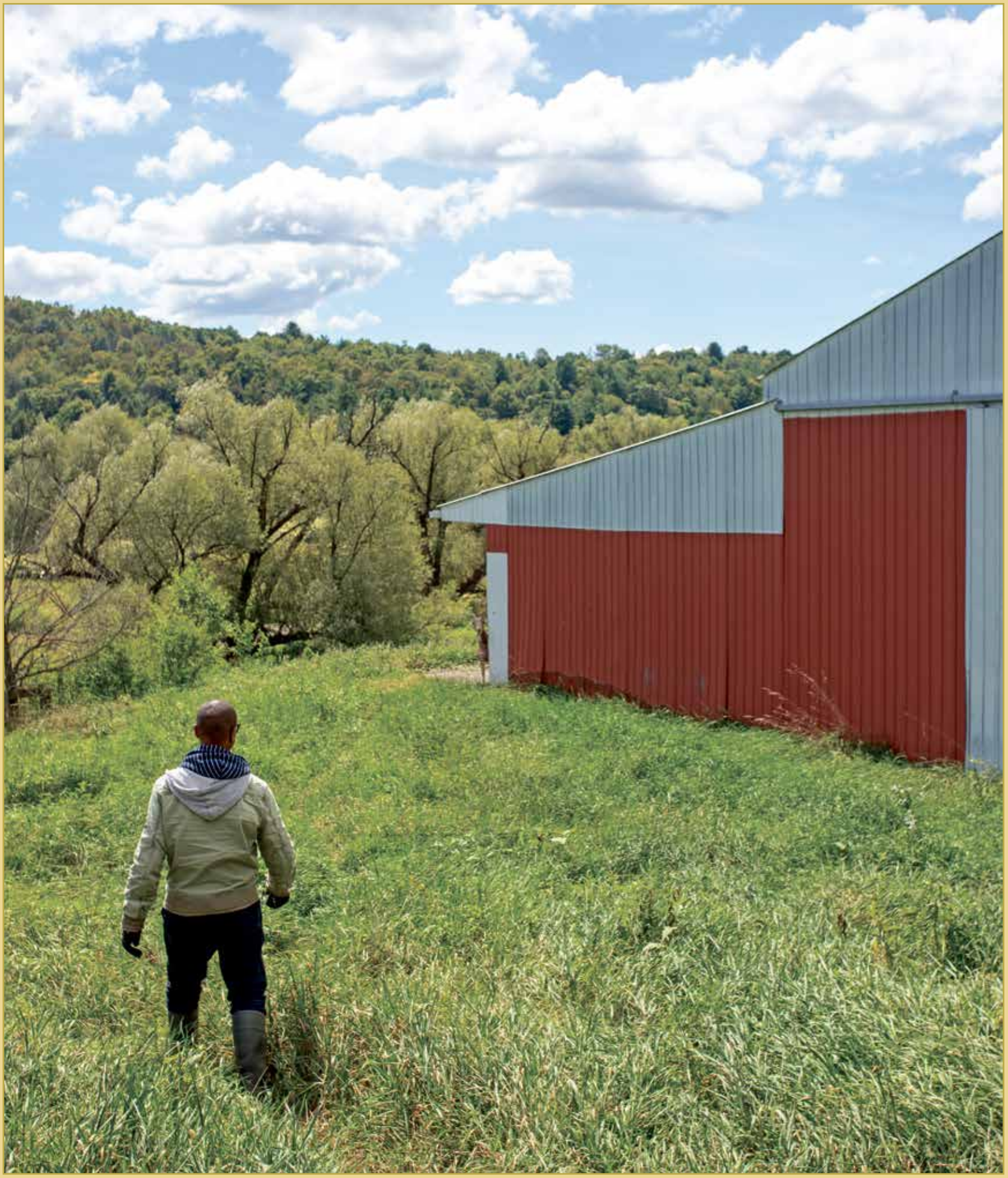
Small Farms Quarterly

Good Living and Good Farming – Connecting People, Land, and Communities



Feature Articles

CORNELL Small Farms PROGRAM

FALL 2025

SMALL FARMS QUARTERLY – FALL 2025

Cover photo: *Brett Grant is a beginning farmer in in Chenango Forks, a hamlet in Broome County, NY, where he is building his dream of a farm and wellness center that will be intellectually, practically, and emotionally uplifting for the community. You can read his story "Head, Hands and Heart: Hidden Pearls Farm & Healing Center" on page 17.*

Photo by Kacey Deamer / Cornell Small Farms Program

SMALL FARMS QUARTERLY

Good Farming and Good Living
Connecting People, Land, and Communities

Small Farms Quarterly is for farmers and farm families – including spouses and children – who value the quality of life that smaller farms provide.

Our goals are to:

- Celebrate the Northeast region's smaller farms;
- Inspire and inform farm families and their supporters;
- Help farmers share expertise and opinions with each other;
- Increase awareness of the benefits that small farms contribute to society and the environment;
- Share important research, Extension, and other resources.

Small Farms Quarterly is produced by Lee Newspapers Inc., and is distributed four times a year as a special section of Country Folks. Publication dates: January 15, April 16, July 9 and October 8, 2025.

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The Small Farms Quarterly is compiled by the Cornell Small Farms Program, based at Cornell University in Ithaca, NY. The Cornell Small Farms Program fosters the sustainability of diverse, thriving small farms that contribute to food security, healthy rural communities, and the environment. We do this by encouraging small farms-focused research and extension programs.

Anyone is welcome to submit articles for consideration. See our guidelines at smallfarms.cornell.edu/quarterly/writers/ and contact Kacey Deamer with inquiries. Articles should be 1,000 - 1,600 words in length with at least three high-resolution image options.

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Fall Program Updates

Cornell Small Farms' Growing Online Course Offerings Begin Live Webinars This Autumn

Your mind is one of the most important tools on your farm. Just like upgrading your equipment, continuing your education can make all the difference in the growth and success of your farm operation. If you want to enhance your business and technical skills to progress toward your farming goals, consider joining one of our online courses during the live instruction season beginning this autumn.

Registration is open for more than three dozen Cornell Small Farms Program courses during our fall and winter instruction season, with the first block having begun in September. Courses include a combination of self-paced reading and assignments along with live webinars with technical specialists where students can ask questions and engage with course material and fellow students in real-time. Each course is instructed by a member of our team of experienced farmers, Extension educators, and agricultural service providers.

Select from a wide variety of topics, including everything from crop and livestock production to business management and personal wellbeing. We also offer a growing selection of courses conducted in Spanish.

One new addition to our suite of courses this year is the new self-paced course "Foundations of Beef Production." This new mini-course covers the most basic beef knowledge you need, from breeds to terminology to production systems. It is led by expert educators Betsy Hicks and Abbey Birchenough and includes two free additional office hour sessions with them. If you are starting from zero, we recommend taking this mini-course and then enrolling in the live-instructed "Beef Cattle Production and Management," which begins Sept. 24.

Registration is open now for all courses. Instruction for the second block, listed below, will begin the first week of November:

- BF 120: Vegetable Production I – From Planning to Planting
- BF 122: Berry Production – Getting Started with Growing and Marketing Berries
- BF 130: Poultry Production – Profiting from Layers, Broilers, Turkeys, and Ducks
- BF 150: Farm Woodlot Management – Assessing the Economic Potential of a Managed Forest
- BF 151: Outdoor Mushroom Cultivation – Growing Mushrooms on Logs, Stumps, and Woodchips
- BF 152: Intro to Maple Syrup Production – Sugaring for Profit
- BF 170: Cut Flower Production – Introduction to the Business of Flower Farming

Learn more about our online course offerings, including

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Message from the Editor

Dear farmers and friends,

We often host listening sessions to hear directly from farmers about their challenges and needs. Our Small Farms Summits create regional gatherings of small-scale farmers and service providers who work together to analyze challenges and prioritize responses to improve small farm success.

We are excited to share that we are hosting a one-day summit this December to bring together farmers, Extension educators, university faculty, and other farm service providers. Our 2025 Small Farms Summit: Stronger Together will take place Dec. 5 at multiple linked sites across the state.

We anticipate that different summit locations will focus on different topics, including a specialty mushrooms and urban agriculture gathering in New York City, and a veterans in agriculture gathering in central New York.

Each summit site will connect in the morning to hear from agricultural leaders in the state as well as a special keynote speaker. Then in-person conversations will take place at each location, covering topics such as new enterprises, building small farm resilience, creating peer support networks, and small farm priorities moving forward.

A more detailed agenda and map of summit locations will be shared this fall. Scan the QR code or visit smallfarms.cornell.edu/projects/summit to learn more and sign-up for updates.

We look forward to our conversations on how small farms are stronger together.

The Cornell Small Farms Program Team

Lasers Match Common Herbicides at Zapping East Coast Weeds

A new study by researchers at Cornell AgriTech and Rutgers University found that automated laser weeding machines are as effective as common herbicides at eliminating East Coast pests and have other benefits to growth and yield.

By Krishna Ramanujan

Shooting lasers at foes is the stuff of science fiction, but now, a few farmers are fighting one of their greatest nemeses with a new technology – laser weeders.

Commercial laser weeders are large machines that pass over crop rows and take photos. A deep learning computer program analyzes the images to distinguish weeds from crops. Then, the lasers zap the weeds to kill them. The machine's computer program also allows farmers to prioritize types of weeds, such as smaller plants that are close to the crop that may be difficult for humans to see and eliminate, for the lasers to target.

The machines have mostly been used on the West Coast, but now a new study has tested how effectively they can work on the East Coast, where soils, crops, rainfall patterns, and weeds can be different.

The study found that the lasers worked as well as common her-

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Farmers attend demonstration of laser weeding machine.
Courtesy of Carbon Robotics

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scholarship opportunities, and register to learn with us, at smallfarms.cornell.edu/online-courses.

Welcome to Small Farms Radio, Our New Podcast

We are excited to share that the Cornell Small Farms Program has launched a monthly podcast, "Small Farms Radio."

