AGVISE LABORATORIES

Timely Information for Agriculture

Fall 2025

INSIDE:

NORTHERN NOTES

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Scattered and sporadic. That about summarizes the rainfall patterns across the northern Great Plains and Canadian Prairies. Growing season precipitation ranged from too much or just right to not enough. Extreme drought in northern Manitoba and Saskatchewan stoked severe wildfires that brought extensive smoke drifting across the region. We know that smoky and hazy days will filter sunlight and reduce air temperatures, but does this filtering cause a reduction in photosynthesis and crop productivity too?

Over the past decade, plant physiologists have been studying this question as wildfire smoke has become a more common summer phenomenon. It comes with positive and negative effects for crop growth. On the negative side, the total amount of solar radiation reaching the plant canopy is reduced, offering less energy to facilitate photosynthesis and carbohydrate production. Wildlife smoke can also carry ozone pollution, which is directly harmful to animals and plants alike. On the positive side, the smoke and haze scatters light in multiple directions, allowing deeper penetration of sunlight into the plant canopy than direct sunlight. The light scattering also helps reduce leaf surface temperatures, which can offer some relief to drought-stressed crops and lower water loss through transpiration.

In the end, the negative effects of wildfire smoke will be most pronounced during the reproductive stages when grain heads or seed pods are filling and a constant supply of carbohydrates from photosynthesis is required. It is hard to put a bushel number on the final effect on crop yield because the wildfire smoke can vary so much from day to day and year to year.

AGVISE Soil Fertility Seminar Dates are Set

The AGVISE Soil Fertility Seminar dates are set for 2026. These seminars cover soil fertility and plant nutrition topics along with other issues that currently challenge our region. You will not want to miss the great program lineup, so mark your calendar now! More details and registration will be sent in November.

Date	Location
January 6	Willmar, MN
January 7	Watertown, SD
January 8	Grand Forks, ND
March 3	Portage la Prairie, MB
March 5	Saskatoon, SK

New AGVISOR Online Portal Launch

We are happy to announce the new AGVISOR online portal launched in August 2025 for the fall soil sampling season. You can find the new portal at https://submit.agvise.com/ This endeavor was a complete overhaul of the AGVISOR Lite portal, first launched 15 years ago. AGVISOR Lite was a first-of-its-kind online platform for submitting and retrieving data online. The new AGVISOR portal provides a newer, more user-friendly interface and a fresh modern look. Similar to the preceding portal, you are able to submit samples, view and edit reports, export PDF and CSV results, and access billing history. Most of all, the new portal provides greater speed and stability during the peak busy season traffic and offers a solid framework to provide new features and enhancements in the future! The new portal also provides improved navigation and functionality on mobile phones and tablets (a frequent request over the years).

Our team is happy to help you navigate the new portal, help you view and export reports, and answer any questions. If you find any issues along the way, please let us know right away. A real person will answer your phone call.

Corn Stalk Nitrate Test

How do you score for corn nitrogen management? Each year, Mother Nature delivers different expectations for crop yield potential, nitrogen mineralization rates, and soil nitrogen losses. It is not always easy to know if you applied enough nitrogen fertilizer to maximize crop yield, or if you maybe ran short. To help you get a better handle on corn nitrogen management, the corn stalk nitrate test offers an end-of-season report card and opportunity to improve your nitrogen fertilizer plan for next year.

The corn stalk nitrate test is a helpful tool for assessing nitrogen sufficiency in mature corn stalks collected at physiological maturity (black layer, R6 growth stage). Iowa State University developed the corn stalk nitrate test and found that it has a strong relationship with soil nitrogen supply and corn grain yield (Binford et al., Agron. J. 82:124-129). If corn did not have sufficient nitrogen, the corn stalk nitrate concentration will be low (<250 ppm NO3-N). If the corn had excess nitrogen, the corn stalk nitrate concentration will be high (>2000 ppm NO3-N). The corn stalk nitrate test not only can tell you if you ran short, but also if you have been applying too much.

