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Timing of fungicide sprays for rust management in faba bean

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Introduction

The most important foliar diseases of Faba bean in northern NSW are rust (*Uromyces viciae-fabae*) followed by chocolate spot (*Botrytis fabae*). An early spray (4–6 weeks after sowing) of mancozeb to control the establishment of the disease during autumn is the recommended control strategy for both rust and chocolate spot. The economics of later fungicide applications depend on seasonal conditions, disease pressure, grain price and yield potential. Chlorothalonil is also registered for rust and chocolate spot. The aim of this trial was to investigate the efficay of two different fungicides (mancozeb and chlorothalonil) and application timings, in particular the length of protection gained from early sprays as well as the value of late applications.

Site details 2011

Location: Breeza

Soil Type: Black Vertosol

Co-operator: Liverpool Plains Field Research Station (LPFRS)

Treatments

Obtaining robust data from fungicide trials containing unsprayed controls (treatment 1 in Figure 1) can be difficult in small plot trials due to the movement of inoculum from unsprayed control plots into neighbouring plots. In order to control such variation this trial was established on a large scale using 'plots', of approximately 50 m length by 60 m width. The trial was planted on the 28th April using the variety Cairo$^{\phi}$. The first fungicide treatment occurred on July 12th using 1 kg/ha of mancozeb (430 g/kg) or 1.4 L/ha of chlorothalonil (720 g/ha). Plots were inoculated by placing pots with rust infected plants in the centre of each plot after the first fungicide treatment on July 12th just before canopy closure. The second application of fungicide occurred on September 16th (mid podding).

Table1. Fungicide treatments at Breeza 2011

Treatment	Early Spray	Late Spray
1	Nil	Nil
2	Nil	mancozeb
3	mancozeb	Nil
4	mancozeb	mancozeb
5	chlorothalonil	Nil
6	chlorothalonil	chlorothalonil

Results 2011

The 2011 season was characterised by a dry winter followed by an unusually wet spring.

Table 2. Rainfall at Breeza

Month	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
LPFRS 2011 (mm)	35	49.5	16.5	3	25	81	76	171.5	69.5
Breeza Long Term Average (mm)	40	41	43	41	40	40	54	64	67

Table 3. Grain yield at Breeza 2011

Treatment	Early Spray	Late Spray	Yield (t/ha)	Significance
1	Nil	Nil	2.7	a
2	Nil	mancozeb	4.3	bc
3	mancozeb	Nil	4.1	bc
4	mancozeb	mancozeb	4.5	c
5	chlorothalonil	Nil	3.7	b
6	chlorothalonil	chlorothalonil	4.1	bc

Table 4. Seed size at Breeza 2011

Treatment	Early Spray	Late Spray	100 seed weight (grams)	Significance
1	Nil	Nil	50	a
2	Nil	mancozeb	65.5	c
3	mancozeb	Nil	60.7	bc
4	mancozeb	mancozeb	65.9	c
5	chlorothalonil	Nil	56.3	ab
6	chlorothalonil	chlorothalonil	61.9	bc

Summary

All the fungicide treatments produced a significantly higher yield compared to the nil fungicide control (Treatment 1). Within the mancozeb treatments there were no significant differences amongst the various timings, however there was a trend to greater yields in the treatments that involved late sprays (Treatments 2 and 4). This may have been a result of a dry winter and wet spring which favoured disease development late in the season. There were no significant differences between the mancozeb and chlorothalonil treatments although there were higher yields in the mancozeb treatments.

All the fungicide treatments except the early chlorothalonil only (Treatment 5) produced higher 100 seed weights compared to the no fungicide control (Treatment 1). Greater seed weights with treatments containing a late mancozeb spray (Treatment 2 and 4) were obtained but they were not significantly higher than the early mancozeb only (treatment 3) and the early and late chlorothalonil (Treatment 6). This data supports the use of an early mancozeb spray in Cairo(ϕ faba bean. Further investigation of the value of late fungicide sprays is required.

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