News From CCE

Barb Neal, CCE Tioga Agriculture and Horticulture Educator

What a spring this has been. I hope all of you are safe and well and enjoying the beginning of a summery season.

Farmers—we continue to help farmers navigate the changing COVID 19 landscape. Please reach out to us if you need assistance or resources. I know there has been an avalanche of information—we can help if you have questions.

Gardeners—Folks who have never grown a vegetable are jumping into growing a victory garden. If you have a neighbor who is starting a garden, consider acting as a mentor for them. If you or anyone you know has a gardening question you cannot answer, contact your CCE office — we have a Grow Line and can answer gardening questions.

The hand sanitizer distribution to farmers has been a success—and we still have some available. If you are a farmer and need hand sanitizer, let your Ag Educator know. We also have masks for farm workers as well.

Inside this issue:
- Murder hornets in NY? Get the info
- Soil Testing
- Growing Tomatoes
- Preventing Bee Disease Spread
- Workshops — online of course
- And more!

Master Gardener Plant Sale—June 6th and 7th
See next page for details!

Important Websites for Farmers and Gardeners

General Questions & Links for dealing with COVID-19:
https://eden.cce.cornell.edu/

Cornell Small Farms Resiliency Resources:
https://smallfarms.cornell.edu/resources/farm-resilience/

Financial & Mental Health Resources for Farmers:
https://www.nyfarmnet.org/

Barb Neal, CCE Tioga Agriculture and Horticulture Educator, ban1@cornell.edu
Liz Alexander, CCE Chemung Agriculture Educator, ema228@cornell.edu
Jingjing Yin, CCE Chemung Horticulture Educator, jy578@cornell.edu
Mary Kate Wheeler, SCNY Farm Business, mkw87@cornell.edu
For more specific information about the Chemung County Master Gardener program, please contact Jingjing Yin at 607-734-4453 or jy578@cornell.edu.

For more information about the Tioga County Master Gardener program, please contact Barb Neal at 607-687-4020 or ban1@cornell.edu.

Planting Tomatoes  
By Steve Reiners, Professor and Chair, Horticulture Section, Cornell University, Cornell AgriTech  
Tomatoes are the most popular vegetable grown by gardeners. And why not? They’re easy to grow, prolific producers, and taste great. They do well in containers on patios and decks. You could harvest 15 to 25 nice slicing tomatoes from a single plant or hundreds of small cherries.

Tomatoes love warm temperatures. So, it’s still too early to plant outside, unless you plan to cover them and protect from cool nights. Although we’re getting close to our frost-free date, usually around May 15 to 20, tomatoes won’t grow well when night temperatures fall into the 40’s.

Varieties  
As far as varieties, you have thousands to choose from. They vary in color, fruit and plant size, earliness, disease resistance and many other factors. Good varieties for this area include:

- Cherry types such as Sungold.
- Grapes such as Juliet and Sugar.
- Large fruited-types like Better Boy, Big Beef, Celebrity, and Supersonic.
- Heirlooms like Brandywine and Cherokee Purple.

Heirloom varieties are traditional varieties that have been preserved by gardeners for generations and often have great flavor.

New to the market in 2020 are the Galaxy Suite of grape tomatoes, bred by my Cornell colleague, Phillip Griffiths. They include five varieties with unique shapes and colors, and all have great taste. Certainly worth a look in your garden.

Over the last ten years, we’ve been dealing with a fungal-like disease called Late Blight. It’s the same disease that caused the Irish Potato Famine 170 years ago. It’s still with us today and is just as devastating to
tomatoes. If we have a sunny, dry and hot summer, we won’t have a problem. But if it’s cool, cloudy and wet – watch out. You might want to include some tomato varieties that are resistant to this disease as well as other common diseases. Cornell breeder Martha Mutscher-Chu and Plant Pathologist Meg McGrath have bred and trialed some excellent new varieties. Iron Lady was one of the first but Stellar and BrandyWise have improved flavor.

**Acquiring plants**

Unless you started tomatoes indoors 6 weeks ago, you will need to purchase your plants at a local garden center this spring. Fortunately, most are open in NY and are carefully following social distancing recommendations. You won’t have the huge number of varieties to choose from that you would if you started the plants yourself, but you will find dozens to choose from.

