American Crystal Sugar Company
AgNotes

404 – Fertilizer Recommendations Changed For 2002 Crop In MN and ND

August 07, 2001

A sound nitrogen fertilizer management plan is the basis for achieving maximum on-farm profit from sugarbeet production. The American Crystal payment program is based on delivery of high quality beets in both prepile and stockpile harvests. Fertilizer recommendations have not been changed since 1988. NDSU and the U of MN research over the past 12 years indicate fertilizer recommendation changes are needed. Grower practices system data at American Crystal Sugar Company complement research results and point to a need for recommendation changes too. **Improving recoverable sugar/ton by 2 lbs. increases revenue per acre by about $8.00 on a 20 ton per acre crop.**

Changes Implemented for 2002

- The use of yield goals has been discontinued
- Phosphorus requirements for the crop have been reduced
- Potassium requirements for the crop have been reduced
- N requirements have been reduced

Soil Sampling Depth	Old Method Recommendation	New Method Recommendation
0-2'	Soil test plus fertilizer N added = 120 Lbs./A	Soil test plus fertilizer N added = 100 Lbs./A
0-4'	Soil test plus added N fertilizer = 150 Lbs./A	Soil test plus added N fertilizer = 130 Lbs./A

- All soil test nitrogen below 2' deep is considered 100% available.

- Residual soil test N, 0-2' deep, plus added fertilizer should total 65 Lbs./A at planting, if additional 2-4 ft. N is available to meet crop needs.

Grower Practice Records Support Changes

When available N exceeded 90 Lbs./acre based on 2 or 4 foot soil tests, sugar per acre decreased by about 200 Lbs., Table 1 and Table 2.

Table 1: Yield and quality of ACSC fields based on 0-2 foot soil samples - 1996-2000.

Available Soil Test Plus Fertilizer N Applied (lbs)	Number of Fields	Recoverable Sugar	
		Per Ton (lbs)	Per Acre (lbs)
0-90	2,453	320	6,720
91-110	5,565	321	6,581
111-130	14,865	324	6,512
130 +	5,325	321	6,516

Table 2: Yield and quality of ACSC fields based on 0-4 foot soil samples - 1996-2000.

Available Soil Test Plus Fertilizer N Applied (lbs)	Number of Fields	Recoverable Sugar	
		Per Ton (lbs)	Per Acre (lbs)
0-90	443	326	6,911
91-110	770	325	6,728
111-130	4,818	326	6,553
131-150	9,073	325	6,598
150 +	10,172	319	6,571

Phosphorus has been found to increase root yields, but not quality in soils low in phosphorus. Since P is immobile in the soil, recommendations are based on a soil sample from the surface 6-8 inches. The P soil test does not measure the P utilized by the plant, as is the case with the nitrate test. The P soil test is only an index, which has been correlated to crop responses to P fertilizer field research (Table 3).

Table 3. New phosphate recommendations for sugarbeet

Soil Test Phosphorus, ppm					
	VL	L	M	H	VH
Bray P1	0-5	6-10	11-15	16-20	21 +
Olsen P	0-3	4-7	8-11	12-15	16 +
Lb P205/Acre					
	80	55	35	10	0

Potassium is required for normal sugarbeet growth. It is not a mobile element in the soil. The soil test is based on a chemical extraction method from a 6-8 inch deep soil sample. Potassium should not be placed in contact with the seed. The majority of soils used for sugarbeet production do not require potassium fertilizer be applied. If soil testing indicates potassium is needed apply according to the revised recommendations given in Table 4.

Table 4. New potassium recommendation for sugarbeet

Soil Test Potassium, ppm				
VL	L	M	H	VH
0-40	41-80	81-120	121-160	160 +
LB K20/Acre				
110	80	50	0	0

Private and public soil testing labs in MN and ND have been appraised of these changes in fertilizer recommendations. To review research data supporting these changes see the fertilizer rate research information available in the soil management section of annual Sugarbeet Research and Extension reports. This information is also available on the Internet at www.sbreb.org.

For a more detailed description of fertilizer recommendations for the 2002 crop contact:

- Your agriculturist
- Al Cattanach, General Agronomist, American Crystal Sugar Company
- University scientists at NDSU and the University of MN

Beet Top N Credits Valuable

Small grain fields are lodging very badly in many fields in the RRV this summer. Much less lodging is being observed in fields fertilized based on satellite imagery of 2000 beet fields. Use of N credits reduced fertilizer costs and improved the 2001 grain crop as well.

Cercospora Control

All early-planted fields should have been sprayed at least once. Be sure and alternate classes of fungicides to reduce resistance development to fungicides.