

The Fate of Ryegrass Seed when Sheep Graze Chaff Cart Heaps

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Ryegrass is a major weed problem for grain growers in Western Australia, especially with the development of herbicide resistant ryegrass. Catching weed seeds by towing chaff carts behind grain harvesters can collect up to 80% of ryegrass seeds from wheat crops to concentrate them in heaps to be destroyed by burning with a hot fire later on in autumn. One problem is that chaff cart heaps can burn for up to four days creating a major fire risk. Farmers report that adult sheep graze intensively on chaff cart heaps within wheat stubbles and reduce the heaps in size considerably. Grazing sheep on chaff cart heaps raises two issues for farmers. The first is the spread of viable ryegrass seed back into the paddock through the sheep faeces. Gramshaw and Stern (1977) found this to be less than 1%. This concern is minor because at least 20% of ryegrass seed is not collected by the chaff cart system. The second concern for farmers is that sheep will spread out the chaff cart heaps too far and a hot burn may not be possible to destroy the weed seeds after grazing.

Two trials were conducted to measure the impact of grazing with sheep on the spread of ryegrass seed within the vicinity of the heaps, whether the heaps can still be burnt after grazing, and whether the risks

associated with burning chaff cart heaps can be reduced. A major trial was conducted at Mingenew on a 120 ha paddock of wheat stubble while a similar study was conducted at Yerecoin. Three block treatments were applied to 15 chaff cart heaps. An ungrazed treatment was fenced to exclude stock and then burnt, while the second was grazed and burnt. The third treatment was grazed and left unburnt. Two germinations of ryegrass plants were counted at 1,2,4 and 8 metre distances from the edge of each heap after rainfall was received during March and June. The means were then added together.

The results showed that grazing had no significant effect on the number of germinated ryegrass plants at the measured distances from the edge of the heaps (Table 1). Grazing reduced the volume of the chaff cart heaps by about a third (10.5 v. 6.3m³) and the area of each heap increased three-fold. This suggests that sheep spread out the material while foraging for grain and other fine residues. In both trials the ewes grazed the heaps intensively yet there was minimal contamination from faeces and urine. There was no effect on the average DDM (47%) and CP (5.6%) but the hectolitre weight of the residues reduced from 74 to 50 g/HL, suggesting sheep selected and ate the most palatable portions.

Table 1. The effect of sheep grazed on chaff cart heaps on germinated ryegrass numbers at Mingenew and Yerecoin

Distance from edge of heap	Mingenew Ungrazed and burnt	Mingenew Grazed & burnt	Mingenew Grazed & not burnt	Yerecoin Grazed & burnt	Yerecoin Ungrazed & burnt
1m	395	380	345	219	278
2m	352	291	309	259	242
4m	358	282	288	207	208
8m	334	297	270	156	199

Grazing reduced the height of the chaff cart heaps from almost one metre down to 10-15 cm. The edge of each heap remained well defined after grazing, the ryegrass seeds were easy to destroy with a hot fire afterwards and the heaps burnt faster compared to ungrazed. After grazing, the seeding equipment passed easily through all the ungrazed heaps without blocking up or distorting the heaps, meaning that burning after cultivation was still possible.

In conclusion, this study shows that farmers can confidently graze sheep on wheat stubbles that contain chaff cart heaps without having a significant impact on

the spread of ryegrass seed back into the paddock. The sheep were selective in what they ate and spread out

the heaps while foraging for grain and other fine material. There were no problems with burning after grazing and the heaps burnt faster, reducing the risks associated with burning.

Gramshaw, D. and Stern, W. R. 1977. Survival of annual ryegrass in a Mediterranean environment, Aust. J. Agric. Res., 28, p. 81-91.

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