SMALL FARMS QUARTERLY — SUMMER 2022

News from the Cornell Small Farms Program
by the Cornell Small Farms Program team.............3

Upgrading a Flock of Hair Sheep
by Ulf Kintzel............................................................4

Cornell Partners with NYS to Fight the Spotted Lanternfly
by Caitlin Hayes.........................................................5

Seeds of Survival
by Susan Kelley............................................................7

Futuro Project Celebrates Latinx Community Leadership/
Proyecto Futuro Celebra el Liderazgo de la Comunidad Latinx
by Mildred Alvarado....................................................8

A New York State Vision for a Profitable, Regenerative,
Equitable, Healthy Food System Future by 2050
by the Center for Agricultural Development and
Entrepreneurship............................................................8

Dealing with the Year of the Drought
by Rich Taber.............................................................11

Anticipating the Next Forest: Ecology and Management
for Sustaining Forests
by Peter Smallidge and Gary Goff..............................13

NYS, Cornell Launch New Grapevine Certification
Program
by Sarah Thompson.....................................................15

Lean Management: Practical Applications and Challenges
on Dairy Farms
by Barry Putnam and Mary Kate MacKenzie.............16

Vegetable Seed Production Course and Mentorship
Available to Growers Throughout the Northeast
by Crystal Stewart Courtens........................................17

Raising Sheep on All Grass
by the Organic Farming Conference Committee........18

NY Onion Growers Can Keep Yields while Cutting
Chemical Use
by Sarah Thompson........................................................19

Cover photo: Grapes being examined at the Cornell Lake Erie Research and
Extension Laboratory. Read more about grapevine research on page 15.

Dan Bell / Cornell CALS

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.

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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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Cover photo: Grapes being examined at the Cornell Lake Erie Research and Extension Laboratory. Read more about grapevine research on page 15.
News from the Cornell Small Farms Program, Fall 2022

Register Now for Our 2022-23 Online Course Season, Featuring New Courses

Are you looking to improve your technical or business skills to benefit your farming operation?

The Cornell Small Farms Program is excited to announce that our upcoming online course season will begin live webinars this autumn, and will feature new courses to offer even more learning opportunities. New additions to our online course suite includes “Goat Production,” which will guide beginning farmers through the production and marketing of goats for dairy, meat, and fiber. We’ve also added “Identification and Use of Mushrooms in Farms, Gardens, and Forests” to teach you basic ID, species, lifecycle, and potential applications of mushrooms to solve community level challenges.

In recent years we’ve also added “Access to Capital” for anyone seeking funding for a farm enterprise; “Cut Flower Production” on the business of flower farming; a course on “Bee Cattle Management”; a primer on “Social Media & Online Marketing” for your farm business; and a four-week intensive in how “Reading the Land” can help you monitor its health.

Our suite of online courses is offered on a user-friendly platform, which grants registrants permanent access to their course content. Courses have tiered pricing based on household size and income to make access to the courses more affordable and equitable for everyone.

Our program offers more than two dozen online courses to help farmers improve their technical and business skills. These courses cover a range of topics any farmer needs to succeed, such as beekeeping, holistic financial planning, soil health, vegetable farming, and so much more. Experienced farmers and Extension educators guide students through course content, including weekly live webinars, videos, and resources.

The bulk of the course happens on your own time, with discussions, readings, and assignments in Teachable, our online course platform. To add to the experience, webinars will be woven into the interface of the course for a dedicated time slot each year to allow you to meet on a weekly basis to learn from presenters and ask questions in real-time. If you miss one, they are always recorded and posted for later viewing.

You can browse all of our course offerings on our website at smallfarms.cornell.edu/online-courses.

Meet the New Cornell Small Farms’ Online Course Coordinator, Kara Peet

I am very excited to join the Cornell Small Farms Program team as the new Online Course Coordinator. With prior experience in education, administration, and customer service, I support instructors and students with the resources they need to be successful with our online course offerings.

I am responsible for all aspects of our online courses, including logistics and coordination, from establishing course schedules to conducting program evaluation. I field student inquiries and help them navigate our resources. I work to maintain positive relationships with existing course instructors and recruit new ones. In collaboration with the Small Farms team, we aim to expand our reach to welcome and grow a diverse crop of successful new farmers, particularly those from historically marginalized communities who have been traditionally excluded from farming opportunities.

