

Quicksheet for Fertilizing Sugar Beet

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July 20, 2018

Soil Testing

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 needed. Soil samples that are taken for shallow depths will not provide the best information for N management.

2. The 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.

3. The soil nitrate-N test is important for selection of the field to grow high quality sugar beets. If the soil test is greater than 150 lb N/A then seriously consider a different field for sugar beet production. The nitrogen nutrient recommendation is a total of soil test nitrate-N to 42 to 48 inches + fertilizer N should equal 100 to 110 lb N/A. A soil sample for nitrate-N can be taken either in the fall or spring. For the fall soil sample, the later in the season the sample is taken (the closer to the time soil temperatures reach 50 degrees) the better the predictability of the soil test on N needs for the crop.

Fertilizer Application

1. Nitrogen can be applied on heavy textured non-irrigated soils either in the fall after the soil temperature have gotten below 50 degrees or in the spring pre-plant. There is little need to side dress N on non-irrigated heavy textured soils. 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.

2. Phosphorus fertilizer application should be based on the Olsen soil test if your pH is greater than 7.4 and the Bray P 1 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 10-34-0 per acre with the seed at planting. The use of the pop-up application will help early growth.

3. Potassium is the third major nutrient to consider for a nutrient program. If the soil test is greater than 120 ppm, there is no need to apply K for 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 B/A in a broadcast application. Seed application of boron is not recommended. There is no need for boron on heavy textured soils.

Additional Information

1. A word about N sources that are not fertilizer; particularly manure and alfalfa. If you have a manure application or a previous crop of alfalfa history, follow the above soil testing and guidelines. Do not over apply manure in amount or in frequency in the rotation. Manure will provide a large amount of N through mineralization along with many of the other nutrients needed by sugar beet. With alfalfa, sugar beet should not be grown the first two years after alfalfa is broken out.

2. Finally, plan your nutrient program looking forward more than a year in advance. Do not over fertilize other crops in rotation with sugar beet.

Fertilizer Recommendations

Nitrogen, phosphate, and potash broadcast recommendations for sugar beet grown in the Southern Minnesota Beet Sugar Cooperative growing area.

		Soil test phosphorus, ppm					Soil test potassium, ppm				
		VL	L	M	H	VH	VL	L	M	H	VH
Soil nitrate-N plus fertilizer N required	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/acre-2'	lb/acre- 4'	----- lb P ₂ O ₅ /acre -----					----- lb K ₂ O/acre -----				
80	100	80	55	35	10	0	110	80	50	0	0

Nitrogen guidelines if Organic Matter Zone mapper is used. Soil test to a depth of 48 inches.

- 0-3 % = 130 lb soil test nitrate-N+ fertilizer N/A
- 3-4 % = 120 lb soil test nitrate-N+ fertilizer N/A
- 4-5 % = 110 lb soil test nitrate-N+ fertilizer N/A
- 5-7 % = 100 lb soil test nitrate-N+ fertilizer N/A
- >7 % = 80 lb soil test nitrate-N+ fertilizer N/A