

“Grazing & Grain Recovery, 2015”

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Key Outcomes:

- Mace yields were significantly lower when sown early due to frost
- There was a negligible yield response to applied nitrogen.
- Grazing generally produced grain of lower protein.
- 38mm of irrigation applied at early booting resulted in 700kg/ha more grain

Trial Objectives: To determine 1) the grain yield recovery potential of 2 different wheat varieties 2) whether additional nitrogen is able to assist in grazing recovery and yield compensation and 3) if post grazing rainfall is the key determinant of grain recovery.

Trial Duration: 2015

Location: Navan

Farmer Co-operators: Pat & Mary Connell

Soil Type: Red Clay Loam

Paddock History: 2014 – Faba Beans
2013 - Wheat

Monthly Rainfall:

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
69.5	4	1	70	52	23	56.5	82.5	30.5	9	80.5	36.5

- **Yield Limiting Factors:** Frost, Below average spring rainfall
- **Type of Trial:** Replicated small plot trial
- **Trial Design:** Randomised Complete Block Design, split plots, 3 replicates

Treatments:

The trial consisted of 2 Times of Sowing (TOS 1 – 11/04/2015, TOS 2 – 24/04/2015), 2 wheat varieties (Mace, Trojan), 2 grazing treatments (Ungrazed, Rotaionally grazed to GS 30) and 4 nitrogen rates (0, 50, 100 & 150 kg N/ha). There was also an irrigation treatment

All plots were sown with MAP 1% Zinc at 80 kg/ha at 300 seeds/m². All nitrogen treatments were applied by hand following the final defoliation of the grazed treatments. This corresponded to GS

30 in the ungrazed treatments. A mower was used to simulate stock grazing. The plots were harvested and grain yields determined. Grain samples were kept for protein analysis.

Results:

Figure 1: Grain yield results from TOS 1 in the Grazing and Grain Recovery trial at the MNHRZ, 2015.

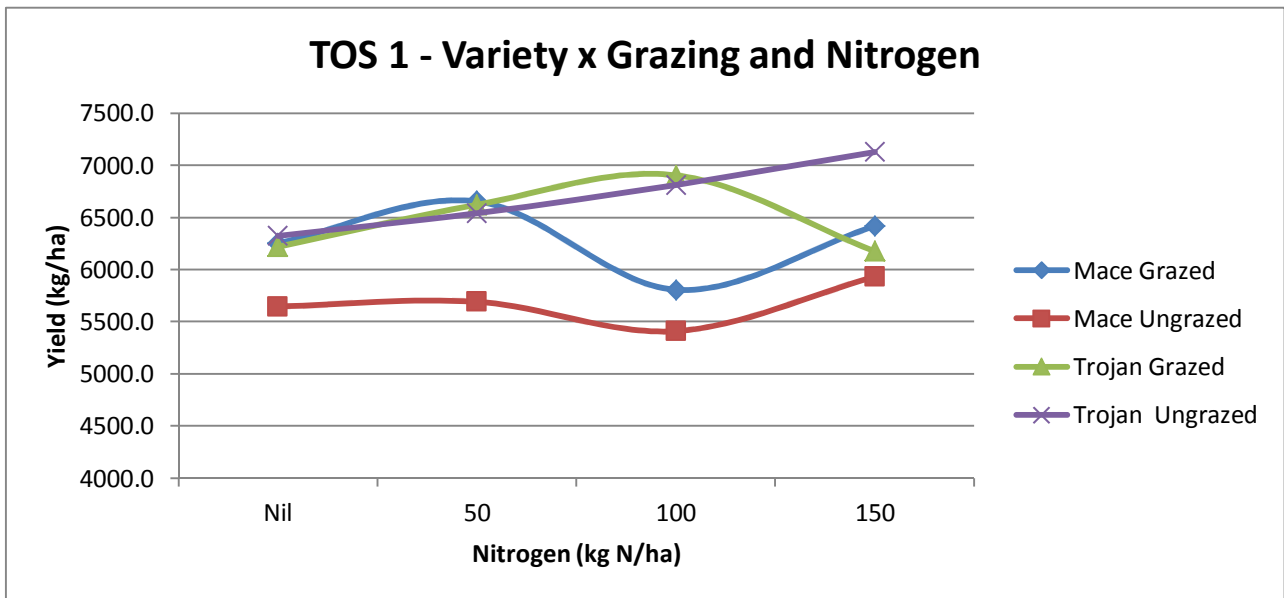


Figure 2: Grain yield results from TOS 2 in the Grazing and Grain Recovery trial at the MNHRZ, 2015.