Tomatoes are identified as either determinate or indeterminate types. Determinates are smaller more compact plants that take up less room. Indeterminates are big plants that usually produce more fruit but will likely need to be pruned to keep under control.

Varieties in seed catalogs always include the days to harvest (DTH). That is the number of days from transplanting until you get the first ripe fruit. A 75-day variety planted June 1, will theoretically produce ripe fruit 75 days later, around August 15. The DTH is useful in comparing varieties but it assumes perfect tomato growing conditions. Often that 75 day tomato could take 80 or 82 days in cooler weather.

**Transplanting**

Tomatoes are unique in that they can develop roots all along the stem. When transplanting, dig a hole at least twice the size of the root ball and sprinkle in compost. Plant the tomato either horizontally or vertically in the soil, with only the top two leaves above the ground. Remove the leaves below. Water the root ball with a soluble fertilizer that’s high in phosphate (the middle number on a fertilizer label). Space the plants at least 18 inches apart in the row, two feet is even better. Leave four feet or more between rows.

Think about supporting the tomatoes on stakes or cages to keep them growing upright rather than sprawling on the ground. You will get better production and less disease when you keep the plants up off the ground.

Right now in the garden, there is still time to plant spinach and peas. All the root crops can be planted, as well as cole crops like cabbage and broccoli, and salad crops like lettuce and Swiss chard. Normally sweet corn could go in by now, but our soil temperatures are still too cold, so let’s wait a week for that. (note: this was written in early May)

**Fruit or vegetable?**

Now back to the “are tomatoes a fruit or vegetable” question. In 1886, an importer named John Nix landed a load of West Indian tomatoes in New York. The Customs agent levied a 10% duty, as specified by the Tariff Act of 1883. Nix claimed his tomatoes should be duty free as the tariff applied only to vegetables. By the botanical definition, a tomato is a fruit since it contains seeds.

The case finally reached the Supreme Court in 1893 when Justice Horace Grey said, “Botanically speaking, tomatoes are the fruit of the vine, just as cucumbers, squashes, beans, and peas. But in the common language of the people, all these vegetables are usually served at dinner, in, with, or after the soup, fish or meat, which constitute the principle part of the repast, and not, like fruit, generally as dessert.”

Nix paid up.
Saving the planet, one shade-grown cup at a time

By Jeri Wall | Cornell Chronicle, May 27, 2020

For ecologist and conservation biologist Amanda Rodewald, migratory birds are emblematic of a world on the move. In one year, a single warbler may spend 80 days in boreal forests in Canada, 30 days in the United States resting and refueling during migration, and more than 200 days in Central America.

Amanda Rodewald holds a Mourning Warbler captured as part of her research; her collaborating biologist, Nick Bayly of the Colombian conservation science group Selva, looks on. Warblers and other neotropical migratory birds, which breed in North America and winter in Central and South America as well as the Caribbean, are of special interest to Rodewald, a member of the Cornell Global Grand Challenge’s Migrations initiative to study the complex global issue of migration.

She and her colleagues study birds and the ecosystems on which they depend, the impact of human activities and global change on their populations, and ways to safeguard the healthy environments they—and we—require.

Rodewald, the Garvin Professor of Ornithology in the Department of Natural Resources, looks for win-win outcomes for people and the planet. This approach turned her attention to coffee farms.

Growing coffee under trees—a traditional practice called shade-grown coffee—results in a wide variety of social and environmental benefits.

“Whether you care about supporting the livelihoods of farmers, conserving biodiversity, maintaining productive and healthy environments, or enjoying a great-tasting cup of coffee, it all points to shade-grown coffee,” said Rodewald, who is director of conservation science at the Cornell Lab of Ornithology.

Guillermo Santos/Provided
A Blackburnian Warbler looks over Antioquia, Colombia’s biggest coffee-producing department and a hotbed for overwintering Blackburnian Warblers.

Coffee and sustainable ecosystems

Many migratory birds spend the winter on shade-coffee farms, returning to the same farms year after year. But widespread deforestation and agricultural intensification has reduced the amount of habitat for migrating birds and other species. As forests were cleared and shade-grown coffee gave way to environmentally harmful monocultures of “sun coffee,” migratory birds have suffered.