Since I am new to the world of farming and this team, I plan to listen, remain curious, and learn from the Small Farms Program community members so that their wisdom can be part of this 2022-23 program year.

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Message from the Editor

Dear farmers and friends,

What does the future of New York State’s food system look like and how can we all work together to ensure our agricultural future?

This is an important question for all food system stakeholders, and I am proud to share that the Cornell Small Farms Program joined the Center for Agricultural Development and Entrepreneurship (CADE), the Dyson School of Cornell University, and faculty from Columbia University to work toward the answer.

The culmination of a three-year research project, the “Vision 2050: A New York State Vision for a Profitable, Regenerative, Equitable, Healthy Food System Future by 2050” report was released on July 28, 2022.

In a recent announcement of this Vision 2050 initiative, I shared how the research recognized the predominance of white farmers in New York, stemming from the long time discriminatory policies of USDA that continued through the 1970s. “If we want an equitable food system future, we need to invest in opportunities for farmers of color,” I said. The publication reiterates the Diversity and Racial Equity Working Group Report findings, which called on New York State leaders to invest an initial $10 million to execute the report recommendations.

“We need to see more action on the report’s recommendations, which centered Black, Indigenous, and People of Color (BIPOC) voices. We applaud NYSDAM for helping facilitate those conversations; now greater action is needed,” I said.

Learn more about Vision 2050 at cadefarms.org/vision-2050.

Anu Rangarajan
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Director of the Cornell Small Farms Program
Upgrading a Flock of Hair Sheep
What to do when you want a breed of sheep but can’t find a place to buy them.

By Ulf Kintzel

Hair sheep that shed and do not require shearing and that are able to thrive on forage have been in high demand for many years now. High and relatively stable lamb prices have added to the demand. White Dorper and Dorper sheep, the meatiest hair sheep in the U.S., are high on that list of demand. That has led to an almost nationwide shortage of breeding stock of such kind, particularly when it comes to ewes. There is a way around such shortage of Dorper and White Dorper ewes, which I will outline in this article.

The practice of upgrading is an old, simple, and widespread practice of getting from one sheep breed to another without ever having to buy a single ewe of the desired breed of sheep. How does it work? For the sake of this explanation, let’s take an existing flock of a sheep breed called A. The desired sheep breed is called B. The desired sheep breed B may be very expensive or may be in short supply because it is new to the U.S. market. However, it is likely that ram lambs or rams of breed B are easier to obtain than ewes. Why is that? The split of female-born lambs versus male-born lambs in any given flock is about 50/50. However, buyers often seek several to many ewes when they purchase a flock but far fewer rams since a ram can breed several dozen ewes during a breeding season. Thus, every sheep farmer will always need and have far fewer rams than ewes. That means ewes will sell out quicker. Rams may be more easily available.

When a ram of sheep breed B is purchased and used to breed the flock of breed A, the flock’s offspring will be 50% breed B. If now an additional ram of breed B is purchased in a subsequent year, unrelated to the first ram since inbreeding is often problematic, and is bred to the offspring of the first ram of breed B, all subsequent offspring are 75% breed B. Since most sheep breeds make it possible for ewe lambs to be bred the same year, and they are born at about eight to nine months of age, this process only takes two years. This now can be continued for another two years and another two generations, which puts the percentage of breed B at the fourth generation at 93.75% (15/16). That is considered purebred by most sheep breed associations. In fact, when certain breeds like Dorper and White Dorper were introduced from countries like South Africa and Australia, 87.5% (7/8, or third generation of upgrading) were considered purebred Dorper sheep. Regardless of the current definition by a national sheep breed association, a 7/8 White Dorper sheep is in appearance and performance exactly or almost exactly like a purebred White Dorper.

I practiced this method of upgrading myself when I had a flock of Texel sheep in the early 2000s but White Dorper ewes in larger numbers were out of my financial reach. I purchased White Dorper rams instead. While rams usually cost more than ewes, the cost becomes much smaller when divided by the number of ewes such a ram will breed to produce offspring. The first generation of offspring (50%) still needed considerable shearing. The second generation (75%) already looked a lot like White Dorper sheep. The following generation was even more like White Dorper sheep. The subsequent generation of 87.5% was basically indistinguishable from purebred White Dorpers.

What to do with the generation of ewes that were used as a stepping stone when upgrading a flock? They can often be easily sold again as a proven flock of ewes. There is no short supply of buyers of ewes.

