

Nitrogen Rates on Industrial Hemp Grain to Optimize Yield

Purpose:

Identify optimum nitrogen (N) rates for hemp grain yield in Renfrew county.

Methods:

Five nitrogen rates: 0, 50, 100, 150, 200, pounds per acre (lbs/ac) were applied in 2011 & 2012 respectively, replicated twice at each site (Table 1a). In 2013 only 4 N rates: 37, 100, 150 and 200 lbs/ac, were used as broadcast fertilizer applied to the site had 37 lbs/ac of N across the field (Table 1b). At harvest, weights were taken and samples to determine harvest moisture.

Table 1a: 2011 & 2012 Plot Layout

Buffer	50
1	0
2	50
3	100
4	150
5	200
6	0
7	150
8	50
9	200
10	100
Buffer	50

Table 1b: 2013 Plot Layout

Buffer	37
2	37
3	100
4	150
5	200
7	150
8	37
9	200
10	100
Buffer	37

Picture 1: Reuben Stone Nitrogen on Hemp Project 20 July 2013.

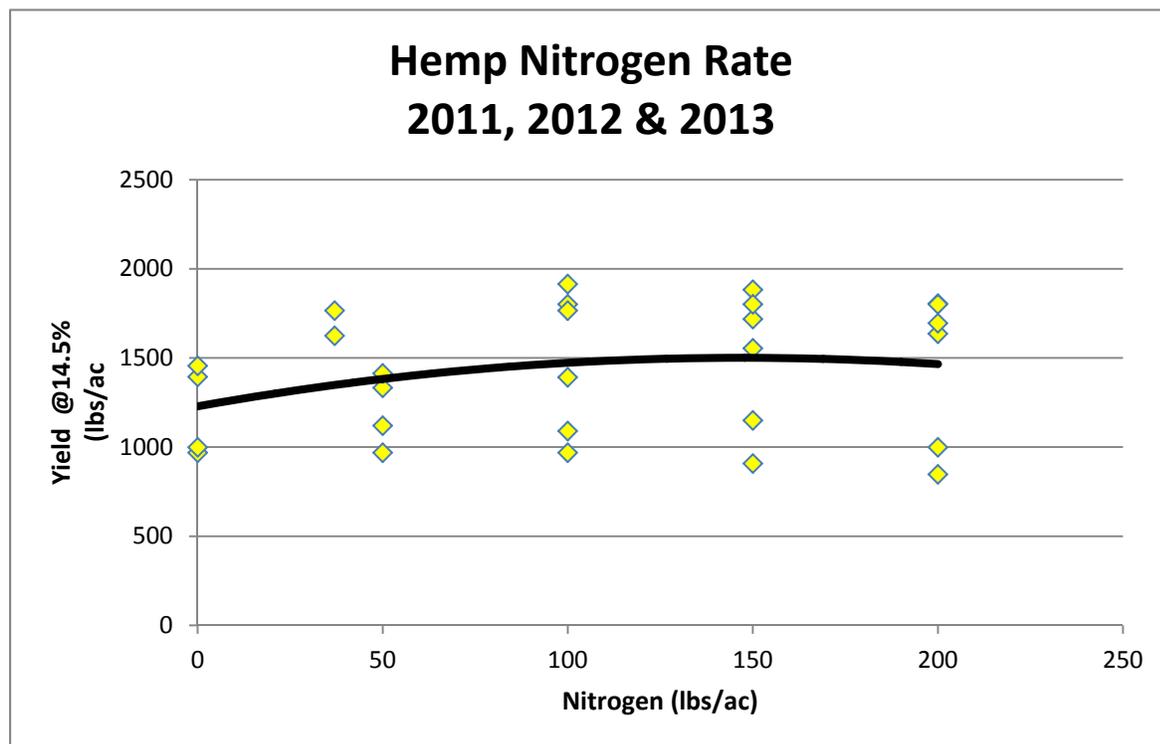


Results:

Table1: Hemp Grain Yield Response To Nitrogen In 2011 - 2013.

N Rate (lbs/ac)	Yield @14.5% moisture (lbs/ac)		
	2011	2012	2013
0	1,425	984	n/a
37	n/a	n/a	1,695
50	1,373	1,044	n/a
100	1,653	1,029	1,783
150	1,800	1,029	1,677
200	1,720	923	1,748

Chart 1: Hemp Grain Yield Trendline Response to Applied Nitrogen



Summary:

The project was to evaluate nitrogen fertility rates in a commercial production setting effort to determine the optimum nitrogen rate for grain hemp. Table1 shows the Hemp Grain Yield response to Nitrogen in 2011, 2012 & 2013, respectively. 2012 was an extremely dry year, resulting in little difference between N rates. 2013 was a wet spring and the crop had to be replanted in late May and may have impacted on available N later in the growing season.

Chart 1 shows a trendline of grain yield for the respective N rates for each of the 3 years. Based on the cost of urea N fertilizer of \$650 per tonne and Hemp Grain at \$0.65 cents per pound (\$1,433 per tonne), the calculated Most Economically Rate of Nitrogen (MERN) is 100 lbs/ac.

Next Steps:

Given the extreme weather variability from year to year, more years of nitrogen response data would strengthen the optimum N rate to be recommended. If possible the trial should be repeated in 2014.

Acknowledgements:

Projects co-operator Reuben Stone, OMAF Field Crop Technician - Victory Yuill, Renfrew and Ontario Soil & Crop Improvement Association.

Project Contacts:

Scott Banks, OMAF, Kemptville, Scott.Banks@ontario.ca

Location of Project Final Report:

Crop Advances, Ontario Soil & Crop Improvement Association at:
<http://www.ontariosoilcrop.org/en/resources/cropadvances.htm>