

7.1.2 Fertilizing Right

Sugar Beets

Fertilizer:

- Nitrogen
 - Most limiting factor
 - Apply at rates based on expected crop yields, minus credits for residual soil nitrates in the top 4 feet of soil and nitrogen mineralized from soil organic matter
 - Do not apply manure to fields prior to planting sugar beets
 - Needs low levels during midseason so that the beet produces more sugar for harvest
- Phosphate
 - Apply at rates based on soil test results
 - Some areas may not need much or any application

Table 1. Reduction in sugar content of sugar beet with increasing N availability. (Adapted from Smith, 1984). Studies conducted recently on modern sugar beet cultivars support this relationship.

Nitrate-N, 0-2 foot depth plus fertilizer N lb/a	Sugar content %	Recoverable sucrose lb/acre
100	14.4	6,040
150	13.2	5,600
200	13.1	5,440
300	12.6	5,110

Types of Fertilizers:

- Nitrate nitrogen
- Phosphorus in ppm
- Add potassium if there are two prominent soil clays: smectite and illite
- Sulfur not needed unless soil sample says that you will need it

Table 4. Guidelines for sugar beet fertilization with P, considering the starter P option.

Olsen soil test P, ppm	Recommendations
12+	Apply no P fertilizer
12	Fall applied P, use recommended P broadcast rate, Table 2
8-11	Use either 3 gal/acre 10-34-0 or recommended P broadcast rate, Table 2
1-7	3 gal/acre 10-34-0 + 40 lb P ₂ O ₅ broadcast

Fertilizer	Rate	Time	Place
N & P	Based on acres/sugar content/time of year	Apply early spring; none during mid-summer or fall	NW MN; all ND

Environmental Impacts:

- If nitrogen is applied to sugar beets during the mid-summer months then the sugar content during harvest will be less.
- Too much nitrogen decreases yields as well as harms the environment due to runoff - algae blooms become too aggressive
- Groundwater contamination if not all fertilizer is taken up by the plant
- Nitrogen, once in the ground, can remain there for years in the form of nitrates
- Acid rain
- Ozone depletion
- Maintain wildlife habitat by not have to clear cut a forest because the land is not sustainable for using for crop production any longer
- Can use organic fertilizers/natural fertilizers