If meaty hair sheep like White Dorper or Dorper is the desired outcome, what is a breed of sheep suitable for upgrading? The first choice that comes to mind are Katahdin. This breed of sheep is an American breed of hair sheep, named by its breeder after Mount Katahdin in Maine. These sheep shed well, are good mothers, lamb easily, and often have good hoof structure. Many bloodlines remain unspoiled from the show ring and thus can still perform well on pasture. What is missing in the breed is growth rate, meatiness, and overall size. The lower prices at livestock auctions, compared to wool breeds, often reflect that deficiency. Besides the breed’s many other positive attributes, they are also widely available.

Reconnecting with Purpose Program Welcomes Applicants for Year 3 Cohort

As farm and food system educators or change makers, we face enormous challenges to our efforts to support improved livelihoods of those we serve. Although we may work hard toward positive change and genuine service, our goals can become daunting. There are times we find our energy, commitment, and spirit depleted.

The Cornell Small Farms Program is pleased to share that we are hosting a Year 3 Cohort for “Reconnecting with Purpose – A Renewal Experience for NY Farm and Food System Educators and Change Makers.”

This five-month program is designed for those working across the New York farm and food system and seeks participants from all backgrounds, roles, and ages. This includes those working with NYS community gardens, urban farms, youth farms, food systems organizers (e.g. food hubs, food banks), farmer-educators, Cornell Cooperative Extension, USDA, NRCs, nonprofit organizations, private consultants, and community foundations.

“Reconnecting with Purpose” creates a welcoming and trustworthy space for participants to explore challenges, to “live their questions,” and to uncover a sense of clarity and direction in their work and lives. Facilitators guide participants through a carefully curated journey of themes and reflections. The program, which spans from October 2022 - March 2023, consists of an in-person, two-day opening retreat, four monthly peer learning circles, and a virtual two-day closing retreat. The entire program is aligned with the Center for Courage & Renewal principles and practices and is funded by the Northeast Sustainable Agriculture Research and Education Program.

Learn more about this project at smallfarms.cornell.edu/projects/reconnecting-with-purpose.
Cornell Partners with NYS to Fight the Spotted Lanternfly

The devastating spotted lanternfly’s spread to upstate and western New York is not a matter of if, but when, experts say—and Cornell is a key player in helping slow the infestation.

By Caitlin Hayes

The devastating spotted lanternfly’s spread to upstate and western New York is not a matter of if, but when, experts say—and Cornell is a key player in helping slow the infestation.

From providing farmworkers with training in Spanish to developing predictive modeling tools to exploring whether dogs can detect spotted lanternfly (SLF) egg masses, Cornell researchers and Extension staff are working closely with New York State agencies to keep the pest at bay.

“This is the critical year for us in New York,” said Alejandro Calixto, director of the New York State Integrated Pest Management (NY-SPIM) in the College of Agriculture and Life Sciences. “The ultimate goal is to reduce the speed of the spread, which will allow us to get more tools in place to manage it once it gets here, and to reduce the risk to people and agricultural systems.”

The SLF, a destructive invasive species that has decimated vineyards in southeast Pennsylvania, is a particular threat to the Finger Lakes and western parts of the state, where the majority of New York’s grapes are grown.

NYSPIM, Cornell Cooperative Extension (CCE), and the New York Invasive Species Research Institute (NYISRI), as well as individual researchers—through close collaboration with the New York State Department of Agriculture and Markets and the Department of Environmental Conservation, as well as the eight Partnerships for Regional Invasive Species Management (PRISMs)—have helped with surveillance, early detection and eradication, outreach, and research.

The pests were first detected in Pennsylvania in 2014 and have since spread to 11 states in the eastern U.S. They’ve already been found in New York—with widespread populations in all five boroughs of New York City, scattered individual populations in the Hudson Valley, and small isolated populations in Ithaca and Binghamton.

In heavily infested areas of Pennsylvania, in addition to being a nuisance—with swarms so large it’s hard to be outside—they are a threat to numerous crops, including apples and hops, but have proven particularly devastating to the grape and wine industry, the area of biggest concern in New York.

The adult SLFs are beginning to appear now—the instars mature and grow wings in July and August, becoming easier to spot and more mobile. They’re known to hitchhike and can lay their eggs on any surface, including the underbellies of cars and trucks, or the goods those vehicles transport.

