

# **SMBSC Soil Fertility Analysis Program – Crop Year 2024**

With the highly fertile and productive soils in the SMBSC growing area, precise management of available nitrogen is critical to maximize sugar per ton and per acre. As the number of fields submitted for the program has decreased to less than 50 percent, we have realized the need for more incentive to participate. The driving force behind this incentive is the need to grasp the quality aspect of our crop rather than strictly yield, especially considering recent yield trends. The shareholders have been able to deliver higher tonnage yields through their practices, and possibly through the increased nitrogen rate recommendation by SMBSC. It is the intention of the SMBSC Ag department to target maximum crop quality and maintain a robust soil fertility database for use by shareholders, agriculturalists, and industry agronomists. **In an effort to increase participation and reinforce the dependability of our soil data, it has been decided to increase the qualifying field incentive for soil sampling to \$5/A.**

Participation in the SMBSC soil fertility analysis program and Ag Practice Database are vital tools for identifying fertilization management options and strategies that are capable of improving sugarbeet yield and quality, as well as shareholder revenue.

## **Soil Fertility Analysis Program Requirements for the 2024 Crop**

Soil samples can be submitted to either Agvise or MVTL for analysis. Discuss with your soil sampler where your samples will be sent for analysis. This document will serve as the official policy for the program. Determination of meeting the minimum program criteria and subsequent reimbursement will be at the discretion of SMBSC.

The requirements for the Soil Fertility Analysis Program include the following changes;

- Lat/long replacing 40 codes
- Minimum Nitrate sample depth reduced to 24"
- \$5/acre incentive only for 36" minimum depth nitrate fields meeting full program criteria

Soil samples can be submitted to either Agvise or MVTL. Contact Agvise at 320-843-4109 or MVTL at 800-782-3557 for information on how to submit samples to each lab and for the proper forms.

The program criteria for analysis compensation by SMBSC are as follows;

- 1) Samples should be taken by management zones or grid system. Fields sampled with only one composite sample for the entire field will not be compensated.
  - a) Fields sampled by management zones should have a minimum of one composite sample taken per management zone, with a minimum of two zones.
  - b) Where management zones are quite large, multiple samples should be taken from the zone. This does not disqualify reimbursement within the program.

- c) Best practices are to utilize 6 - 8 soil probes per composite sample should be taken on management zones less than 30 acres, and 8 - 12 soil probes should be taken per composite sample on management zones greater than 30 acres.
- 2) Analyze 0 - 6" for N, P, K, OM, and pH.
- 3) 24" minimum sample depth for nitrate nitrogen (48" preferred).
  - a) Analyze 6 - 24" for nitrate nitrogen. **Minimum program requirement.**
  - b) Analyze 24 - 36" + for nitrate nitrogen. **This is mandatory to qualify for \$5 incentive.**
  - c) **Nitrate samples must be submitted after September 15<sup>th</sup>.**
- 4) Fields must be planted to sugar beet for the successive season.
- 5) SMBSC will pay 100% of the sample analysis fees for the above required tests for all fields sampled, planted to sugar beets in the subsequent year, and submitted through the SMBSC Soil Fertility Analysis Program. To be eligible for this compensation, all requirements for the Soil Analysis Program must be met for each field submitted to the program. If the 36" minimum depth nitrate test is performed, the shareholder will receive a \$5/acre incentive. This compensation will be paid directly to the SMBSC shareholder through a line item on the subsequent November sugarbeet checks.
- 6) In addition to the nutrients listed above, SMBSC will also accept and pay the analysis fees on nitrogen-only samples when nitrogen is the only nutrient analysis requested, but these fields would not be eligible for the \$5/acre incentive.
- 7) SMBSC recommends soil testing after 4" soil temps fall below 50° F is a good agronomic practice. This avoids changes from nitrate mobility at higher temperatures.

Soil samples not meeting all the above criteria can still be submitted to either lab under the SMBSC program; however, because not all the criteria are met, the cost of the sample analysis will be deducted from the shareholder's November sugarbeet payment. This also applies to additional tests such as sulfur, zinc, or boron, which will be deducted from the grower payment.