For more than two decades, the Cornell Small Farms Program has supported small farms across New York State and beyond. We have seen how farmers work tirelessly to keep their farms viable in a system that was not built for them. We have seen an increasingly diverse group of people who dream of farming try to navigate land access. There are so many stories scattered across our state, just waiting to be told. Through "Small Farms Radio," we share the stories our farmers: why they do this work, what they struggle with, and their visions for the future.

"Small Farms Radio" serves as a hub of conversation for New York farmers, providing a window into the state's small-scale agricultural world for the broader public. We center stories of the diversity, hope, and resilience of our farmers and food system.

Our podcast episodes convene farmers, ag educators, and others in the food system to share their thoughts about where they think the future of agriculture should be heading and what they're doing to move it in the right direction.

Our first episode asked the question "Who Is A Farmer?" to a panel of farmers, service providers, and other agriculturalists. Subsequent episodes have featured the innovative land tenure model of West Branch Commons and the story of two farmers from two different generations coming together to keep farmland in agricultural production, as well as what farm transitions have looked like for Northland Sheep Dairy.

This summer we shared two episodes about mushrooms in New York City moving from the farm to your plate and back again. (You can read more about that story on page 7.)

You can subscribe on your preferred podcast platform to stay connected to "Small Farms Radio."

"Small Farms Radio" is produced by the Cornell Small Farms Program, with contributions from farmers, educators within Cornell Cooperative Extension (CCE), faculty and researchers with the Cornell University College of Agriculture & Life Sciences (CALS), and other service providers across the Northeast. The podcast is supported by a Rural Humanities Grant, which focuses on learning from rural New York's histories, cultures, challenges, and futures.

We welcome anyone who has a story to share.

Futuro en Ag Project Had a Busy Summer

The Futuro en Ag team wrapped up an ambitious summer, leading five bilingual Farm Field Days from Western New York to Long Island, hosting a monthly cohort-based Farm Field School in the Hudson Valley, developing hybrid courses on agricultural cooperative development, and visiting farms across the state for technical assistance.

This autumn, the team is continuing its monthly bilingual farmer-to-farmer learning circle, Juntos Aprendemos, is running its core Spanish-first online course, "Cómo Iniciar su Negocio Agrícola," and is preparing for additional online offerings. To connect to the Futuro community and find out about upcoming events, go to smallfarms.cornell.edu/projects/futuro or call, text, or write to us on WhatsApp at 607.793.4969.

El equipo de Futuro en Ag ha culminado un ambicioso verano: lideró cinco Días de Campo Agrícolas bilingües desde el oeste de Nueva York hasta Long Island, organizó una Escuela de Campo Agrícola mensual en el Valle del Hudson, desarrolló cursos híbridos sobre el desarrollo de cooperativas agrícolas, y visitó operaciones agrícolas en todo el estado para brindar asistencia técnica.

Este otoño, el equipo continúa con su círculo mensual de aprendizaje bilingüe entre agricultores, "Juntos Aprendemos," imparte su curso virtual en español, "Cómo Iniciar su Negocio Agrícola," y se prepara para ofrecer más cursos virtuales. Para conectarse con la comunidad de Futuro y enterarse de las próximas ofertas educativas, favor visitar smallfarms.cornell.edu/projects/futuro, o escribirnos por WhatsApp o mensaje de texto al 607.793.4969.

‘Farm of the Future’ Showcased at Cornell PRO-DAIRY Celebration

An event at the Cornell University Ruminant Center highlighted cutting-edge management practices and monitoring technology that will help New York State dairy farmers bolster yields, improve animal health, and increase sustainability.

By Caitlin Hayes

Julio Giordano, professor of animal science in the College of Agriculture & Life Sciences, shows dairy industry leaders a collar that can track cows’ food intake, at the Cornell University Ruminant Center.

The Cornell University Ruminant Center in Harford is a commercial-scale dairy farm and one-of-a-kind testbed for new technologies and strategies that benefit NYS dairy farmers.
Devin Flores / Cornell University

Fifteen miles southeast of Cornell’s Ithaca campus, in a sprawling valley surrounded by wooded hills, a Cornell-operated, commercial-scale dairy farm resembles many across New York State. Adjacent to manure and feed storage, two large, red barns house 570 milking cows, all of it encircled by crop fields.

But look closely, and you can see that the Cornell University Ruminant Center (CURC) isn’t a standard dairy farm. On top of the work of managing the farm, a vast number of questions are being asked and answered. Cameras and sensors are affixed to the barns’ rafters. Cows wear collars adorned with sensors. A long line of feeding bins are labeled with project numbers. There’s evidence that researchers are studying every piece of the dairy farm system, from cows’ diet and reproduction to manure management to growing the crops that feed the cows.

Cornell faculty, staff and industry partners say CURC, in Harford, NY, is a one-of-a-kind testbed for new technologies and strategies that, since its construction in 2013, has been crucial to helping NYS dairy farmers improve processes, profits, and environmental stewardship.

“Today shows me that integrated system that we have in New York State, starting first and foremost with Cornell,” said Katie Howard, deputy commissioner for the NYS Department of Ag & Markets, at a June 30 event

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bicides in test plots of East Coast peas, beets, and spinach.

“We wanted to know if laser weeders are going to perform as well as business as usual here on the East Coast, and it turns out, they can,” said Lynn Sosnoskie, assistant professor in the School of Integrative Plant Science, Horticulture Section at Cornell AgriTech in the College of Agriculture & Life Sciences. Sosnoskie is the first author on the paper, while collaborator Thierry Besançon, associate professor and Extension weed science specialist at Rutgers, is corresponding author of the study, published in June in Pest Management Science.

Seattle-based Carbon Robotics, whose machines were tested in the study, has sold around 100 laser weeders. They come with a hefty price tag of up to $1.5 million each. “It’s important for us to test them, because growers are assuming a lot of risk with technology and are putting a lot of capital investment in something they may not know will work,” Sosnoskie said. Also, companies can quickly fail, so farmers need reassurances now, she said. There are currently three onion farms in New York using laser weeders.

Most conventional farmers control weeds with costly herbicides, which can be injurious to the crop, resulting in lower yields. Organic and conventional farmers may hire workers to hand weed, which is time and labor intensive.

In the study, the researchers conducted three research trials in New Jersey and New York on pea, spinach, and beet crops, with four treatments: a control where weeds were allowed to grow freely; applications of common herbicides; laser weeders alone; and a combination of lasers and herbicides. Plots were monitored for crop emergence, crop growth and development, weed emergence, weed cover and density, and total weed biomass produced. The study included two to three passes with the laser weeders, each about 10 days apart.

Results showed that laser weeding was as effective as or better at controlling annual weeds than three common herbicides (S-metolachlor, bentazon, and phenmedipham). While the lasers did well at eliminating such weeds as lambsquarters and ragweed, they were less effective at controlling purslane and annual grasses. That’s because lasers target the plant’s growing point, called the meristem, and some weeds have hidden meristems; for example, in grasses, the growing points are below ground. The weeders generally worked better against smaller species, which take less energy to kill, Sosnoskie said.

Compared to untreated controls, laser weeding reduced the percentage of a plot covered by weeds by up to 45%; and reduced weed density – the number of weeds present in a square meter – by up to 66%, resulting in 97% less weed biomass by season’s end, according to the paper.

The laser weeders offered other benefits. The herbicides evaluated in the study delayed crop emergence and/or stunted the crops, but with the lasers crop stunting was less than 1% and crop biomass increased by up to 30% when laser weeding replaced herbicide use, the authors reported.

Next steps will include optimizing laser weeding across different environments and weed species, and evaluating commercial units with improved lasers and faster processing speeds.

This article originally appeared in the Cornell Chronicle.

Krishna Ramanujan is a senior staff writer at the Cornell Chronicle focusing on life sciences, agriculture, and veterinary medicine.

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showcasing CURC and the research and Extension associated with it. “The relationship between the state and Cornell, and with industry, our processors, our producers, and the research that’s being done here – that’s really the envy of the country.”

The daylong event, which began with presentations at Hopshire Farm and Brewery and ended with a tour of CURC, was attended by more than 60 industry leaders and Cornell faculty and staff associated with CURC and PRO-DAIRY, an applied research and Extension program in the College of Agriculture & Life Sciences (CALS) that has supported the NYS dairy industry since 1988. The aim was to update the community on recent advances and new projects, celebrate accomplishments, and take stock of available resources and needs at a time of uncertainty in the future of federal and state funding. The meeting was part of a larger effort by PRO-DAIRY to make the myriad efforts of Cornell Extension associates and researchers more tangible for stakeholders.

“It’s really to help illustrate to those who are involved the comprehensive nature of how we support the industry,” said Thomas Overton, director of PRO-DAIRY and professor of animal science (CALS). “We have PRO-DAIRY but also a variety of other research programs that feed into that. It’s an ecosystem where we’re all interacting and looking at innovation in all areas of farm management.”

New York State ranks fifth in milk production nationally, and the industry is poised to grow, with multiple processors recently announcing plans to build or expand operations in the state. Chobani, which already has a significant presence in NYS, announced plans to build the largest dairy processing plant in the country in Rome, a $1.2 billion investment; fairlife is building its first NYS plant in Webster, near Rochester; and other companies are moving to the state or expanding existing operations.

Howard, as well as Tonya Van Slyke, executive director of the Northeast Dairy Producers Association, said a big part of the attraction for these processors is the community of dairy farmers in the state and their success, which is bolstered and accelerated by the relationship they have with Cornell.

“I just can’t say enough about how much PRO-DAIRY and Cornell, the work they do – the research, the outreach, education, collaboration – helps farmers grow,” Van Slyke said. “Our relationship allows us to make sure that research is front and center, to make sure we have a scientific approach to continuous improvement.”

Envisioning the ‘Farm of the Future’

Researchers at CURC said they are building a foundation for the farm of the future, but what does that look like? In multiple demonstrations at CURC, researchers and Extension staff painted a picture of a future in which farmers collect and harness more data for decision-making, with the ultimate goal of using those data to create an integrated, circular farm system where every piece – from feeding to manure management to crop production and back to feeding – is optimized for productivity, animal health, and lower greenhouse gas emissions.

