

Urea Treated with Agrotain on Spring Wheat

Purpose:

In 2003 the Ottawa-Rideau Regional Soil & Crop Improvement Association completed a 3-year project to assess the benefit of treating urea-based fertilizer with Agrotain applied broadcast on spring wheat. Agrotain is a urease enzyme inhibitor designed to reduce the potential loss of nitrogen (N) from urea-based fertilizers broadcast on the soil surface. All sites were no-till spring wheat. In 2000, with an average increase of 8 bushels per acre of spring wheat from the two-repetition comparison at Cornerview Farms, the Agrotain treatment looked very promising. Notably, the weather conditions in 2000 were wetter and cooler than normal.

Methods:

Results:

The spring of 2001 was uncharacteristically dry. This allowed for early seeding of the spring wheat. However at most of the farm locations, there was no rainfall for 20-25 days after the urea was applied and the soil surface remained dry. The spring of 2003 was slightly cooler, with double the rainfall in May. Results from the trials are given below (Table #1).

Table 1 – Agrotain treated urea vs non-treated urea on spring wheat.

Project Year/ Co-operator	0 Nitrogen (Bu/ac)	No Agrotain (bu/ac)	Agrotain (bu/ac)	Difference NO AGROTAIN & 0 NITROGEN (bu/ac)	Difference AGROTAIN & NO AGROTAIN (bu/ac)
<i>2000 Co-operator</i> Cornerview Farms	35 ₍₁₎	48 ₍₂₎	56 ₍₂₎	14	8
<i>2001 Co-operators</i>					
Droogh	71.6 ₍₁₎	81.4 ₍₂₎	79.9 ₍₂₎	10	-2
Ferguson	41.0 ₍₁₎	55.0 ₍₂₎	54.7 ₍₂₎	14	0
MacLaren	56.2 ₍₂₎	70.6 ₍₂₎	70.4 ₍₃₎	14	0
Pelton	n/a	55.7 ₍₁₎	61.2 ₍₂₎		5
Cornerview Farms	75.2 ₍₁₎	78.0 ₍₂₎	81.2 ₍₂₎	3	3
			Average	10.3	1.3
<i>2003 Co-operators</i>					
Kevin Ferguson	50.2 ₍₁₎	64.5 ₍₂₎	66.2 ₍₂₎	14	2
Jack MacLaren	71.8 ₍₂₎	77.4 ₍₁₎	74.2 ₍₄₎	6	-3
Cornerview Farms	n/a	70.4 ₍₂₎	72.5 ₍₂₎		2
			Average	9.9	0.2

Note: ₍₂₎ means there were 2 strips of this treatment at this farm plot location.

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Summary:

Depending on the rate of Agrotain applied to the urea and the rate urea applied per acre, the additional cost of the Agrotain is about \$5.00 to 10.00 per acre. Therefore the break-even yield increase required is 1- 2 bushel per acre for Hard Red Spring Wheat. The results indicate that there was little benefit to the use of Agrotain.

The results from this project are consistent with the Durham East Soil & Crop Improvement Association strip trials on winter wheat, which found no significant differences in yield between the Agrotain treated urea and the non-treated urea.

Next Steps:

This was the final year of a three-year study.

Acknowledgements:

Ottawa-Rideau Regional Soil & Crop Improvement Association

Project Contacts:

Please contact Scott Banks at scott.banks@ontario.ca for further information on these trials.