Guillermo Santos/Provided
A Black-and-White Warbler lands on a coffee bush in Colombia.
For example, the population of one vulnerable songbird species, the small blue-and-white cerulean warbler, has declined by 70% in the past 50 years, coinciding with the widespread conversion of shade to sun coffee.

Fortunately, shade-grown coffee is making a comeback.

Rodewald’s collaborative research demonstrates the benefits for farmers and their families. Trees improve soil health and farm conditions, and shade-grown coffee beans are a higher quality, which can bring the farmer a higher price. With the forest acting as natural fertilizer, there is little need for chemicals, which improves water quality. And coffee plants grown under trees produce beans two or three times longer than sun-grown coffee plants.

“We’re focused on finding ways to conserve species and protect biodiversity,” Rodewald says. “To do that, we need to understand the migratory patterns of birds. We also need to understand the social and economic choices that people make, and the full impacts of those choices. Then we can recommend sustainable solutions – changes to systems, resources and incentives at local and global scales – that will contribute to the health of the planet for all species.”

Holistic views, workable solutions

Rodewald’s research touches on a variety of subdisciplines: conservation biology, community ecology, landscape ecology, population demography, behavioral ecology, ecological restoration and sustainability science. “This may surprise people” she says, “but some of our most important partners here at Cornell are in the social sciences, including economics and business.”

In the five-minute video Conservation Science and Shade-Grown Coffee by the Lab of Ornithology, Rodewald explains how conservation can work for people and the planet.

“If we want to fully understand the realities and the possibilities for change,” she says, “then we need to be taking a more holistic view of the interactions of all the players in the ecosystem.”

The Migrations initiative facilitates new collaborative projects that consider these connections – between humans, animals, plants and nonliving things.

“We’ll be funding faculty and student projects that will demonstrate how to work in interdisciplinary space,” Rodewald says. “This will make explicit the connections, the causes and consequences. It will give us, as researchers, a more holistic view. There is power in that systems-level approach.”

In a new project with Ivan Rudik, assistant professor in the Charles H. Dyson School of Applied Economics and Management; Alison Johnston, research associate at the Cornell Lab of Ornithology; and Catherine Kling, Tisch University Professor in the Dyson School, Rodewald will study the Farm Bill’s Conservation Reserve Program, which pays farmers to take farmland out of rotation.

“We will quantify the ways in which the program contributes to bird conservation,” she says, “and provides other benefits such as clean air and water, habitat protection and recreation.” They’ll also investigate how benefits might flow across states, changing with enrollment patterns and moving with migratory birds.

In another project, led by Filiz Garip, professor of sociology in the College of Arts and Sciences, Rodewald and colleagues focus on human movement ecology. They study how different environmental shocks or changing climates in Mexico affect individual decisions about migrating, and ultimately aims to inform policy and humanitarian efforts.

“Finding working solutions to real-world problems is both a challenge and a fascination for me,” Rodewald says. “Through authentic ways, how can we increase caring and therefore positive action? It’s about building empathy.”

This article is adapted from the original, “How Global Actions Can Benefit Multiple Ecosystems,” by Jeri Wall, former director of communications for Global Cornell.

Guillermo Santos/Provided
A Blackburnian Warbler forages in the coffee trees of a shade-grown coffee farm.
Asian Giant Hornets – A Concern for New York?
May 5, 2020 by Jody Gangloff-Kaufmann, NYS IPM

By now many Americans reading or watching the news have heard about “murder hornets” from Asia invading the American landscape. It is true that in many parts of East Asia, Japan in particular, a large hornet lives and feasts upon honey bees and other insects. This is the Asian giant hornet (AGH), or *Vespa mandarinia*, which is a relative of the European hornet (*Vespa crabro*) that we typically see in North America.

The Asian giant hornet is the world’s largest, measuring 1.6 to 2 inches long, with a particularly large yellow-orange head. It is a social insect, living in colonies built in soil burrows dug by rodents and other animals.

The European hornet is an import to America that has naturalized, or become established here as if it was native. The Asian giant hornet has just arrived on North America’s west coast, by unknown means. Residents and beekeepers alike are hoping it doesn’t become naturalized in America.