But as PRO-DAIRY Senior Extension Associate Jason Karszes said, in order to manage it, farmers first need to measure it.

With a $4.3 million grant from USDA, Julio Giordano, professor of animal science (CALS), has established the Cornell Agricultural Systems Testbed & Demonstration Site (CAST) for the Farm of the Future. CAST is using CURC to develop and test emerging, data-driven technologies and techniques that will help farmers gather the data they need to optimize and react to shifting conditions.

Katie Howard (left), deputy commissioner for the NYS Department of Ag & Markets, talks with Thomas Overton, director of Cornell CALS PRO-DAIRY and professor of animal science in the College of Agriculture & Life Sciences, at an event showcasing the Cornell University Ruminant Center.

Examples include overhead cameras in the milking parlor that could allow farmers to more easily monitor animal health and mobility. Collars with built-in sensors could help farmers measure the food intake of individual cows and how that relates to output, and environmental monitoring could provide farmers with data about air quality and emissions – to name a few. The vision is to eventually create decision-making tools such as a farm dashboard that incorporates multiple data streams to give farmers a full picture of what’s happening on their farms.

“We’re trying to bring data-driven technologies as close as possible to application,” Giordano said. “And we are working in this feedback loop with what we know from farms, what we know is coming, what’s interesting, and we’re bringing them to our testbed first … some things will have a pretty substantial impact very quickly, and there are some things that will fail, but that’s the point. We are doing that testing so you don’t have to.”

Researchers are also testing feeding changes that could increase productivity, reduce methane emissions, and ensure cows’ health through the cycles of reproduction; new ways to store and treat manure to reduce emissions, improve its use as a fertilizer for crops, and even to generate power; and technologies and best practices for growing more resilient crops.

All of this research is connected to what’s happening on NYS farms and very often benefits from farmers sharing their data. The Nutrient Management Spear Program, run by Quirine Ketterings, professor of animal science (CALS), has recently devised strategies for using sensor technology to study crop yields and for measuring total farm nutrient cycling and greenhouse gas emissions. She has worked with farmers throughout the state to collect data they can then use to benchmark against themselves or others.

“Farmers across New York State have provided data back in terms of different soil types and overall yields from crops and the use of different management practices,” Van Slyke said. “We need CURC and that relationship with the farms around the state – it’s a circular relationship, and they’re very, very important to one another.”

That relationship has been built over decades through PRO-DAIRY’s direct Extension work with farmers – bringing farmers together for groups and conferences around the challenges they face and providing needed analyses and impartial, data-driven advice.

Retired dairy farmer Meghan Hauser said she consulted with PRO-DAIRY staff on a weekly basis, for advice on feeding calves, barn construction or renovations, the best forages to use, how to protect the environment, and how to keep employees safe.

PRO-DAIRY and the research at CURC is needed in multiple areas going forward, Hauser said, as NYS’s capacity for processing increases, including understanding climate change’s influence on food production and dairy’s role in greenhouse gas mitigation, as well as challenges in staffing and management.

“We need talented researchers to seek out and work on our next challenges,” she said. “A fully staffed, fully funded, fully equipped PRO-DAIRY team is vital to the future of New York State dairy … it’s our most powerful weapon for long-term success.”

This article originally appeared in the Cornell Chronicle.

Caitlin Hayes is a staff writer for the Cornell Chronicle, focusing on stories related to impact and sustainability.

Fungi in the City and on the Farm

Small Farms Radio covers the urban mushroom lifecycle and explores indoor mushroom production.

By Olivia Young & Emma Davis

How does a mushroom move through the city? What does it take to grow mushrooms indoors? These questions were tackled on two recent episodes of the Small Farms Radio podcast as our agroforestry and mushroom specialist Connor Youngerman talked with mushroom farmers, chefs, suppliers, and consumers in New York City.

Connor Youngerman (left) and Cam Bremner (right) look at petri dishes of mycelium at Cam's Urban Farm in Queens while recording a conversation for Small Farms Radio.
Yolanda Gonzalez / Cornell Cooperative Extension

Fungi in the City

Urban mushrooms' journeys are shaped by compost collection vans, not subways or taxi cabs, Youngerman learned. With the help of farmers, chefs, and business owners, Youngerman explored the lifecycle of urban mushrooms and how several organizations are working to close the loop of food and food waste in New York City.

As a researcher and educator with our Specialty Mushrooms project, Youngerman is always looking to connect with mushroom farmers, suppliers, and consumers across the region. He explained to podcast host Jamie Johnson that NYC is a hub of mushroom farming. Over the course of many trips to the city, Youngerman formed connections with a suite of farmers, entrepreneurs, chefs, and educators (some of whom participated in our Community Mushroom Educator program). Although from different backgrounds, they shared a common thread: the love of mushrooms. Youngerman decided to follow a mushroom through the city, to make sense of the unique cycle of urban mushroom production.

Smita and Ithu Chakma, owners of Big Apple Fungi, show off their harvest of Golden Oyster mushrooms at their basement farm in Forest Hills, Queens.
Connor Youngerman / Cornell Small Farms Program

His journey began at the Empire State Building. Chef Morgan Jerrett at the STATE Grill and Bar explained that her restaurant, like many, must get creative to deal with the large volume of food waste. Looking to dispose of their waste simply and sustainably, STATE formed a partnership with Afterlife Ag, a circular mushroom production company based in Queens. Co-founder Winson Wong shared that he was inspired to start Afterlife to address the negative impacts of food waste. Over 95% of American food waste goes to the landfill, emitting harmful greenhouse gases.

"Commercial waste management companies are expensive to work with … they throw all these food scraps away, hours away from New York City, into landfills, because that's the cheapest thing to do," Wong said. "We really wanted to solve for that problem."

Afterlife collects food scraps from across the city and turns them into substrate blocks to grow oyster, lion's mane, chestnut, and pioppino mushrooms. But after production, the blocks of food scraps become depleted of nutrients. Instead of discarding them as waste to the landfill, Wong searched for a way to repurpose the spent substrate.

In the next step of his journey, Youngerman met with Corey Blant, the director of agriculture at New York Restoration Project (NYRP). Blant first learned about urban mushroom farming at a mushroom inoculation event at Red Hook Farms in Brooklyn, organized by the Cornell Small Farms Program. After the event, Blant enrolled in two Small Farms courses on mushroom production, which inspired him to incorporate mushrooms into some of the public gardens and parks that NYRP manages. On his hunt for a source of mushroom spawn to expand production, he found Wong at Afterlife. Wong agreed to supply Blant with the spent substrate blocks, which still contained live mycelium. With the help of some extra nutrients, Blant turned the spent substrate into a key component of NYRPs community gardens in a cycle of "infinite mushrooms." The remainder of the spent substrate could be used as soil amendments to beautify NYRP's parks across the city.

And the cycle continues: food, becoming restaurant waste, transforming into mushrooms, and producing waste again, before being brought back to life in NYRP's gardens. Youngerman remarked that the urban mushroom farming system in NYC is one of the most "closed" production loops in agriculture. Farmers can turn waste into valuable growth medium over and over again, preventing environmentally-damaging food waste from sitting in landfills, and putting fresh mushrooms on the table for residents across the city.

"Mushroom farmers […] tend to be very resourceful people," Youngerman said. "[Maybe] just by hanging out with mushrooms you become more resourceful, because you begin to see the world through their paradigm."

Fungi on the Farm

Youngerman next took podcast listeners on a tour of Queens, venturing into nondescript buildings and ducking into basement hatches to discover the innovative world of indoor mushroom production. Here he learned how some growers in the big city are producing mushrooms from "spore-to-table" and every step in between. The first stop was to meet Louis Vassar, a self-described

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New LakeEffect Winter Barley Offers Flurry of Benefits for NYS

Researchers at the Cornell Small Grains Breeding Program have released a new variety of winter malting barley with higher yield, better disease resistance, and superior brewing profile.

By Craig Cramer

LakeEffect, the first winter malting barley released by the Cornell Small Grains Breeding Program, is set to take the New York craft beverage industry by storm. The new variety produces high yields, is disease resistant, and has a good malting profile, researchers said.

"We're excited about LakeEffect because it couples the agronomic performance farmers want with the superior malting qualities brewers and distillers prefer," said Mark Sorrells, professor of plant breeding and genetics in Cornell's School of Integrative Plant Science (SIPS) in the College of Agriculture & Life Sciences, who led the breeding effort.

"What's truly remarkable is that we took this from first cross to commercial release in just seven years, which is incredibly fast to move a new variety to market," he added. Seed for the first commercial LakeEffect crops will be available in summer 2026 for autumn planting.

LakeEffect produces higher grain yields than either of its parents, SY Tepee and Lightning – two winter barleys with a proven track record – but where it really shines is in its resistance to diseases, which can be serious in the often wet and humid conditions faced by New York barley growers, said Gary Bergstrom, SIPS emeritus professor of plant pathology (CALS).

"Among available varieties, LakeEffect has the highest level of resistance to Fusarium head blight and its associated contamination of grain by the fungal toxin DON," he said. "It also resists scald and powdery mildew – two common leaf diseases that often reduce barley yields in New York."

In addition to the characteristics that benefit growers, LakeEffect has the malting profile that brewers and distillers want, said Siim Sepp, a doctoral student in the Sorrells Lab who has continued analyses started by former graduate student Karl Kunze.

"It offers strong malt extract potential, high kernel weight, low beta-glucan levels, and well-balanced protein levels, all key attributes for quality brewing and distilling," Sepp said. "It hits all the marks for malting quality and performance in the field."

David Benscher, a research support specialist in the Sorrells Lab, conducted on-farm tests across the state for several years. "We're confident it is well-suited to different regions in New York," he said.

LakeEffect 9

Mark Sorrells, professor of plant breeding and genetics in Cornell's School of Integrative Plant Science (SIPS) in the College of Agriculture & Life Sciences, with the newly released LakeEffect winter barley.

