

### Polymer-Coated Urea as N Source for Sugarbeet Production

Kurt Steinke and Andrew Chomas, Michigan State University

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

N Trt. (Total lb. N/A)	Sidedress (2-4 lf) Lb. N/A	RWSA	RWST	Tons/A	% Sugar	% CJP	NH2	Amino-N
40 <sup>a</sup>	0	8595	297	28.9	20.0	94.8	138	8.1
80	40 - Urea	8786	290	30.2	19.8	94.5	167	9.8
120	80 - Urea	9197	282	32.5	19.3	94.3	183	11.0
160	120 - Urea	10197	287	35.5	19.6	94.2	224	13.5
200	160 -Urea	9645	277	34.8	19.3	93.6	213	12.8
120	80 – ESN (PRE-PLANT)	9120	285	32.0	19.5	94.1	324	19.2
200	160 – ESN (PRE-PLANT)	9119	269	33.9	18.8	93.3	258	15.4
<b>LSD<sub>(0.10)</sub><sup>b</sup></b>	----	----	<b>9</b>	<b>3.2</b>	<b>0.4</b>	<b>0.4</b>	<b>110</b>	<b>6.5</b>

<sup>a</sup> All plots received 40 lbs. N/A as 28% applied 2x2 starter.

<sup>b</sup> LSD, least significant difference between means within a column at ( $\alpha = 0.10$ ).

**Comments/Summary:** Trial was conducted to determine the effects of polymer-coated urea (ESN, Environmentally Smart Nitrogen) on sugarbeet production and quality. ESN is one example of a polymer-coated urea product that functions as a slow-release N fertilizer by metering the N release through the polymer coating. All treatments received 40 lbs. N/A as 28%, 20 lbs. P<sub>2</sub>O<sub>5</sub>/A, 50 lbs. K<sub>2</sub>O/A. and 2 lbs. Mn/A as starter placed 2x2 on April 5. Sidedress N applications of urea were completed on May 14 and were followed by a light cultivation to avoid N volatilization. In order to initiate the N release process early, polymer-coated urea was applied as a pre-plant application on April 5. At similar N rates, polymer-coated urea and urea obtained similar tonnage, RWSA, RWST, % sugar, and % CJP. Polymer-coated urea did increase soluble N impurities within the beet. The extremely dry weather conditions of 2012 may have delayed N release until later in the growing season as evidenced by green tops at harvest (personal observation) and elevated levels of soluble N. Slow- release nitrogen products such as polymer coated urea offer the benefit of reduced number of trips/applications through the field but will need to be considered along with trends in overall precipitation.