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Asian giant hornet, pinned. Photo by Allan Smith-Pardo, USDA APHIS PPQ, Bugwood.org

The Asian giant hornet is the world’s largest, measuring 1.6 to 2 inches long, with a particularly large yellow-orange head. It is a social insect, living in colonies built in soil burrows dug by rodents and other animals.

While people may not often see Asian giant hornets, beekeepers will definitely notice their decimated colonies of honey bees. It takes a handful of Asian giant hornets to slaughter an entire honey bee colony, after which hornets feed on the larvae, pupae and honey inside the hive.

Japanese honey bees, which are a different species of honey bee than what we raise in North America, can fight back against AGH by surrounding and super-heating the wasp in a ball of bee bodies. Our European honey bees do not have this defense behavior. If AGH becomes established in the US and Canada, the greatest threat will be to beekeepers and their honey bees.

The hazard to humans posed by the stings of AGH is real. The venom is toxic and with their long stingers, AGH can inject more venom into a wound than most other stinging insects. Stings lead to intense pain and swelling, and can induce renal failure and anaphylaxis. Multiple stings can be deadly. But, these hornets do not come after humans and left alone, they mind their own business.

The efforts to eradicate AGH from Washington State and Canada will be a priority aimed at avoiding their permanent establishment in the US. Unlike claims in some media outlets, it will likely take many years for this wasp to spread across the country on its own if we fail to eradicate it. Beekeepers will be on the front lines of detection.

There are several species of wasps in the US that are very commonly confused with AGH:

**Cicada Killer** – *Sphecius speciosus* – a large, native, solitary wasp, does not readily sting or act aggressive toward humans, hunts cicadas, exclusively, digs burrows in the soil where eggs are laid upon the body of paralyzed cicadas. Common in suburban areas.

Cicada killer wasp, photo by Nancy Hinckle, bugwood.org

**European Hornet** – *Vespa crabro* – an introduced social species, colonies started by a single queen, colony builds and expands a tan paper ball nest typically in hollow trees and abandoned barns and structures. More common in rural areas. Not aggressive unless harassed.

European hornet pinned specimen, photo by Allan Smith-Pardo, USDA APHIS PPQ, Bugwood.org
**Baldfaced hornet** – *Dolichovespula maculata* – Large black-and-white wasp, not a true hornet, colonies started by a single queen, nest is a grey paper ball usually high in trees or on the side of structures. Not aggressive unless harassed.

**Yellowjackets** (many species) – *Vespula* sp. – Small yellow-and-black wasps that nest in large colonies in soil and other man-made cavities. Can be aggressive, especially in early fall.

**Paper wasps** – *Polistes* sp. – Slightly longer than yellowjackets, various colors, long legs, umbrella comb nest with a few to a few dozen wasps. Not aggressive unless harassed.

**The Bottom Line**: A few Asian giant hornets were discovered in Washington State in 2019. The greatest threat is to honey bees and beekeepers. Efforts to eradicate this wasp are underway. New York does not have Asian giant wasps and hopefully won’t anytime soon.

Residents of the west coast should keep an eye out for Asian giant hornets and residents of Washington State are strongly encouraged to submit reports of sightings to the Washington State Department of Agriculture. If you live in New York and have questions about wasps or any stinging insects, you can contact NYSIPM or your local Cornell Cooperative Extension office for advice or to submit samples for identification.
CCE Chemung Welcomes two Summer Interns

Alyssa Roorda

Hello everyone! My name is Alyssa Roorda and I am a rising sophomore at Cornell University in the College of Agriculture and Life Sciences. I am majoring in Agricultural Science, pursuing a minor in Animal Science, and concentrating on Education, with plans to become an Agricultural Educator.

I am a native of Chemung County, which makes me very eager to be working with this Cooperative Extension and playing a greater role in my home county. I was very active in 4-H, showing dairy cows at our county fair, participating in public presentations, and a longstanding member of our dairy bowl team. I also was active in FFA my senior year of high school, having the opportunity to attend both state and national convention, and compete at various levels. Another large aspect of my agriculture experience was serving on the Chemung County Dairy Promotion team, both as an ambassador and County Princess, and later going on to be on the State Dairy Princess Team.

At college, I am involved in the Cornell University Dairy Science Club, Collegiate Farm Bureau, Guiding Eyes for the Blind, and Sigma Alpha. I look forward to spending my summer with Chemung CCE and being able to work with the many amazing people within our community!

