

Trial Results, Survey

Blackleg in canola

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Key Outcomes

- Blackleg internal infection was found in many varieties including some varieties that had higher levels than would be expected.
- Due to the good winter and spring, the level of yield loss at a certain level of internal infection was much lower than measured in 2008.
- Farmers need to cut canola stems at windrowing time to assess the level of blackleg

Trial Objectives: To assess the effect of blackleg on canola crops and varieties in the South East of SA.

Trial Duration: 2009

Location: Various.

Farmer Cooperator: Various

Soil Type: Various.

Monthly Rainfall:

Rain	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sep	Oct	Nov	Dec	Total
Struan, 2009	3	0	53	51	16	64	123	115	99	41	53	28	645

Water Use Efficiency:

Yield Limiting Factors: Blackleg, early finish

Plot Size: Plots, 8 m long by 8 rows at 15 cm row spacing.

Replicates: 3.

Treatments

1. A survey was conducted of canola crops in 2009. Fourteen canola paddocks across the South East district were surveyed for blackleg infection within several days of windrowing.

One hundred stems were randomly sampled in each paddock, along 5 diagonal transects between windrows, and scored for % blackleg internal infection in the stem cross-section at the base or crown. Photographic standards of a range of infection levels from 0 to 100%, provided by Dr Steve Marcroft, were used to train scorers and provide consistency between scorers.

2. To test the effect of internal infection on grain yield of canola, plants were sampled from a crop at Bool Lagoon. Plants were cut at ground level at windrowing time and were divided into categories of internal infection (Table 2). Lots of 25 plants were then dried and threshed to determine plant and grain yield. Grain weight and oil content were measured.

Trial Results

Survey results for the major varieties encountered are shown in Table 1.

Average blackleg internal infection scores in individual paddocks ranged from less than 1% up to 38%. But even at the highest levels of internal infection, no external signs of blackleg disease, such as cankers and collapse of plants, were evident.

All varieties showed a wide range of internal infection levels, for example 45Y77 ranged from 26% to 54% infection. This variability is most likely linked to management factors such as proximity to previous year's canola stubbles.

Table 1: Blackleg infection scores for canola varieties in 2008 South East survey.

VARIETY	No. of paddocks surveyed	Range of blackleg infection	Average blackleg infection	Blackleg resistance rating
45Y77	3	26%-54%	46%	MR
46C76	1	30%	30%	MS
46Y78	2	38%-44%	41%	MR
44C79	5	18%-44%	28%	MS
AV-Garnet	1	50%	50%	MR
46Y81	2	21%-35%	28%	MR

Effect of blackleg on plant yield

Effect of blackleg internal infection was measured and reported in Table 2. Increasing levels of blackleg had a much reduced effect on grain yield than in 2008. Only the 80-100% level of internal infection reduced grain yield to a high degree. This can be compared to a study conducted in 2001 by Steve Marcroft with a good spring where the level of yield loss was about half of that in 2008 with a poor spring, and the much reduced yield loss in 2009 when a very high growing season rainfall occurred (Table 3 and Figure 1).

Table 2. Effect of blackleg internal infection on plant yield (g) and yield components 2009

Internal infection	Mean results			
	dry weight g per plant	grain g per plant	harvest index	1000 grain g
0-10	27	7.15	26.5	2.98
20-40	30.9	8.16	26.4	3.05
50-70	31.4	8.11	25.8	3.10
80-100	24.9	5.69	22.8	3.00

Table 3. Effect of blackleg internal infection on plant yield loss in three seasons

Internal infection	% yield loss 2001- good spring	% yield loss 2008- bad spring	% yield loss 2009- good spring
0-10	0	0	0
20-40	7	14	0
50-70	12	30	0
80-100	30	57	20

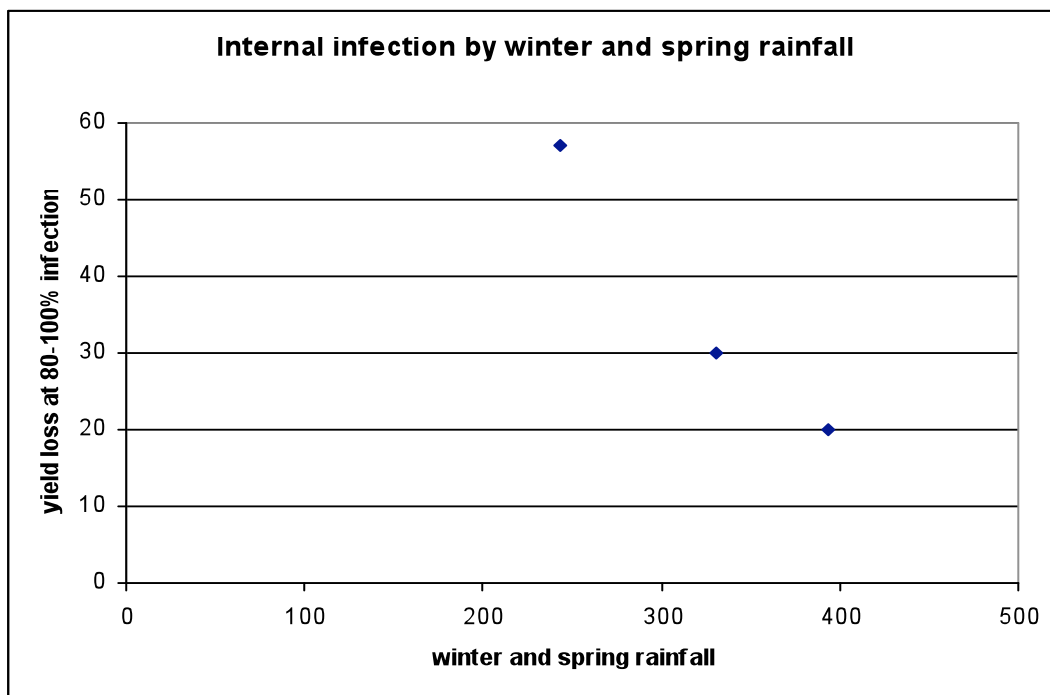


Figure 1. Effect of blackleg internal infection on canola yield in differing seasons

Comments

Blackleg is a serious disease of canola. Yield loss can be high in some years and in some paddocks. The crop survey showed how variable the amount of internal infection can be in the same variety and the yield loss with increasing levels of internal infection also shows how much can be lost to blackleg even when there are few symptoms of disease on the exterior of the plant. Farmers are encouraged to check their crops for internal infection.

Conclusion and into the paddock

Blackleg is a crucial disease in canola. Farmers need to cut plants at windrowing stage to assess how much disease is present to help to decide on what variety to grow in future, whether to use a fungicide treatment and how well management such as isolation distance from previous stubble is working.

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