4.5 ASSESSING THE IMPACT OF NITROGEN TREATMENTS ON WHEAT CANOPIES (HAMILTON VIC)

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Rainfall (2005): 535 mm
GSR: (Apr – Nov) 379 mm

Summary:
Nitrogen strategies are an important component in ensuring wheat crops achieve their yield potential in the higher rainfall production zones. Determining the most profitable strategy is paramount for farmers in a year of high input costs. Applying nitrogen at critical development stages in this trial showed no significant yield or quality benefits. These findings are not consistent with previous year's research, although did show similarities with other SFS nitrogen triasl in 2005.

Background:
Timely nitrogen strategies are critical in ensuring product efficiency and yield optimization. Over time, the various timings of N have reflected differing yield and grain quality results. Taking advantage of increased grain quality while maintaining similar input costs, forms an important ingredient in maximising farmer returns.

Objectives:
The aim of the trial is to identify the best nitrogen timing and rate in order to maximize profits for the widely grown cultivar Kellalac, in the local higher rainfall conditions of southern Victoria.

Methodology:
A replicated trial was established consisting of 5 treatment with various nitrogen timing strategies (Table 4-10), including basal N sown using DAP, vs differing rates of N at GS31 &/or GS39. A randomized block design was implemented. Plot lengths were 10m, with each variety being grown on a 1.7 metre wide raised bed.

Table 4-10: Fungicide Trial Treatment List

Trt	*Nitrogen Treatment*
1	20kgN/ha at sowing
2	20kgN/ha at sowing + 45kgN/Ha at GS31
3	20kgN/ha at sowing + 80kgN/ha at GS31
4	20kgN/ha at sowing + 45kgN/ha at GS31 + 35kgN/ha at GS39.
5	20kgN/ha at sowing + 80 kgN/ha at GS39

Sowing Date: 24th May 2005.
The variety sown was Kellalac.

Sowing Rate:
Adjusted for seed weight, with the aim of establishing 200 plants/square metre.

Seed treatment:
Raxil at recommended label rates.

Fertiliser:
100 kg/ha DAP was applied at sowing, with the various nitrogen treatments applied at either 1st September (GS31) or 4th October (GS39).
Dual Gold at 230mls/ha + Talstar @ 100mls/ha was applied immediately after sowing, with Tigrex at 500ml/ha applied on the 6th July and Amicide 500 at 1.4l/ha on the 1st September 2005.