“Cornell has all these tentacles, these relationships,” said Hans Walter-Peterson, senior Extension associate and team leader of the Finger Lakes Grape Program. “We work with Ag and Markets and the PRISMS, and we have our regional teams. Then we sit in offices with 4-H people, with natural resources teams, and county agriculture educators, who all deal with different aspects of life in New York State. We sit in the middle. Being able to take this science that we’re getting from different channels and share it in all directions, with all these other groups, is the only way we can do this.”

A Seat in the Middle

The Department of Ag and Markets is leading the state’s response to the SLF threat, but Cornell provides key infrastructure for reaching growers.

NYSPIM and CCE work together to provide information to growers through CCE’s weekly growers’ meetings, both in-person and online, including providing kits for identifying the SLFs at their different life stages and the insect’s favorite host, the invasive tree-of-heaven. They let growers know how they can report a SLF sighting and—looking ahead—what pesticides and measures for management have been approved and recommended.

Calixto has been providing training...
ings in Spanish for farmworkers, who can make a huge difference early on in the season, when the grapevines are pruned. “Right now, early detection is key,” he said. “The egg masses overwinter, and if farmworkers, a large majority of whom are Spanish-speaking, are able to detect those and remove them, you can significantly reduce the pressure in those vineyards.”

Brian Eshenaur, senior Extension associate for invasive species with NYSIPM and a lead on the SLF outreach, maintains the nationwide map for where SLFs have been spotted and established. NYSIPM’s Dan Olmstead has developed a modeling tool, used by the Department of Ag and Markets in their monitoring, to predict what stage of the lifecycle to expect in a given location. In the Hudson Valley, Krystal Dixon, a CCE summer student intern, documented her work setting up traps and learning more about the biology of the insects. CCE’s Finger Lakes and Lake Erie Grape Programs are also monitoring traps at high traffic areas where SLFs are most likely to appear.

“There’s a lot going on,” said Jennifer Phillip Russo, Extension associate and viticulture specialist for CCE and the team leader for the Lake Erie Grape Program, which covers 32,000 acres of grapes in western New York and Pennsylvania. Russo is working to develop a short video which the team hopes to put on local television and push out through social media. “The general population can be really helpful,” she said. “The lanternflies can build up in the woods before descending on crops, so we want to reach folks who are not growers too.”

Providing the Science

On the Cornell campus, faculty are working on the SLF problem as well. Ann Hajek, professor of entomology in CALS, has made more trips to southeast Pennsylvania than she can count and has a colony of SLFs at a quarantine facility on campus.

“I’ve worked with fungal pathogens of insects for a long time,” Hajek said. “I was aware that they were good at infecting leaf and plant hoppers like the spotted lanternfly, and when I heard about it being here with such big populations, a light bulb went off.”

Hajek’s hunch was a good one. On a research trip in 2018, she arrived at a vineyard in Pennsylvania to find all of the SLFs dead. They’d been killed by two native fungal pathogens, one of which, B. bassiana, was already commercially available in a number of biopesticides.

She and collaborators from Penn State immediately ran a field trial to confirm and quantify the observations, and her postdoc Eric Clifton, now a researcher in the private sector, went on to compare the available products. Products with B. bassiana are now on the approved insecticide list for SLF.

Hajek is continuing to research the second fungal pathogen, which hadn’t been recorded in North America since 1888, as well as other native fungal pathogens of the SLF. “We don’t know these species very well, and most of the research on insect pathogens in general is on species you can grow easily and spray on crops—not about the native species in the forest,” she said. “So we’ve been surprised to find these different species and want to know more about them.”

While the application of Hajek’s new research may be years down the road, it aligns with a main goal of NYSIPM: finding more sustainable management strategies for SLF. Multiple pesticides have been approved and are effective, but the insect can multiply in such numbers that growers may have to spray constantly, potentially impacting the taste of the grape juice or wine produced.

“Right now, we don’t have that many tools for managing the pest other than insecticides,” Calixto said. “We need other tools, and we’re looking at new generation pesticides that are softer and more specific for controlling that pest.”

Another research project led by the NYSIRI and funded by the Cornell Atkinson Center for Sustainability is exploring how well dogs perform in the detection of spotted lanternfly egg masses. "Image provided by New York Invasive Species Research Institute

The New York Invasive Species Research Institute is exploring how well dogs perform in the detection of spotted lanternfly egg masses.

