



CAYUGA COUNTY

Water Quality Management Agency

NEWSLETTER



March 2024

Soil Sampling for Lawns and Gardens

By Frank Clarke, Cornell Cooperative Extension of Cayuga County

An important step towards prolonged healthy lawns and gardens is to soil test. Soil sampling can be conducted any time of the year, but spring and fall are the most common times it is done. The most important thing is that the sampling is done at the same time of the year, every sampling year. Sampling is recommended every three years.

Soil analysis done through a certified laboratory is significantly more accurate than that of a store-bought home kit and the costs are similar. Analysis done through a lab will also include more than just N-P-K (Nitrogen - Phosphorus - Potassium). The lab analysis includes organic matter content, secondary macro-nutrients, and micro-nutrients, all of which are important for plant health. The analysis will also come with fertilizer recommendations, if necessary. Typically soil analyses do not come with nitrogen levels, as climate, chemical, and biological factors can influence the amount of soil nitrogen present at any time. The lab may provide nitrogen recommendations based on the plants you plan to grow. Results can also be sent to your local extension office if further information and recommendations are desired. Contact your extension office for a list of certified labs in your area.

For healthy growth, plants require 18 essential macronutrients and micronutrients. With an up-to-date soil analysis, accurate fertilizer applications that target the needed nutrient can be made. You may also find that your garden has sufficient nutrient levels, and no additional fertilizers are needed. Without a test, you're just guessing what your plants need. By guessing you may overapply nutrients, wasting money and possibly contributing to nutrient runoff into waterways. You could have lackluster plant growth if your soil is in a nutrient deficit, and you under-apply fertilizers.



*A vibrant, healthy lawn requires 18 essential nutrients.
Soil testing can ensure you do not add excess nutrients.*

Collecting a soil sample is simple. However, there are some steps you need to follow to get accurate results. It is important to collect a representative sample of your garden. To do so, you'll collect ten or more soil samples to a depth of 4 to 6 inches throughout your garden. Lawns only need to be sampled to a depth of 4 inches. Ideally a soil probe is used but if you don't have access to one, a clean trowel can substitute. If using a trowel, dig a hole to the desired depth, then take a slice of soil from the side of the hole and put the soil slice into a container.

To get an accurate representation of the soil around a home, sampling areas should be delineated. Samples will need to be collected for each area. Some examples of different sampling areas are front yard lawns, backyard lawns, flower beds, and vegetable gardens. In each area, samples should be collected to represent the whole area. A common sampling pattern to follow is in the shape of a "M" or "W" as seen in the figure below.

Once you've collected your samples, shake the container to homogenize, then transfer a subsample to a sample bag, about a cup. The sample bag is what will be sent to the lab. If the soil is too wet, let it air dry first. Check with the lab to see if they have specifications that need to be followed.

Call your local Cornell Cooperative Extension office to learn more about soil sampling and soil analysis.

CCE Cayuga - Phone: 315-255-1183 or **email:** fc357@cornell.edu

Website: CCECayuga.org

Additional Resources:

Cornell School of Integrated Plant Science, Soil Sampling Protocol – Fact Sheet 16-01,

https://soilhealthlab.cals.cornell.edu/files/2021/11/01_CASH_SH_Series_Sampling_Protocols.pdf

Dairy One Soil Laboratory, Taking a Soil Sample <https://dairyone.com/download/agronomy-taking-a-soil-sample/?wpdmdl=13822&masterkey=5d0a580b1ba61>

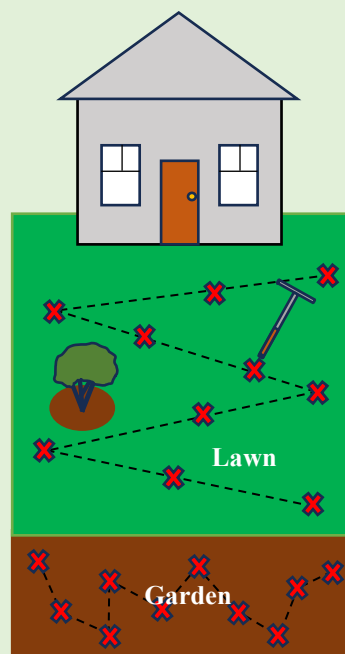
Collecting Soil Samples



Method 1: Use a soil probe to take a soil sample to a depth of 6"



Method 2: Use a trowel to take a slice of soil



You will need multiple samples from different parts of your lawn and/or garden – a common sampling pattern is an 'M' or 'W' shape

Resources Available from Cornell Cooperative Extension of Cayuga County
Ron Kuck, Cornell Cooperative Extension of Cayuga County
Frank Clarke, Cornell Cooperative Extension of Cayuga County

The Homeowners Lawn Care Water Quality Almanac is available online and provides a month-by-month plan for lawn care that results in a healthy lawn while preventing environmental damage. You can find it at <https://ecommons.cornell.edu/handle/1813/68>.