The corn stalk nitrate test is particularly useful in cropping systems with manure or corn-after-alfalfa, where a significant portion of the crop nitrogen budget comes from nitrogen mineralization. For corn silage production, it is easy to collect corn stalk samples on the go during silage harvest, making it a quick and practical tool. It is also helpful in corn-soybean rotations, where soil samples for residual soil nitrate-nitrogen are not typically collected before the soybean year. In a corn-soybean rotation, the corn stalk nitrate test might be your only opportunity to assess nitrogen management of the corn year. Take a look at your corn nitrogen management report card with the simple and practical tool that is the corn stalk nitrate test.

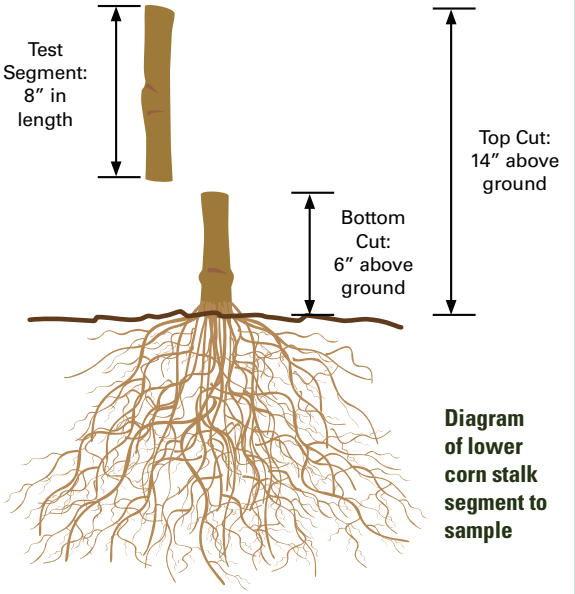


Diagram of lower corn stalk segment to sample

Collecting a good sample:

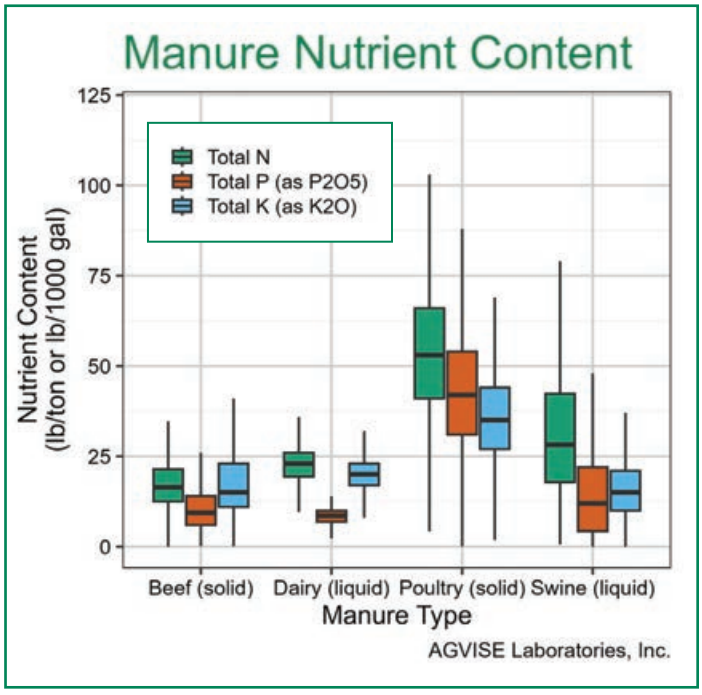
- Sample 1-3 weeks after black layer
- Collect 15 eight-inch stalk segments between six and 14 inches above the soil surface
- Randomly select stalks from about a one acre area that represents a larger area
- Separately sample different soil types and management areas
- Place stalks in paper bags, not plastic, for shipment to the lab
- Ship samples within one day or refrigerate until shipping

Corn stalk sampling instructions for end-of-season corn stalk nitrate test (from Iowa State Univ. Ext. Circ. CROP 3154, 2018).