More information about how to identify and report the SLF can be found on the NYSIPM website at nysipm.cornell.edu/whats-bugging-you/spotted-lanternfly.

This article originally appeared in the Cornell Chronicle.

Caitlin Hayes is a writer at the Cornell Chronicle.
Seeds of Survival
Cornell Botanic Gardens honors the Black experience.

By Susan Kelley

Plain grits, made by his aunt and grandmother, were the only thing Kofi Acree would eat as a baby. Now he makes grits for himself in all sorts of ways – with shrimp and tomato sauce, with cheese and eggs.

“...” said Acree, director of the John Henrik Clarke Africana Library and curator of Africana Collections in Cornell University Library.

Food Plants & Cash Crops

The seeds of leftover slave ship provisions – such as watermelon and sorghum – made their way to the gardens enslaved Africans planted around their living quarters. Their agricultural skill and resilience enabled them and their descendants to stay alive – and retain some of their dietary preferences and cultural identities under the trauma of kidnapping and enslavement, Acree said.

“...” Acree said. “And so that meant late at night, early in the morning, before they went to the fields.”

Collards were among several leafy green vegetables enslaved people grew in their own gardens, enabling them to carry on a West African tradition of incorporating leafy greens into soups and stews.

Collards hold a special place in the memories of Jakara Zellner, co-leader on the Garden Ambassador team, who served on the advisory committee and narrated the audio tour.

Her mother cooked fresh collard greens from scratch for Sunday dinners and holidays. Zellner prepped the greens for her mother to cook, repeatedly washing the grit off of the tough leaves before her mother braised them, creating a savory “juice.”

“My mom also grew up near Mobile, Alabama, where her mother and grandmother farmed and we would often return home from visiting them with mason jars full of greens that they grew and prepared for us,” said Zellner, who is majoring in sociology and minor in health equity. “Whenever I cook or eat collard greens now, I am reminded of these family memories.”

Okra, a member of the marshmallow family, had been used in African cooking for millennia; enslaved cooks introduced it into American foodways. Culinary historian Michael Twitty believes that fish peppers were first brought to Baltimore, MD, by Haitians in the late 1800s and soon after appeared in area gardens, kitchens, and produce markets, grown almost exclusively by Black farmers. Taro’s large heart-shaped leaves are cooked into a spicy side dish known as callaloo that honors the legacy of African Caribbean ancestors.

“It’s an interesting culinary journey, to start to think more deeply about how these came to be,” Fiorello said, “and how great the contribution was by enslaved Africans and their descendants to creating these cuisines.”

The exhibition also includes the cash crops that enslaved people were forced to grow. West African rice farmers were specifically targeted for enslavement because of their expertise in rice cultivation. Between the 1740s and the 1770s, indigo was a significant commercial crop grown on Southern plantations, where enslaved people planted, harvested, and processed it to dye clothing worn by upper-class Europeans.

During the 1700s, the number of enslaved people in the Chesapeake Bay area and North Carolina increased from 10,000 to 1 million due to the increased European demand for tobacco, which led to a higher demand for labor.

Collaboration, Contributions

The Cornell Botanic Gardens began work on the exhibit in fall 2021 by collaborating with Valerie Aymer, associate professor of practice, landscape architecture, in the College of Architecture, Art, and Planning (AAP), and students enrolled in her Individual Study in Landscape Architecture class. The eight students conducted research on significant plants, with help from Acree’s library resources, and developed design concepts for the planting display. From these initial concepts, gardens’ horticulturists Melissa Cox and Emily Detrick determined which plants could be grown; Fiorello and educator Pam Shade conducted deeper research into the history of the plants. The advisory committee gave input to students through autumn 2021 and to Gardens’ staff through spring 2022.

The advisory committee included Acree, Aymer, Fiorello, Zellner, and Greg Page, emeritus professor of art, AAP; and Catherine Thrasher-Carroll, mental health promotion program director, Cornell Health.

The collaboration among students, staff, and the advisory committee shaped the theme of the exhibit, which showcases how historically, these plants were important for survival. The exhibition especially aims to uncover narratives about the many ways African descendants have contributed to American foodways and farming practices, Zellner said.

“I hope visitors interacting with these plants leave the gardens recognizing and acknowledging some of the innovative agricultural creations and techniques developed by Black Americans,” she said, “and how this history connects to current cultural cuisines and injustice within our food system.”

