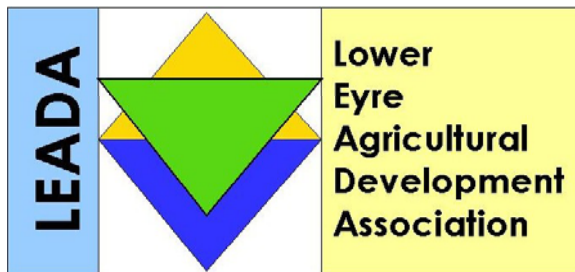


Blackleg on Eyre Peninsula

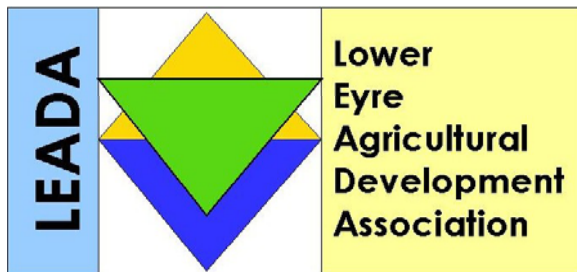
Breakdown of Hyola 50 resistance



Blackleg on Eyre Peninsula

Breakdown of Hyola 50 resistance

Oops – We did it again!



Breakdown of Hyola 50 Resistance

Managing your risk of blackleg in canola cultivar HYOLA® 50 on the Eyre Peninsula

In 2011, in a blackleg monitoring trial site on the lower Eyre Peninsula (SA), the canola cultivar Hyola® 50 had much higher levels of blackleg than expected. Specifically, blackleg severity in cv. Hyola®50 increased from 16% to 71% internal infection at Wangary from 2010 to 2011 (Figure 1). This is the same region where *tylvestris* resistance was overcome in 2003.

Hyola®50 has been grown extensively on the lower Eyre Peninsula, therefore Hyola® 50 may have even higher disease severity in 2012 if its resistance is overcome by the blackleg fungus. In other sites that were surveyed across South Australia, New South Wales, Western Australia and Victoria, the level of disease in Hyola®50 is still low (less than 25% internal infection), (refer Table 1).

Figure 1. Blackleg severity in cv. Hyola® 50 at Wangary

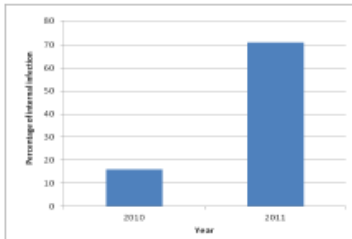


Figure 2. Dead Hyola® 50 plant at Wangary in the 2011 blackleg monitoring site.

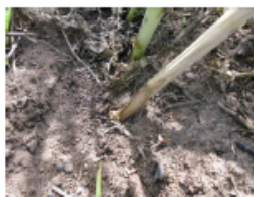


Table 1. Blackleg severity of Hyola® 50 at monitoring sites in eastern Australia during 2011. Typically yield loss will occur in plants with more than 30% internal infection, with severe yield loss occurring in plants with more than 50% internal infection.

NSW monitoring sites	Percentage internal infection		VIC monitoring sites	Percentage internal infection	
	NSW monitoring sites	SA monitoring sites			
Beckom	1	Arthurton	8	Diggers	3
Gerogery	1	Bordertown	0	Horsham	2
Grenfell	1	Clare	4	Minyip	0
Temora	0	Riverton	2	Streatham	0
Wagga Wagga	6	Mt Hope - Eyre Pen.	16	WA monitoring site York	23
		Wangary - Eyre Pen.	71		

Acknowledgements

Funding for surveys, trials and associated research is provided by the Grains Research and Development Corporation (GRDC). The Lower Eyre Agricultural Development Association (LEADA) for providing the Wangary trial site.

Recommendations for growers on the lower Eyre Peninsula

Consult the 'Blackleg Risk Assessor' (www.grdc.com.au) for advice on all blackleg control practices.

1. Choose a canola cultivar different to Hyola®50 with high levels of blackleg resistance for the Eyre Peninsula (use only the current year's ratings), blackleg ratings are available at www.grdc.com.au.
2. Separate this year's canola crop from last year's canola stubble by a minimum of 500m.
3. Do not sow Hyola®50 within 500 m of its own stubble from a 2011 or 2010 crop (older stubble does not release enough spores to warrant concern).
4. Ensure that canola seed has been treated with flutriafol as an insurance against blackleg.
5. Monitor blackleg severity within the 2012 crop to assist with decision making in 2013.

Selecting an alternative cultivar to Hyola®50.

