kg) + 1.5 L/ha TriflurX (480 g/L trifluralin) PSPE: 200 mL/ha Lorsban (500 g/L chlorpyrifos), 100 g/ha Balance (750 k/kg isoxaflutole) Post Em: 9/7/19: 500 mL/ha Select (240 g/L clethodim), 4/9/19: 300 mL/ha Alpha Scud (100 g/L alpha-cypermethrin) & 500 mL/ha Select
Fungicide treatments	1.5 L/ha Bravo (720 g/L chlorothalonil), 0.875 L/ha Veritas (200 g/L tebuconazole & 120 g/L azoxystrobin)

Table 1. 2019 monthly rainfall (mm) from BOM Dalwallinu station (8297).

Dalwallinu	May	Jun	Jul	Aug	Sep	Oct	Annual	GSR
Average	34	35	49	40	24	14	291	195
2019	4	83	38	26	5	17	187	165

Method

Chickpea variety Neelam was sown in to dry soil. Plots were not inoculated with disease. in order to allow natural infection from the surrounding environment.

Treatment List

- 1 Bravo early and late
- 2 Bravo early and Veritas late
- 3 Veritas early and late
- 4 Veritas late
- 5 nil fungicide

Early fungicide treatments were applied on 23 July and late treatments on 28 August.

Fungicide applications were up to 48 hours prior to rainfall events.

The trial was monitored for disease development throughout the season.

Results

This trial was dry sown on 7 May. Post-sowing, the first significant rainfall event was on 7 June and the crop emerged mid-June. June rainfall (83mm) was well above the local average of 35mm, allowing for good crop establishment (average 59 plants/m²) and early vigour. 87mm was received after crop establishment, with only a single rainfall event over 10mm, which occurred early in July. These conditions were not conducive to the development of ascochyta blight, and as such extremely low levels of disease were seen in trial plots. There were occasional small lesions seen early in the season and no active disease from August onwards. There was no differences observed between treatments (Table 3).

Unfortunately, growing season rainfall in 2019 was below average (Table 1), as such yields for this site were quite low, with a site average of 0.32 t/Ha (Table 4). There was no significant yield difference between the nil fungicide plots or any of the fungicide treatments, as is expected from the lack of disease presence. Currently chickpeas are trading over \$700/t, so even at these low yield levels they would likely be a break-even option.

Table 3. Average ascochyta rating for each treatment on 9 September.

Rating scale from 0: no infection, to 9: most foliage dead or completely dead.

Treatment	Ascochyta rating
Bravo early and late	0
Bravo early and Veritas late	0
Veritas early and late	0
Veritas late	0
nil fungicide	0

Table 4. Average yield (t/Ha) for each treatment on 24 October.

Comprehensive fungicide treatments offered no yield benefit compared to no fungicide at all.

Treatment	Yield t/Ha (P =0.427)
Bravo early and late	0.33
Bravo early and Veritas late	0.35
Veritas early and late	0.28
Veritas late	0.32
nil fungicide	0.31

Comments

The late start, wet June and drier than normal spring in 2019, saw this chickpea crop emerge and grow well early on with good pod set, but struggle to fill pods during the tail end of the season. These climatic conditions also led to good environmental control of ascochyta and the crop showed extremely low levels of the disease throughout the year. This led to an inability to discriminate between fungicide treatments, with low disease presence and low yields seen across all treatments. Similar work in a year with more disease presence would better showcase control options for management of ascochyta.

Of concern for the Australian chickpea industry is the development of an ascochyta strain in south-eastern Australia, which has resulted in a downgrading of resistance ratings for most Australian chickpea varieties. In WA, crop monitoring by CCDM has to date not found the southern strain of ascochyta in WA. Therefore, we believe the dominant ascochyta strain in WA to be similar to the northern strain. In our experiment, we selected the variety Neelam, which is rated MR/MS in the northern regions of eastern Australia and MS in the southern region. Most other desi chickpeas that are currently available are rated S to the southern strain. We encourage growers to isolate from previous years' chickpea stubble, sow only clean seed, continue to use a robust fungicide package and to monitor crop closely.

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