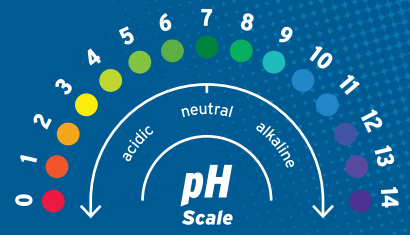
Soil Characteristics

In addition to a measure of primary and secondary nutrients (see *Soil Fertility Explained*), soil test results can also provide you with baseline information about your soil's ability to absorb and retain water and nutrients.



pH

- Soil pH is a measure of acidity or alkalinity. This is very important because pH determines the availability of nutrients to be taken up by plants.
- Ideal pH for growing turfgrass should be near neutral (6.0-7.5) but some turfgrass species can grow in slightly acidic or alkaline conditions.

Organic Matter (OM)

- OM is dead and decaying plant and animal material. It enhances soil structure and allows movement of air, water, and nutrients within soil.
- OM acts like a sponge, which gives roots more time to soak up water and nutrients and helps prevent larger issues like flooding, erosion, and nutrient runoff.

Cation Exchange Capacity (CEC)

- CEC is a measurement of the soil's ability to hold on to essential nutrients—especially positively charged ions like K, Ca, and Mg.
- The higher a soil's CEC, the better it can retain nutrients and make them available for plants.

Take Action

Soil is the foundation of a healthy lawn. It is recommended to test your soil every three to five years, and more often if working to correct an issue. Always test prior to a new planting or renovation and test trouble spots separately.

- Commercially available, at-home test kits are not accurate.
- A list of certified testing labs can be found at lawntolakemidwest.org/SoilTesting/Labs. Select a lab that will provide recommendations for any needed amendments.
- Contact your local university extension office for additional help interpreting results.
- Test costs range from $10-65, depending on specific requests and whether testing materials are provided.

When sampling large turfgrass areas, you will likely need to collect soil at a depth of 3-6 inches from 10-15 random sites. Remove any vegetation or large debris, break up clumps, and dry at room temperature. You will send about a cupful of your well-mixed sample to a lab for analysis.

To learn more about research and extension related to soil testing your lawn, please visit

LawnToLakeMidwest.org/SoilTesting

[1]For references, visit iiseagrant.org/soil-testing

This information brought to you by Illinois-Indiana Sea Grant.
Developed by Janice Milanovich and Allison Neubauer, edited by Hope Charters, and designed by Joel Davenport. Produced by Allison Neubauer and Sarah Zack.

Thank you to the following for their expert review: Duane Friend and Richard Hentschel, University of Illinois Extension; Rebecca Koetz and John Orick, Purdue Extension

This publication was made possible through funding by University of Illinois Extension and the Great Lakes Restoration Initiative.

Illinois Extension
UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN

Sea Grant
ILLINOIS-INDIANA

PURDUE UNIVERSITY | Forestry and Natural Resources

IISG20-RCE-BRC-042

SOIL TESTING

FOR A HEALTHY LAWN

for Homeowners

LAWN TO LAKE *midwest*

Create Healthy Soil

Fertile soil is essential for growing and maintaining plants, and your lawn is no different. Soil testing is often overlooked by homeowners, but knowing what nutrients are available to your plants is an important first step in establishing a sustainable landscape.

Why take a soil test?

- Save money long-term.
- Discover lawn problems.
- Maximize lawn care efforts.
- Protect the environment.

Without knowing the current condition of your soil, how do you decide what nutrients to add, and in what amounts? The only way to know for sure is to test your soil. A soil test will help you understand what nutrients are present or lacking. It will also provide information about any needed amendments to other important soil characteristics like pH, soil structure, and texture. A soil amendment is something added to improve soil and create a better home for plants.

Improper fertilization practices waste money and time, and can negatively impact the health of your grass and the environment. For example, excess nitrogen and phosphorus—the two main ingredients in most fertilizers—can seep down into groundwater, or rain can wash these nutrients off lawns and into nearby water bodies, where they may cause unsightly algae growth that can be harmful to wildlife. For this reason, Illinois and several other states have passed laws limiting phosphorus fertilizer use on lawns.[1]

Soil Fertility Explained

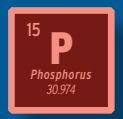
Fertile soil contains a healthy amount of Primary Nutrients, Secondary Nutrients, and favorable Soil Characteristics for growing plants.

Primary Nutrients (NPK)

Almost all turf fertilizers advertise three numbers on the bag. This represents the ratio of the three main nutrients required for plant growth: nitrogen (N), phosphorus (P), and potassium (K).

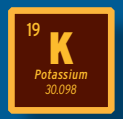
Nitrogen (N)

- Contributes to turf's dark green color, thicker growth, and deeper roots. This helps a plant recover more quickly from damage due to pests, drought, and heat.
- A soil test will not include this measurement because nitrogen levels change quickly in the soil and are not easy to test accurately.
- Nitrogen is required in the largest amount of the three primary nutrients. However, needs will vary depending on turfgrass species, personal color preferences, and lawn traffic and wear.



Phosphorus (P)

- Boosts root growth and supports the growth of new grass.
- A new lawn developing its root system will require more phosphorus than an established lawn with an existing root system.

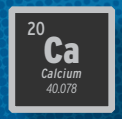


Potassium (K)

- Helps move water throughout a plant.
- The overall durability of turfgrass improves with potassium, which helps it resist drought, cold, and disease.

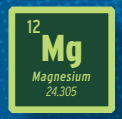
Secondary Nutrients

Though needed in smaller quantities than NPK, secondary nutrients are just as critical. Secondary nutrients are usually adequate in Midwest soils and may not be included in some basic testing services.



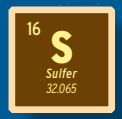
Calcium (Ca)

- Turfgrass lacking calcium suffers from poor root and blade growth.



Magnesium (Mg)

- A lawn lacking magnesium will have yellowed grass blades since the nutrient is critical for chlorophyll, the green pigment that gives plants their color.



Sulfur (S)

- Sulfur deficiency can also result in yellowed grass blades, and it is important for maintaining a stable soil pH.