

# Growers equipped for blackleg battle

KATHERINE MAITLAND



ANDREW WARE, RESEARCH SCIENTIST FOR SARDI'S NEW VARIETY AGRONOMY GROUP, CHECKS FOR BLACKLEG LESIONS IN A MATURING CANOLA CROP.

New management options are available to help canola growers manage the risk of yield loss from blackleg.

According to Dr Steve Marcroft, from Marcroft Grains Pathology, the severity of the disease has increased in recent years due to the increased area of canola being grown, particularly in higher rainfall areas.

“Blackleg is a high-risk fungus because it has a high propensity to overcome resistance in *Brassica napus* (canola) cultivars,” Steve said. “The blackleg fungus is able to overcome resistance because it is sexually reproducing, resulting in enormously diverse populations.

“The blackleg fungal population evolves very rapidly and responds quickly to selection pressures such as wide-scale sowing of cultivars with particular resistance genes. The risk of a resistance mechanism being overcome is increased when cultivars containing the same resistance gene are sown for three or more years in succession,” he said.

Steve expects the pressure from blackleg

to be high in many regions this season because of the large areas sown to canola in 2011 and 2012.

“Blackleg is able to survive and reproduce on canola stubble, so a two million hectare crop last year means two million hectares of blackleg-infested stubble this season, releasing wind-blown spores every time it rains.”

The ability of the disease to overcome resistance can be countered by growing canola varieties with different resistance mechanisms.

“Growing cultivars with different sources of resistance changes the selection pressure on the fungal population, which prevents the build-up of virulent isolates capable of overcoming the resistance mechanisms and infecting crops.

“For example, if you sow a Group D cultivar, the number of individuals (isolates) in the blackleg population able to attack Group D cultivars will increase each year you sow the same cultivar or one with the same resistance mechanism.

But, at the same time, the frequency of blackleg fungal isolates able to attack other resistance groups will decline.

“This effect was clearly seen on the Eyre Peninsula when varieties with the *sylvestris* source of blackleg resistance went from immune to completely susceptible, then three years later recovered some of their resistance.

“If you sow the same cultivar every year you are likely to break that cultivar’s blackleg resistance. This process takes at least three years in regions of high rainfall and intensive canola production and is likely to take longer in other regions. The flip side is, if you change your cultivar to one containing different resistance genes every three years, you are likely to reduce yield losses and the probability of resistance breakdown.”

Growing resistant varieties, avoiding the previous year’s stubble and using fungicides in high-risk areas will all help reduce the risk of blackleg infection, Steve says.

“The new Blackleg Management Guide



BRUCE MORGAN, EYRE PENINSULA FARMER.

is a comprehensive tool to help growers control blackleg infection,” he said. “The Guide explains how to determine the risk of blackleg based on rainfall and canola production intensity and assess the severity of blackleg in crop. It also sets out best practices, including the need to rotate resistance groups in high-risk areas, to reduce the risk of blackleg.”

While resistance is the first and most cost-effective defence against blackleg, the foliar fungicide Prosaro, which has recently been registered for use against blackleg in canola, can significantly reduce the impact of the disease where varieties rated moderately resistant to moderately susceptible (MR-MS) or weaker are under high disease pressure, he said.

Prosaro is recommended for application at the four-to-six-leaf stage at a rate of 375 to 450 mL/ha.

### Variety selection

Results from a five-year trial program on lower EP have had a strong influence on the canola varieties grown in the region, according to Andrew Ware, research scientist with SARDI’s new-variety agronomy group.

The work, to develop a better understanding of blackleg and how to manage it, has been carried out by the Lower Eyre Peninsula Agricultural Development Association (LEADA) and SARDI funded by the Grains and Research Development Corporation (GRDC).

“We began working on blackleg in 2008,” Andrew said.



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## MANAGEMENT KEY TO REDUCING BLACKLEG RISK

Bruce Morgan has first-hand experience of the damage blackleg can do, and in recent years he has changed his canola management to minimise blackleg risk.

Bruce, with his brothers Darren and Lyndon, combine cropping and sheep on 3,000 ha between Coultas and Wangary, where the annual growing-season rainfall ranges from 450 mm to 525 mm.

They have been growing canola on lower EP, in an environment considered medium to high-risk for blackleg, since the mid-1990s, and in that time have increased their area of canola by 25 to 30%.