ALL Cultivars listed below have tested as more susceptible to the EP Hyola®50 stubble

Cultivar	Seed type	Resistance	Company
HYOLA® 751TT	Pacific seeds	XCEED™ OASIS CL	Viterra
HYOLA® 444TT	Pacific seeds	ATR GEM	Nuseed
HYOLA® 433	Pacific seeds		

THESE ARE THE ONLY CULTIVARS THAT HAVE HIGHER BLACKLEG RATINGS BUT MAY BE MORE SUSCEPTIBLE TO HYOLA®50 STUBBLE ON LOWER EP IN SOUTH AUSTRALIA.

How does blackleg overcome resistance?

Unlike cereal rusts in Australia where all individual fungal spores are genetically identical, blackleg is a sexually reproducing fungal pathogen. The spores that attack crops each year are a result of sexual recombination occurring on canola stubble over the summer and autumn.

Blackleg spores are genetically different to each other, so there will always be individual spores that can attack each resistance gene in canola. If a blackleg spore is able to attack, it will colonise the canola plant and then reproduce on the stubble, releasing more spores in subsequent years capable of overcoming that resistance gene or genes. When a particular canola cultivar with specific resistance genes is sown, selection for blackleg spores that overcome that cultivar occurs. The number of virulent spores initially is low so that it takes a number of years before they increase to a frequency that can overcome resistance and cause yield loss. This situation can be compared to the overuse of one herbicide group and the subsequent selection of herbicide-resistant ryegrass plants.

Different cultivars can differ in stability of their resistance; some cultivars lose resistance quickly while other cultivars have not lost resistance to date. In cultivars with polygenic resistance the loss of resistance is normally gradual - termed as 'erosion of resistance'. Where resistance has been eroded a 'Reduced Resistance' warning has been placed on the blackleg rating of the particular cultivar.



Figure 3. Seedling death (highlighted blackleg pinched hypocotyl). If diseased roots are observed the likely cause is 'Damping-off fungi'.

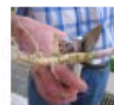
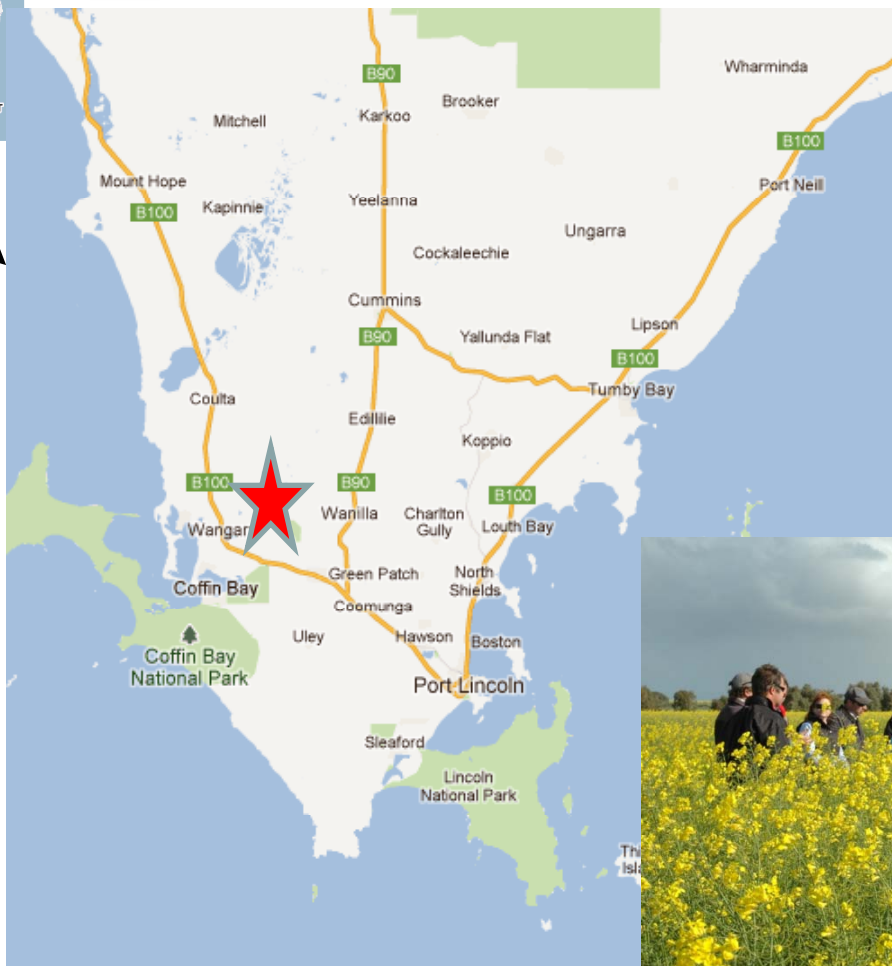
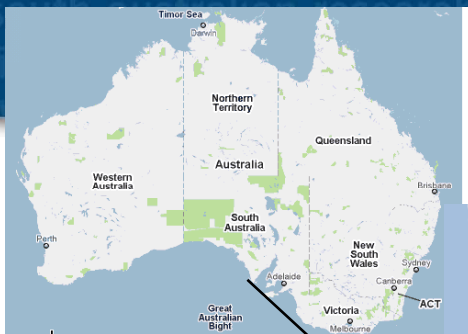


