

## Late sowing and alternative harvesting techniques to reduce ryegrass numbers

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The aim of this trial was to investigate whether ryegrass seed set could be manipulated using alternative harvesting techniques such as windrowing and crop topping.

### Summary

Crop yields were disappointing due to the frost in late October. Early May and mid June sown Rosella yielded better than Silverstar sown on the same dates. Ryegrass numbers were unacceptably high in both the early and late sown treatments, even though the late sown treatments received an extra knock down spray with RoundUp prior to sowing. There may have been no benefit from this spray due to the high level of tolerance of ryegrass to RoundUp at this site. Windrowing and crop topping with Gramoxone were investigated as alternative seed set control techniques. The windrowing option showed some promise and should be investigated in more detail. Crop topping wheat with Gramoxone is not a registered practice and resulted in a yield and quality penalty.

### Method

In crop ryegrass numbers were determined in early (May 6) and late (June 15) sown wheat. Late sown wheat had the benefit of an additional knockdown prior to late sowing. The effect of late sowing was investigated using two varieties - an early maturing variety (Silverstar) and a late maturing variety (Rosella). Ryegrass seed set and wheat yields were investigated with windrowing and crop topping (with Gramoxone) when the ryegrass was at the milky dough stage.

### Results

The early sown plots were sprayed with 0.6L of RoundUp CTXtra prior to sowing. This rate was too low for the level of tolerance to RoundUp exhibited by the ryegrass. Four weeks after sowing it was clear that a large proportion of ryegrass had survived the RoundUp application, in addition new ryegrass had emerged (even though the plots were treated with Trifluralin at 2L/ha (PSPE). The late sown plots were sprayed with 1.5L/ha of RoundUp CTXtra prior to sowing, this rate appeared to be successful in controlling ryegrass, although there was some regrowth. Even though plots were treated with Trifluralin at 1.5L/ha a subsequent germination of ryegrass resulted in quite high numbers of ryegrass plants in the late sown plots. Ryegrass numbers were counted on August 6 (Table 2.13). Ryegrass numbers were unacceptably high due to:

- a late germination of ryegrass, and
- poor control with RoundUp CTXtra at 0.6L/ha prior to sowing.

**Table 2.13 Ryegrass population mid-season with early and late sown wheat**

	<b>Growth stage (wheat)</b>	<b>Ryegrass / m2 (August 6)</b>
Silverstar early sown	1-2 node	304
Rosella early sown	6 leaf	438
Silverstar late sown	3 leaf	399
Rosella late sown	3 leaf	348

**Table 2.14 Wheat yield in relation to variety, sowing time and harvest management**

Plot	Variety	sowing time	harvest management	Yield t/ha
1	Silverstar	early	windrow	1.24
2	Silverstar	early	crop top	0.71
3	Silverstar	early	normal	1.28
4	Rosella	early	normal	1.49
5	Rosella	late	normal	1.40
6	Silverstar	late	normal	1.09
7	Silverstar	late	crop top	1.03
8	Silverstar	late	windrow	0.68

Crop yields were disappointing due to the frost in late October.

**Interpretation:** Rosella performed better than Silverstar in both the early and late sown trials (Table 2.14). Early sown Silverstar yielded better than late sown Silverstar. Windrowed early sown Silverstar had the same yield as normally harvested Silverstar - providing a potential control technique to reduce ryegrass seed set. Windrowing late sown Silverstar was unsuccessful. Crop topping early sown Silverstar with Gramoxone was not successful, however, crop topping late sown Silverstar was successful - this indicates the importance of timing when topping wheat. Crop topping too early will interfere with optimum wheat development. The windrowing option should be investigated in more detail.

**Commercial Practice:** For late in-crop ryegrass seed set control, crops need to be windrowed. Crop topping with Gramoxone is not an option at this stage as *Gramoxone is not registered for this use in cereal, and more particularly as some suggestion of residue problems have been made..* In terms of trial work, for optimum ryegrass seed set control, windrowing or crop topping needs to take place at the milky dough stage. In the Mallee this occurs approximately 7 days after flowering (in the Central region about 10 days after flowering). If ryegrass is windrowed or topped at the doughy stage then only 60% control of seed set can be expected. If windrowing or topping takes place after the heads are bleached (dried off) then little or no control will result. Crop topping to reduce ryegrass seed set has been shown to be successful in field peas, lupins and faba beans, but only when crop topping can take place when the crop has almost matured. It is unlikely that the same will apply with wheat due to differences in ripening of the grain, when the ryegrass is ready for topping the wheat crop in many cases will still be too immature.

The results of this trial indicate that windrowing could be an option - more work needs to be carried out with this practice. In 1999 the BCG will undertake trial work with windrowing a wide range of crops and varieties to determine the optimum windrowing times.