

5.2 THE IMPACT ON LIVESTOCK, GRAIN YIELD AND STUBBLE MASS FROM GRAZING CEREALS IN WINTER (DERRINALLUM, CERES, LEARMONTH VIC)

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Location: Derrinallum, Ceres and Learmonth

Acknowledgements:

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Rainfall (2005): not recorded

Summary:

Three farmer trials (one replicated, 2 unreplicated) were conducted to assess the impact on grain yield and stubble mass by grazing in winter. Grazing of the cereals up to growth stage 31 had no significant impact on grain yield but it did reduce the amount of stubble remaining post harvest. Grazing after growth stage 31 did reduce yield and further reduce stubble mass.

Background:

The increase in cereal production in south west Victoria has resulted in higher winter stocking rates on the remaining grazing land. This placed increased demand on pastures that are already restricted in their growth by cold wet conditions. If cereals could be grazed during this period without compromising grain yield, it would provide an opportunity to increase stocking rates and/or decrease supplementary feeding. Grazing may also have a benefit in reducing the amount of stubble remaining post harvest.

Research has shown grain and forage yields are greatly influenced by the time and intensity of grazing. The later the time of grazing and the more severe the grazing intensity, the greater the likelihood of suffering yield reductions. The selection of unsuitable varieties can also result in unacceptable yield reductions from grazing.

To begin to understand the interactions between grazing, livestock benefits and the effect on grain yield and stubble aftermath, three investigative trials were conducted to determine critical issues for further investigation.

Objectives:

To examine the livestock benefits and impacts on cereal yield and stubble aftermath by grazing.

Table 5-3: Experimental Design

Location	Area	Treatments	Replicates
Ceres	4 ha	2 varieties x 2 growth stages at grazing x 3 grazing intensities	3
Derrinallum	2.4 ha	4 varieties x 1 grazing time	1
Learmonth	4 ha	3 varieties x 1 grazing time	1

Exclusion cages were used to prevent stock grazing the trial at certain times. The remainder of the cereal was grazed during this period. Quadrant cuts were taken inside and outside the exclusion cages to determine drymatter and feed quality. Cereal yield was also determined by quadrant cuts and drymatter analysis.

Location	Sowing Date	Cereal	Variety	Date Grazing Start	Grazing Days	Grazing Stage	Grazing Intensity
Ceres	11/07/05	Barley	Cape	22/08/05	2 ⁹	GS22	Nil, to 9 cm, to 5 cm
				12/09/05	11 ¹⁰	GS31	Nil, to 9 cm, to 5 cm
				23/09/05	14 ¹¹	2 nd grazing of GS22 at GS33	From 30 cm to 28 cm
			Yerong	22/08/05	2	GS22	Nil, to 9 cm, to 5 cm
				12/09/05	11	GS31	Nil, to 9 cm, to 5 cm
				23/09/05	14	2 nd grazing of GS22 at GS33	From 25 cm down to 19 cm
Derrinallum	04/05/05 (dry)	Red wheat	Declic	20/07/05	15 ¹²	GS24	To 2 cm
			Amarok			GS23	To 2 cm
		Triticale	Crackerjack			GS23	To 2 cm
			Monsterness			GS23	To 4 cm
Learmonth	28/06/05	Triticale	Jackie	16/09/05	33 ¹³	GS27	Not recorded
			AT574			GS27	
		Oats	Eurabbie			GS26	

⁹ Grazed with first cross lambs

¹⁰ Grazed with first cross bred ewes with lamb at foot

¹¹ Grazed with cross bred ewes with lamb at foot

¹² Grazed with late pregnancy second cross ewes

¹³ Grazed with second cross ewes with lamb at foot

Results and Discussion

Table 5-4: Drymatter Consumed By Grazing

Trial	Cereal	Variety	Grazing Stage / Intensity	Drymatter Removed By Grazing (kg/ha)
Ceres	Barley	Cape	GS22 to 9 cm	50
			GS22 to 5 cm	60
			GS31 to 9 cm	540
			GS31 to 5 cm	1330
			2 nd grazing of GS22 at GS33	390
		Yerong	GS22 to 9 cm	90
			GS22 to 5 cm	10
			GS31 to 9 cm	350
			GS31 to 5 cm	830
			2 nd grazing of GS22 at GS33	510
Derrinallum	Red wheat	Declic	GS24	290
		Amarok	GS23	360
	Triticale	Crackerjack	GS23	720
		Monsteress	GS23	410
Learmonth	Triticale	Jackie	GS27	1970
		AT574	GS27	2070
	Oats	Eurabbie	GS26	2650