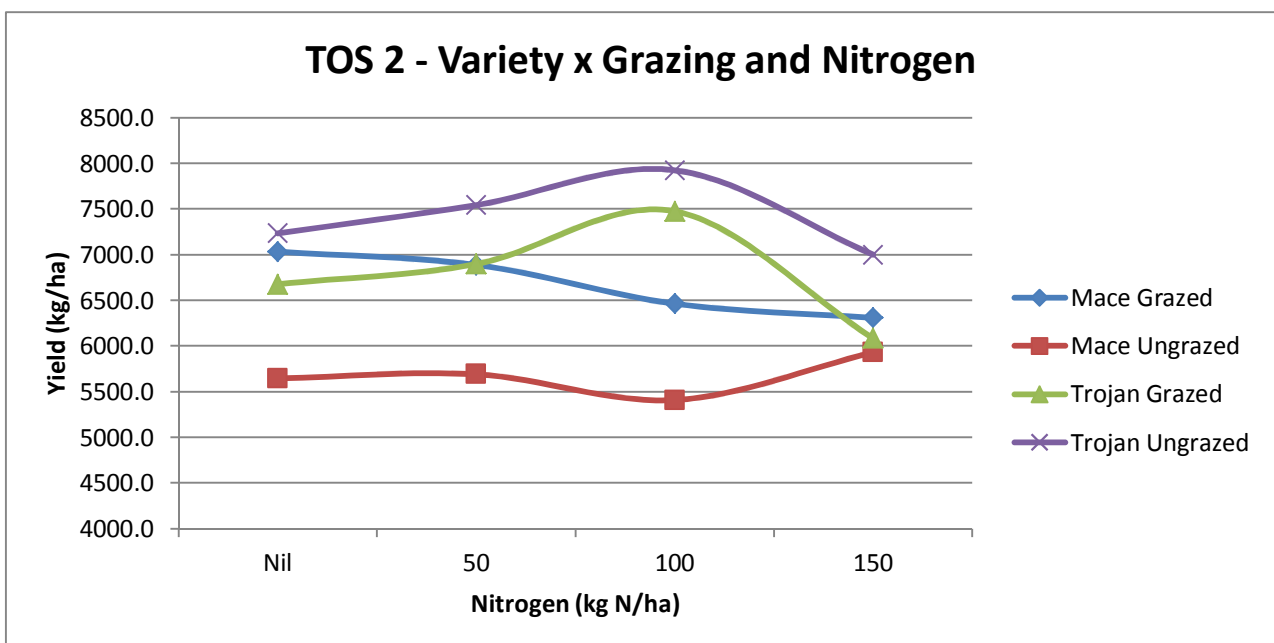


Table 1: Varietal Protein effects, MNHRZ 2015.

Nitrogen	Mace	Trojan
<i>Nil</i>	8.8	8.9
<i>50</i>	10.3	9.3
<i>100</i>	11.8	10.4
<i>150</i>	11.7	12.5
P=0.0019, LSD 5% - 0.81		

Table 2: Yield vs Variety, Grazing and Irrigation, MNHRZ 2015.

	Mace				Trojan			
	Ungrazed		Grazed		Ungrazed		Grazed	
	Yes	No	Yes	No	Yes	No	Yes	No
Irrigation	Yes	No	Yes	No	Yes	No	Yes	No
Yield	7755.6	6904.6	6944.6	6440.6	7782.7	6794.9	7014.7	6454.8
Yield Diff.	851.0		504.0		987.8		560.0	

Comments:

Mace wheat experienced significant yield loss due to frost in TOS 1 when un-grazed. Grazed plots were slightly later maturing due to the effect of grazing and were able to escape the damaging frosts, as the reproductive parts of the plant had not yet emerged at the time of the frost.

Grazing overall did not significantly reduce yield of either variety in this trial, however it is likely that the positive effect of grazing in Mace TOS 1 and frost avoidance are weighing heavily on this result.

There was little effect of additional nitrogen on yield in this trial. This was due to the high background levels of nitrogen (178 kg/ha N 0-100cm). There was however a protein response to higher applied nitrogen rates.

38mm of irrigation applied at booting produced an additional 900 kg of yield in the un-grazed treatments, whereas this was only 500 kg where the plots were grazed.

Conclusion and into the paddock

These trials were established to determine the mechanism of grazing recovery and whether additional inputs could account for the differences in grain yield. At this stage it appears that recovery from grazing is largely a varietal response, rather than a management strategy that can be applied to the crop. Additional nitrogen or post GS 31 moisture does not appear to help the crop recover to the full potential of the un-grazed treatments.

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