

# Lentil production for yield

The aim of this trial was to investigate sowing time and fungicide management aimed at optimising lentil production.



## Summary

The take home message from the lentil production trial in a disease-free year is that lentils should be sown prior to mid June, preferably in the late May to mid June period to achieve optimum yields. A difference of 1t/ha was achieved between sowing in late May compared to an early July sowing. However it must be remembered that with an early sowing if crops are reaching canopy closure in late winter/early spring then significant levels of disease could be expected under conditions conducive to disease.

Fungicide applications made no improvements to yield regardless of fungicide type, application timing or the number of applications made.

However, if the season had been wetter with a higher disease incidence, then crops may have benefited from one or more fungicide applications.

## Background

There is still much to learn about lentils and with the development of new cultivars agronomic management may need to be altered to optimise the yield benefits of these new cultivars. This trial investigated the interaction between sowing time on the growth and yield of two lentil cultivars. To complete the agronomic package the BCG-WFS also investigated the rate and application timing of fungicides on the lentil crops.

## Methods

This trial was conducted using a fully replicated (x4) randomised block design at the Murtoa site.

Nugget and Northfield lentils were sown at two different times (May 30 and July 8) at 50kg/ha with 60kg/ha EzyZinc. Triflur 480<sup>®</sup> was applied prior to sowing at 0.8L/ha and Broadstrike<sup>®</sup> at 20g/ha and Brodal<sup>®</sup> at 100ml/ha were applied on August 19. Verdict<sup>®</sup> was applied at 75ml/ha and Uptake at 0.5% on September 4.

Fungicides were applied according to Table 1. Crop emergence was monitored and all plots harvested to establish yield and grain quality for each treatment.

Table 1. Fungicides used in the trial

Fungicide	Application timing	Protection
Mancozeb	8 weeks post emergent	General protection of early diseases such as grey mould and ascochyta
Carbendazim	Just prior to full canopy closure	Protection from grey mould
Chlorothalonil or Mancozeb	1 <sup>st</sup> pod formation	Protection from ascochyta (primarily for the protection from seed staining)

## Results

Crops sown on May 30 performed significantly better than the July 8 sown crops (2.1t/ha versus 1.1t/ha for both Northfield and Nugget). The later time of sowing was stunted from the Brodal-Broadstrike<sup>®</sup> application and took some time to recover. This may have contributed to the low yields. There was no significant difference in yield between Northfield and Nugget lentils. The application of fungicides was not significant (Table 2).

Table 2. Sowing time and affect of fungicides on two lentil varieties.

Sowing date	Treatment	Rate/ha	Timing	Northfield (t/ha)	Nugget (t/ha)
May 30	Control	-	-	2.1	2.1
May 30	Mancozeb	1.5kg	8wks PE	2.1	2.2

	Carbendazim	0.5kg	Pre-canopy		
	Chlorothalonil	1L	1 <sup>st</sup> pod		
<b>May 30</b>	Carbendazim	0.5kg	Pre-canopy	2.1	2.2
	Chlorothalonil	1L	1 <sup>st</sup> pod		
<b>May 30</b>	Carbendazim	0.5kg	Pre-canopy	2.0	2.2
	Mancozeb	1.5kg	1 <sup>st</sup> pod		
<b>LSD (5%)</b>				<b>NS</b>	
<b>July 8</b>	Control	-	-	1.1	0.89
<b>July 8</b>	Mancozeb	1.5kg	8wks PE		
	Carbendazim	0.5kg	Pre-canopy	1.2	1.2
	Chlorothalonil	1L	1 <sup>st</sup> pod		
<b>July 8</b>	Carbendazim	0.5kg	Pre-canopy	1.2	1.10
	Chlorothalonil	1L	1 <sup>st</sup> pod		
<b>July 8</b>	Carbendazim	0.5kg	Pre-canopy	1.2	0.98
	Mancozeb	1.5kg	1 <sup>st</sup> pod		
<b>LSD (5%)</b>				<b>NS</b>	

PE = Post emergent

## Interpretation

Foliar disease in lentils has the potential to cause significant yield loss as well as impacting negatively on grain quality. Botrytis grey mould and Ascochyta blight are the two main foliar diseases responsible for such loss.

In 2003 no significant yield loss or gain occurred between the fungicide treatments regardless of fungicide type, application timing or number of applications for both Northfield and Nugget lentils. This finding is similar to the trial 'Foliar disease control in lentils' conducted by the BCG-WFS in 2001. For both the late May and early July time of sowings, fungicide treatments did not affect grain yield.

In both these years, 2001 and again in 2003, the lack of decent rainfall from early October decreased the rate of disease development. In 2003 ascochyta was seen in lentils early in the season; however the season didn't eventuate for disease pressure to build up and be destructive to the crop.

However a large time of sowing effect did occur in this trial. The late May time of sowing, on average, yielded 2.1t/ha compared to an average 1.1t/ha yield for the July time of sowing lentils. This is a 1t/ha different between the two times of sowing – a significant effect. Herbicide damage as well as late sowing may have contributed to this difference.

## Commercial Practice

Ascochyta blight had been noted at significant levels in lentil crops across some parts of the Wimmera and Southern Mallee in 2003. As can be seen in this trial there was no significant yield loss or improvement after using different rates and timings of fungicides. Most commercial varieties are unlikely to have any significant yield losses due to infection from ascochyta blight. However infection of seed can often cause discolouration of grain which significantly reduces its market value. Northfield is the only current variety with resistance to seed infection by ascochyta blight. Seed discolouration levels of 1-3% are down graded to No 2 Grade lentils with a deduction of approximately \$50/t.

Table 3. Response of lentil varieties to Ascochyta Blight and Botrytis Grey Mould

<b>Variety</b>	<b>Ascochyta Blight (foliar)</b>	<b>Ascochyta Blight (seed)</b>	<b>Botrytis Grey Mould</b>
Northfield	MR	R	S
Nugget	MR	MS	MR

R = Resistant, MR = Moderately Resistant, MS = Moderately Susceptible, S = Susceptible

The appropriate fungicide strategy for any lentil crop will depend on the likelihood of disease incidence – determined by variety, paddock history, location and seasonal conditions.

Current best practice is to regularly monitor crops and for cost effective Botrytis (grey mould) control a fungicide application must be made before canopy closure, while the critical time for Ascochyta is at early pod-fill.