Livestock Manure Sampling and Analysis

If you have access to livestock manure, do not forget to include this valuable resource in your crop nutrition budgets. Manure is an excellent source of plant-available nutrients and offers great economic savings, especially when fertilizer prices are high. When manure is applied properly, you can maximize the crop nutrient value, reduce nutrient losses, and comply with government regulations.

A proper manure nutrient management plan starts with soil and manure analysis. AGVISE Laboratories provides both soil and manure analysis as routine services to help you develop the right manure nutrient management plan. You might find "book values" with average manure nutrient contents for different manure types, but there is a lot of variability among manure sources from farm to farm. Would you purchase commercial fertilizer without knowing the nutrient analysis? I don't think so! The manure nutrient concentrations vary widely because of dry matter/moisture content, livestock species and age, bedding type, and feed rations. Each year, AGVISE analyzes thousands of manure samples, and the nutrient content range can be considerable. A manure analysis is a quick way to know the real dollar value in your manure.



A good manure analysis starts with a good manure sample. Here are a few tips and tricks in collecting a representative manure sample. AGVISE provides manure sample containers at no cost, so please contact us if you need manure sampling supplies.

Solid Manure

Collect several small samples using a shovel or pitchfork in the manure pile or bedding area, placed in a clean plastic bucket. Avoid the top or edges of the pile where a crust has formed. Mix the bulk sample well, then submit one subsample for analysis in a plastic jar (about 1 pint). Store in a refrigerator or freezer until shipped. Place in a tightly sealed plastic bag to prevent leakage in shipment. Multiple samples may be necessary if the storage area includes manure for different lengths of time.

Liquid Manure

Before sampling, the liquid storage system should be agitated to mix liquid and solids. Collect several samples in a clean plastic bucket. Mix the bulk sample well, then submit one subsample for analysis in a plastic jar (about 1 pint). Store in a refrigerator or freezer until shipped. Place in a tightly sealed plastic bag to prevent leakage in shipment.

Once the manure analysis results are back, you can begin creating a manure nutrient management plan with the soil and manure analysis results. The soil test results will determine the crop nutrient requirements to maximize crop yield and profitability. Then, subtract the amount of crop nutrients provided in manure (adjusting for manure nutrient availability), and apply any remaining crop nutrient requirements with commercial fertilizer. A good manure nutrient management plan will help you maximize economic return on manure inputs. In addition, check with local and regional government agencies for any special requirements in your area.

In recent decades, regulation and public concerns have changed the way we handle manure nutrient management. It is a valuable nutrient resource, which when managed properly, can increase profitability, improve soil properties, and protect the environment.

Better soil health starts with soil fertility

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"Feed the soil, not just the crop." It is a phrase gaining traction in today's conversations about soil health. The idea of soil as a living dynamic system is not new, but there is stronger interest in the role of soil microorganisms in supporting plant health and overall soil health. With current fertilizer and crop prices, some producers are asking if biological products or alternative cropping practices can replace traditional fertilizers and improve soil health without sacrificing crop yield or quality. A person needs to ask – *Does it pay in the long run to focus on feeding soil microorganisms, rather than focusing on crop yield and response to fertilizers? What long-term effect do fertilizers have on soil health? Is soil fertility the opposite of soil biology or soil health?*

The data is in–and the answer is no. Fertilizer does not harm soil biology when fertilizing based on crop nutrient requirements and soil test levels. In fact, proper fertilizer management is where healthy, productive soils begin! A review article published in the journal Soil Security showed that long-term synthetic fertilizer and manure nutrient inputs help increase soil organic matter and soil health metrics (Howe et al., Soil Security 16:100155). Another study demonstrated that fertilization positively altered soil properties in the rhizosphere, where most root and microbial activity occurs, and the soil profile beyond the rhizosphere (Tong et al., Comm. Earth and Environ. 6:602). In other words, healthy plants promote healthy roots, healthy microorganisms, and healthy soils.