If you need to analyze your soil, you can get packages to do so by contacting Cornell Cooperative Extension of Cayuga County at 315-255-1183. Available Packages through Dairy One Soil Laboratory include <https://dairyone.com/services/soil-laboratory/soil-analysis/packages/>:

- (833E) PrePlant \$13.50: pH, buffer pH (lime requirement), organic matter, Modified Morgan phosphorus, potassium, calcium, magnesium, aluminum, iron, zinc, and manganese.
- (833M) Maintenance \$13.50: pH, buffer pH (lime requirement), organic matter, Modified Morgan phosphorus, potassium, calcium, magnesium, aluminum, iron, zinc, and manganese.
- (834E) PrePlant Troubleshooting \$18.50: 833 Package plus soluble salts. This troubleshooting test should be used to determine if poor plant growth may be related to high salt concentrations in the soil due to over fertilization or road salting practices.
- (834M) Maintenance Troubleshooting \$18.50: 833 Package plus soluble salts. This troubleshooting test should be used to determine if poor plant growth may be related to high salt concentrations in the soil due to over fertilization or road salting practices.
- (855) Modified Morgan (fruits, vegetables, turf) \$13.50: pH, buffer pH (lime requirement), organic matter, Modified Morgan phosphorus, potassium, calcium, magnesium, aluminum, iron, zinc, and manganese.

If you need to analyze your water, you can get packages to do so by contacting Cornell Cooperative Extension of Cayuga County at 315-255-1183. Water Sampling Packages include:

- (213) Complete \$53: Coliform, Total Dissolved Solids (TDS), pH, Hardness, Ca, P, Mg, K, Na, Fe, Zn, Cu, Mn, Mo, Chlorides, Sulfates, Nitrates
- (200) Suitability \$42: Total Dissolved Solids (TDS), pH, Hardness, Ca, P, Mg, K, Na, Fe, Zn, Cu, Mn, Mo, Chlorides, Sulfates, Nitrates

Updated Groundwater Protection Guidelines for Water from the Cornell University Nutrient Management Spear Program can be found at <http://nmssp.cals.cornell.edu/publications/files/GroundwaterGuidelines2021.pdf>.

Bob Brower Scientific Symposium 2024 – Meeting Summary
Dana Hall, Owasco Watershed Lake Association
Toy Vano, Owasco Watershed Lake Association

We all miss the community leadership and knowledge Bob Brower so willingly contributed to the betterment of our region. He was a mentor to many of us, patiently explaining Owasco Lake’s behavior and its dependence on the health of its surrounding large watershed. Each year since Bob’s passing, we have commemorated him with a scientific symposium at which experts present and explain “in plain English” important research and findings about the lake and/or its watershed.



Carey Eidel, Auburn Public Theater

On Saturday, March 9, 2024, five speakers offered the research and observational findings from Owasco lake or its watershed. The Symposium was held at the Auburn Public Theater (APT) and online. Carey Eidel, Director of Finance and Grants at the APT, served as Master of Ceremonies welcoming everyone to the event and introducing each speaker. Approximately 50 people attended in person and another 60 participated online.

Ken Kudla and Julie Lockhart led off the presentations. They and their families are long term lakeside residents. Ken reminded everyone of the unique freshwater resource we all are fortunate to live near. Owasco Lake

and the other ten Finger Lakes are part of the Great Lakes basin. Some 21% of all of the world’s accessible freshwater is in the Great Lakes basin. That’s also 95% of the accessible fresh water in the United States. Julie emphasized that we all live in a watershed, that of Owasco, Lake Ontario, and even larger, the Great Lakes watershed. and so have responsibilities to be good watershed stewards. Be mindful of what we do on the land because eventually everything ends up in a lake. For more information, see the Finger Lakes Regional Watershed Alliance’s Lake Friendly Living website: <https://www.flrwa.org/lake-friendly-living>.



Ken Kudla, former OWLA Board Member



Julie Lockhart, OWLA Board Member

The attendees welcomed Seth Jensen as the Symposium’s second speaker. Seth has served for many years in, and now manages, the City of Auburn’s water processing and distribution system. Seth described how his agency and that of the Town of Owasco process raw lake water into the consumed product we all confidently imbibe.