Katie Callero

Hello! My name is Katie Callero and I cannot wait to be one of the CCE Chemung County interns this summer. I will be working mainly with Sasha Diederich to help develop the 4-H horse program further. As I grew up, I spent half my childhood in California and the other half in Texas, one of the things that stayed consistent with me was my passion for animals and education. I worked over 6 years as a teaching assistant at a local K-12 school and look forward to working with children once again! As I finish up my junior year at Cornell, I have been studying Animal Science and minoring in infectious disease biology. Currently, I serve as Captain on Cornell’s Western Equestrian team. Before attending Cornell, I briefly studied in the Honors program at Texas Tech University where I was on their Varsity Equestrian team. I truly am an addict to horseback riding and have been since I started in 7th grade. My main discipline is Western, but I occasionally will throw on an English saddle for some cross-discipline training! I can’t wait to meet everyone and share my love of teaching and horses with the community.

FSA Expands Set-Aside Loan Provision for Customers Impacted by COVID-19

WASHINGTON, May 21, 2020– USDA’s Farm Service Agency (FSA) will broaden the use of the Disaster Set-Aside (DSA) loan provision, normally used in the wake of natural disasters, to allow farmers with USDA farm loans who are affected by COVID-19, and are determined eligible, to have their next payment set aside. In some cases, FSA may also set aside a second payment for farmers who have already had one payment set aside because of a prior designated disaster.

“This immediate change of the Set-Aside provision can provide some welcome financial relief to borrowers during this current crisis,” said FSA Administrator Richard Fordyce. “FSA recognizes that some customers may need this option to improve their cash flow circumstances in response to the COVID-19 outbreak.”
FSA direct loan borrowers will receive a letter with the details of the expanded Disaster Set-Aside authorities, which includes the possible set-aside of annual operating loans, as well as explanations of the additional loan servicing options that are available. To discuss or request a loan payment Set-Aside, borrowers should call or email the farm loan staff at their local FSA county office.

The set-aside payment’s due date is moved to the final maturity date of the loan or extended up to twelve months in the case of an annual operating loan. Any principal set-aside will continue to accrue interest until it is repaid. This aims to improve the borrower’s cashflow in the current production cycle.

FSA previously announced it was relaxing the loan-making process and adding flexibilities for servicing direct and guaranteed loans to provide credit to producers in need. Direct loan applicants and borrowers are encouraged to contact their local FSA county office to discuss loan making and servicing flexibilities and other needs or concerns. Customers participating in FSA’s guaranteed loan programs are encouraged to contact their lender. Information on these flexibilities, and office contact information, can be found on farmers.gov/coronavirus.

FSA will be accepting most forms and applications by facsimile or electronic signature. Some services are also available online to customers with an eAuth account, which provides access to the farmers.gov portal where producers can view USDA farm loan information and certain program applications and payments. Customers can track payments, report completed practices, request conservation assistance and electronically sign documents. Customers who do not already have an eAuth account can enroll at farmers.gov/sign-in.

USDA Service Centers are open for business by phone appointment only, and field work will continue with appropriate social distancing. While program delivery staff will continue to come into the office, they will be working with producers by phone and using online tools whenever possible. All Service Center visitors wishing to conduct business with the FSA, Natural Resources Conservation Service or any other Service Center agency are required to call their Service Center to schedule a phone appointment.

More information can be found at farmers.gov/.

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**Virtual Meeting Hours for Livestock Questions**

If you have questions or concerns, we have answers.

If you need assistance with any topic regarding livestock we are here to help. Meeting hours will start at 2pm on Wednesday April 15, 2020. If you are interested, you will need to contact Ashley McFarland, directly via email or phone, contact can be found in this email.

Please also have a topic idea that you are interested in learning more about or have a specific question we can address with the audience. We look forward to hearing from you and seeing you on the call next week.

Ashley M. McFarland  
Cornell Cooperative Extension  
Central NY Dairy, Livestock & Field Crops Team  
Regional Livestock Specialist P.A.S.  
5657 State Route 5  
Herkimer, NY 13350  
https://cnydfc.cce.cornell.edu/  
Office : 315 866 7920  
Cell: 315 604 2156
A new study on bees, plants and landscapes in upstate New York sheds light on how bee pathogens spread, offering possible clues for what farmers could do to improve bee health.