The garden installation is open dawn to dusk; the exhibit in the Nevin Welcome Center is open 10 a.m. - 5 p.m. Tuesdays - Sundays.

This article originally appeared in the Cornell Chronicle.

Susan Kelley is a senior staff writer for the Cornell Chronicle.
Proyecto Futuro Celebra el Liderazgo de la Comunidad Latinx
El equipo del Proyecto Futuro en Ag y nuestros aliados hemos tenido un verano muy ocupado.

By Mildred Alvarado

Nuestro trabajo en equipo con nuestros colaboradores, productores, proveedores de servicios, y la comunidad en general nos ha mantenido trabajando con orgullo hacia nuestro objetivo de apoyar a los agricultores Latinos a través del acceso a la información en Español y a las herramientas educativas apropiadas para lograr sus objetivos y minimizar los riesgos.

El Primer Día de Campo en Español Celebra el Liderazgo, el Espíritu, y la Contribución de la Comunidad Latina a la Industria de la Manzana en el Oeste de Nueva York
Una comunidad local de más de 40 agricultores Latinos, gerentes, supervisores, propietarios de fincas, líderes de cuadrillas, y empleados del oeste de Nueva York asistieron al “Día de campo en español para la comunidad Latina del oeste de Nueva York,” el 17 de junio. Los asistentes aprendieron prácticas de manejo sostenible en el manejo integrado de plagas y la producción de la variedad de manzanas honeycrisp, y a desarrollar prácticas de manejo sólidas en su negocio agrícola en la oficina del condado de CCE Orleans, y fueron reconocidos por su liderazgo y contribuciones a la industria de la manzana. Este evento de colaboración fue organizado por El Programa de Small Farms de Cornell, (NYS IPM) y el Programa de Frutas del Lago Ontario del CCE.

Reconocer las contribuciones de los agricultores Latinos – el liderazgo, las habilidades, y el papel vital que tienen en el sector agrícola – crea oportunidades para visualizar y desarrollar carreras profesionales agrícolas exitosas para los futuros productores Latinos. Además, entender las aportaciones lideradas por los Latinos identifica habilidades únicas e invaluables, promoviendo objetivos profesionales, y de negocios, que a su vez mejoran el bienestar y la vida familiar, inspirando a la comunidad agrícola Latina en su conjunto. Por ejemplo, año tras año, el Estado de Nueva York cosecha más de 1.2 mil millones de libras de manzanas, cuída más de 1.6 millones de árboles de manzanas, y cultiva más de 55,000 acres que proveen manzanas frescas y nutritivas a más de 68 millones de personas en todo el país. Una gran parte de este esfuerzo se debe a la masiva contribución de agricultores, empleados y proveedores de servicios Latinos que cultivan, cosechan, empaquetan, comercializan, distribuyen, y exportan activamente manzanas producidas en el Estado de Nueva York.

Participants listening at the Seventh Hispanic Fruit Tour on Aug. 24.
Participants escuchando en Séptima Gira Hispana de Frutas, 24 de Agosto.
Mildred Alvarado/Cornell Small Farms Program

Juntos Aprendemos: Un Día de Campo en Español para la Comunidad Latinx
El primer día de Campo para la Comunidad en la finca West Haven Farm de Carlos Aguilera y Lorena Mendoza Pérez, el pasado 6 de agosto, se caracterizó por la pasión por la agricultura orgánica de la familia Aguilera Mendoza y de su equipo de trabajo, la curiosidad y el deseo de aprender de los productores Latinos y Latinas que atendieron el evento, la deliciosa comida Mexicana combinada con el sabor de Ithaca, y el apoyo de una comunidad más amplia que forma parte esencial para el éxito de los productores Latinos y Latinas en el Estado de NY. Durante este día campo, Carlos y Lorena compartieron su historia como familia Latina, sus sueños como agricultores y sus retos y aciertos mientras afinan sus prácticas de producción y mercadeo de hortalizas orgánicas y de gestión de la salud del suelo implementadas en las tierras de su finca.

Luego de recorrer las diferentes estaciones preparadas con demostraciones prácticas y visuales, los participantes de este día de campo se reunieron en la casa comunal de Eco-village para aprender de Carlos y Lorena sobre su experiencia en el acceso a la tierra, el desarrollo de sistemas de registros contables y manejo de las finanzas y el cumplimiento de los regímenes de plagas.

