Foliar fungicide for blackleg control

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ABSTRACT

Currently canola growers do not have any in crop management options for blackleg control. Seed dressings such as Jockey® (active ingredient Fluquinconazole), provide effective seedling protection, giving up to six weeks control during the most susceptible plant growth stage. Infection that takes place after the 3rd-5th leaf stage won't result in stem canker, however, even with the use of a seed dressing, infection still occurs resulting in significant yield losses. Two disease nurseries in Victoria, Wonwondah and Lake Bolac, were used to evaluate the use of Impact® (active ingredient Flutriafol) as a foliar fungicide, with and without the use of the seed treatment Jockey®. Impact® applied as a foliar spray was not as effective as Jockey® seed treatment. However, the use of Impact® foliar at the 6 leaf growth stage as well as Jockey® seed treatment increased the protection currently given to canola crops in high disease situations. As the most effective application time was at the six leaf stage, canola growers may be able to assess the current crop for disease severity before deciding if a foliar fungicide is required.

Key words: *Leptosphaeria maculans* - *Brassica napus*

INTRODUCTION

Blackleg (causal agent *Leptosphaeria maculans*) is the most detrimental disease of canola (*Brassica napus*) worldwide (West *et al.* 2001). Infection by *L. maculans* can result in stem cankers which can cause lodging of the plants and significantly reduce yield.

Current management options include selecting a resistant cultivar, using a fungicide seed dressing and sowing at least 500 metres from the previous year's stubble (Marcroft *et al.* 204). There are currently no in-crop management options for Australian canola growers.

Canola plants are most susceptible to infection by this pathogen as seedlings. Seed dressings give approximately six weeks protection from the pathogen, after which no protection from infection is available, although, infection after the 3rd-5th leaf stage has been shown not to result in stem canker (Marcroft *et al.* 2005).

In regions of high canola production it may be economical to apply a foliar fungicide if the disease severity is high, or if genetic resistance is inadequate or has been overcome by the fungus. Currently there are no foliar fungicides registered for use in canola, however this is likely to change in the near future. If foliar fungicides become available to canola growers it will be important to provide them with information on when to apply the fungicide and likely yield benefits.

The aim of this study was to determine if, under high disease pressure, the use of a foliar fungicide can provide greater protection to a canola crop than a seed dressing alone, and if so, the optimal timing of application.

MATERIALS AND METHODS

Two experimental sites were used in Victoria, Lake Bolac and Wonwondah. In order to ensure uniform and high disease severity both sites were sown into six month old canola stubble from commercial crops.

The moderately susceptible cultivar ATR-Cobbler was sown in rows of approximately 150 seeds. Table 1 outlines the treatments applied at both Lake Bolac and Wonwondah. The seed dressing used was Jockey® (active ingredient Fluquinconazole), and the foliar fungicide used was Impact® (active ingredient Flutriafol).

Table 1. Foliar fungicide and seed dressing treatments applied to the canola cultivar ATR-Cobbler at Lake Bolac and Wonwondah, Victoria.

Site	Treatment
Wonwondah, Victoria	No fungicide control
	Seed dressing only
	Foliar fungicide at 2 leaf stage
	Foliar fungicide at 4 leaf stage
	Foliar fungicide at 6 leaf stage
	Foliar fungicide at 8 leaf stage
	Foliar fungicide at 2 & 4 leaf stages
	Foliar fungicide at 2 & 6 leaf stages
	Foliar fungicide at 4 & 8 leaf stages
	Foliar fungicide at 2, 4 & 6 leaf stages
Lake Bolac, Victoria	No fungicide control
	Seed dressing only
	Foliar fungicide at 4 leaf stage
	Foliar fungicide at 6 leaf stage
	Foliar fungicide at 8 leaf stage
	Foliar fungicide at 4 & 6 leaf stages
	Foliar fungicide at 4 & 8 leaf stages
	Foliar fungicide at 4, 6 & 8 leaf stages
	Seed dressing & foliar fungicide at 4 leaf stage
	Seed dressing & foliar fungicide at 6 leaf stage
	Seed dressing & foliar fungicide at 4 & 6 leaf stages

Treatments were assigned in a complete randomised block design and applied at the commercial rate of 400 ml/Ha using a hand held spray boom. Plants were sown in 7 metre long single rows. The number of plants in each row was counted at emergence and again at maturity (windrowing stage). The percentage survival was then calculated for each treatment.
A square root transformation was applied to the data and a general linear ANOVA used to calculate least significant differences within sites.