“Canola has been a very successful and valuable break crop since being introduced to this area and there are some growers planting up to 50% cereal, 50% canola in a rotation that works well providing it is managed properly,” Bruce said.

“However, growing canola in tight rotations over large areas has created added pressure from blackleg, which resulted in resistance breakdown in the sylvestris strains of canola.”

He attributes this mainly to the success of Surpass 400, a variety with the sylvestris resistance mechanism, which was grown by many canola growers on Lower EP prior to 2003.

“In 2003, the sylvestris varieties lost their ability to resist the blackleg levels that had built up, causing substantial losses in some areas.

“We suffered minimal losses, but it was a wake-up call that we had to change the way we managed our canola.”

The local agronomist at the time, with the newly-formed Lower Eyre Agriculture Development Association (LEADA), were able to help growers such as Bruce manage their cropping program to minimise the risk of losses from blackleg.

“As a result of many years of LEADA trials and the establishment of blackleg nurseries on Lower EP, some of the varieties we grew in the past are no longer used because their resistance has broken down.”

Bruce says he has tried to keep abreast of this recent research,

including the use of the new Blackleg Management Guide and the new foliar fungicide, Prosaro. Based on this research, and learning from previous mistakes, he has a sound management plan for the coming season.

“We plan to plant 880 ha of canola, which is 30% of our cropping area for this year. We will sow Clearfield varieties including 45Y86, 46Y83 & Hyola 575CL, the conventional variety AV Zircon and the triazine-tolerant variety Thumper TT. This will give us at least two different blackleg resistance groups and enable us to use different chemical groups for weed control.

“We will sow a block of 150 to 200 hectares of each variety so we can manage their location in relation to previous canola crops. This approach will also help make future variety decisions easier.

“This season we will use seed treated with Jockey at a rate of two to 2.5 kg/ha and 19:13:0:9 starter fertiliser at 140 kg/ha, plus fungicide, copper and zinc injected below the seed. Sulphate of ammonia and urea will be applied as needed during the growing season,” he said.

Growers now have more varieties to choose from, and the advantage of knowing which blackleg-resistant gene group each is in.

“We also have trial work to back up the use of seed treatments and fungicides in furrow at seeding, along with the recent registration of Prosaro as a foliar fungicide. This gives us far more options to manage blackleg now and in the future. We can now plan where to sow particular varieties, rotate the different resistant gene groups, and make strategic use of fungicides to avoid blackleg building up on a large scale again.

“One of the biggest risks we face is the reliance on fungicides and a build-up in resistance to the products currently available. The lack of alternatives currently available to us will require ongoing research to try and stay ahead of blackleg with new varieties and fungicide options.”

For more information contact Steve Marcroft, email [steve@grainspathology.com.au](mailto:steve@grainspathology.com.au)



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“The lower Eyre Peninsula has the highest concentration of canola in SA, so it was a good area to monitor blackleg disease.

“From 2008 until last year we surveyed different areas at windrowing and checked the level of blackleg in randomly selected paddocks.

“When we started, Hyola 50 made up more than 30% of the Peninsula’s canola production and was very resistant to blackleg. Three years later we found its resistance had deteriorated so much that a warning was issued to growers in the area to stop growing it. By 2011, only about 3% of the canola grown on lower EP was Hyola 50.”

Andrew says the SARDI group was able to detect the deterioration in the resistance to blackleg as it was occurring.

“We noticed signs of blackleg on Hyola 50 and quickly concluded that the variety had lost resistance to the disease. We were then able to advise farmers to change varieties within a season. The variety now has a poor level of blackleg resistance on Lower EP and is not commonly sown any more.

“Understanding the genetics behind the resistance in this variety has meant we can also advise farmers not to plant any variety with similar or the same genetic makeup to Hyola50.”

Findings from the EP research also fed into work by Steve Marcroft and Melbourne University researchers to determine why canola varieties had different levels of blackleg resistance.

“We wanted to know why one variety of canola was more prone to blackleg than another,” Andrew said.

“We noticed that when high concentrations of varieties with the same resistance mechanism are grown over a number of seasons the characteristics of the disease population shift in response to that, which meant we could work out what was going on before the entire crop was wiped out.

“We concluded that growers in areas with medium to high-risk of blackleg need to change varieties of canola every few years. The GRDC Blackleg Management Guide is the best source of information for growers looking to assess the risk of blackleg on an individual property.” 

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E - What is the **evidence**? Challenge your conclusions. Why and says who? It may help to talk to someone as part of this challenge process.

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