

BLACKLEG MANAGEMENT GUIDE FACT SHEET

WESTERN AND SOUTHERN REGIONS QUANTIFY THE RISK, Paddock BY Paddock

Blackleg can cause severe yield loss, but can be successfully managed. Use this guide to determine whether you are in a high-risk situation and what practices you can change to reduce or prevent yield loss from blackleg. **Follow the four steps, in sequence, below.**

KEY POINTS

- Monitor your crops to determine yield losses in the current crop.
- Choose a cultivar with adequate blackleg resistance for your region.
- Never sow your canola crop into **last year's canola stubble**.
- Relying only on fungicides to control blackleg poses a high risk of fungicide resistance.
- If your monitoring has identified yield loss and you have grown the same cultivar for three years or more, choose a cultivar from a different resistance group.

Blackleg is a sexually reproducing pathogen that will overcome cultivar resistance genes. Fungal spores are released from canola stubble and spread extensively via wind and rain splash. Therefore the disease is more severe in areas of intensive canola production.

STEP 1: Use Table 1 to determine your farm's blackleg risk

Table 1 Regional blackleg factors.

Environmental factors that determine risk of severe blackleg infection	Blackleg severity risk factor								
	High risk			Medium risk			Low risk		
Regional canola intensity (% area sown to canola)	above 20	16-20	15	11-14	11-14	10	6-9	5	below 5
Annual rainfall (mm)	above 600	551-600	501-550	451-500	401-450	351-400	301-350	251-300	below 251
Total rainfall received Mar-May prior to sowing (mm)	above 100	above 100	above 100	above 100	91-100	81-90	71-80	61-70	below 61

Combined high canola intensity and adequate rainfall increases the probability of severe blackleg infection.

STEP 2: Determine each paddock's blackleg severity

- Assess the level of disease in your current crop. Immediately after windrowing (swathing), pull 50 randomly chosen stalks out of the ground, cut off the roots with a pair of secateurs and, using the reference photos in Table 2, below, estimate the amount of disease in the stem cross-section. Yield loss occurs when more than half the cross-section is discoloured.
- A dark-coloured stem is a symptom of blackleg (Table 2). Stem cankers are clearly visible at the crown of the plant. Severe cankers may cause the plant to fall over as the roots become separated from the stem.
- If you have identified that you are in a high-risk situation (Steps 1 and 2), use Steps 3 and 4 to reduce your risk of blackleg for future seasons.



Cut a plant at the crown to assess internal infection.

Table 2 Paddock blackleg severity.

High risk	Medium risk	Low risk
		

Yield loss occurs when more than half of the cross-section is discoloured.

STEP 3: Management practices can reduce the risk of blackleg infection

If your crop monitoring (see Step 2) showed yield loss in the previous year, the following practices can be used to reduce blackleg severity. Complete the following process for each canola paddock to be sown.

- For each of the seven management factors listed below, circle where each canola paddock fits to determine the risk of blackleg. For example, Blackleg rating: if your cultivar is AV-Garnet, circle MR indicating a low risk of blackleg; or Distance from last year's canola stubble: if your proposed canola crop is 200 metres away, high risk is indicated.
- Complete all seven management factors to determine which practices are causing increased risk and how they can be reduced. For example, for Distance from last year's canola stubble, choose a different paddock, at least 500m away from last year's stubble, reducing the risk from high to low.

WARNING: 'CANOLA ON CANOLA' WILL CAUSE A SIGNIFICANT YIELD LOSS AND WILL REDUCE THE EFFECTIVE LIFE OF CANOLA CULTIVARS AND FUNGICIDES.

Blackleg management practices that determine risk of blackleg infection, from highest to lowest effectiveness are:

Blackleg ratings

The cultivar blackleg rating is the most important blackleg management tool. If your previous crop had a high level of disease, choose a cultivar with a higher blackleg rating.

High risk			Medium risk			Low risk		
VS	S-VS	S	MS-S	MS	MR-MS	MR	R-MR	R

*VS = very susceptible; S = susceptible; MS = moderately susceptible; MR = moderately resistant; R = resistant; P = provisional rating

Distance from last year's canola stubble

The distance of your current crop to last year's canola stubble will determine disease severity. NEVER sow your canola crop into last year's canola stubble. Distances from last year's stubble up to 500m will reduce blackleg severity.