## **Field Identification**

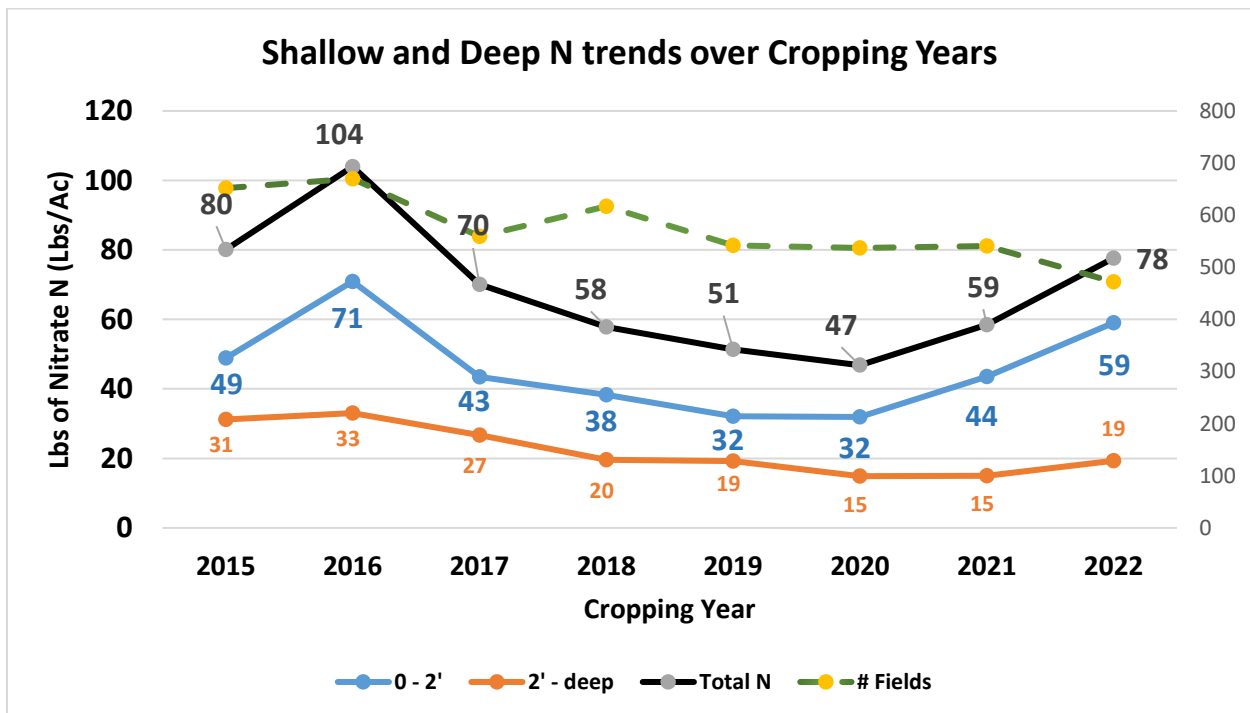
For many years the soil sampling program has utilized 40 codes for geospatial verification of sugarbeet fields and their matching samples. Starting in 2024 the official accepted format for field location will be in decimal Latitude, Longitude format. Coordinates for each sample are not necessary. One Lat/Lon coordinate for each field, copied for each sample, will be accepted if the coordinate point is inside the field border. Example coordinates; **44.814825, -95.174153**

## **Nitrogen Recommendations**

Nitrogen management is an extremely important part of sugar beet production. The presence of excess nitrogen fertilizer decreases sugar content and overall beet purity, which when combined results in decreased sugar production in your factory. High-quality nitrate nitrogen samples taken at the proper time and recommended depth are an important part of a nitrogen management program. **SMBSC data over 10 years and 19 trial locations suggest managing Nitrogen to 130 total lbs. per acre (+/- 20 lbs. depending on individual field circumstances). This total includes (residual + applied) based upon the use of a four-foot soil sample.** Adjustments

upward or downward from the recommended range may be required to compensate for fields possessing high organic matter and/or a history of manure applications.

Due to no longer requiring deep nitrate samples for the program, recommendations for nitrogen fertility should be made carefully with several factors taken into consideration. Factors such as previous crop, yield of previous crop, rainfall, mineralization potential of soil types and textures, tillage practices and crop plans should all be considered. From 2018 through 2022 our average nitrate between 24” and 48” was 16.81 lbs, but samples have been recorded in excess of 100 lbs. This is a good reason to consult with your agriculturalist and agronomist for nitrogen recommendations in your sugarbeet crop. The following chart shows our nitrate trends over recent years and can serve as an indicator for general trends and aid in recommendations.



Through the soil analysis program there is a large dataset including over 25,000 samples with the following 5 year(2018-2022) averages on 24-48” soil test nitrate;

<b>Max</b>	<b><u>420.00</u></b>
<b>Min</b>	<b><u>0.00</u></b>
<b>Median</b>	<b><u>12.00</u></b>
<b>Mean</b>	<b><u>16.81</u></b>
<b>Std. Deviation</b>	<b><u>16.49</u></b>

Please note the wide swing from Max to Min, and all factors should be considered before making recommendations without a deep nitrate sample.

## **SMBSC Management Zone Maps and Mapping Program**

SMBSC recommends that soil samples be taken on a management zone or grid basis. Soil sampling and fertilizer application by the management zone is an important part of increasing sugarbeet quality and revenue. In 2012 SMBSC introduced a zone mapping program for use in our shareholders' sugarbeet fields. SMBSC's goal for this program is to increase cooperative average sugar content and maximize sugar production per acre by applying nitrogen fertilizer to zones that identify a need for additional nitrogen, and to refrain from over-application of nitrogen to zones possessing high organic matter and higher residual nitrogen. This system uses bare soil imagery to delineate management zones within fields for soil sampling. These zones are useful for soil sampling fields or may be added as a layer to management zone maps you may already be using on your farm.

Discuss the SMBSC zone mapping system with your soil sampler for use on your 2024 sugar beet fields. Contact Jody Steffel at 320-329-4144 for questions regarding the SMBSC zone mapping system.

### **Summary**

The SMBSC Soil Fertility Analysis Program and Zone Mapping Program were implemented to help shareholders raise higher quality sugar beet crops, and to obtain quality soil fertility information for the SMBSC Agronomic Practice Database. Although it is impossible to design a program that fits all operations or field specifics, we are interested in any suggestions that could make the program better. Please forward any suggestions or questions that you may have regarding the SMBSC Soil Fertility Analysis Program to [cody.bakker@smbc.com](mailto:cody.bakker@smbc.com)

SMBSC would like to thank all past participants in the SMBSC Fertility Analysis Program and encourage everyone to take advantage of the program for their next high quality sugar beet crop.

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