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amateur mycologist. Youngerman met him at Biotech Without Borders, a community biology lab in Long Island City, Queens. This unassuming building serves as a "makerspace" for microbiologists. Vassar uses tools and techniques from microbiology to produce mushroom spawn, the foundational material used to inoculate substrates to grow mushrooms. Spawn are clones of existing strains of mushroom mycelium. Vassar works under a flow hood, which creates a sterile bubble to keep competitors in the air away from the freshly made spawn and substrate. The spawn created in Vassar's lab are sold and used by small-scale mushroom growers.

In the next step of his journey, Youngerman met Smita and Ithu Chakma, owners of Big Apple Fungi in Forest Hills, Queens. He followed them down a basement hatch to find a space alive with racks of inoculated mushroom blocks and a multitude of different varieties of fruiting mushrooms in climate-controlled tents. Together, the Chakmas produce 250 to 300 pounds of mushrooms every week, focusing on varieties rarely seen in grocery stores.

The final stop was Cam's Urban Farm, a compact and efficiently designed basement grow operation run by Cam Bremner. As the solo operator, Bremner has engineered his setup to maximize output using minimal space. He walked Youngerman through his streamlined process, from producing spawn to selling mushrooms directly to local restaurants.

"I can grow 300 pounds of mushrooms a week out of 850 square feet of space. That kind of output is just completely unheard of in any [other] farming," Bremner said. He views urban farming as a core principle of his work and he believes it is the future of agriculture.

"Every single farm that I visited is different and there's so much creativity that gets embedded into every step in growing mushrooms," Youngerman told podcast host Jamie Johnson as he reflected on his trip to Queens. "I came away just in awe of how creative and diverse and accessible mushroom farming can be – and that delights me."

If you're curious about growing mushrooms yourself, visit the Cornell Small Farms Program's Specialty Mushrooms project page at smallfarms.cornell.edu/projects/mushrooms. It is a clearinghouse for mushroom resources, PDF guides, and online courses.

Youngerman also has some advice for beginning mushroom growers. Before diving into full-scale production, first try a ready-to-fruit block. See if you enjoy growing mushrooms and, more importantly, eating them.

Listen to the full episodes of the podcast to learn more about urban mushroom farming and the power of fungi for both recycling food waste and as a food source. Scan this QR code to visit the Small Farms Radio website. You can subscribe on your preferred podcast platform, listen to full episodes, and read more about this new podcast.

Olivia Young and Emma Davis are interns working with the Cornell Small Farms Program.

Should We Mow Our Pastures?

In the fourth installment of our new series "Where's the Grass?" we share that while you don't always need to mow your pastures, there are times that it needs to be done.

By Rich Taber

This is the latest installment in the "Where's the Grass?" series. Older iterations may be found archived on the Small Farms website at smallfarms.cornell.edu. You may also find a collection on beef cattle management – the "Where's the Beef?" series.

The question always seems to come into discussion in grazing circles as to whether you should mow your pastures as a routine practice. The short answer is "It depends." Mowing pasture paddocks entails using any of a variety of machines to cut back weeds, to cut off weed seed heads before they mature, and to make better conditions for the grass plants to grow.

We need to keep in mind that mowing pastures entails an expenditure of time, labor, fuel, and machinery operation. Machinery operation means that the machinery is being depreciated that much more, the more you mow. When machines wear out, they break down and must be repaired or replaced.

The need definitely exists, however, to mow pastures in certain circumstances. When is the best time to mow? Probably right after the animals are through grazing a paddock. This will give the grass time to regrow. If you wait too long to mow after grazing, then you are cutting into your next rotation's supply of grass.

Why do we mow? The most important reason is to stem the growth of weeds. Some pastures can look horrible with weed infestations. There are other ways to control weeds, however. You can mob graze sheep and goats if you have them; they are both grazers and browsers and can make short order of many common weeds. You can also spray for weeds, if that is your inclination. I only suggest that you absolutely know what you are doing to ensure accurate coverage. If you are organically inclined, this will not be an option, and then we will be back to mowing.

Another good reason to mow pastures is in the reclamation process. If a field has been abandoned or has not had any haying or grazing occurring in a while, then mowing can kill off those existing weeds. You must keep your soil pH at around at least a 6.2 level. Nature abhors a vacuum, and when the ground is not covered, she will swoop in and have weeds proliferate, especially when the pH is below 6.2. By keeping pH levels up, and fertility levels up, the grasses will stand a much better chance at survival.

Another time that mowing pastures and hayfields occurs is in years much like 2025. We had two continuous months of solid, almost daily rain, making it all but impossible to make dry hay. Making silage and baleage was challenging too. As a result of this aggravating rain pattern, we had a lot of very low quality hay accumulate in fields well into late July. If we don't want to make hay out of this stuff, then we can mow it, or brush hog it, and let it recycle as organic matter, providing nutrients for later growth.

The author's 10-foot brush hog, which attaches to the drawbar and is raised and lowered hydraulically.

What can we mow the weeds with? Normally we would use some sort of brush hog (technically, a "rotary mower" – Bush Hog is a brand). You can also use an older haybine or a mowing machine. You can use your disk bine that you mow all of your hay crops with. I prefer not to do that, as a disk bine is a high value implement that we need to keep operational for mowing hay crops. We don't need to be sacrificing it with the rougher application of brush hogging.

You can also use disk mowers, which are like disk bines but do not crush the hay. There are also machines known as rotary mowers, which do an excellent job but tend to be of short width, typically five or six feet.

How big of a brush hog should you use? I would suggest as big as your tractor can easily run without overloading the tractor. Brush hogs can vary in width from about five feet all the way up to 15 feet. The largest mowers are known as "bat wing" mowers, whereby two sections on either side of the machine are raised hydraulically and then lowered when it's time to mow.

The reason I suggest using as big a mower as your tractor can operate is due to the oftentimes excessive amounts of time that it takes to accomplish all of this brush hogging. My bigger brush

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LakeEffect barley produces higher grain yields than either of its parents and is resistant to disease.

Images provided

Benscher expects to harvest about 100 bushels of foundation seed from Cornell fields this summer. That seed will be planted by certified growers this autumn for harvest next summer that farmers can then purchase and plant for the first commercial LakeEffect crops in 2026.

For more information on seed availability, contact the New York Seed Improvement Program at 607.255.9869 or nysip@cornell.edu.

This article originally appeared in the Cornell Chronicle.

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Compaction Crisis: The Unseen Battle Farmers Face Every Day

The effects of soil compaction on crop growth are often overlooked, especially compared to many other soil health indicators. In New York State, Kitty O'Neil is determined to investigate its impacts on-farm.

By Madeline Hanscom

In recent years, scientists and farmers have paid increasing attention to the impacts of soil health on crop yields. Many farmers have already adopted soil health management strategies that can protect their soil while boosting crop growth and yield. These strategies can range from nutrient management plans to reducing tillage and using cover crops.

However, compaction tends to fly under the radar, despite its potential to significantly influence crop growth and overall soil functions. Recognizing this, Kitty O'Neil, Cornell Cooperative Extension (CCE) agricultural climate resiliency specialist, took the initiative to further investigate compaction over a decade ago.

A tractor equipped with high-flex sidewall tires (left), capable of operating in fields at low tire pressures, compared to a tractor with standard high pressure tires (right).
Kitty O'Neil / Cornell Cooperative Extension

Soil becomes compacted when soil particles are compressed together, reducing porosity and increasing density.

There are a couple of key contributors to this issue that happen on-farm, O'Neil explained. Compaction is often worsened in farm fields when heavy equipment is used on wet soils – the water acts as a lubricant, allowing particles to slide and collapse under pressure.

Small tire contact area and elevated tire pressure are also contributors to increased compaction, O'Neil continued. Farm equipment can be heavy, and small tire footprints combined with high tire pressures concentrate the weight on less surface area, leading to greater soil compression. With lower tire pressure and larger tire contact area, the weight can be distributed over a greater area, reducing the load per square inch.

The best way to mitigate compaction, as far as we know, is to prevent it by identifying the root of the problem and avoiding these practices, O'Neil said.

"The extent of compaction in New York agricultural fields is not well known," O'Neil said. "What we do know is that compaction affects the ability of plants to penetrate the soil volume to find the nutrients and water that they need, and at that point they become less drought resistant. This is really crucial when it comes to maintaining climate resilience on our farms – the more that our farms can adapt to extreme weather conditions, the better."

Other consequences of compaction include impeded water infiltration, drainage, and gas exchange, O'Neil stated. This can lead to increased runoff and surface flooding following heavy rains – both of which can lower crop yields, increase the amount of energy needed to till a given field, and contribute to soil and nutrient losses.

"Soil compaction is a form of soil degradation that is difficult for farms to detect and evaluate, mainly because it is difficult to observe from above the soil surface," said O'Neil. "That's where the research comes in."

Soon after beginning her research, O'Neil found that most soil sampling protocols do not fully account for variability in a field. In other words, they don't illustrate the differences in compaction severity within a given farm field. She noticed that there was considerable within-field variability, due to soil type diversity and equipment travel paths, that needed to be taken into account.

O'Neil partnered with the Cornell Nutrient Management Spear Program (NMSP), working closely with Manuel Marcaida, NMSP data analyst, and more recently, Issa Diaz, Ph.D. student, to address this issue.

"We amended the sampling protocol with Kitty," Marcaida said. "We identified where to take the compaction

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hog is 10 feet in diameter, and it always seems to take inordinate amounts of time to get all of my brush hogging done. I have a small, older brush hog that is seven feet in width that is mounted on one of my smaller tractor's three-point hitches. This is a dandy outfit to operate in close quarters but is certainly not ideal for bigger acreages.

I would also suggest that you buy as good of a quality brush hog that you can afford. They can be extremely expensive, but you want to shy away from the cheap, imported machines that you find at the typical big box farm store. These imported machines change manufacturers every few years and finding parts for them can be difficult in years to come.

How often should you brush hog? If you're going to do this, it's probably good enough to at least do so once per year, typically after the first grazing. You don't have enough time to mow more than this anyway, what with managing all of your hay crops and correctly managing your rotational grazing system, working a job off of the farm, etc. Keep in mind that there are many graziers who do a top-notch job in managing their pastures and do little or no mowing/brush hogging. I mow mine when I can get around to it!