High risk			Medium risk			Low risk		
0m	100m	200m	300m	400m	500m	>500m		

Fungicide use

Seed dressing and fertiliser-applied fungicides will reduce the level of blackleg infection. Foliar fungicides in addition to seed/fertiliser fungicides will further reduce the level of blackleg. Fungicides are not a cure for blackleg. Fungicides should only be used where yield loss from blackleg is likely. If severe yield loss is likely fungicides will reduce, but not avoid, yield loss.

RELIANCE ON FUNGICIDES TO CONTROL DISEASE POSES A HIGH RISK OF FUNGICIDE RESISTANCE.

Medium risk			Low risk		
No fungicide			Seed/fertiliser fungicide	Seed/fertiliser fungicide + foliar fungicide	

Years of same cultivar grown

The blackleg pathogen will overcome cultivar resistance genes if the same genes are used each year. By sowing a cultivar based on different resistance genes, the ability of the pathogen to overcome resistance will be reduced. All cultivars have been placed into different blackleg resistance groups based on their resistance complement (see Table 3).

If you have:

- high or increasing levels of blackleg in your crop (from monitoring disease levels each year);
- used the management practices outlined here in Step 3; and
- sown cultivars from the same resistance group in close proximity (within 2km) for three or more years,

then sow a cultivar from a different resistance group (see next page – Blackleg Resistance Groups).

High risk			Medium risk			Low risk		
Sown the same cultivar-resistance group for more than 3 years			Sown the same cultivar-resistance group for 3 years			Sown the same cultivar-resistance group for 2 years	Sown the same cultivar-resistance group the previous year	Sown cultivar from a different resistance group

Distance from two-year-old canola stubble

Stubble older than two years produces fewer blackleg spores and will normally have minimal effects on blackleg severity, even where canola is sown into two-year-old stubble. However, two-year-old stubble may cause disease if inter-row sowing canola (see below, Canola stubble conservation) or if the cultivar resistance has been overcome.

Medium risk			Low risk		
	0m	100m	250m	500m	>500m

Canola stubble conservation

Stubble destruction is not effective in reducing blackleg infection. Inter-row sowing canola into two-year-old canola stubble where germinating seedlings are immediately next to standing stubble may result in higher levels of blackleg infection.

Medium risk			Low risk		
Inter-row sowing	Disc tillage	Knife point tillage	Burning/ burying tillage		

Month sown

Canola is most vulnerable to blackleg as a seedling. If crops are sown early into warmer conditions and get through the seedling growth stage quickly, they may escape high blackleg severity.

Medium risk			Low risk		
June to August	May 15 to 31	May 1 to 14	April 15 to 30		

STEP 4: Blackleg resistance groups

All cultivars have been placed into groups (A to G) based on their resistance complement (see Table 3). Some cultivars may belong to multiple groups. The blackleg fungus will most likely overcome resistance if you sow cultivars with the same resistance complement in close proximity for three years or more. By rotating resistance groups growers can avoid resistance breakdown and reduce disease severity.

How to use blackleg resistance groups

- Use Steps 1 to 3 to identify if you are in a high-risk region (adequate rainfall and high canola intensity) and monitor your crops to determine blackleg severity.
- If blackleg is not severe in your crop, continue with current management techniques as outlined in Step 3.
- If you have high blackleg severity and have used the same cultivar for three years or more, identify the resistance group of your current cultivar from the blackleg ratings in Table 3.
- Select a cultivar from a different resistance group. If your current cultivar belongs to multiple groups, do not choose a cultivar from any of these groups.

Table 3 2012 blackleg ratings and resistance groups. (Note: Only resistant cultivars MR and above can be classified for resistance groups.)