Figure 4 & 5. Plants with various levels of internal infection. Cut 50 random plants at the crown after windrowing. An average of 30% or more internal infection indicates yield loss.



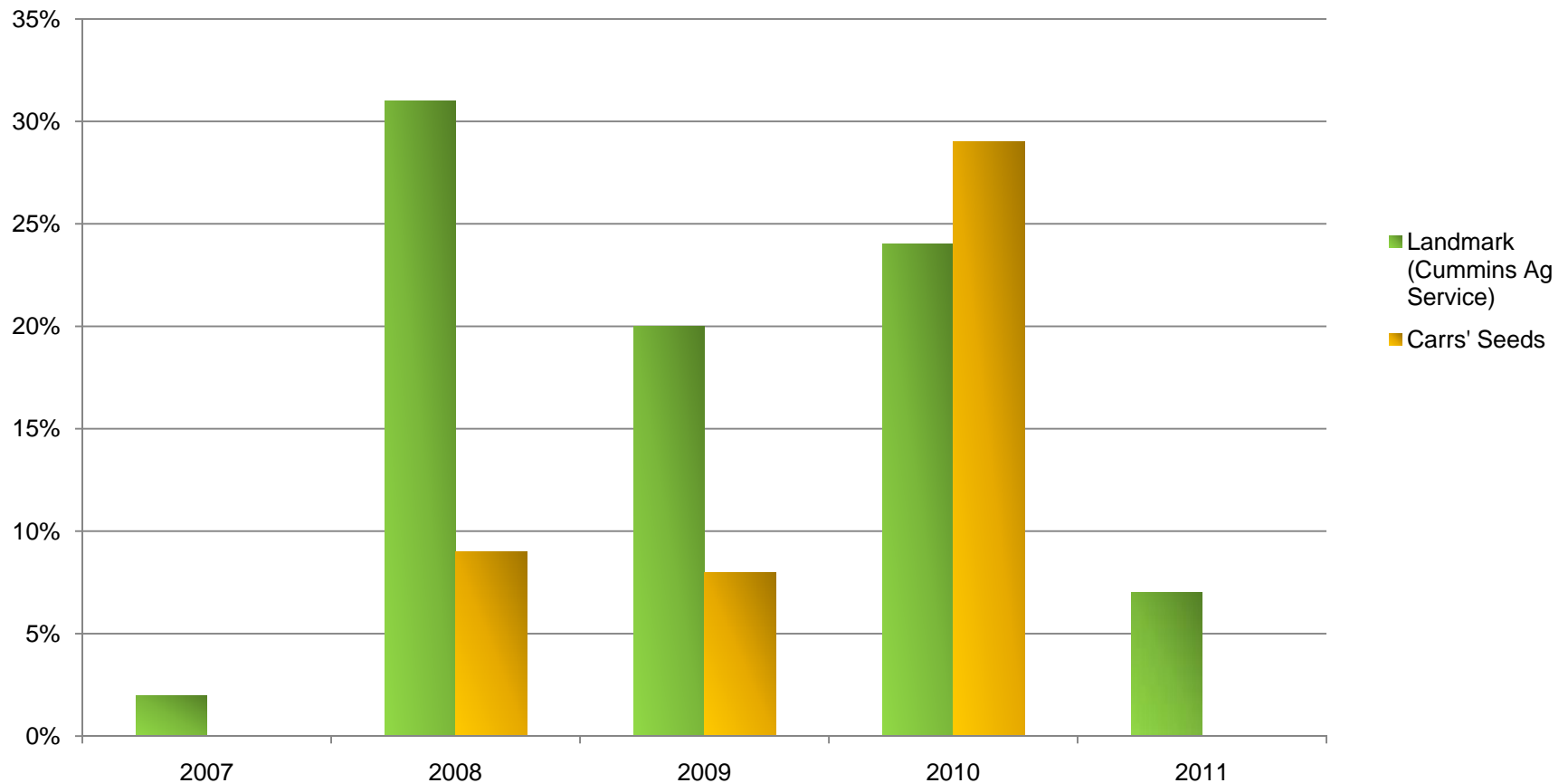
Figure 6. Check for stem cankers at plant maturity.

