

“Canopy Management in Wheat, 2015”

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Key Outcomes:

- Sowing on the 24th of April resulted in an average yield approximately 1 & 2t/ha greater than plots sown on the 8th of May and 22nd of May respectively.
- Applications of nitrogen at rates greater than 60 kg N/ha resulted in a significant yield losses
- TOS, Variety and Nitrogen all had significant effects on screenings

Trial Objectives: To determine 1) Varietal yield in response to Time of Sowing (TOS), seeding density and nitrogen and 2) to determine if differences in quality (protein, screenings) occurred due to the management strategy imposed.

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 the following treatments:

3 x Times of Sowing – TOS 1 – 24/04/2015, TOS 2 – 08/05/2015 and TOS 3 – 22/05/2015

3 x Varieties – Cobra, Mace, Trojan

2 x Densities – 100 & 300 seeds/m²

4 x Nitrogen Treatments – Nil N, 60 kg N/ha, 120 kg N/ha and 120 kg N/ha at Growth Stage 31.

Additional plots of Cobra were sown (all 300 seeds/m²) at each time of seeding to generate a nitrogen response curve x TOS effect and also to explore the effect of nitrogen on quality in more detail. Additional nitrogen treatments for these plots were 30 kg N/ha, 90 kg N/ha, 150 kg N/ha and 180 kg N/ha.

All plots were sown with MAP 1% Zinc at 80 kg/ha. The plots were harvested with a small plot header and grain yields determined. Grain samples were kept for protein analysis and it was decided that following poor broadacre quality results in many paddocks, we would determine screenings as an additional measure of quality.

Results:

Figure 1: Wheat Yield and Screenings vs. Time of Sowing, MNHRZ, 2015.

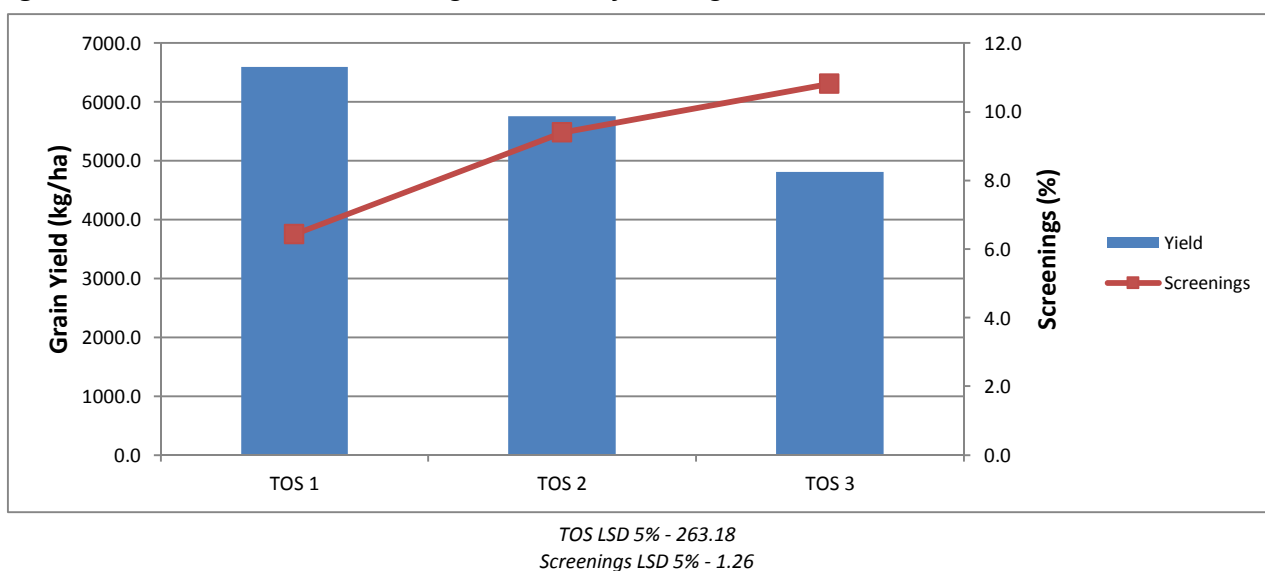


Figure 2: Wheat Yield, Protein and Screenings vs. Nitrogen, MNHRZ, 2015.