Rich Taber is an agriculture educator with CCE Chenango. He lives with his brush hogs, tractors, beef cattle, woodlot, and wife Wendy on a 165-acre hill farm in nearby southern Madison County. He can be reached at rbt44@cornell.edu.

This is why we brush hog pastures and hayfields. After brush hogging, the grass will grow back very nicely.

Rich Taber / CCE Chenango

Cornell, Wegmans Partner to Train Growers in Food Safety

Wegmans produce farmers work with Cornell AgriTech's Produce Safety Alliance to improve food handling practices and reduce foodborne illness.

By Laura Reiley

For the last 15 years, Cornell has helped Wegmans and its growers comply with government regulations and keep consumers safe from foodborne illness. Fresh fruits and vegetables account for a significant portion of outbreaks, in part because they are often grown in open fields in soil, and in part because they are frequently consumed raw.

Farmers and produce buyers meet these challenges by doubling down on food safety protocols, from practices in the field to new technology in the grocery aisle. The Cornell-based Produce Safety Alliance (PSA) has been essential in effectively disseminating information and instituting new training, according to Steve Strub, manager of produce food safety for Wegmans Food Markets.

The PSA was established in 2010 through a cooperative agreement between Cornell, USDA and the FDA.

Strub said a lot of his growers are people he's known for more than a quarter century, and that he spends much of his time visiting the farms and having hard conversations about what is required to keep fruits and vegetables safe.

"In 2010, we started working with the Produce Safety Alliance," he said. "It was not long after the spinach E. coli outbreak occurred, which affected 26 states and Ontario, Canada; that's what got Wegmans involved."

Strub, who has worked for Wegmans for 28 years, the past nine as produce manager for the company's 110 stores, credits Elizabeth Bihn, director of the PSA and director of the National Good Agricultural Practices (GAPS) Program at Cornell AgriTech, as a central reason the Wegmans-PSA collaboration has been so successful.

"Betsy has been with us since the get-go," Strub said. "Talk about real and practical. She's an annual part of our training; she's the star of our show and has a great connection with our growers. They know her and respect her knowledge and experience. She and her PSA team have been helpful to Wegmans, participating in trainings and sharing their knowledge with our growers."

On every farm, one person must be trained in food safety best practices, per the FDA's Produce Safety Rule, as well as Wegmans' own requirement of vendors, he said. The PSA Grower Training curriculum includes seven modules that farmers work through, ranging from worker health and hygiene to agricultural water and post-harvest handling and sanitation.

"The trainings are pulled together in whatever states we do business in – we invite the experts, reaching out to land-grant universities and state agriculture departments," Strub said. "And food safety trainings aren't just about food safety – they're about decreasing plant diseases, increasing shelf life, less shrinkage at stores, and a better overall customer experience."

The Food Safety Modernization Act (FSMA) went into effect in 2011, but its Produce Safety Rule was not completed until 2015, representing the first time produce had been federally regulated. A further phase of FSMA will be instituted in the next few years, adding greater traceability for food categories like produce, as well as increased recordkeeping requirements, especially for "high risk" foods.

This will increase the urgency of the work the PSA and Cornell AgriTech do, Bihn said, because challenges persist: Foodborne illness outbreaks in the U.S. rose in 2024, with confirmed cases increasing by 25% compared to the previous year. Several factors contributed to this increase, including changes in food handling practices, increased consumption of certain risky foods, a wider distribution of contaminated products, and better science for the detection and tracking of outbreaks.

Elizabeth Bihn is the director of the Produce Safety Alliance and director of the National Good Agricultural Practices Program at Cornell AgriTech.

Ryan Young / Cornell University

"So much of this is dependent upon trust," she said. "We work to make sure growers have the information they need to discern between hazards and risks and are able to effectively do what they need to do to reduce risk."

This article originally appeared in the Cornell Chronicle.

Laura Reiley is a staff writer at the Cornell Chronicle focused on agriculture, the food system, and entrepreneurship.

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readings then took measurements across the fields to see if our refined methods would illustrate the compaction throughout a field more accurately."

The researchers' current work includes sampling of yield stability zones for seven farms across New York. The project, co-funded by Northern New York Agriculture Development Program and New York Farm Viability Institute, resulted in over 8,000 penetrometer compaction readings collected over two sampling periods. The sampling protocol allows O'Neil and the team to evaluate the relationship between compaction severity and corn silage and grain yield.

"A preliminary study conducted during 2021 on northern New York farms revealed a relationship not previously understood between soil compaction and historical crop yield," said O'Neil. "This study suggested more severe compaction in the lower yielding zones within the fields. This resulted in expansion of the project to now include seven farms and 21 fields across New York State."

Issa Diaz takes a measurement with a probe in the farm field.

Image provided

Issa Diaz is working on processing the data collected at the seven farms. She reported that analysis is still ongoing, and more results are expected to be ready for reporting later this year.

O'Neil and the team hope to see more awareness of compaction among farmers and researchers alike, and they are excited for more results to start rolling in.

This article originally appeared in CALS News.

Madeline Hanscom is a writer for the Cornell Nutrient Management Spear Program.

Networks of Support Help Farmers Achieve Land Access in New York State

Land access models – based on relationships, collective and comprehensive learning, and the great effort of individuals – provide a roadmap for designing public policy, new farm incubator programs, technical assistance, and education programming.

By Mildred Alvarado

Land access is one of the biggest challenges for those who dream of starting a life in farming or expanding the farm they've made great efforts to start. Despite these difficulties, I have been privileged to witness a range of inspirational stories related to land access. With ingenuity, perseverance, and a deep connection to the land, many have been able to transform obstacles into opportunities.

Through our work in the Cornell Small Farms Program's Futuro en Ag project, we accompany many families who are now growing food, creating sustainable farm businesses, and working toward becoming landowners. These experiences not only reflect their resilience but also offer valuable lessons on how to build pathways to agricultural stability, especially when resources are limited. In this article, I will share examples from our experience working with Latino/a/x producers in New York State. Every farm and every farmer are unique, facing different challenges, but they are all important, and we can learn from everyone's experience.

An analysis of USDA Ag Census data reveal an interesting trend. From 2002 to 2017, the number of Hispanic producers in the U.S. grew 122%, from 50,592 to 112,451. This growth can be attributed to the increase in the Hispanic population, access to certain assistance programs, and the community's interest in farming. However, between 2017 and 2022, growth plateaued and even declined slightly. This stagnation could reflect current challenges: limited profitability of small farms, difficulties in accessing land and financing, climate-related issues, and shifts in policy and public funding priorities.

In the particular case of New York State, the data show a story that deserves attention. In 2017, there were 629 farming operations operated by at least one Latino/a/x producer. By 2022, that number dropped to 569. This decline, while small, could also reflect the increasing difficulties Latino/a/x producers face in maintaining access to land in a market where prices are high and financing opportunities are limited. However, these figures do not reflect the impact and importance of existing operations, which cover more than 81,000 acres and represent significant agricultural production. Despite the challenges, Latino/a/x producers continue to be a vital force in the state's agriculture, contributing generational knowledge from a range of national origins and a strong sense of community.

While the numbers help us understand the big picture, it's the life stories that really show how Latino/a/x farmers deal with and overcome challenges related to land. In my work, I have had the chance to get to know many of these experiences firsthand. In what follows I'd like to share a few examples that reflect the ingenuity, perseverance, and hope with which so many families build their future in agriculture.

A farmer who started out as a landscaper and farm laborer was able to access his first plots of land to farm thanks to the trust of a family to whom he provided landscaping services. Now, in partnership with his brother, they are in the process of buying some farmland of their own.

Another farmer started his farm business on land he was offered by an acquaintance in an informal verbal agreement. After the farmer invested resources, time, and significantly improved the land, the landowner evicted him. Because the farmer didn't have any documentation proving his right to use the land, he lost access to it.

However, the farmer didn't give up. Now that he had clarified his objectives, market experience, and sound technical assistance, he was able to lease 10 acres at a new farm. With assistance he wrote a grant to buy a farm vehicle to take his produce to market, and he got the money.

Today this new leased land and improved transportation represent significant advances as he saves money and prepares to acquire his own land when the opportunity arises.

Many farm laborers have found opportunities to farm at their workplace. In recognition of their dedication and work ethic, a group of women farm employees has been given access to land by their employer every year to grow vegetables and corn. They are now gaining increased financial literacy, developing entrepreneurial skills, and building up some savings with the goal of becoming landowners.

One poultry farmer our team works with was inspired by a phrase he heard at one of our conferences: "If I can work every day to fulfill my boss's dreams, how much would I be willing to do to fulfill my own?" With our support, he wrote a business plan, and he presented it to his employer. His employer offered him a plot of land to start raising broilers. Today he has a formal business and continues training with the goal of acquiring his own land.

Farmers who work together cooperatively have also found creative ways to access land. A group of farm employees from different companies joined together and formed a cooperative LLC. With the support of our program and county Cooperative Extension officers, they were accepted into a farm incubator program

Once new and beginning farmers get access to farmland, an important next step is ongoing technical assistance. Here two farmers at a bilingual training facilitated by Cornell Small Farms Program and Cornell Cooperative Extension adjust a manual plastic mulch layer that will help with weed management.

Una vez agricultores principiantes logran el acceso a la tierra, un próximo paso importante es la asistencia técnica. Aquí en un evento educativo facilitado por Cornell Small Farms Program y la Extensión Cooperativa de Cornell, dos productores ajustan una máquina de control de maleza.

Las Redes de Apoyo Necesarias para Lograr el Acceso a la Tierra en Nueva York

El acceso informal a la tierra puede ser un punto de partida, pero los productores prosperan cuando se crean rutas hacia contratos formales y, con el tiempo, hacia la propiedad de la tierra.

Access to land is one of the most difficult challenges for new and beginning farmers, especially those who also face barriers in terms of language, formal education, capital, and credit history. Cornell Small Farms Program has worked with this farmer to formalize a lease of a few acres in the Hudson Valley, and the farmer now hosts a monthly bilingual training on the land.