Seth Jensen, Director of Municipal Utilities, City of Auburn

Kirsten Workman is a certified nutrient management and environmental sustainability specialist with the Cornell College of Agriculture and Life Sciences (CALs). Kirsten discussed the importance of planning nutrients for farm fields. She and her colleagues strive to work with agriculturalists to



Kirsten Workman, Senior Extension Associate, Cornell College of Agriculture and Life Sciences

maximize the benefit of nutrient application, especially manure, to agricultural land, thus eliminating or reducing the need for commercial fertilizer.

The Symposium was also pleased to welcome Dr. Lisa Cleckner, Director of the Finger Lakes Institute (FLI) located at the Hobart and William Smith Colleges in Geneva NY. Dr. Cleckner presented some of the recent findings from the instrumented buoy the FLI operates in Owasco Lake.

Questions were welcomed from those physically in the APT and online. Time prevented answering all of the questions during the symposium. OWLA is preparing a detailed response to each.



Dr. Lisa Cleckner, Director of the Finger Lakes Institute

From Source to Sip - The Shared Journey of Preserving Owasco Lakes Water Quality
By Abigail Hai, Lead Watershed Inspector, Owasco Lake Watershed Inspection and Protection Division
Repurposed from The Citizen, published February 9, 2024

The history of Owasco Lake descends further back than the lineages that grew up around it. For some it was a crossing point in their travels, but for others it represented a forever home. As the Owasco Lake watershed and adjoining communities have grown, so have efforts to protect the lake’s water quality. The dominant inflow to the lake is from the Owasco Inlet at Owasco Lake’s southern end with headwaters in Groton, New York. The lake ultimately flushes at the northern end and discharges to Lake Ontario. The Owasco Lake watershed is but one watershed within a much larger system of watersheds through which water flows. Water travels through many townships and watersheds before it reaches us and will continue to travel through other townships and watersheds long after. Not only does the Owasco Lake watershed constitute one of many lake watersheds within the greater Lake Ontario watershed, but the lake itself

provides a critical drinking water supply for nearly 45,000 Cayuga County residents. While watershed managers generally focus on watershed dynamics, research, and protections, the public’s understanding of their drinking water source and delivery is also important. Government officials for municipalities that purvey drinking water can play a pivotal role in directing resources towards protecting drinking water supplies for the benefit, health, and safety of consumers.



City of Auburn Mayor James N. 'Jimmy' Giannettino

Mr. James N. ‘Jimmy’ Giannettino may be the new Mayor of Auburn, but he is no stranger to Owasco Lake and the strong communities that have been built around it. Born and raised in Auburn, Mayor Giannettino has many fond memories of Owasco Lake. During our recent interview, he reflected on the lake’s ability to provide a “home away from home” in the summertime for the hard-working citizens

that helped form many of the surrounding townships we know. During the interview, we touched upon the consideration that many people may know where their water comes from, but may not understand how it is delivered. Mayor Giannettino, taking into consideration his daughter's academic pursuit in environmental sciences, explained that growing up in this area can factor into one's recognition and understanding of the importance of Owasco Lake, freshwater, and the protection of environmental resources.



Although Auburn isn't located in the Owasco Lake watershed, Mayor Giannettino recognizes there are many features that affect the quality of water his city consumes. Acknowledging and appreciating that there are "hidden heroes" within Owasco Lake's watershed, he reflected on the "underdogs" who don't always get recognized for their efforts to purvey clean and safe drinking water to the community. The process of making readily available drinking water for household consumption is often forgotten; frequently the association between water purveyance and consumer access is understated as "a faucet is turned and water comes flowing through the pipes."

Mayor Giannettino stated, "If you look at the City staff responsible for the filtration plant, the wastewater treatment plant, and managing the levels of the lake, all of them in one way or another fall into this category. People turn on their faucet or put something down the drain and don't even think about it."

Furthermore, the municipal services within the Owasco Lake watershed, such as the highway departments, protect the water before it even enters our lake by helping keep our roads, drainage ditches, and culverts clear. They are yet another faction of workers helping to protect Owasco Lake's water quality, although in the public eye, their efforts may be overlooked. Mayor Giannettino commented, "People don't think about how important those people are, making sure our waters are clean." Whether they help protect water before it enters pipes or before it makes its way to the lake, there are many individuals who play a large role in the water consumed from Owasco Lake every day.

For those residents who constitute the watershed community, surrounded by one of the most valuable resources on earth, let's consider how we can support ecosystem services and commit to lake friendly land use practices to protect Owasco Lake's water quality. As Mayor Giannettino said, "We're at a critical juncture to protect Owasco Lake and the greater Finger Lakes." Like many resources, it's important to recognize where our water is from, where it's been, and where it's going to end up. Less than three percent of water on earth is fresh water, and less than one percent of that three percent is readily available drinking water. Next time you turn on your faucet, or drink a clear cold glass of water, please consider the time, resources, and efforts invested to make drinking water available.