Table 5-5: Cereal Yield Comparisons, Grazed V Ungrazed

Trial	Cereal	Variety	Grazing stage / intensity	Grain yield (t/ha)	Difference in yield due to grazing (t/ha)
Ceres	Barley	Cape	No grazing for GS22	3.8	
			GS22 to 9 cm	4.0	+ 0.2
			GS22 to 5 cm	4.3	+ 0.3
			No grazing for GS31	2.2	
			GS31 to 9 cm	3.0	+ 0.8
			GS31 to 5 cm	2.9	+ 0.7
			2 nd grazing of GS22 at GS33	3.6	+ 1.4
		Yerong	No grazing for GS22	4.4	
			GS22 to 9 cm	3.7	- 0.7
			GS22 to 5 cm	4.8	+ 0.4
			No grazing for GS31	4.7	
			GS31 to 9 cm	4.1	- 0.6
			GS31 to 5 cm	3.2	- 1.5
			2 nd grazing of GS22 at GS33	2.8	- 1.9
Derrinallum	Red wheat	Declic	No grazing	2.8	
			GS24	2.8	0.0
		Amarok	No grazing	3.7	
			GS23	3.6	- 0.1
	Triticale	Crackerjack	No grazing	3.5	
			GS23	3.9	+ 0.4
		Monsteress	No grazing	3.2	
			GS23	3.3	+ 0.1
Learmonth	Triticale	Jackie	No grazing	8.7	
			GS27	1.6	- 7.1
		AT574	No grazing	10.6	
			GS27	3.9	- 6.7
	Oats	Eurabbie	No grazing	9.1	
			GS26	3.3	- 5.8

Table 5-6: Residual Stubble Post Harvest, grazed V ungrazed

Trial	Cereal	Variety	Grazing stage / intensity	Stubble yield (t/ha)	Difference in stubble yield due to grazing (t/ha)
Ceres	Barley	Cape	No grazing for GS22	5.3	
			GS22 to 9 cm	6.4	+ 1.1
			GS22 to 5 cm	7.7	+ 2.4
			No grazing for GS31	7.0	
			GS31 to 9 cm	5.7	- 1.3
			GS31 to 5 cm	3.3	- 3.7
			2 nd grazing of GS22 at GS33	4.6	- 2.4
		Yerong	No grazing for GS22	6.7	
			GS22 to 9 cm	5.8	- 0.9
			GS22 to 5 cm	6.6	- 0.1
			No grazing for GS31	5.9	
			GS31 to 9 cm	4.8	- 1.1
			GS31 to 5 cm	4.7	- 1.2
			2 nd grazing of GS22 at GS33	3.1	- 2.8
Derrinallum	Red wheat	Declic	No grazing	8.5	
			GS24	7.4	- 1.1
		Amarok	No grazing	8.5	
			GS23	7.1	- 1.4
	Triticale	Crackerjack	No grazing	8.4	
			GS23	8.4	0.0
		Monsteress	No grazing	8.8	
			GS23	8.2	- 0.6
Learmonth	Triticale	Jackie	No grazing	13.8	
			GS27	5.2	- 8.6
		AT574	No grazing	17.4	
			GS27	7.8	- 9.6
	Oats	Eurabbie	No grazing	10.9	
			GS26	5.9	- 5.0

Table 5-7: Quality Of Cereal At Time Of Grazing

Variety	Quality		
	Metabolisable energy (MJ/kg DM)	Protein (%)	Drymatter digestibility (DDM)
Cape barley	12.6 – 13.6 ¹⁴	28.2 – 39.8	84.4 – 91.8
Yerong barley	12.9 – 13.5	28.4 – 39.6	84.4 – 91.1
Declic red wheat	12.3	35.9	83.2
Amarok red wheat	12.9	35.0	87.2
Crackerjack triticale	12.5	36.1	84.7
Monsteress triticale	12.5	36.4	84.4
Jackie triticale	11.3	27.9	-
AT574 triticale	12.5	26.0	-
Eurabbie oats	11.1	22.5	-

¹⁴ Range depends on time of grazing