This should not surprise anyone working in crop nutrition. We understand that producing a lot of plant biomass is the first step to adding carbon inputs to soil, feeding microorganisms, and created long-term stable soil organic matter. Simply put, we need productive plants first! The soil microorganisms utilize root exudates and leftover plant biomass second. If plants are nutrient deficient, we cannot expect them to make up the difference by sheer will and a go-get-'em attitude. For emphasis, a long-term no-till cropping experiment in Australia over 40 years showed restricted nitrogen fertilizer use had a faster decline of the soil nitrogen supply (organic N), along with lower wheat grain yields (Dalal et al., SSSAJ 75:2251-2261). Starving plants do not make for healthy soils.

I do not want to imply that fertilizer alone is the key to good soil health. You do not want to overapply fertilizer in a way that reduces profitability or misapply fertilizer that could be lost to the environment. We must continue to strive to maintain crop residue cover to protect soils from erosion, enhance soil organic matter, and preserve good soil structure. But, trying to accomplish these goals without a good soil fertility program and productive crops is much harder without nutrient inputs like fertilizer or manure in the system. A soil test-based crop nutrition program can enhance both soil nutrient availability and microbial populations in soil. Bottom line: Healthy soils start with healthy crops—and that starts with smart soil test-based fertilization.

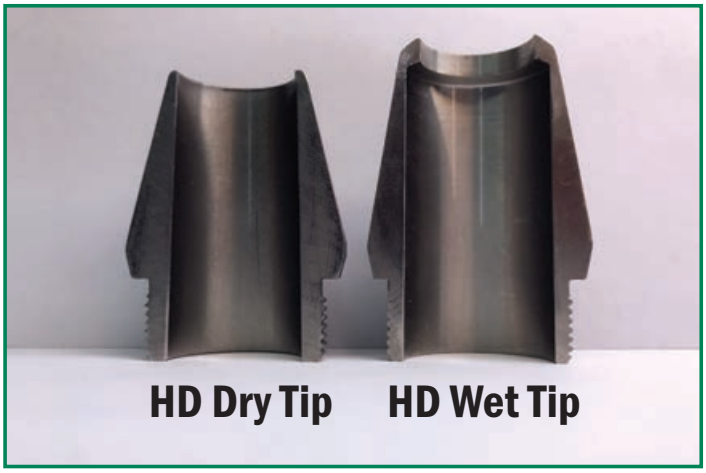
Fall Special: Hydraulic Soil Sampling Kit (24 inch)

AGVISE Laboratories is offering a fall special on the first 50 Hydraulic Soil Sampling Kits (24 inch) sold this fall. You will receive $200 credit on soil analysis for each kit purchased. The Hydraulic Soil Sampling Kit (24 inch) is priced at $3,400.00 USD. The kit includes a 12VDC electric-hydraulic pump, 30-inch hydraulic cylinder and mounting channel, two stainless steel soil probes (solid and slotted), two heavy-duty (HD) soil probes (solid and slotted), and a complete set of 5/8-inch, 3/4-inch, and wet-style tips for each soil probe type. The HD soil probe is ideal on hard, compacted, or frozen soils. You can view details of the Hydraulic Soil Sampling Kit (24 inch) on our website: https://www.agvise.com/product/hydraulic-soil-sampling-kit/

If you need to collect deep soil samples for deep-rooted crops like sugar beet and sunflower, we also have a 42-inch telescoping hydraulic cylinder system, which can be outfitted with an 8-HP Honda gas-powered hydraulic pump or large-capacity 12VDC electric-hydraulic pump. Please call for details on the 42-inch soil sampling systems.