Carlos Aguilera showing how he works the soil at West Haven Farm on Aug. 6.
Carlos Aguilera mostrando como trabaja el suelo en su finca, Dia de Campo en West Haven Farm, 6 de Agosto.

Estamos profundamente honrados y contentos de haber colaborado con Carlos y Lorena para desarrollar este evento único en su tipo, que reunió a 35 Latinos y Latinas del centro y el oeste de Nueva York, en el cual aprendimos cómo producir alimentos usando técnicas agrícolas amigables con el ambiente. Como seguimiento a este evento, el grupo de productores de Juntos Aprendemos de Futuro en Ag continuará reuniéndose mensualmente virtualmente para seguir aprendiendo de productores como Carlos y Lorena y otros que son ejemplos a seguir en el Estado de NYS.

Mostrando las Habilidades de Gestión de los Huertos
La séptima gira anual de la fruta hispana brindó a 140 agricultores latinos la oportunidad de desarrollar habilidades prácticas a través de diversas actividades en el huerto de Zinger Farm el pasado 24 de agosto. La camaradería, la conexión entre pares, y la inspiración de los nuevos

A New York State Vision for a Profitable, Regenerative, Equitable, Healthy Food System Future by 2050
New York agricultural agencies and researchers release a statewide food system vision for 2050.

By the Center for Agricultural Development and Entrepreneurship (CADE)

On July 28, 2022, the Center for Agricultural Development and Entrepreneurship (CADE) and its research partners Cornell University’s Dyson School of Economics and Management, Cornell Small Farms Program, Hartwick College, SUNY Cobleskill’s Institute for Rural Vitality, and faculty of COLUMBIA University are launching the culmination of a research project, “Vision 2050: A New York State Vision for a Profitable, Regenerative, Equitable, Healthy Food System Future by 2050.”

CADE Executive Director Phoebe Schreiner stated, “This is a historic moment for New York State. Vision 2050 is a culmination of a three-year research project engaging stakeholders across New York to put forward an integrated, comprehensive food system vision by 2050 – one that is profitable, regenerative, equitable, and healthy. It is intended to educate political leaders on what food system stakeholders want to see for the future and act as a compass for getting us there, including overcoming barriers. We hope the vision can guide our leaders in developing a long-term state strategic plan that is holistic and integrated.”

New York’s leaders are currently considering priorities for a 2023 NYS Farm Bill in the areas of agriculture, nutrition, and the environment.

“We worked with renowned researchers to develop participatory research methods, such as focus groups and surveys, ensuring we had inclusive representation from stakeholders both across the food system and the State of New York,” Schreiner said.

The research effort engaged a total of 417 producers, agricultural agencies and associations, fishery experts, funders and investors, supply chain entrepreneurs, buyers, nutritionists, climate experts, equity and racial justice experts and associations, fishery experts, funders and investors, supply chain entrepreneurs, buyers, nutritionists, climate experts, equity and racial justice experts and associations, fishery experts, funders and investors, supply chain entrepreneurs, buyers, nutritionists.
Futuro Project Celebrates Latinx Community Leadership
The Futuro en Ag Project team and our partners have had a very busy summer.

By Mildred Alvarado

Our teamwork with our collaborators, farmers, service providers, and the community at large has kept us proudly working toward our goal of supporting Latinx farmers through access to information in Spanish and appropriate educational tools to achieve their goals and minimize their risks.


A local community of more than 40 Latinx farmers, managers, supervisors, farm owners, crew leaders, and employees from Western New York attended the "Spanish-First Field Day for the Latino Community in Western New York" on June 17. Attendees learned sustainable management practices in integrated pest management and honeycrisp apple production, developed sound management practices in their farm business at the CCE Orleans County office, and were recognized for their leadership and contributions to the Apple Industry. This collaborative event was hosted by the Cornell Small Farms Program (SFP), New York State Integrated Pest Management (NY-SIPM), and the Cornell Cooperative Extension Lake Ontario Fruit Program (CCE LOF).

Recognizing the contributions of Latinx farmers – the leadership, the skills, and vital role they hold in the agricultural sector – creates opportunities to envision and develop successful agricultural career paths for future Latinx producers. Additionally, understanding Latinx-led contributions identifies unique and valuable skills, furthering professional and business goals, which in turn improve well-being and family life, inspiring the Latinx agricultural community as a whole.

