



## MARITIME SPRING WHEAT FERTILITY AND VARIETY TRIALS

Interim Research Report E2008-46

### BACKGROUND

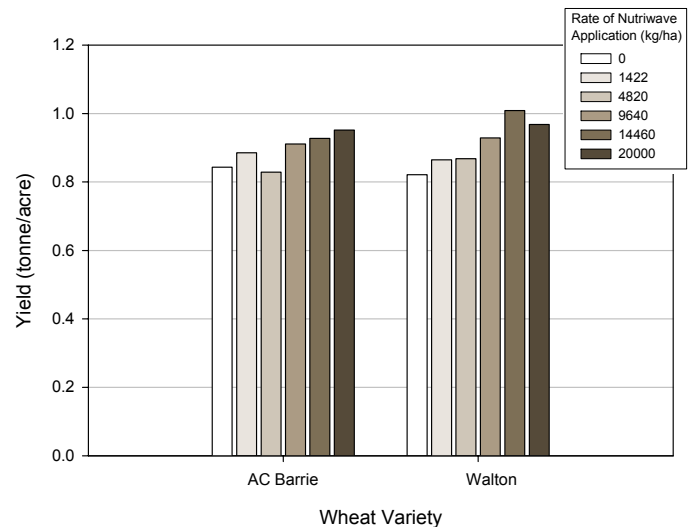
High yield and protein content are a challenge for both organic and conventional producers of spring wheat in the Maritimes. Wheat varieties also respond differently among sites. Pelletized poultry manure has become available to some organic producers presenting them with an opportunity to supplement soil nitrogen (N) to boost yield and protein. Research has shown that application of N at planting can increase yields, but possibly at the risk of diluting protein content. Application of N after growth stage 30 (5 leaf stage, after tiller initiation), can contribute directly to grain protein. The objectives of these trials were to compare the unfertilized yield and protein content of selected wheat varieties, and evaluate wheat response to different levels of pelletized poultry manure.

### WHAT WAS DONE

A wheat variety trial consisting of Walton, AC Helena, AC Barrie, and Red Fife was established at two different sites: NB and PEI. In a second experiment, pelletized poultry manure (Nutriwave™ 4-1-2) was applied to wheat plots at four increasing rates. Previous research has shown that about 50% of the nitrogen in the Nutriwave becomes plant available within a growing season. At the PEI site, the amendment was applied either before planting or at growth stage 30 (GS30). In NB, the amendment was applied before planting, or as a split application – half before planting and half at GS 30. At the NB site, 20 t/ha of commercial compost was also applied as a treatment. Walton and AC Barrie wheat varieties were tested in this trial.

### PRELIMINARY RESULTS

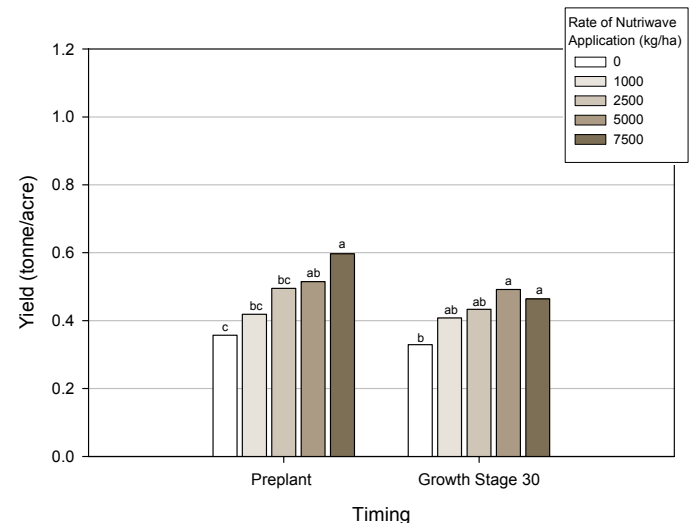
A trend of increasing yield with Nutriwave application rate was measured in NB, but the response was not statistically significant (Figure 1). Fertility levels at this site were reasonably good as indicated by the yield, which explains the subdued response.