Genotype	Blackleg resistance rating bare seed	Blackleg resistance rating + fluquinconazole (Jockey®)	Resistance group	Type
Conventional varieties				
Hyola® 50	R	R (P)	D	
Hyola® 433	R-MR	R (P)	D	
Victory® V3002	R-MR	R-MR (P)	C	High stability oil
SARDI 515M	MR	MR (P)	G	Industrial mustard
Victory® V3003	MR	R-MR (P)	C	High stability oil
AV-Zircon [Ⓛ]	MR	R-MR	A	
AV-Garnet [Ⓛ]	MR	R-MR (P)	ABG	
CB™ Taurus	MR (P)		C	
Victory® V3001	MR	R-MR	A	High stability oil
CB™ Agamax	MS	MR (P)		
CB™ Tango C	MS (P)	MR (P)		
Triazine tolerant varieties				
Hyola® 751TT	R	R (P)	D	
Monola™ 707TT	R-MR (P)	R-MR (P)	F	High stability oil
Monola™ 506TT	R-MR (P)	R-MR (P)	F	High stability oil
Monola™ 605TT	R-MR (P)	MR (P)	D	High stability oil
Thumper TT [Ⓛ]	R-MR	R-MR (P)	E	
Bonanza TT [Ⓛ]	MR (P)	R-MR (P)	C	
Fighter TT [Ⓛ]	MR	R-MR (P)	Not screened	
Hyola® 555TT	MR	R	E	
Jackpot TT [Ⓛ]	MR (P)	R-MR (P)	E	
Hyola® 444TT	MR	MR (P)	D	
ATR-Gem [Ⓛ]	MR (P)	MR (P)	AD	
ATR-Stingray [Ⓛ]	MR	R-MR (P)	C	
CB™ Henty HT	MR-MS (P)	MR (P)		
Crusher TT [Ⓛ]	MS	MR		
ATR-Marlin [Ⓛ]	MS			
CB™ Scaddan [Ⓛ]	MS	MR (P)		
ATR-Snapper [Ⓛ]	MS	MR-MS		
CB™ Jardee HT	MS	MR (P)		
Tawriffic TT [Ⓛ]	MS	MR (P)		
CB™ Junee HT	MS-S	MS (P)		
CB™ Mallee	MS-S	MS (P)		
ATR-Cobbler [Ⓛ]	MS-S	MR (P)		
CB™ Telfer [Ⓛ]	MS-S	MR-MS (P)		
CB™ Tanami [Ⓛ]	S			

Table continued over page

VS = very susceptible; S = susceptible; MS = moderately susceptible; MR = moderately resistant; R = resistant;

P = provisional rating, there is insufficient data to meet National Blackleg Rating protocols. Growers should be cautious until sufficient data are available;

Not screened: cultivar was not screened due to operational error, data will be available in 2013.

■ = low risk ■ = medium risk ■ = high risk

Table continued from previous page

Genotype	Blackleg resistance rating bare seed	Blackleg resistance rating + fluquinconazole (Jockey®)	Resistance group	Type
Clearfield® system varieties				
Hyola® 575CL	R	R	E	
Hyola® 474CL	R (P)	R (P)	E	
XCEED™ OASISCL	R-MR	R-MR (P)	DG	Juncea canola
Pioneer® 46Y83 (CL)	MR	R-MR (P)	Not screened	
Pioneer® 43Y85 (CL)	MR		A	
Pioneer® 45Y82 (CL)	MR-MS	MR (P)		
Pioneer® 44Y84 (CL)	MR-MS	MR (P)		
Pioneer® 43C80 (CL)	MS	R-MR (P)		
Pioneer® 44C79 (CL)	MS	MR-MS (P)		
Roundup Ready® varieties				
Hyola® 505RR	R	R (P)	D	
Hyola® 404RR	R	R	D	
CB™ FrontierRR	R-MR (P)	R (P)	D	
IH50RR	R-MR (P)	MR (P)	A	
GT Mustang [†]	MR	R	F	
Pioneer® 43Y23 (RR)	MR		F	
Victory®V5002RR	MR (P)	R-MR (P)	AB	High stability oil
GT Cobra [†]	MR (P)	MR (P)	A	
GT Cougar [†]	MR	R-MR	AC	
GT Viper [†]	MR (P)	MR (P)	F	
Pioneer® 46Y20 (RR)	MR	MR	ABC	
GT Scorpion [†]	MR-MS	MR		
GT Taipan [†]	MR-MS	R		
Pioneer® 45Y21 (RR)	MR-MS	MR (P)		
Pioneer® 45Y22 (RR)	MR-MS	MR (P)		
Victory®V5001RR	MS	MR		High stability oil
CB™ EclipseRR	MS-S	MS		

Blackleg resistance group monitoring

Representative cultivars from all blackleg resistance groups are sown in trial sites in all canola-producing regions across Australia and monitored for blackleg severity. These data provide regional information on the effectiveness of each blackleg resistance group and are available on the NVT Online website (www.nvtonline.com.au).

USEFUL RESOURCES

Canola best practice management guide for south-eastern Australia

Ground Cover Direct, 1800 110 044, www.grdc.com.au/bookshop

Managing blackleg and sclerotinia in canola: The back pocket guide

Ground Cover Direct, 1800 110 044

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MORE INFORMATION

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Blackleg resistance ratings and National Variety Trials

www.nvtonline.com.au

Australian Oilseeds Federation – Agronomy Centre

www.australianoilseeds.com

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