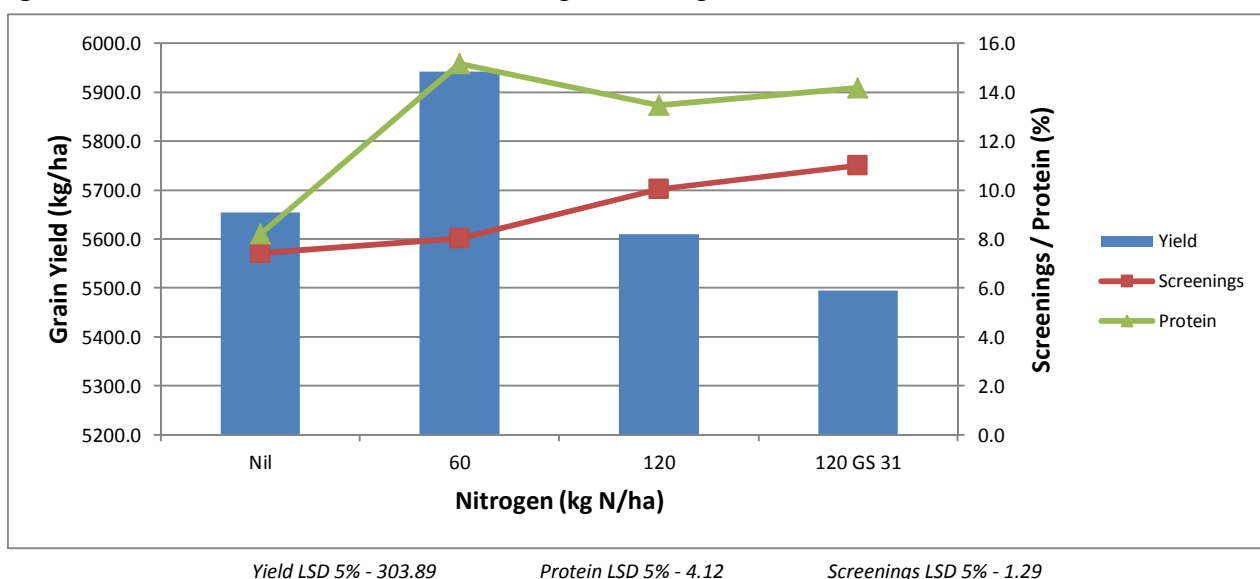


Table 1: Cobra Wheat Yield, Protein and Screenings vs. Nitrogen, MNHRZ, 2015

Nitrogen	Yield	Protein	Screenings
Nil	5638.7	10.0	7.9
30	6080.4	9.9	7.6
60	5997.0	11.5	8.7
90	6245.2	11.5	9.6
120	5895.4	13.4	10.2
150	5708.7	13.5	9.3
180	5900.0	13.0	12.4
120 GS 31	5667.3	14.8	12.4
LSD 5%	NS	1.42	2.99

Comments:

There was very little difference between the varieties at any time of seeding for yield. The main over-riding influences on grain yield were the time of sowing and nitrogen. There appears to be a concerning trend towards the need to sow earlier in this environment for maximum grain yield. As few as 5 years ago, trials at the MNHRZ suggested sowing Mace from the 15th-20th of May was ideal to maximise grain yield. The last 3 seasons have clearly demonstrated that early sown wheat yields best and may now be the new norm. Sowing on the 24th of April maximised grain yields across the trial, as did applying no more than 60 kg N/ha. This is line with Yield Prophet predictions for N requirement for the paddock this year.

Time of sowing also appeared to have a large effect on grain screenings too, with the later sowing dates producing progressively higher screenings levels. Nitrogen influenced the amount of screenings also, with all applications of nitrogen increasing screenings above the Nil N treatment, but only when 60 kg N/ha was exceeded did the screenings level rise above the Nil N treatment by statistically significant level.

Protein increased with increasing nitrogen application as can be expected, with maximum yields occurring in the 10-11% protein range.

Conclusion and into the paddock

Sowing early is of paramount importance to achieving maximum grain yields. It seems that sowing mid-season wheat varieties in the last week of April - first week of May is the ideal seeding window contrary to previous results from the MNHRZ. Blame it on climate change or the lack of spring rainfall, but give yourself the best chance of achieving high yields by sowing early.

Similarly, nitrogen application should be matched to the yield potential of the crop and the soil N reserves. Getting this wrong and having the best looking crop in the district in September, does not relate strongly to grain yield – if anything there are severe negative effects associated with excessive N application. Formulating an N budget based on what is in the soil, combined with plant

available water knowledge at all stages during the year allows for insightful nitrogen management and optimal profitability.

Acknowledgements

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