Acceso a la tierra para la producción agropecuaria es un principal desafío para los productores principiantes, especialmente para los que también enfrentan las barreras de idioma, educación formal, capital, e historial crediticio. El Cornell Small Farms Program ha acompañado a este productor para formalizar el arrendamiento de unas acres en el Valle de Hudson. El productor es ahora anfitrión de capacitaciones mensuales bilingües en la tierra.

A Mildred Alvarado

Conseguir acceso a la tierra sigue siendo uno de los mayores retos para quienes sueñan con empezar una vida en la agricultura o para aquellos que buscan hacer crecer las fincas que ya han comenzado con tanto esfuerzo. Sin embargo, detrás de cada dificultad, he tenido el privilegio de conocer historias que inspiran: personas que, con ingenio, perseverancia y una profunda conexión con la tierra, han sabido transformar los obstáculos en oportunidades reales.

A través de nuestro trabajo en el proyecto Futuro en Ag del Cornell Small Farms Program, hemos acompañado a muchas familias que hoy cultivan alimentos, crean empresas agropecuarias sostenibles y sueñan con convertirse en propietarios de sus tierras, si es que aún no lo son. Estas experiencias no solo reflejan su resiliencia, sino que también ofrecen lecciones valiosas sobre cómo construir caminos hacia la estabilidad agrícola, especialmente cuando los recursos son limitados. En este artículo, quiero compartir algunos ejemplos de nuestra experiencia trabajando con productores latinos en el estado de Nueva York. Como todos sabemos, cada finca y cada productor es único y enfrenta realidades distintas, pero todos son importantes y siempre podemos aprender de cada uno de ellos.

El análisis de los datos del Censo Agrícola del USDA revela una tendencia interesante. Desde 2002 hasta 2017, el número de productores hispanos en Estados Unidos creció un 122%, pasando de 50,592 a 112,451. Este crecimiento puede atribuirse al aumento de la población hispana, el acceso a ciertos programas de apoyo y el interés de la comunidad en la producción agropecuaria. Sin embargo, entre 2017 y 2022, el crecimiento se estabilizó e incluso disminuyó ligeramente. Este estancamiento podría reflejar los retos actuales: rentabilidad limitada de las pequeñas fincas, dificultades en el acceso a tierras y al financiamiento, problemas de clima, acceso a la mano de obra y cambios en las políticas en general.

En el caso particular de Nueva York, los datos muestran una historia que merece atención. En 2017, había 629 operaciones agrícolas operadas por al menos un productor latino. Para 2022, ese número descendió a 569. Esta disminución, aunque moderada, también podría reflejar las crecientes dificultades que enfrentan los productores latinos para mantener el acceso a la tierra en un mercado donde los precios son elevados y las oportunidades de financiamiento son limitadas. No obstante, estas cifras no reflejan el impacto y la importancia de las operaciones existentes, que abarcan más de 81,000 acres y generan una producción agropecuaria significativa. A pesar de los desafíos, la comunidad latina continúa siendo una fuerza vital en la agricultura del estado, aportando conocimientos tradicionales familiares y de una diversidad de orígenes nacionales, además de un

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at a land trust. They now have access to three acres, infrastructure, and educational resources at the land trust. Their vision is to become producers and future landowners.

These farmers not only produce vegetables, apples, eggs, chickens, and other specialty crops. They also adopt agroecological practices that integrate traditional knowledge with local conditions and promote food security and cultural identity in their communities. Each piece of land they cultivate represents more than a source of income: it is a commitment to the community and the environment.

These stories, and many others, demonstrate that access to farmland rarely begins with a large purchase. For most, high costs, barriers related to credit, and legal obstacles make that option unattainable. Instead, most Latino/a/x producers take progressive steps starting small, through informal agreements, family support, mentoring, technical support from trusted service providers, and above all, building trusting relationships.

As a society, we must recognize that these land access models – based on relationships, collective and comprehensive learning, and the great effort of individuals – provide a roadmap for designing public policy, new farm incubator programs, technical assistance, and education programming. These case studies show us that farmers thrive when provided with culturally relevant education, mentoring, legal guidance, technical support, and connection to local resources, among other supports.

Informal access may be a starting point, but producers do best when pathways to formal leases are made available and when the door is opened to land ownership. For anyone working in agriculture, rural development, or public policy, these stories offer both inspiration and direction.

It's imperative that funders, landowners, foundations, policymakers, and other allied organizations come together to design and strengthen intentional and culturally sensitive land access systems. Because when opportunity meets preparedness, not only are new farms established: community resilience becomes more robust, and the networks of family and social support grow as well.

Mildred Alvarado is the Futuro en Ag Coordinator for the Cornell Small Farms Program. Her work is focused on building bridges to facilitate knowledge and help farmers to overcome linguistic, cultural, and technical barriers to promote inclusive and profitable businesses. Coming from a farm facing the challenges that many still face, the program's mission is close to home for her. The soil of her Honduran farm taught her how to survive and fueled her body and her dreams, which have brought her to the Cornell Small Farms Program team.

A Personal Note from White Clover Sheep Farm

How Ulf Kintzel facilitated what he believes will be his "last act" in farming.

By Ulf Kintzel

September 13 of this year marks my 30th anniversary of coming to the U.S. A lot has happened since then in my life, farming or otherwise. This spring, I facilitated another change and what I believe will be my "last act" in farming. Don't worry, the melodramatic tone may mislead you. I hope to raise sheep for another 15 to 20 years if my health permits it.

I am approaching 60 years of age and the desire as well the ability to take on large projects has diminished. Gone are the days when I, all by myself, farmed well over 100 acres during summer, grazed many acres off the farm in autumn and early winter, lambed well over 200 ewes in winter and spring, and bought in many more market lambs to finish during grazing season. At its peak, I once grazed 770 sheep on my farm and adjacent pastures.

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Raising grass-fed White Dorper sheep is the most enjoyable part of farming for me.
Ulf Kintzel / White Clover Sheep Farm

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fuerte sentido de comunidad.

Aunque las cifras nos ayudan a entender el panorama general, son las historias de vida las que realmente nos permiten ver cómo los agricultores latinos enfrentan y superan estos desafíos. A lo largo de mi trabajo he tenido la oportunidad de conocer muchas de estas experiencias de cerca, y hoy quiero compartir algunas que reflejan el ingenio, la perseverancia y la esperanza con la que tantas familias construyen su futuro en la agricultura.

Un productor que comenzó haciendo trabajos de jardinería y como empleado agrícola pudo tener acceso a sus primeras parcelas para cultivar gracias a la confianza de una familia a la cual le prestaba sus servicios de jardinería. Ahora, en sociedad con su hermano, están en proceso de comprar un terreno agrícola que será de su propiedad.

Un agricultor inició su operación agropecuaria gracias a que un conocido le cedió, mediante un acuerdo informal de palabra, un terreno para comenzar a producir. Sin embargo, tras invertir tiempo, recursos y mejorar significativamente la parcela, la propietaria decidió desalojarlo. Al no contar con documentación legal que respaldara su derecho de uso, perdió el acceso a la tierra.

A pesar de este revés, no se rindió. Con objetivos claros, experiencia en el mercado y el acompañamiento técnico adecuado, logró arrendar diez acres. Además, presentó una solicitud de subvención para adquirir un vehículo que le permitiera transportar sus productos, la cual fue aprobada. Hoy, este nuevo espacio y su medio de transporte representan oportunidades para ahorrar y prepararse para el momento en que pueda adquirir su propia tierra.

Muchos trabajadores agrícolas han encontrado oportunidades dentro de sus propios empleos. Un grupo de mujeres trabajadoras agrícolas, conocidas por su dedicación y ética de trabajo, logran acceso anual a tierra para producir hortalizas y maíz, ofrecida por su empleador. Actualmente mejoran su educación financiera, desarrollan habilidades empresariales y construyen ahorros con el objetivo de convertirse en propietarias de tierras.

Un productor avícola que es acompañado por nuestro equipo fue inspirado por una frase que escuchó en una de nuestras conferencias: "Si puedo trabajar todos los días para los sueños de mi jefe, puedo trabajar para los míos". Con nuestro apoyo, creó un plan de negocios y lo presentó a su empleador. Este le ofreció una parcela para iniciar su producción de pollos de engorde. Hoy cuenta con una empresa formal y continúa capacitándose con la meta de adquirir su propia tierra.

Las alianzas cooperativas también han buscado formas creativas de acceder a la tierra para la producción agropecuaria. Un grupo de empleados de diferentes empresas se unieron y formaron una LLC cooperativa. Con el apoyo de nuestro programa y técnicos de una oficina de extensión cooperativa, fueron aceptados en un programa de incubadora de tierras en un fideicomiso de tierras. Hoy tienen acceso a tres acres, infraestructura y recursos educativos a través del fideicomiso de tierras. Su visión es convertirse en productores y futuros propietarios.

Estos agricultores no solo producen hortalizas, manzanas, huevos, pollos y otros cultivos especializados. También adoptan prácticas agroecológicas que integran saberes tradicionales con las condiciones locales y promueven la seguridad alimentaria y la identidad cultural en sus comunidades. Cada parcela que cultivan representa más que una fuente de ingresos: es un compromiso con la comunidad y el medio ambiente.

Estas historias, y muchas otras, demuestran que el acceso a la tierra rara vez comienza con una compra inmediata. Para la mayoría, los altos costos, las barreras crediticias y los obstáculos legales hacen que esa opción sea inalcanzable. En su lugar, los productores latinos tienden a progresar mediante pequeños comienzos, acuerdos informales, apoyo familiar, mentorías, apoyo técnico de pro-

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Farm infrastructure such as greenhouses, irrigation systems, and processing facilities are important for making farming operations viable in the Northeast. In many cases, state and federal grants are what make these investments possible for new and beginning farmers. For Latinx farm families with limited English skills and limited digital literacy, support is often essential to apply to these programs.

