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Burning canola stubble may not control blackleg

January, 2007



This fact sheet should be used in conjunction with the Australian Blackleg Management Guide available from www.canolaaustralia.com.

Blackleg is the most damaging disease of canola worldwide. In Australia, resistant varieties normally control this fungal pathogen but if crops are sown under high disease pressure, yield losses are still likely. Various management options are available to reduce disease severity.

One option is to remove as much stubble from the previous canola crop as possible. However, this may be less effective than once thought.

Key Points:

- Burning canola stubble does not destroy all stubble.
- Remaining stubble can still release blackleg spores.
- Resistant varieties, distance from canola stubbles and, where necessary the use of fungicides are the keys to blackleg management.

Why destroy canola stubble?

The primary source of blackleg infection is spores that are released from blackleg fungal fruiting bodies which are found on canola stubble. So, removing stubble reduces the number of blackleg spores.

However, the severity of the disease depends on many additional factors, so reducing the level of canola stubble in a paddock may not necessarily reduce blackleg severity.

Retaining canola stubble also has the benefits of increasing soil organic matter, nutrient recycling and erosion control.

It is not known if a reduction in canola stubble also reduces disease severity in current canola crops.



Figure 1. Does burning canola stubble reduce blackleg severity?

Burning does not destroy all stubble

Recent studies investigated the effect of burning as a disease control option. In unburnt paddocks, the normal soil tillage and sowing operations reduced initial stubble quantity by approximately 80%, whereas burning plus the normal tillage operations reduced the amount of stubble by approximately 95% (Figure 2).

However, stubble that had been burnt but not destroyed, released a similar number of spores compared to unburnt stubble.

Remaining stubble can still release blackleg spores

The bushfire on Eyre Peninsula, SA in January 2005 burnt all canola stubble paddocks in an entire district. This provided the opportunity to measure disease severity after most stubble had been burnt. Approximately 400kg/ha of canola stubble remained in unburnt paddocks compared to 100kg/ha in the burnt paddocks (Figure 3).

To determine if this reduction in stubble quantity resulted in lower blackleg severity, a number of canola varieties were sown in trial plots within the burnt area.

Individual plants were scored for severe internal blackleg infection. The susceptible cultivars Surpass501TT and ATR-Stubby still had considerable blackleg infection even after the bushfire, but the resistant cultivars all had fewer than 15% of plants severely infected.

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Knowledge gained from the bushfire:

- The bushfire was more effective at destroying canola stubble compared to prescribed burns, BUT the bushfire did not destroy all canola stubble.
- The remaining burnt stubble still released blackleg spores.
- Plants at the bushfire site were infected by blackleg, but only varieties with a blackleg rating of less than 6 had severe infection.
- It is not known how severe blackleg would have been if the site was not burnt.
- Given that blackleg was still present after this very intense and extensive fire, it raises the question - is burning canola stubble as a blackleg management tool as effective as previously thought?

EVEN IF YOU BURN CANOLA STUBBLE, YOU MUST STILL MANAGE BLACKLEG.

Growers are therefore recommended to:

- 1 Determine which varieties are best suited to their farming system, and then choose the variety with the highest possible blackleg rating (see CAA Blackleg Resistance Rating publication or www.canolaassociation.com for current resistance ratings). Use only the current year's ratings as a variety's resistance can change over time.
- 2 Do not grow the current canola crop adjacent to canola stubble from the previous year's crop as this stubble accounts for up to 95% of blackleg spores.
- 3 If blackleg is still a problem after using a variety with a high resistance and isolating crops from the previous year's stubble, then consider using an in-furrow fungicide or seed dressing in future years. See fact sheet Fungicide use for Blackleg control in canola available at www.canolaaustralia.com.

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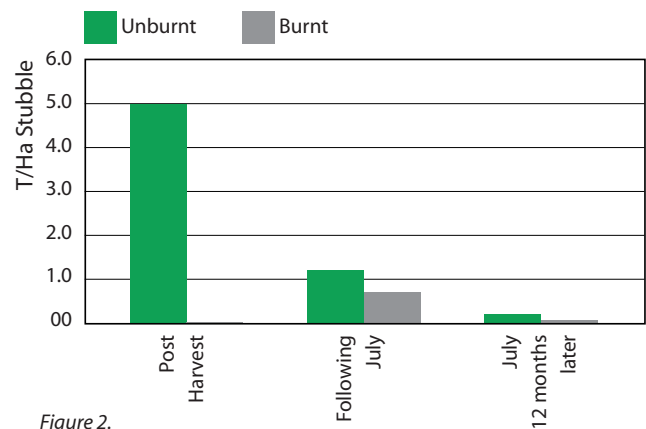


Figure 2. The practice of deliberate stubble burning reduces stubble quantity by approximately 50% in the following July.

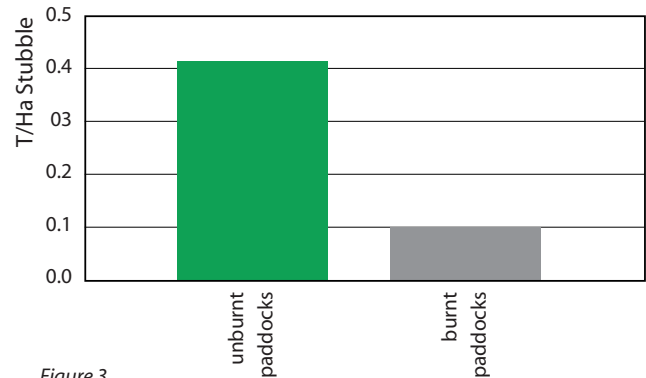


Figure 3. Average amount of remaining stubble was reduced by approximately 75% by the 2005 Eyre Peninsula bushfire. (Measured following October after bushfire).

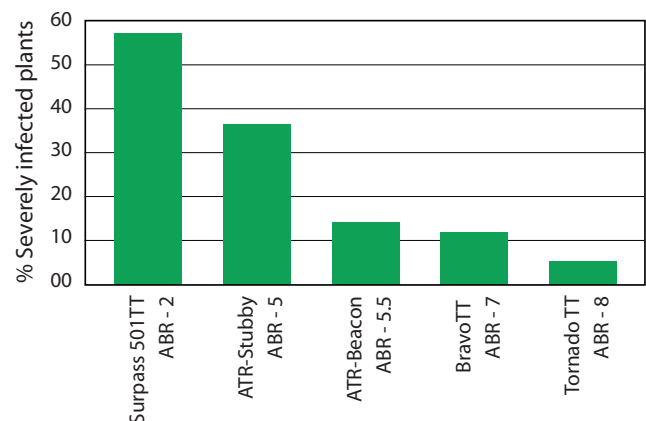


Figure 4. Blackleg severity after the bushfire was still high in susceptible cultivars. ABR (Australian Blackleg Rating 1-9).