Winter Wonders on Skaneateles Lake
A Conversation with SUNY-ESF's Lake Expert, Dr. Kim Schulz
by David Figura, on behalf of The Skaneateles Lake Association
As appeared in Neighbors of Skaneateles Magazine

What makes a good or bad winter for Skaneateles Lake in regard to water quality, plankton ecology, invasive species and aquatic ecosystems?

"I guess it might be different answers for different lakes," said Kim Schulz, associate professor and limnologist at SUNY ESF, who studies and teaches about plankton ecology and aquatic ecosystems.

There are several factors to consider, she said. They include the extent of cold temperatures in late winter and early spring, the amount of snow that falls or the occurrence of heavy, unseasonable rainfalls — and most importantly, the current management of the watershed and shoreline surrounding the lake.

Temperature

"Most years, Skaneateles Lake freezes at the northern and southern ends, but doesn't freeze completely over. A lake like that is 'mixing' all winter and becomes stratified (temperature-wise) in the summer months," Schulz said.

Temperature affects the phenomenon of the lake's water constantly mixing during the cold months because the exposed surface water becomes colder than the warmer water underneath. As a result, the colder water (which is heavier) is constantly sinking and mixing (thanks to the wind) with the water underneath, oxygenating and supplying food for the organisms and plant life underneath on the lake's bottom.

"For Skaneateles Lake, a good winter is for the winter to be long and for low temperatures to extend into the spring so that the lake is not stratifying really early on in the spring."

Schulz said the sooner the lake surface warms up in the spring and becomes stratified temperature-wise, the longer the lake's surface has a chance to heat up during the warm months – a condition favoring the appearance of "unfavorable things" people have been seeing a bit more in recent years.

"Namely, cyanobacteria blooms and blue green algae," she said. "They often out-compete other algae in warm temperatures."

A cold winter and delayed water stratification in the spring favors the formation of single-celled diatoms, a type of phytoplankton. The diatoms do well in such conditions and are consumed by larger zooplankton (copepods) in the lake, which are larger and more nutritious for small bait fish. The bait fish are then consumed by the larger fish. An abundance of copepods in a lake are also beneficial in that they consume decaying plant matter.

On a side-note, the presence of healthy (for humans) fish oils in the flesh of the larger game fish originates with the diatoms, Schulz said.



*Kim Schulz, Associate
Professor and Limnologist,
SUNY ESF*

On the other hand, if it completely freezes over, Schulz said, it's like "having the fish and other lake critters locked in an airtight room with no fresh air supply. If the ice completely covers the lake for a long time the oxygen (in the water) begins getting used up by the fish, algae, plankton and other living things in the lake," she said.

Snowfall, Rainfall and Lake Management

Meanwhile, the amount of snow the area gets, and the slow melting of it throughout and at the end of winter, usually has no negative impacts on the lake. The lake level is managed by the City of Syracuse and its dam at the lake's northern end.

"The more snowpack you get, though, the more run-off (there is into the lake) in the spring," Schulz said. "The impact on the lake depends on the quality of watershed management you have around the lake, which is generally good. A poorly managed watershed would result in more materials (from the shore) flowing into the lake."

Those "materials" (excessive nutrients) will remain in the water and later provide food for harmful algal blooms, she said.

What would be a negative factor, though, of excessive snowfall or continuous ice conditions during the winter and/or early spring would be the amount of road salt put on roadways in the lake's watershed. Salty water is heavier than freshwater, Schulz said, and sinks to the lake's bottom.

"Some of the things that live in the sediment at the bottom of the lake that can be food for some of the fish feeding down there can be negatively affected by it being too salty down there," she said.

Due to climate change, in recent years the lake has been experiencing an unprecedented number of torrential rainstorms in the late winter/early spring, resulting in run-off from surrounding fields and other areas along the lake's shoreline, Schulz said.

Schulz said the Skaneateles Lake Association (SLA), with the advice of scientists and researchers from Syracuse University and SUNY ESF, is doing a "great job" or trying to manage run-off and "nutrient-loading" (such things as nitrogen and phosphorus) into the lake. (More on SLA's lake protection efforts at <https://skaneateleslake.org/special-report/>) It's a difficult task at times, considering the steep-sided shoreline and number of tributaries that run into the lake, she added.