In the paper, “Landscape Simplification Shapes Pathogen Prevalence in Plant-Pollinator Networks,” published April 28 in the journal Ecology Letters, Cornell researchers gathered data on the entire bee community and the plant species visited on 11 sites surrounded by varying amounts of farmland.

The study, which used empirical data and mathematical modeling, reveals how surrounding landscapes might affect the ways that bees and flowers interact, and how interconnected networks of plants and pollinators influence disease spread in bees. The findings are important because bee diseases have contributed to pollinator declines worldwide.

“Our results are telling us that we need to think about [bee, flower, pathogen and landscape] interactions,” said Laura Figueroa, the paper’s lead author and a doctoral student in the lab of Scott McArt, assistant professor of entomology.

The study found that 65% of bee species and 75% of flower species carried pathogens, and that pathogens are transmitted between bees and flowers.

Figueroa and colleagues began with an empirical study of the bee species present on wildflower strips in upstate New York. In 2012, the researchers began planting uniform plots of wildflowers on 11 sites with varying amounts of surrounding farmland. In 2015, the team observed, tracked and recorded which bee species visited which flowers, ultimately describing the interaction patterns of 46 bee species and 13 plant species. They found that the common eastern bumblebee, as the dominant bee species in upstate New York, has a greater influence than other species on disease transmission dynamics.

The researchers also collected bees and flowers from each site and screened them for pathogens in the lab.

“In more simplified landscapes [with more farmland], the dominant species visited more plant species,” Figueroa said.

This study found the bumblebees’ increased diet breadth spread pathogens across many more flowers, she said, which in turn reduced each individual bee’s exposure to new pathogens.

The researchers then entered the data from their empirical study into a mathematical model. They found that on a community level, accounting for all bee and flower species, the likelihood of a communitywide outbreak of disease decreased when the network of flowers and bees was highly interconnected, again, because pathogens were diluted across more flowers.

This is especially important when farmers plant wildflower strips to improve pollinator health.

While simple farm landscapes might lower disease spread on a communitywide level, each individual species behaves differently, depending on which flowers they visit, and which pathogens affect them. Future studies will parse out how individual species fare in simplified landscapes, which has important conservation implications.

“Potentially,” Figueroa said, “we could develop mixtures of wildflower species that can not only maximize food for the pollinators, but can shape interactions in a way that reduce the likelihood of disease spread.”

The study was supported by the National Institutes of Health, the National Science Foundation, the U.S. Department of Agriculture, the Garden Club of America and the Cornell Atkinson Center for Sustainability.
Support Local Farms and Local Farmers

Some websites to explore:

**Buy Local Food**—a searchable website with farmers who sell direct to consumers. You can narrow your search for product and location: [https://buylocalfoodny.org/](https://buylocalfoodny.org/)

**Finger Lakes Farm Country**—an agritourism website, but includes maple, honey, and other products available for sale: [https://fingerlakesfarmcountry.com/](https://fingerlakesfarmcountry.com/)