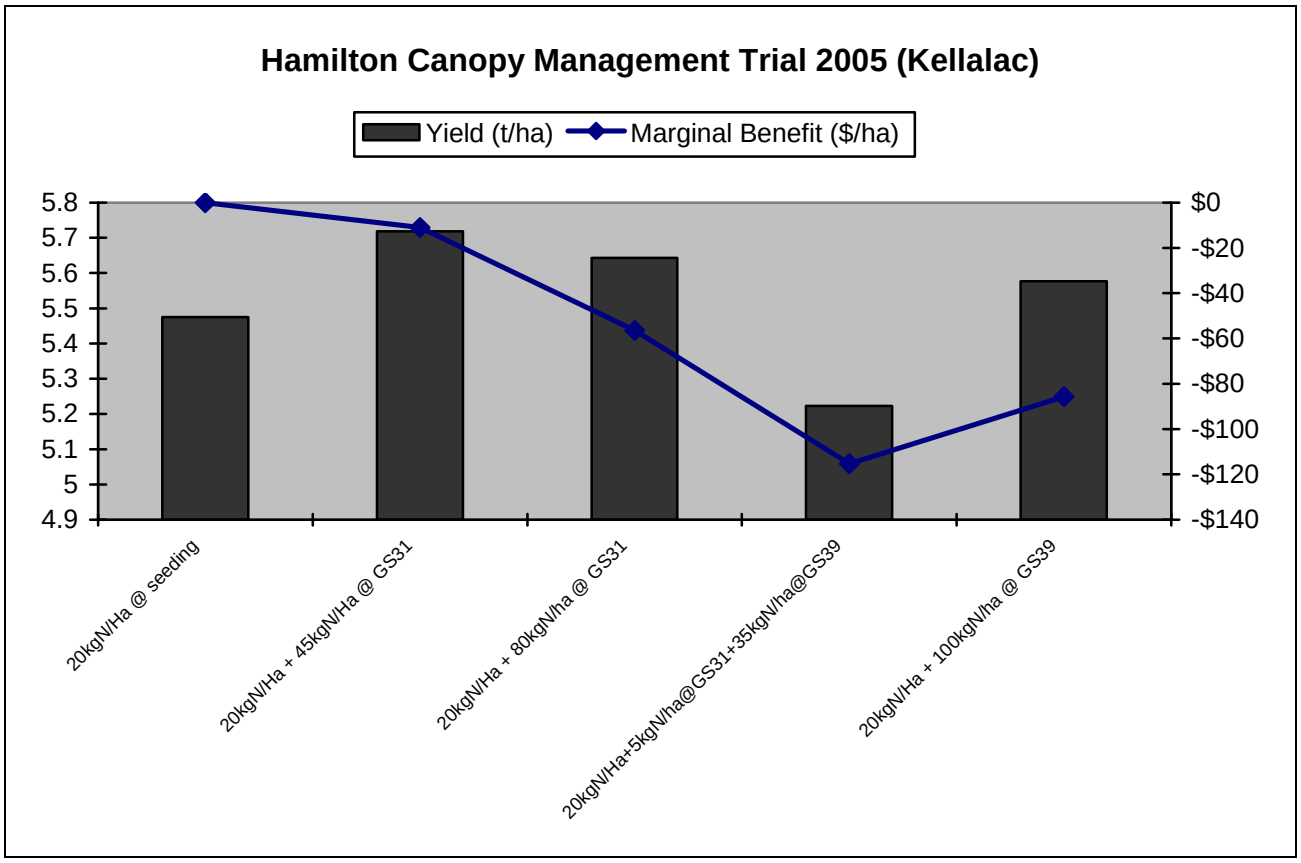
Foliar Fungicide:
Tilt Xtra ® was applied at 250 ml/ha on 2 separate occasions, namely 1st September (GS32) and 4th October (GS39) across the whole of the trial. The aim was to minimise the impact of disease, allow canopy structures to only be affected by nitrogen applied.

Harvested: 5th January 2006.

Results and Discussion:

With no significant difference in yield across this trial (Table 4-11) it appears that the high soil nitrogen and variable season may have been too influential to repeat previous years' results. Findings from this trial should still be reviewed, but not used solely to make strategic nitrogen management decisions in the future. Possibly one key finding may be that high N paddocks need little if any follow up N past crop emergence, depending on paddock history and seasonal outlook. Late leaf rust was present throughout this trial, however it is not known if this was influential in determining yield outcomes.

Figure 4-2: Wheat Yield (T/ha) & Marginal Benefit With Post Emergence Nitrogen Applied vs Control.



Grain valued at $140/Tonne and cost of nitrogen valued at $1/kgN
Impact of grain quality on price not included.

Table 4-11 indicates that nitrogen timing and rate in this trial had no significant impact on yield, protein or test weight across all 5 treatments. This again needs to be treated with caution, as each site will vary with basal N rates.

Table 4-11: Yield And Grain Quality Data

Trt	Yield kg/ha	Protein %	Retention %	Screenings %	Test Wt kg/hl
1	5.49	11.85	97.56	2.41	71.30
2	5.72	12.05	97.10	2.80	71.08
3	5.64	11.95	97.96	1.98	71.85
4	5.22	12.60	97.42	2.50	71.38
5	5.58	12.55	96.94	2.95	71.22
Average	5.53	12.20	97.4	2.53	71.37
LSD 5%	**0.71**	**1.58**	**1.46**	**1.42**	**2.44**
CV	**8.01**	**7.68**	**0.93**	**35.86**	**2.19**
Sig. Diff.	**No**	**No**	**No**	**No**	**No**

Nitrogen now forms the basis of many production systems in the southern higher rainfall zones. Maximising response out of this input needs careful consideration to ensure optimal efficiency. Timing and rate of application need to be planned on the back of soil test results and the changes in seasonal outlook. Not applying nitrogen in low or deficient sites could be detrimental to any yield opportunities.