Schulz pointed out that Skaneateles Lake is a primary water source for the city of Syracuse and many surrounding communities ringing the lake, including the village and town of Skaneateles. "There are few lakes in the country where water doesn't have to be filtered before it is used for drinking water – definitely fewer than 5," Schulz said.

Skaneateles is among them.

(David Figura is the retired outdoors writer for The Post-Standard and a member of the Skaneateles Lake Association.)

Trout

Ryan Staychock, Cornell Cooperative Extension of Cayuga County

April 1st is just around the corner. This article is about trout fishing in New York's inland waters. Why? Because April 1st is the traditional first day of inland trout fishing in New York State. It is significant for anglers to remember the anticipation and excitement for trout season to start in the Finger Lakes. April 1st is also the day that 2024 NYS Freshwater Fishing regulations go into effect.

Fishing regulations can be confusing if you don't understand terminology and context. Regulations change and they may be different today than in the past. Reference the New York State Freshwater Fishing Regulations for a convenient summary of rules and regulations, it is available for free online (<https://dec.ny.gov/things-to-do/freshwater-fishing/regulations>).

Did you know there are different regulations when fishing in lakes and ponds, versus fishing in streams? "Inland Trout Streams" have a specific definition in New York State. According to the NYS Department of Environmental Conservation (DEC) website, Inland Trout Streams are defined as "all rivers and streams inhabited by trout", with a few exceptions such as "the start of tributaries to the first impassible barrier" associated with the Great Lakes and Finger Lakes and Lake Champlain, and "streams that fluctuate due to tidal activity."



Rainbow Trout Yearling
Photo by Robert H. Pos, USFWS

Two years ago, the NYS DEC implemented new regulations for trout fishing. Anglers can now fish for trout all year on Inland Trout Streams. Specifically, from October 16th to March 31st trout anglers must use "Artificial Lures" to catch trout and must release the fish back into the streams. People cannot keep trout to take home during this time period. Basically, it's a winter catch-and-release season with Artificial Lures. According to the NYS General Freshwater Fishing Regulations "Artificial Lures (or bait) means artificial imitations of natural bait, man-made flies, spinners, spoons, plugs, jigs, and other lures, including those that may contain some natural substances such as deer hair and feathers."

Starting April 1st anglers can keep some trout they catch, and use "Natural Bait" which means all baits that entice or might be ingested or swallowed by fish.

April 1st is the start of the Inland Trout Stream regulations that grant anglers the privilege to take and possess trout. Anglers can possess up to five (5) trout including any combination of brook trout, brown trout, rainbow trout, or splake (splake is a hybrid of two fish species resulting from the crossing of a male brook trout and a female lake trout). However, only two of the five trout can be longer than 12." If you

are catching more than 2 trout larger than 12” then I thank you for releasing such wonderful creatures back to the waters. There’s always tomorrow for you. This limit of trout per day is based on the definition of “Daily Limit.” The NYS DEC explains Daily Limit as follows: “a person may not have in possession, or intentionally kill or injure, fish other than the sizes specified and allowed for that species on a given water.” The DEC adds that “any fish in a vehicle used to access a given water counts towards the number and sizes of fish in possession.”

I encourage everyone to review the NYS Freshwater Fishing Regulations every year to keep up to date on any changes, and to refresh your memory.

Trout are special for many reasons. Trout need clean water. Trout need cold water. Trout need natural food sources, including aquatic insects, larvae, plankton, minnows, small fish, and sometimes small mammals. Trout can be “Indicator Species.” In Malcolm L. Hunter’s *Fundamentals of Conservation Biology*, an indicator species is described as species that “are useful to conservation biologists because they have such narrow ecological tolerance that the size and health of their populations is a good indicator of environmental conditions.” The type and numbers of trout in a waterbody correlate to the quality of their environment – a lake, pond, or stream. Trout are in the scientific family Salmonidae, which includes salmon. Just as salmon are important to the cultures in the Pacific Northwest, trout are important to our culture in this freshwater paradise of New York State. It’s up to people to protect trout habitat and enhance trout habitat when the opportunity presents itself. Healthy watersheds can be trout habitat. Please do your part to protect healthy watersheds.

Cayuga County WQMA

For more information about the Cayuga County Water Quality Management Agency, check out our website at www.cayugacountywater.org.

The Cayuga County WQMA is also on social media. For up-to-date information on water quality issues and events, please friend us on Facebook at: <https://facebook.com/CayugaCoWQMA>

The Cayuga County WQMA YouTube channel is <https://www.youtube.com/@CayugaCountyWQMA>.

The Cayuga County WQMA is looking for story ideas for its webpage and its newsletter. If you have something you would like to share, please email us at wqma@cayugacounty.us.



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