La infraestructura como los invernaderos, sistemas de riego y facilidades para el procesamiento es importante para que las operaciones agropecuarias en el Noreste de EE.UU. sean viables. En muchos casos, las subvenciones estatales y federales son lo que facilitan estas inversiones para que productores principiantes tengan éxito. Las familias agrícolas latinas que tienen limitaciones en el inglés y acceso a recursos digitales, tienden a requerir la asistencia técnica para aplicar a estos programas.

Tim W. Shenk / Cornell Small Farms Program

Master Composters Turn Food Waste into Community Action

Educators at CCE Tompkins are training volunteer compost experts with the mission of engaging the community in smarter waste management, reducing food waste one person at a time.

By Melissa Jo Hill

Austin Beck was looking for a way to meet people and get involved in his new community when he moved to Ithaca in August 2024. That's when he learned about the Master Composter Volunteer program.

"When I found out that there was a specific program for learning to compost," he said, "I was all in."

The Master Composter volunteer program at CCE Tompkins got its start 32 years ago in response to a growing concern in Ithaca and Tompkins County about waste management. Modeled after the successful Master Gardner Volunteer program, and drawing inspiration from Master Composter programs sprouting up on the West Coast, CCE Tompkins, with sponsorship from Tompkins County Solid Waste (now Tompkins County Recycling & Materials Management), developed a train-the-trainer volunteer education program that would educate local residents on compost methods and best practices while reducing the volume of waste being sent to landfills.

Adam Michaelides has been coordinating the Compost Education program with CCE Tompkins, which includes the Master Composter program, since 2001. For more than two decades, he has witnessed and guided its evolution, maintaining its mission while adapting to modern needs around waste reduction, sustainability education, and community composting. "I like composting. What can I say?" Michaelides quipped.

Volunteers sign up for training and educational programming, where they learn the ins and outs of composting success from other Master Composters and expert guest lecturers. In return for the training, participants commit to 40 hours of volunteer work – 20 of which are completed during the training, and 20 can be spent pitching in at compost outreach and collection sites at the local festivals, compost demonstration sites throughout Tompkins County, and working on personal compost-related projects.

Adam Michaelides is the Compost Education program manager at CCE Tompkins.

"It was a wide variety… sometimes learning the basics of composting, and other times more in the weeds, like looking at microorganisms under a microscope," said Beck. "That part was incredible."

Michaelides underscored the tangible environmental impact the Master Composter program has had over the years, especially through its work at local festivals. "At events like Ithaca Festival and the Grassroots Festival of Music and Dance, Master Composters help divert thousands of pounds of food scraps from the landfill," he explained.

"At the last Ithaca Festival, we collected 1,650 pounds of food scraps alone, and at larger festivals like Grassroots, it can be over four tons of material. The sheer volume of waste diverted from landfills shows how much of an impact composting can have – not just environmentally, but as a community effort."

"People don't know how to sort their trash – they struggle to know what's recyclable, compostable, or garbage," Michaelides said. "Master Composters help guide them, ensuring material ends up in the right place."

Collected food scraps are sent to Cayuga Compost, a local commercial composting operation, or integrated into smaller community compost systems overseen by volunteers.

In addition to festivals, the program supports smaller events around Ithaca, like Reggae Fest and Porchfest, where volunteers take the lead as independent event coordinators.

"There's this need out there, begging for Master Composter

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fesionales de confianza y, sobre todo, construyendo relaciones de confianza.

Como sociedad, debemos reconocer que estos modelos de acceso – basados en relaciones, aprendizajes colectivos e integrales y esfuerzos individuales – ofrecen una hoja de ruta para el diseño de políticas públicas, programas de incubación de nuevas fincas, programas de asistencia técnica y educación, entre otros. Estos casos nos muestran que los agricultores prosperan cuando se les brinda educación culturalmente relevante, mentoría, orientación legal, apoyo técnico y conexión a recursos locales, entre otros.

El acceso informal a la tierra puede ser un punto de partida, pero los productores prosperan cuando se crean rutas hacia contratos formales y, con el tiempo, hacia la propiedad de la tierra. Para quienes trabajamos en agricultura, desarrollo rural y formulación de políticas, estas historias ofrecen tanto inspiración como dirección.

Es importante que financiadores, propietarios de tierras, fundaciones, responsables de políticas públicas y otras organizaciones aliadas se unan para el diseño y fortalecimiento de sistemas de acceso a la tierra que sean intencionales y culturalmente sensibles. Porque cuando la oportunidad se encuentra con la preparación, no solo nacen nuevas fincas: nacen comunidades resilientes que alimentan tanto a sus familias como a nuestra sociedad.

Master Composters *from 15*

involvement," Michaelides said. "I provide buckets, signs, and tools, but volunteers drive the outreach themselves – it's how we want the program to grow."

"Compost education is a great example of everything an Extension program can be," said Cynthia Cave-Gaetani, executive director of CCE Tompkins. "Workshops, community events, partnerships with local schools and the farmers market, volunteer opportunities, and Adam and his crew still find time to respond to questions and requests by phone or email."

"I've trained 300 and some Master Composters personally," Michaelides said. "And I have more than 100 active volunteers on my list. Many of them stick around – some for five, 10, or even over 20 years!"

One of those volunteers, Liz Burns, became a Master Composter in 2015. "I didn't really know much about composting before I started the program," Burns recalled. "I had a garden plot at the Ithaca Community Garden, where we compost plant material and vegetation, but I didn't understand what happened after I dumped it in the compost bin."

After completing the training, Burns became a compost coordinator at the Ithaca Community Garden. "I was able to put the knowledge I learned to use. The two people who took over after me also went through the program. I can't recommend it enough."

Over the past 10 years, she has remained active in composting outreach, volunteering at festivals like Grassroots, Ithaca Festival, and Apple Harvest Festival. "I used to do Grassroots, and I almost always volunteer at the Ithaca Festival and Apple Harvest. It's a great way to stay involved."

For Michaelides, the program's success lies in its balance of education and action.

"The educational component is so important," he said. "Through the outreach, classes, and volunteering, people don't just learn about composting – they experience the larger impact it has on the community. It helps people see just how much composting happens here and how they can be part of that."

"It's such a universal experience, dealing with the food scraps left over from a meal," said Cave-Gaetani. "Doing better by turning these into useful material for the garden is something we can all have in common. We've been told that our compost drop-off on Sunday mornings is quite a social event!"

"Think of 100 people in Tompkins County with their networks – how many people can we reach? That's the power of a decentralized, community-based effort," Michaelides said.

Burns agreed. "The program really opens doors," she said. "It plugs you into the larger community network, which I think is incredibly valuable. Whether you're a novice or someone who has been composting for years, you learn so much and find new ways to stay involved."

The Master Composter volunteer program at CCE Tompkins got its start 32 years ago.

The compost education booth at the Ithaca Farmers Market.

Images provided

Beck found a network of like-minded folks through the Master Composter program, and he's excited to work on a personal composting project that combines his understanding of the compost landscape in Tompkins County with community connections and his professional skillset in GIS.

"It's not just about learning to compost," Beck said. "It's about finding ways to contribute meaningfully to your community. I'm so glad I joined – I can't recommend it enough."

This article originally appeared in CALS News.

Melissa Jo Hill is the senior content specialist on the CCE Administration Communications team, working primarily on the CCE website. Before coming to Cornell, she worked in publishing.

Head, Hands and Heart: Hidden Pearls Farm & Healing Center

Spending a summer afternoon with Brett Grant in his farmhouse kitchen, learning about the spectacular emergence of his dream.

By Violet Stone & Brett Grant

Brett has begun the process of building relationships with other growers and collaborators who will eventually become co-owners on some of the lower 52 acres as the Chenango Forks Collective.

Kacey Deamer / Cornell Small Farms Program

Brett Grant first heard whisperings of a calling toward growing food, community, and healing in his childhood on a trip with his father to Mount Pleasant, Texas. As they made their way through the tall Texas prairie grass, keeping a nervous eye out for snakes, it moved Brett to know that the land beneath their feet was once in his family.

Many years later, during college, Brett started studying Booker T. Washington and learned that the agricultural curriculum at Tuskegee was based on the needs of the surrounding community. Washington's educational philosophy emphasized the interconnectedness of "head, hand, and heart," advocating for a holistic approach to learning and development. The approach resonated with Brett, and he continued to explore holistic education through his subsequent dissertation.

When he finished his Ph.D., he made a promise to himself: "I don't want to just do this theoretically. I want to put this into practice." He started dreaming of a farm and wellness center that could be intellectually, practically, and emotionally uplifting for the community.

He started looking for land with like-minded collaborators in the greater Minneapolis region. He felt the location of the land didn't matter as much as the people he was partnering with. But ultimately the right opportunity did not materialize, and Brett made his way to New York City to begin a post-doc position at Columbia University. On some of his early car excursions leaving the city to explore rural Upstate New York, he was touched by the beauty of the landscape.

He discovered a website that helped match aspiring farmers with existing farms, and came across a listing in Chenango Forks, a hamlet in Broome County, situated where the Chenango and Tioughnioga rivers meet. Like the meeting of rivers, threads from Brett's past experiences and future aspirations seemed to easily converge at his first farm visit. The owners had built a spacious indoor pool in a heated building which brought back joyful memories of childhood swimming and invited the possibility of reviving his past work as a hot yoga instructor. The farmhouse, pastures, livestock barns, and solar panels offered all the infrastructure he hoped for.

But while it seemed serendipitous in many ways, just as the ownership transition was underway, Brett's post-doc position ended. His vision had made it this far, and he wasn't willing to give up. Noting the farm's one-hour drive away from Cornell University, he sent some feelers out about job openings and was delighted when an opportunity arose at the Cornell Nutrition Liberation, Food Sovereignty, and Justice lab. Now in a more secure position, Brett proceeded to navigate the purchase and transition, which involved many months of visits with the owners, learning about the land and infrastructure.

Now as the new owner, Brett has begun the process of building relationships with other growers and collaborators who will eventually become co-owners on some of the lower 52 acres as the Chenango Forks Collective. Building trust, writing bylaws, and understanding how the cooperative will function takes time.