Lower EP - Wangary



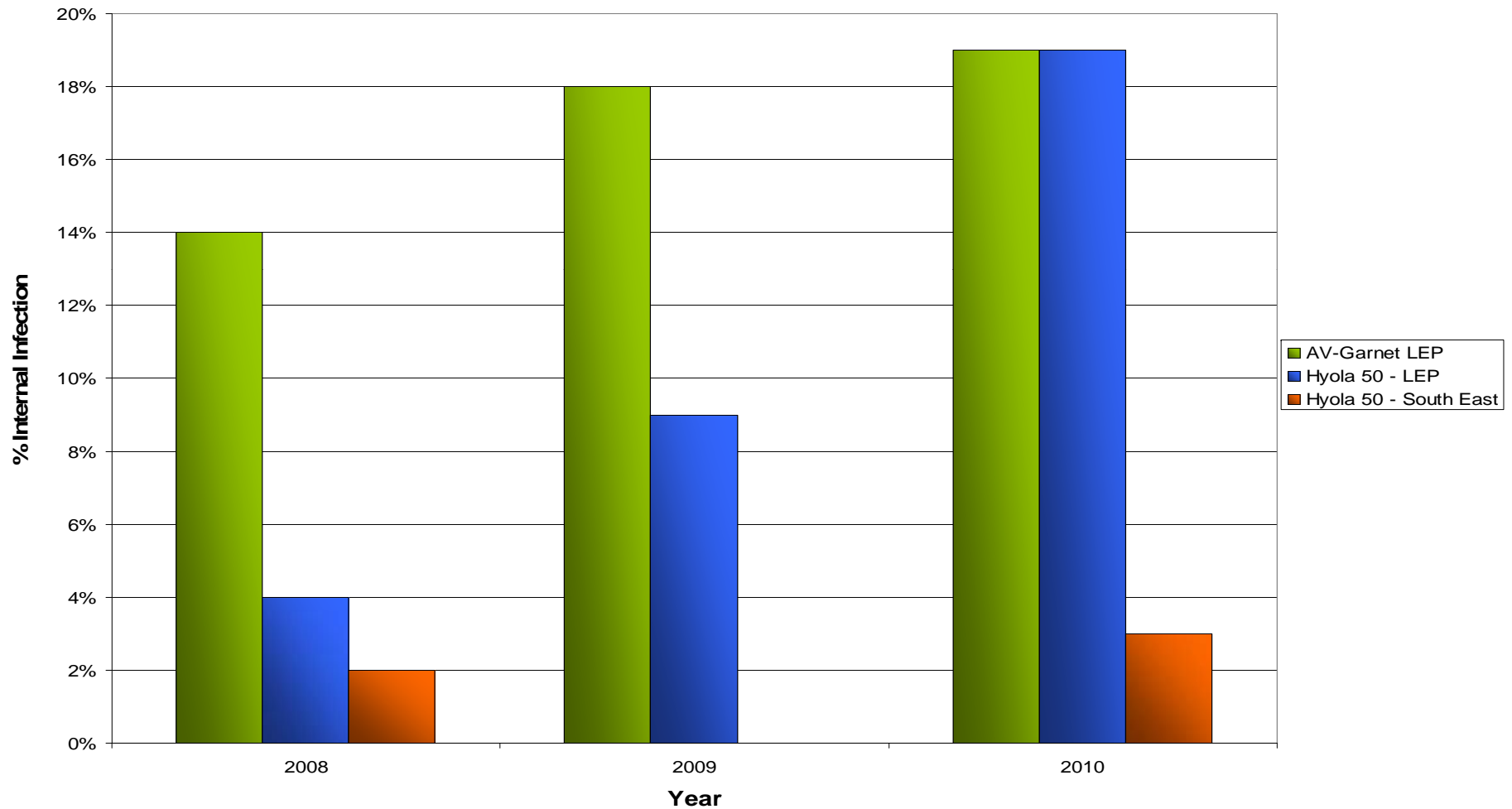
Rise and Fall of Hyola 50 on LEP

**Hyola 50 Seed Sales of two leading LEP Resellers
(expressed as % of total tonnage sold)**



LEADA/ SE Blackleg Survey

Paddock Blackleg Survey
% Internal Infection

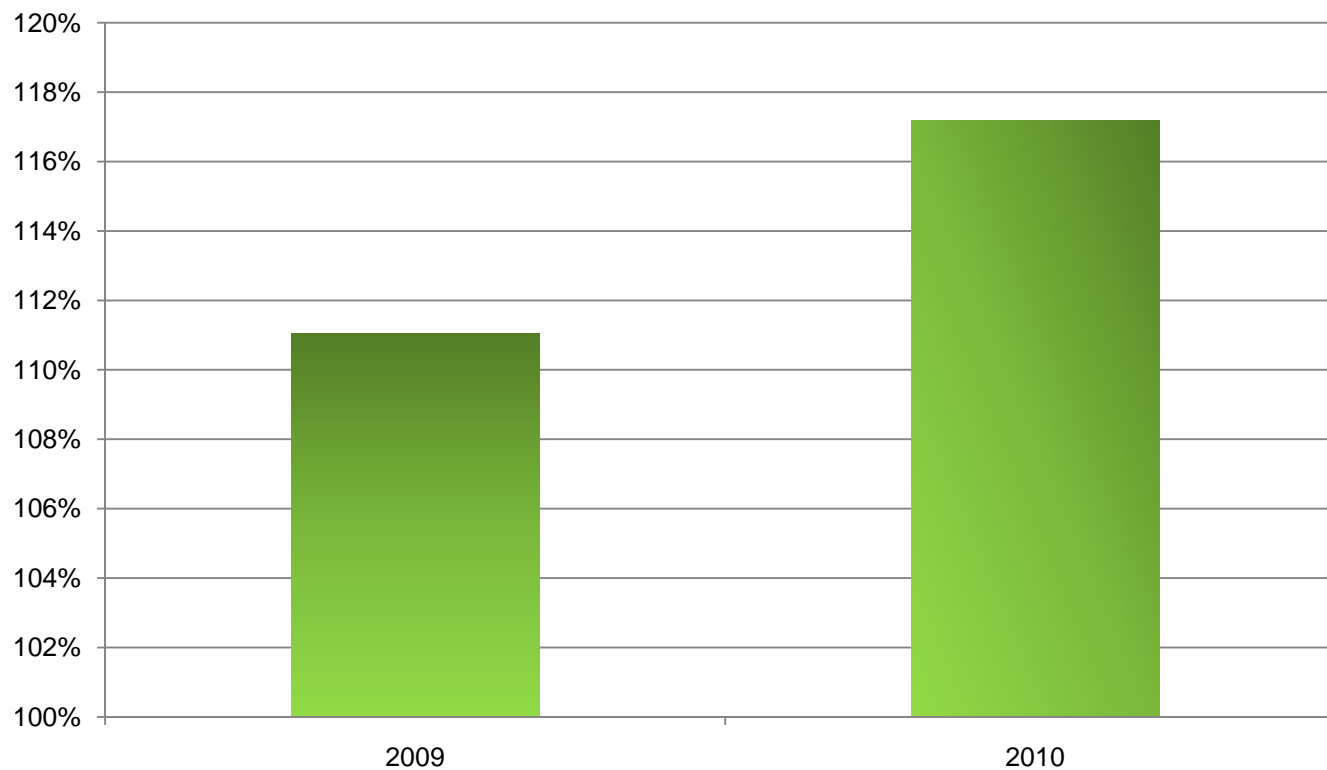


Commercial Crop – Hyola 50 Wanilla 2010



2009 & 2010 Blackleg Control Trials

Hyola 50 treated with Impact-in-Furrow + Jockey at Wangary (Yield as % of untreated control)



The warning

Table 1. Blackleg severity of Hyola® 50 at monitoring sites in eastern Australia during 2011. Typically yield loss will occur in plants with more than 30% internal infection, with severe yield loss occurring in plants with more than 50% internal infection.

NSW monitoring sites	Percentage internal infection	SA monitoring sites	Percentage internal infection	VIC monitoring sites	Percentage internal infection
Beckom	1	Arthurton	8	Diggora	3
Gerogery	1	Bordertown	0	Horsham	2
Grenfell	1	Clare	4	Minyip	0
Temora	0	Riverton	2	Streatham	0
Wagga Wagga	6	Mt Hope –Eyre Pen.	16		
		Wangary –Eyre Pen.	71	WA monitoring site	
				York	23

What lessons can be learnt?

- How do we stop one variety (or resistance group) from being so dominant in a region?
- Growers will use a range of fungicide products as standard practice that will compliment varietal resistance
 - Will this create another issue - resistance to fungicides?
- LEP growers are keen to be able to rotate varieties with different sources of resistance