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Sugarbeet Nitrogen Response Following Wheat

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Location: Saginaw Valley Research and Extension Center	**Tillage**: Conventional with light S-tine at sidedress
Planting Date: April 5, 2012 (Harvest 10/5/12)	**N Rates**: See below
Soil Type: Clay loam; 2.9 OM; 7.8 pH; 40 ppm P; 183 ppm K	**Population**: 4 ¼ in. spacing
Variety: Hilleshog 9042 Roundup Ready	**Replicated**: 4 replications

N Trt. (Total lb. N/A)	RWSA	RWST	Tons/A	% Sugar	% CJP	NH2	Amino-N
0 – Check	7683	293	26.2	19.8	94.7	124	7.3
40	8595	297	28.9	20.1	94.8	138	8.1
80	8786	290	30.2	19.8	94.4	167	9.8
120	9197	282	32.5	19.3	94.3	183	11.0
160	10197	287	35.6	19.6	94.2	224	13.5
200	9645	277	34.8	19.3	93.6	213	12.8
240	9605	274	35.0	19.1	93.6	249	14.9
$LSD_{(0.10)}$[a]	**892**	**8**	**2.8**	**0.4**	**0.5**	**42**	**2.7**

[a] LSD, least significant difference between means within a column at ($\alpha = 0.10$).

N Trt. (Total lb. N/A)	Gross Grower Payment ($/A)	Net Economic Return Minus N Costs ($/A)[b]	Net Economic Return Minus N Costs and Trucking ($/A)[c]
0 – Check	1787	1787	1696
40	1999	1973	1872
80	2044	1992	1886
120	2139	2061	1948
160	2372	2268	2143
200	2244	2114	1992
240	2234	2078	1956
$LSD_{(0.10)}$[a]	**207**	**207**	**198**

[a] LSD, least significant difference between means within a column at ($\alpha = 0.10$).

[b, c] Gross grower payment and net economic returns based upon a $65/ton payment, an average RWST equal to the company average, an N price of $0.65/lb., and trucking costs of $3.50/T.

Comments/Summary: Trial was conducted to more accurately determine sugarbeet nitrogen fertilizer needs and nitrogen response following wheat. All treatments received 40 lbs. N/A as 28%, 20 lbs. P_2O_5/A, 50 lbs. K_2O/A. and 2 lbs. Mn/A as starter placed 2x2 on April 5 (check plots did not receive any N). The 40 lb. N/A treatment received no supplemental N beyond the starter application. Sidedress N (urea) applications were completed on May 14 and were followed by a light cultivation to avoid N volatilization. Total nitrogen rate had a significant effect on all yield, sugar quality, and economic parameters. The 160 lb. N treatment yielded greater tonnage and RWSA as compared to all other N treatments. When factoring in grower payment in addition to nitrogen and trucking costs, 160 lb N/A provided the greatest return on investment. Soluble N compounds increased up to the 160 lb N treatment but the 200 lb N rate appeared to promote enough top- and root-growth to dilute both NH_2 and amino-N concentrations. Soluble N compounds did not approach excessively high levels until the N rate of 240 lbs. N/A. Data following wheat indicate that 160 lbs. total N may be required to maximize sugarbeet yield and economic return. Net economic return is based on a $65/ton payment, an average RWST equal to the company average, an N price of $0.65/lb., and trucking costs of $3.50/T.