Choosing the Right Soil Probe Tip for Wet or Dry Soil

Seasonal rainfall across the region has ranged from excessively wet to extremely dry. These soil conditions can pose a challenge for taking good quality soil samples, if you do not have the right equipment! To help you collect the best quality soil samples, AGVISE Laboratories provides different soil probe and tips options for our 24- and 42-inch hydraulic soil sampling systems. The stainless steel (SS) and heavy-duty (HD) chromoly steel soil probes each have wet and dry soil probe tips for adverse soil sampling conditions. The wet tip is ideal for very wet soils, high clay soils, and even frozen soils. It has a recessed lip just inside the opening, which allows the wet soil to flow into the soil probe without smearing and plugging inside the probe body. The dry tip features a cutting edge and larger opening for easier soil sampling in hard, dry soils. If you have not tried the wet or dry tips, you really must give them a try.



SOUTHERN TRENDS

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The growing season in the Benson territory started with early planting and dry soil conditions, reminding folks of the old adage, "Plant in the dust and bins will bust." However, those hopes were quickly dashed when heavy rains started in June and never stopped. Some locations recorded over 12 inches of rain for the month of June alone. Similar to 2024, the excessive rainfall created a lot of yellow corn once again. Yellow corn can indicate poor uptake of nitrogen, sulfur, or just extended waterlogged conditions and poor rooting.

We will need some dry and sunny days ahead for crops to finish on time. Another September with above average temperatures like last year would be a great and welcome surprise.

More Continuous Corn Acres?

With low soybean prices, continuous corn was a more attractive option for farmers in the upper Midwest in 2025. For farmers trying continuous corn for the first time, it is not as simple as following soybean each year. You must pay extra attention to hybrid selection, fertilizer plans, and insecticide choices for continuous corn. Excess crop residue buildup must also be managed effectively. Will we see more corn acres in 2026 too?

A high-yielding corn crop will require and remove higher nutrient amounts compared to other grain crops. This is true for phosphorus and potassium, which will require a consistent soil sampling program to ensure soil fertility is not limiting. The nitrogen fertilizer rates for continuous corn are also higher to account for nitrogen immobilization from excess crop residue.

Soil testing for nitrate-N in continuous corn systems is also important for optimizing nitrogen management. An eight-state Midwest study showed that the amount of residual nitrate-N after corn at the Economically Optimal Nitrogen Rate (EONR) ranges from 35-55 lb/acre in the soil profile (Bandura et al., SSSAJ 89:70105). This range indicates that enough nitrogen was supplied to maximize corn grain yield, but not too much to leave excess nitrogen in the soil profile and vulnerable to environmental loss. Additional nitrogen management tools include the Pre-sidedress Soil Nitrate Test (PSNT) for directing in-season nitrogen applications and the end-of-season Corn Stalk Nitrate Test (CSNT) to assess if enough nitrogen was supplied.

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PRESIDENT'S CORNER

CINDY EVENSON
PRESIDENT
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This summer would have been a great summer to be a duck! Too much rain in central Minnesota brought all the expected problems with nitrogen and sulfur deficiencies, diseases, and flooded fields. If you or your growers were hit by flooding and storms, we hope that your recovery goes well and look forward to next year.

We were excited to launch the new AGVISOR online portal in late summer. The new portal will be easier to navigate and allow for more enhancements in future years. If you have any questions, please do not hesitate to call either AGVISE office, and we will be happy to help you.

Both laboratories are prepared and ready for the 2025 soil testing season. Since last year, we have been working to improve daily laboratory throughput and added new instruments to increase daily capacities in the phosphorus, potassium, and zinc analysis sections. These improvements continue to enable us to process your soil samples promptly and return soil test data to you for fall fertilizer plans. With high fertilizer prices, we know that current soil test data is more important than ever.

I wish you a safe and prosperous fall harvest and soil sampling season ahead!