RESULTS

At Lake Bolac application of the foliar fungicide at the six leaf growth stage as well as the use of a seed dressing provided the greatest protection. This treatment also resulted in a significantly better survival percentage than the seed dressing in isolation.

At Wonwondah the survival percentage of the treatments with foliar fungicide applications at two and six or two, four and six leaf stage were not significantly different to that of only the seed dressing. Unfortunately, due to space constraints no treatments with both seed dressing and foliar fungicide application were used at this site.

Over both sites, two out of three of the fungicide treatments at the six leaf stage (with and without Jockey®) resulted in a significant increase in survival compared to the no fungicide treatment.

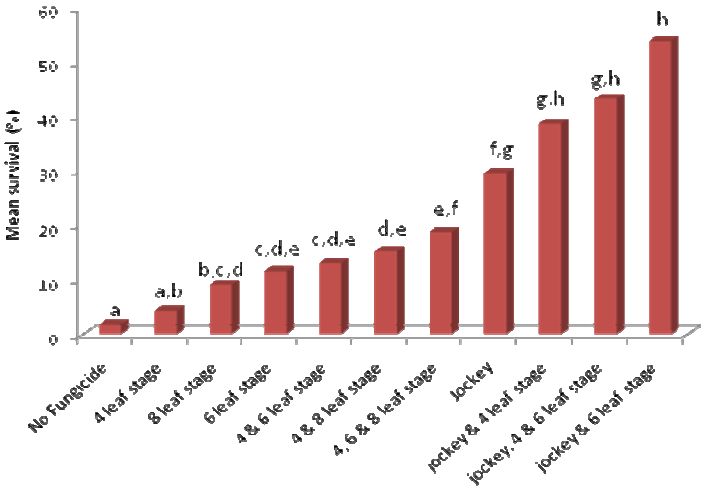

Figure 1. Mean survival percentage of ATR Cobbler at Lake Bolac for eleven different fungicide treatments.

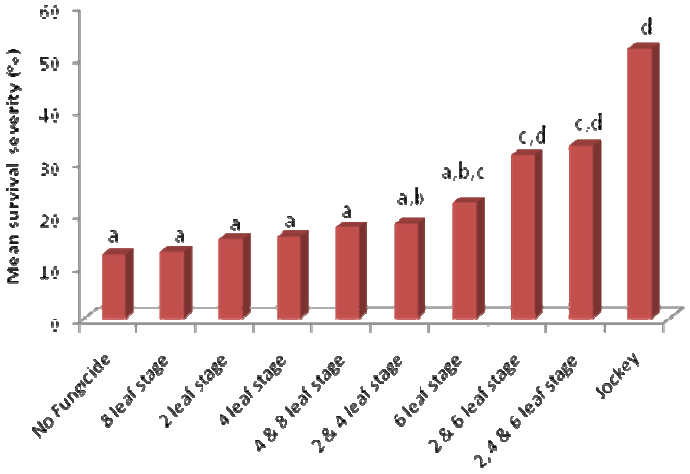

Figure 2. Mean survival percentage of ATR Cobbler at Wonwondah for ten different fungicide treatments.

DISCUSSION

The use of flutriafol applied as a foliar fungicide reduced the severity of blackleg in canola plants grown under severe disease severity. However the foliar application was not as effective as the use of Jockey® seed treatment. When the foliar and seed treatments were both applied significantly greater protection was obtained.

Optimal timing of application of the foliar fungicide will be essential to gain this increased protection. Application at the 6 leaf growth stage increased mean survival percentage and will allow canola growers time to assess the seasonal blackleg severity and potential of their crop prior to spending additional money on fungicide. If the yield potential is high then it may be profitable to increase the protection against blackleg. Information will need to be provided to canola growers on how to make this decision and what factors they should consider, such as crop potential and likely disease pressure.

There may be other foliar fungicides that are more effective against blackleg than the fungicide used in this study. This could result in an increased period of time that seedlings can be protected from infection. If new chemistries become available to canola growers in the future,

further investigations into the optimal timing of application and the economical benefit of application under different seasonal situations will be required.

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