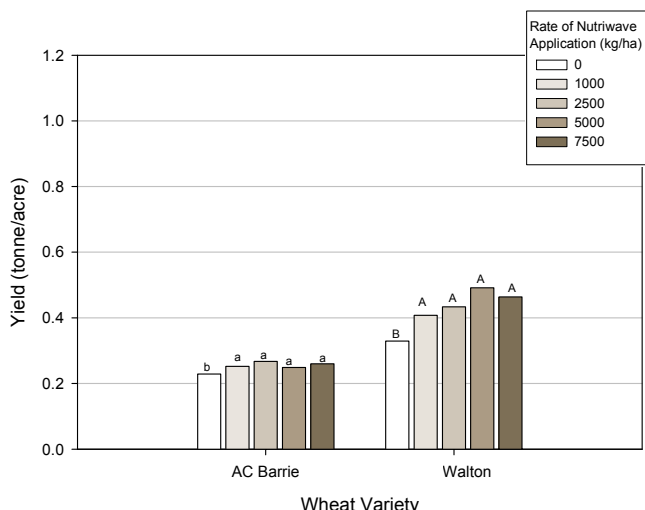
**Figure 1. Yield response of AC Barrie and Walton wheat in NB. No statistical difference among rates.**

**Note: 20000 kg/ha rate is a commercial compost**

There was not a significant protein response to Nutriwave rate, but protein was higher in the variety AC Barrie. The 20000 kg/ha (20 t/ha) compost treatment provided a yield response.



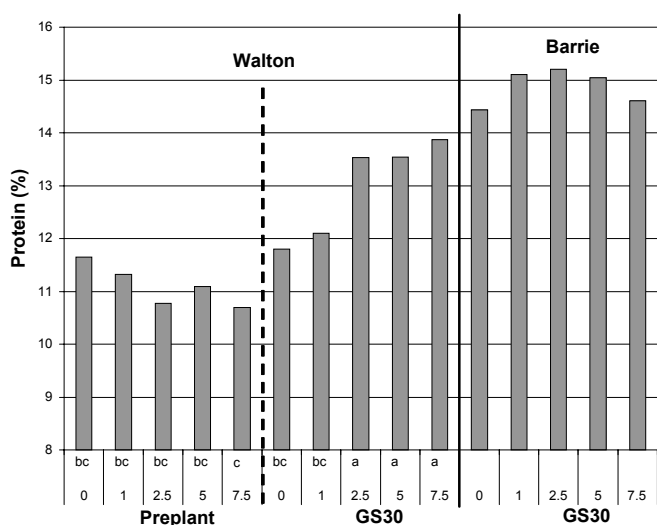
**Figure 2: Yield response of Walton on PEI to Nutriwave applied before planting or at GS30. Within a timing, columns with the same letter are not statistically different.**



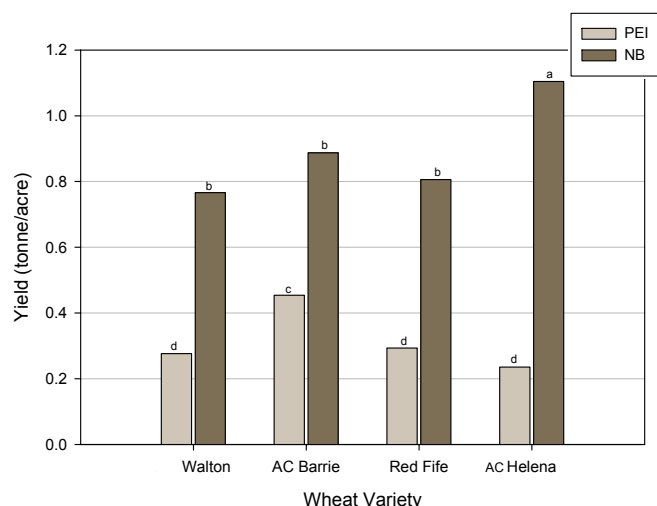
**Figure 3. Yield response of AC Barrie and Walton to Nutriwave applied at GS30 in PEI. Columns with the same letter are not significantly different.**

Soil fertility was lower at the PEI site, resulting in a stronger response to the Nutriwave. The yield response of Walton to Nutriwave applied at GS30 was lower than when applied before planting (Figure 2), however, the GS30 application produced a significant protein response when applied at a rate of 2500 kg/ha (not shown). The yield and protein response of AC Barrie to Nutriwave at GS30 was small compared with Walton (Figures 3 & 4), but protein content was higher for Barrie.

In the variety trials, yields were significantly higher in NB than in PEI (Figure 5). AC Helena was very responsive in yield to the more fertile site in NB, but AC Barrie yield was highest on the less fertile PEI site.



**Figure 4. Protein response to Nutriwave applied to Walton at preplant and GS30 and to AC Barrie at GS30 in PEI. For Walton, columns with the same letter are not statistically different.**



**Figure 5. Yield of four wheat varieties on a low fertility site in PEI and a high fertility site in NB. Columns with the same letter are not statistically different.**

## THE BOTTOM LINE

Based on these preliminary results, wheat varieties should be selected with consideration for soil fertility level. Pelletized poultry manure can contribute to yield on less fertile sites, but its cost-effectiveness depends on wheat prices.

## ACKNOWLEDGEMENTS

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## CREDITS

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