**Meat Suite**: buy quantities of meat from local suppliers: [https://www.meatsuite.com/](https://www.meatsuite.com/)

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<table>
<thead>
<tr>
<th>Tioga County Local Farm Food</th>
<th>Address</th>
<th>Food Available</th>
<th>Website</th>
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<tbody>
<tr>
<td>Engelbert's Farm Store</td>
<td>263 West River Road, Nichols</td>
<td>A Variety of Organic Meats, eggs, and vegetables</td>
<td>check their Facebook @ Engelbert Farms Store and Creamery for daily updates of available products</td>
</tr>
<tr>
<td>King Bird Farm</td>
<td>9398 W Creek Rd, Berkshire</td>
<td>24/7 Self serve farm store-chicken, beef, pork, lamb and eggs</td>
<td>kingbirdfarm.com</td>
</tr>
<tr>
<td>Our Five Acre Homestead</td>
<td>838 Prentice Hill Rd, New-ark Valley</td>
<td>homemade soaps and lotions</td>
<td>ourfiveacrehomestead.com</td>
</tr>
<tr>
<td>Bottomland Farm</td>
<td>838 Prentice Hill Rd, New-ark Valley</td>
<td>Now offering Home Delivery to Broome, Tioga, and Tompkins Counties, farm raised pork and chicken</td>
<td>bottomlandfarm.com</td>
</tr>
<tr>
<td>Spook Hill Farms</td>
<td>838 Prentice Hill Rd, New-ark Valley</td>
<td>Beef, pork</td>
<td>spookhillfarms.com</td>
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<tr>
<td>Hortsmann Hills Farm</td>
<td>79 Spencer Rd Candor, Berkshire</td>
<td>Beef</td>
<td>hortsmannhillsfarm.com</td>
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<tr>
<td>Side Hill Acres</td>
<td>79 Spencer Rd Candor, Berkshire</td>
<td>Farm Store offering goat milk, cheese, eggs, beef, pork, chicken, jams, jellies, variety of gluten free products</td>
<td>sidehillacres.org</td>
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<td>Marz Farms</td>
<td>3624 Wilson Creek Rd, Berkshire</td>
<td>pork</td>
<td>marzfarm.com</td>
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<td>Heritage Haus Farm</td>
<td>1042 Brown Rd Berkshire</td>
<td>online ordering of beef and pork</td>
<td>heritagehausfarm.com</td>
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Soil Test Results

By Jan Beglinger, Agriculture Outreach Coordinator for CCE Genesee

Soil testing is an easy way to find out the nutrient level of your soil. Once you know the soil’s nutrient content you can then add the appropriate amendments (such as lime or fertilizer) to optimize plant growth. Soil test results are going to give you some basic but necessary information about your soil.

Soil pH may be one of the most important things to know about your soil as it influences the chemical and biological reactions that occur. Soil pH also influences the availability and uptake of plant nutrients. Most plants grow best in a pH range of 6 to 7, as most nutrients are readily available. But plants do have different nutrient needs and some plants, such as rhododendron and blueberry, do best at more acidic pH conditions. If your soil pH is too acidic (less than 7), lime can be used to raise the pH. Conversely, if the pH is too alkaline (over 7), it can be lowered by applying sulfur to the soil. Your soil analysis should make a recommendation as to what product to apply. Changing the pH of the soil can take time. The soil’s parent material (bedrock), organic matter, temperature and moisture all influence the pH. Trying to change the soil pH by more than 1 unit is probably not feasible for home gardeners.

Plants need 18 elements for normal growth. Oxygen, hydrogen and carbon come from the air and water. The remainder come from the soil. Nitrogen, phosphorus and potassium are primary nutrients that plants use in relatively large amounts. Calcium, magnesium and sulfur are secondary nutrients that are also used in large amounts. Iron, boron, copper, chlorine, manganese, molybdenum, zinc, cobalt and nickel are trace elements that are needed in small amounts.

Nitrogen (N) is the one nutrient most often limiting plant growth. Nitrogen gives plants a rich, green color and is necessary for growth. You can tell if nitrogen is lacking because plants look yellow and sickly. But too much nitrogen will cause plants to put all of their energy into developing leaves rather than flowers and fruit. You won’t find nitrogen soil levels on your soil analysis. Nitrogen soil levels constantly change due to microorganism activity, organic matter levels and even changes in temperature and moisture. However, your soil test should make nitrogen recommendations based on the crop requirements for the season. It will generally tell you how much nitrogen you need to apply during the growing season.

Plants require fairly large quantities of phosphorus (P). Plants need phosphorus for normal growth and maturity as it is important for cell division and new tissue development. Plants deficient in phosphorus tend to be stunted and often have an abnormal dark-green color. Phosphorus is less available to plants when soil temperatures are cool, which is why in the spring, using a starter fertilizer with phosphorus may be beneficial to flower and vegetable transplants. If your soil test results indicate phosphorous levels are high, you should not use a fertilizer with phosphorus in it.