"It's going to be really difficult because now we're moving from me to we, and working as a group under democratic control and governance," Brett said.

But he feels farming within a community and partnering with others as equal farm owners is the best way.

"I do not have the skills to fix a tractor, to know how to plant, or to put up fencing, but there are other people around who know," Brett explained. "The universe will connect me with those people and I'll figure it out. All I have to do is set myself in motion and not give in to the fear."

As he is relatively new to farming and

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Solar Farm Shade in Autumn Reduces Radish and Radicchio Yields

A series of studies by Cornell researchers is testing how crops might grow when planted between rows of solar panels on a solar farm in New York State.

By Krishna Ramanujan

By acquiring real data, researchers may provide farmers and policymakers with important information, as growing crops between rows of solar panels to maximize dual land use will be increasingly critical, especially since New York's utility-scale solar farms cover roughly 9,300 acres of land.

In the first of a series of studies, published July 29 in the journal Environmental Research Food Systems, Cornell researchers tested a 2024 autumn crop of radishes and radicchio grown between rows of solar panels, which yielded useful findings on the limitations of an autumn planting. This year, the team of researchers is continuing experiments by planting strawberries, raspberries, winter wheat, soybeans, zucchini, peppers, chard, and dry beans, starting in spring, with promising early results.

"New York has an extremely strong agricultural legacy, and solar development on repurposed agricultural crop lands is going to have to meet farmers where they're at," said Matt Sturchio, a postdoctoral associate in the Department of Natural Resources and the Environment in the College of Agriculture & Life Sciences (CALS).

"We need to be able to find solutions that either co-locate or find the most efficient land use synergies for solar

Solar Farm Shade 19

An infrared gas analyzer assesses photosynthetic light response in radish plants grown on a solar farm near Albany, NY.

Matt Sturchio / Provided

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this land, there are plenty of challenges and uncertainties. When asked how he resists giving in to fear, he shared that spiritual practices are important. Prayer, stillness, and fasting for spiritual clarity are practices he prioritizes.

"I see so much fear in my own family and community – people not trying something because they were too afraid," he said. "I don't want to live that way."

He described a fire pit near the crest of the hillside where he sometimes sits at night appreciating the silence and stillness, a welcome contrast to the ongoing problem-solving and critical thinking required for farm maintenance and planning.

Wellbeing is at the center of Brett's vision for this land. In addition to the Chenango Forks Collective, he is creating Hidden Pearls Healing Center to provide opportunities for visitors to enjoy beauty, healing, nourishment, and community. He is seeking schoolteachers and students to work with as co-facilitators, co-designing learning experiences centered on growing food, cooking, exploring, and playing together.

Inspired by a book called "Liberating Teaching and Learning," he said he wants children visiting the farm to see, feel, and taste freedom. "I think offering space for emergence is really important," he said. "What can emerge if I just help to facilitate the environment?"

At the end of my conversation, I invite Brett to reflect on the gifts he brought to the manifestation of his dream. He said that the landscape of his family home in northern California helped him see possibility.

"I had oceans and mountains and rivers and lakes. And it just gave me this sense of awe and wonder," he shared. "That never went away."

As our conversation winds down, we walk back outside, looking down over the river valley and the pastures, now lush and tall, that will eventually be stewarded by the farming collective. My conversation with Brett has left me reflecting on awe and wonder, and how it can lead a child visiting ances-

Brett's first livestock on the farm included two inherited goats and then a small flock of chicks from a neighbor he's now raising in the screened-in porch.

Though Brett is relatively new to farming, he's learning quickly on the job and through a network of farmers and educators he's connected with.

Personal Note ***from 14***

Mind you, I have always been a one-man show. That's okay when the sun is shining and the birds are singing but it takes its toll when the weather conditions are challenging or when you are ill and have to do your work anyway, no matter how achy the body or how high the fever is.

How did I do all of this? I ask myself that very question at times. I do not know. I feel a little worn by now. Since the need to make money has decreased after all debt and mortgages have been paid off, I no longer feel the need I have to hustle the same way. The cost of making money has become, well, too costly.

That is why my wife and I decided to sell half of the farmland we own to a young Mennonite farmer and his wife. We closed in April. They will raise beef, taking full advantage of the well-established pasture and fencing. I will continue farming the other half. Since I will have fewer acres, the flock will be reduced in size. I will retain just under 100 breeding ewes of my grass-fed White Dorper ewes.

Aside from less workload, there are a few additional benefits to downsizing. The biggest advantage is this: As I reduce the size of the flock, I get to do a lot of choice culling. Ewes that have one small flaw or another (e.g., not the best hoof structure) can be culled. I will be able to exclusively retain excellent stud ewes, which are able to produce high quality ewe and ram lambs worthy of being sold as breeding stock. In anticipation of the decision to downsize, I had started marking young breeding ewes with an additional blue tag, indicating the "perfect" trifecta: twinning (or triplets), fully shedding, and correct hoof structure. Pair these traits with the traits I already have in all my ewes such as meatiness, good mothering, calm disposition, ease of lambing, a high degree of parasite resistance, and, of course, the ability to thrive and excel on pasture. I can now say I have reached my breeding goals. Of course, improvements are always possible. However, any improvement will be on the margins. In short: I am where I wanted to be. That is a pretty good feeling.

What else is of benefit? I still have to work my fair share but it no longer will be the hustle, day after day from the start of lambing season in late winter and all the way to autumn to get the daily chores done before I run out of daylight. I hope to get to linger a bit, having more time now to stop and think more often about how to move forward, what bloodlines to retain, which ewes to breed to what ram, and so forth. These are the parts of sheep farming I enjoy most.

Aside from that, I get to enjoy some sidekicks, like my small orchard and gardening. It was always about getting it done – pruning, spraying, tilling, you name it. Now I hope I will have time to enjoy all of it a bit more and do it in a timelier fashion. Picking strawberries will still be up to my wife and youngest son. These berries are far too close to the ground for my stiff body.

This article originally appeared in Farming Magazine.

Ulf Kintzel owns and operates White Clover Sheep Farm and breeds and raises grass-fed White Dorper sheep and offers breeding stock suitable for grazing. He is a native of Germany and has lived in the U.S. since 1995. He farms in the Finger Lakes area. His website is whitecloversheepfarm.com. He can be reached by email at ulf@whitecloversheepfarm.com or by phone during "calling hour" indicated on the answering machine at 585.554.3313.

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tral Texas prairie eventually to a river valley in Upstate New York.

Having learned of Brett's dreams for this land makes the valley all the more beautiful.

Brett Grant is the steward and visionary of Hidden Pearls Farm & Healing Center. To reach Brett, email hiddenpearlshealingcenter@gmail.com.

Violet Stone is the coordinator of Growing Together, a community of farmers and earthworkers from many backgrounds who are reaching for deeper peace, connection, and trust in our hearts and in our communities. Growing Together is a project of the Cornell Small Farms Program and Northeast SARE. To reach Violet, email vws7@cornell.edu.

Solar Farm Shade ***from 18***

development, so that's why we're doing this work," he said.

While crops are being grown successfully on solar farms in the Southwest and Midwest, New York is challenged by a short growing season and limited sunlight, and shade from solar panels.

In the current study, radishes, a root crop, and radicchio, a leafy crop, were planted within the roughly 20 feet of space that lies between rows of solar panels on a solar farm near Albany, owned and operated by Greenbacker. The researchers found reductions in sunlight created by early morning and late afternoon shade stunted the autumn crops, especially the radishes.

Not only was sunlight reduced in the test crops, but so was leaf temperature, which together led to lower carbon accumulation, or biomass. The change in biomass was especially pronounced in the radishes, due to a drop in below-ground production, as the plants allocated more resource to leaves that collect sunlight and exchange gases, Sturchio said.

"The environment limited the ability of these crops to produce the same yield as in the control environment," Struchio said.

"If growth is delayed somewhat in fall crops in the solar panels, that might mean that maybe we want to plant a little earlier, and plan to harvest later, which might not be bad, because it will space out the harvesting," said Toni DiTommaso, professor in the School of Integrative Plant Science Soil and Crop Section in CALS. DiTommaso and Steve Grodsky, assistant unit leader of the New York Cooperative Fish & Wildlife Research Unit and courtesy assistant professor in the Department of Natural Resources and the Environment in CALS, are both co-principal investigators of the project and senior authors of the paper.

The New York-centric project aims to assess what might be viable in existing solar farms that weren't set up for dual use.

"We're trying to grow a slew of these crops to see which ones have potential, so that we can provide data, science-based information to policymakers and to farmers who may be thinking of getting involved," DiTommaso said.

In Europe, solar farm operators are starting to orient panels so they are parallel with the sun's rays instead of perpendicular. "Instead of catching all of the sun's rays, they allow light to pass through, so they're creating minimal shade," Sturchio said. Increasing sunlight, even for an extra hour a day, could change the biomass loss that the study found, he said. Spacing panels wide enough for machines to get through is another possible adaptation.

"In redesigning these systems, we'd really want to put both the cropping and renewable energy at equal levels," DiTommaso said.

Co-authors of the study include Dana Russell, Jasmine Schmidt, Caroline Marschner, and Jinwook Kim at Cornell.

The work was funded by the New York State Department of Ag & Markets as part of the Cornell Center for Agrivoltaics.

This article first appeared in the Cornell Chronicle.

Krishna Ramanujan is a senior staff writer at the Cornell Chronicle focusing on life sciences, agriculture, and veterinary medicine.

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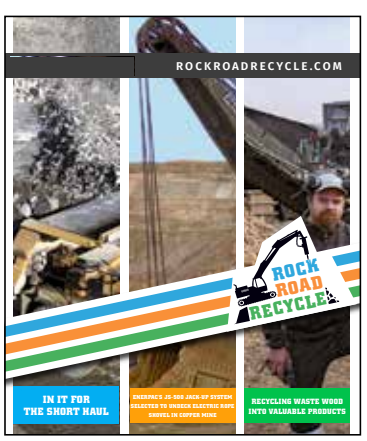

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