

Sulphur Impacts on Winter Wheat

Purpose:

With declining sulphur additions to the soil in the form of acid rain and dry deposition, there is some question if our soils now require additional sulphur fertilization to maximize yield and protein levels. This study evaluated the addition of sulphur fertilizer over a two year time period (2005/2006 wheat harvest).

Methods:

Field length, two replicate strip trials were planted using additional sulphur in the seed placed starter band at a rate of 20 pounds actual sulphur per acre, or as 10 pounds actual sulphur supplied in the spring with the nitrogen fertilizer application. Visual assessments of colour differential were taken (greenness factor). SPAD meter readings would be taken if any visual differences were evident. Yield, protein, moisture, test weight and thousand kernel weight measurements were all taken at harvest.

Results:

2006 data is presented in Table 1, with the 2005/2006 combined summary presented in Table 2. There was essentially no response to sulphur applications in 2006, in which the month of May had relatively normal rainfall, but June and July were relatively dry. Conversely, there appeared to be reasonable response to sulphur in a limited dataset in 2005, a season which tended to be dry from May through to July. The only location with any positive response in 2006 was the Nairn location, definitely a lighter soil type than the other locations. Protein content of the grain was not changed by sulphur addition.

From this data, there is no reason to suggest the requirement for any additional sulphur on wheat at this time. Growers on sandy soils with low organic matter may wish to continue these sulphur trials, as these soils should be the first to show a sulphur deficiency.

Table 1: 2006 Sulphur on Wheat Data

| Location | Yield | | Protein | |
|-----------|------------|---------|------------|---------|
| | No Sulphur | Sulphur | No Sulphur | Sulphur |
| | bu/ac | | % Protein | |
| Lucan | 99.2 | 95.5 | 9.3 | 9.2 |
| Lucan 2 | 95.2 | 93.8 | 9.9 | 9.9 |
| Perth | 72.6 | 68.5 | 8.9 | 9.0 |
| Carthage | 69.9 | 69.2 | 9.4 | 9.3 |
| Nairn | 103.1 | 106.0 | | |
| Brantford | 57.6 | 57.6 | | |
| Average | 82.9 | 81.8 | 9.4 | 9.4 |

Table 2: 05/06 Sulphur Summary

| Location | Yield | |
|---------------|------------|---------|
| | No Sulphur | Sulphur |
| | bu/ac | |
| Carthage 05 | 83.2 | 89.3 |
| Stratford 05 | 89.3 | 93.5 |
| 05/06 average | 83.8 | 84.2 |

Summary: Fertilizer sulphur additions over two years showed response in an unusually dry spring (limited data set), with no response in a spring that was dry but not abnormally so. Over the two year dataset, there is no indication that a blanket sulphur fertilizer recommendation is required.

Next Steps: This trial should be continued on sandy soils with low organic matter (no manure applied) for another two years.

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Project Contacts:

Peter Johnson, OMAFRA, peter.johnson@ontario.ca , 519 271 8180

Location of Project Final Report:

Peter Johnson