New York State does have regulations when it comes to phosphorous fertilizers and lawns. Per the NYS DEC website: “Do not use lawn fertilizer that contains phosphorus unless (1) you are establishing a new lawn, or (2) a soil test shows that the lawn does not have enough phosphorus. Do not apply any lawn fertilizer on impervious surfaces, such as sidewalks or driveways. If any fertilizer is spilled onto impervious surfaces, you must contain the spill to prevent runoff into drains or waterways. Do not apply any lawn fertilizer between December 1st and April 1st.” There are additional regulations which you can find on their website under the “Dishwasher Detergent and Nutrient Runoff Law.” When choosing a fertilizer without phosphorous look for the middle number to be zero, such as 22-0-15.

Plants take up a relatively large amount of potassium (K) each growing season. Plants deficient in potassium are more susceptible to diseases and insects. Potassium is also associated with the movement of water, nutrients and carbohydrates in plant tissue. If a plant cannot get enough potassium, growth can be
Got Commercial Vegetable Questions? Get live answers every **Thursday Night, 7pm to 8pm**, starting April 16!

CCE Vegetable Specialists across the state are teaming up to host a digital office hour every Thursday from via Zoom and/or phone. Growers can email or text pictures to specialists for discussion during the office hours. It’s also an opportunity for growers to speak with each other about challenges and opportunities.

What to expect?

- Dynamic troubleshooting with CCE Specialists
- Quality, farmer-driven production conversations
- Photo diagnostics/ID lessons

Join us each week at: [https://cornell.zoom.us/j/450507028](https://cornell.zoom.us/j/450507028) or by calling 1-646-518-9805, meeting ID: 450 507 028

Accepting pre-submitted photos and questions at vegofficehours@gmail.com
stunted and yields may be reduced.

When a soil test indicates that a particular fertilizer is required, the recommended fertilizer rate is intended to satisfy crop needs for the growing season and also to help build soil levels to the optimum range if they are low.

Soil organic matter is the part of the soil that is made up of decomposing plant or animal material. In New York, most of our productive agricultural soils have between 3 and 6 percent organic matter. The ideal soil organic matter level, from the standpoint of nutrient cycling and fertility, is 5 to 8 percent. There are many benefits to having a relatively high, stable organic matter level in your soil. These include improved water holding capacity, suppling essential nutrients and reducing water runoff.

Soil testing for the home gardener is a valuable tool. It allows you to get a base line on the soil fertility as it relates to pH, organic matter and whether there is a need for added fertilizers.

Resources: Michigan State University, University of Massachusetts, Cornell University, University of Maine, Colorado State University and NYS Dept. of Environmental Conservation Resources: Mass Audubon, Cornell University, North Carolina State University, University of Minnesota, Virginia Cooperative Extension, Iowa State University, and University of Illinois.

**News, Notes and Workshops for Tioga and Chemung County Farmers and Gardeners**

**Understanding our Current Beef Market Situation & Marketing your Beef Locally**

June 2, 2020, 7:30-8:30 via ZOOM. COVID-19 has brought a lot of uncertainty to livestock agriculture. Join us for an evening conversation with Cornell’s Beef Specialist, Mike Baker. We will talk through the current situation and explore some of the opportunities it may present for us. [Program and registration information.](https://agworkforce.cals.cornell.edu/2020/04/01/covid-19-employee-leave-and-farm-employers/)

**COVID 19 and Farms**


The document covers: cleaning and disinfection, face coverings, social distancing, high-risk locations, coordination with local health departments, employee health screening, quarantine/isolation, and farm-provided employee housing.

A companion document is a helpful checklist for farms to be sure they have covered every required item: [https://agriculture.ny.gov/covid-19-operator-checklist-farms](https://agriculture.ny.gov/covid-19-operator-checklist-farms).

Also included is a tip sheet intended for farm workers ([https://agriculture.ny.gov/covid-19-prevention-tips-farmworkers](https://agriculture.ny.gov/covid-19-prevention-tips-farmworkers)). This document is presently in English but should be available in more languages soon, and I recommend that you distribute it to all employees. Please carefully read the last section of the document titled “Empower Yourself,” this section informs workers about how to file complaints. Make sure that your business is in full compliance with all federal and state COVID-19-related sick leave and paid family leave requirements and that you are communicating this information to employees, see this post ([https://agworkforce.cals.cornell.edu/2020/04/01/covid-19-employee-leave-and-farm-employers/](https://agworkforce.cals.cornell.edu/2020/04/01/covid-19-employee-leave-and-farm-employers/)) for more information.
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