American Crystal Sugar Company
AgNotes

569 – Effective Nitrogen Management Strategies

July 25, 2012

NITROGEN MANAGEMENT WAS CRITICAL TO SUCCESSFUL SUGARBEET PRODUCTION SINCE THE CROP FIRST WAS GROWN IN THE RED RIVER Valley in 1918. Nitrogen management remains just as critical yet today. Many more tools are now available to fine tune your nitrogen management plan to maximize crop yield and quality, improve storage and increase factory efficiencies. Just as green manure crops and summer fallow disappeared as management options, fall applying 100% of your anticipated N needs may also have to change. You are strongly encouraged to carefully consider if change will benefit your farm business.

Utilize every option available to maximize your N fertilizer use efficiency. Precision N Management options include:

- Soil testing to a 4-foot deep
- Use of N stabilization and controlled release products
- Zone soil testing
- Variable rate N fertilization
- SPLIT N applications with use of sidedressing equipment - This practice is common in corn production why not beets?

Refining Your N Management Plan

- Obtain soil samples to an accurate 4' depth
- Use a local soil testing lab with a reputation for quality service
- Use satellite imagery or other reliable Precision Ag information to obtain soil samples by management zone

- Review past history of N application rates versus yield and quality on your farm
- Apply 65-75% of your anticipated N needs in the Fall of 2012
- Sidedress additional N as needed by the 8-leaf stage of the crop in the Spring of 2013

Table 1: Effect of Total Available N, 0-4 ft. on Recoverable Sugar and Gross Revenue Per Acre. 6 Year Average (2006-2011)

Available N-lbs.					
Factor	0-100	101-120	121-140	141-160	161+
RSA (lbs.)	7986	8333	8059	8241	8143
Rev/A ($)	1330	1394	1351	1388	1359

Establish a target total available nitrogen level for each field. Consider soil test residual N, plus expected N mineralization from organic matter, plus added fertilizer. Then adjust the side-dress N rate up or down based on these factors.

How to Determine Amount of N to Sidedress in the Spring

Factor	Yield Impact	Sidedress N Rate
Early Planting	Increase	Increase
Late Planting	Decrease	Decrease
Excellent Stand Establishment	Increase	Increase
Poor Stand Establishment	Decrease	Decrease
Low Stored Soil Water	Decrease	Decrease
Soils at Field Capacity in the Spring	Increase	Increase
Low Quality Beet History	---------	Decrease
Low Yield History	---------	Increase
Heavy Soil Type	Decrease	Increase
Light Soil Type	Increase	Decrease

Factor	Yield Impact	Sidedress N Rate
High Organic Matter	Increase	Decrease
Low Organic Matter	Decrease	Increase

Zone soil testing and variable rate fertilization increases yield, quality and revenue per acre. Using multiple targets for zones for total available nitrogen increases revenue per acre compared to using only a single nitrogen rate target.

Table 2: Effect of Soil Test Type on Recoverable Sugar Per Acre and Gross Revenue Per Acre. 6 Year Average (2006-2011)

Soil Test Type	RSA (lbs.)	Rev/A ($)
Not Tested	7237	1182
Conventional	8034	1329
Zone-Single Target	8198	1367
Zone-Multiple Target	8342	1388