2026 Nutrient Management Quicksheet

Soil Sampling

1. Get a soil test. The soil test should be used in field selection for sugar beet production and also for planning the amount of nutrients needed for optimum production. For organic matter (OM), pH, phosphorus (P), and potassium (K), a soil sample taken to a depth of 6 inches is needed. For soil nitrate-N, a soil sample taken to a depth of 42 to 48 inches is recommended. Soil samples taken at shallow depths will not provide the best information for N management.

2. Soil samples should be taken based on the zones defined by the organic matter soil mapper program provided by SMBSC or other zone-based management program. The use of proper zones will reduce the chance of missing an area in the field that is low testing (thus an application that is not enough to optimize root yield and quality) or high testing (this would result in an application of N that is too high for optimum root yield and quality). The more intense the soil sampling, the better the chance of a good prediction of N fertilizer needs.

3**. The nitrogen nutrient recommendation is a total of soil test nitrate-N to 42 to 48 inches + fertilizer N should equal 150-170lbs N/A following field corn and 130lbs following all other crops.** The soil sample for nitrate-N should be taken in late fall or early spring before fertilizer N application. The closer to the growing season the soil sample is taken, the better the predictability of the soil test for the N needs of the crop. The 2020-2025 Nitrogen Research Report is available on the SMBSC website and outlines the data and environmental conditions that have led to an increase in the nitrogen recommendation following field corn.

Fertilizer Application

1. Nitrogen can be applied on heavy textured non-irrigated soils in the spring pre-plant. There is little need to side dress N on non-irrigated heavy textured soils. Again, information from research work has shown no advantage to the use of a split application of N. Nitrogen application for sugar beet grown on irrigated sandy soils is different; a split application should be done, half just prior to planting and half around the 6 to 8 leaf stage. If the nitrogen fertilizer cannot be applied prior to planting due to time/equipment/labor constraints, apply the nitrogen as a side dress application prior to the 4 to 6 leaf stage.

2. Phosphorus fertilizer application should be based on the Olsen soil test if pH is greater than 7.4 and the Bray P1 soil test if the pH is less than 7.4. If you have very low, low, or medium soil test P, consider the use of 3 gallons of a liquid starter fertilizer such as 10-34-0 per acre at planting. The use of the pop-up application will help early sugar beet growth. A broadcast phosphorus source (MAP, DAP, etc.) is also recommended in addition to starter for very low or low testing fields.

3. Potassium is the third major nutrient to consider for a nutrient program. If the soil test is greater than 150 ppm, there is no need to apply K for sugar beet production.

4. There has been little evidence that other nutrients are needed for sugar beet production. If you are growing sugar beets on irrigated sandy soil, boron may be needed. Apply boron with great care. The recommended rate would be 2 lb/A in a broadcast application. Seed application of boron is not recommended. There is no need for boron on heavy textured soils.

Urea Impact on Emergence

Recent studies have shown a significant negative impact on germination and emergence of sugar beet seedlings when application rates reach 90lbs of nitrogen applied as spring urea. If the amount of nitrogen that will be applied exceeds 90lbs it is recommended to use a blend of urea and ESN to keep the urea portion below 90lbs of N. This strategy was used successfully in several trials in 2025 to improve emergence (data shown on right). Another strategy would be to split apply the nitrogen. Up to 90lbs of N as urea could be applied prior to planting and the remaining nitrogen needed could be applied at the 6-8lf stage. Both of these strategies will help reduce any negative impact on germination and emergence following the spring nitrogen application.

Nitrogen Losses: Urea should be incorporated to avoid ammonia volatilization caused by urease enzymes that is prevalent in field corn residue. Broadcasting UAN without incorporation preplant or pre-emerge would not be recommended for the same reason.

	N Rate (lbs/acre)		Stand per 100' row	
Trt	**Urea**	**ESN**	**Lake Lillian**	**Renville**
1	0	0	217.5 a	128.8 ab
2	30	0	208.8 ab	153.8 a
3	60	0	193.8 abcde	113.8 bcde
4	90	0	188.8 bcde	92.5 cde
5	120	0	191.3 bcde	81.3 ef
6	150	0	176.3 e	97.5 bcde
7	**180**	**0**	**177.5 de**	**52.5 f**
8	210	0	183.8 cde	48.8 f
11	60	30	203.8 abc	122.5 abc
12	30	60	200.0 abcde	116.3 bcd
13	0	90	201.3 abcd	100.0 bcde
14	**120**	**60**	**188.8 bcde**	**105.0 bcde**
15	**60**	**120**	**202.5 abc**	**106.3 bcde**
16	**0**	**180**	**208.8 ab**	**118.8 bcd**
Mean			197.4	101.7
CV%			8.8	23.0
Pr>F			0.0401	<0.0001
lsd (0.05)			24.6	33.3

P and K Recommendations

	Soil test phosphorus, ppm					Soil test potassium, ppm				
	Very Low	Low	Med	High	Very High	Very Low	Low	Med	High	Very High
Bray P1	0-5	6-10	11-15	16-20	21+					
Olsen P	0-3	4-7	8-11	12-15	16+	0-40	41-80	81-120	121-160	161+
	-------- lb P_2O_5/acre --------					-------- lb K_2O/acre --------				
Rate	80	55	35	10	0	110	80	50	15	0

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Agricultural Department
Southern Minnesota Beet Sugar Cooperative