For example, year to year, New York State harvests more than 1.2 billion pounds of apples, cares for more than 1.6 million apple trees, and farms more than 55,000 acres that provide fresh, nutritious apples to more than 68 million people around the country. A huge portion of this effort is due to the massive contribution of Latinx farmers, employees, and service providers who actively grow, harvest, pack, market, distribute, and export world-famous NYS-grown apples.

Juntos Aprendemos: A Spanish-Language Field Day for the Latinx Community

Our first Latinx Community Field Day was hosted at Carlos Aguilera and Lorena Men- doza Perez's West Haven Farm on Aug. 6. The day was highlighted by the passion for organic agriculture of the Aguilera-Mendoza family and their team, the curiosity and desire to learn from the Latinx farmers who attended the event, the delicious Mexican food combined with a taste of Ithaca, and the support of the broader community that is essential to the success of Latinx farmers in New York State. During this field day, Carlos and Lorena shared their story of becoming a Latinx family, their dreams as farmers, and their challenges and successes as they enhanced their organic vegetable production, market model (CSA), and soil health management practices implemented on their farmland.

After walking through the different production stations set up with hands-on demonstrations and visual techniques, field day participants gathered at the Eouvillage community house to learn from Carlos and Lorena about their experience in accessing land, developing accounting recordkeeping and financial management systems, and complying with New York State farm labor laws necessary to develop a successful farm business. At the end of the field day, Carlos and Lorena, by showing results, answered the question “Is this model profitable (financially, socially, and environmentally)?” The participants discussed the results and together we learned from Carlos and Lorena’s experiences.

We are deeply honored and proud to have collaborated with Carlos and Lorena to develop this one-of-a-kind event, which brought together 55 Latinx farmers from Central and Western New York to learn how to produce food using environmentally friendly farming techniques. As a follow-up to this event, the Juntos Aprendemos group of farmers from our Futuro en Ag project will continue to meet monthly virtually to learn from farmers like Carlos and Lorena and others who are Latinx role models in NYS.

Featuring Orchard Management Skills.

The seventh annual Hispanic fruit tour brought 140 Latinx farmers the opportunity to develop practical skills through various activities in the Zingler Farm orchard on Aug. 24. The camaraderie, peer-to-peer connection, and the inspiration of the new talent in Bulmaro Solís’ leadership were instrumental to the success of this tour. Thanks to Zingler Farm, Bulmaro Solís, each of the farms that sent their employees to this training, and the supporting partners and collaborators for making this tour a professional development opportunity for the Latinx community in Western New York.

At the first station of the tour, the CCE LOF team and Zingler Farms provided training in Spanish on the use of fruit color enhancement techniques in apple harvesting, including materials, leaf pruning (manual), plant growth regulators, and pneumatic defoliation machines to improve fruit color. At the second station, the NYSIPM team led a discussion on fire blight and invasive pests and Bulmaro Solís and his team demonstrated how they reversed a severe fire blight infection they had in their orchard and saved an orchard block at Zingler Farm. IPM also briefly trained the monitoring of an invasive insect pest, spotted wing drosophila, using red sticky cards.

In the third station of this tour, the Cornell Small Farms Program team focused on how to train new and existing employees on the apple harvesting process to obtain optimum quality fruit, the importance of the role of supervisors in quality inspection, and on motivation and good communication with employees. This station was conducted with the help of experienced Zingler Farm employees and reinforced with human resource management techniques. Finally, participants had the opportunity to travel to a classroom activity to learn leadership, communication, and employee management skills to achieve personal, professional, and farm goals.

Futuro en Ag de 8

talentos en el Liderazgo de Bulmaro Solís fueron dete-

onantes para el éxito de este tour. Gracias a Zingler

Farm, Bulmaro Solís, a cada una de las fincas que

enviaron a sus empleados a esta capacitación y las

instituciones de apoyo por hacer de este evento una

oportunidad de desarrollo para la comunidad latina en

e el Oeste de Nueva York.

En la primera estación del tour el equipo Lake Ontar-
io Fruit Program de CCE y Zingler Farms capacitó en español sobre el uso de tecnologías de mejora del color de la fruta en la manzana, tales como mate-

riales reflectantes, poda de hojas (manual), reguladores de crecimiento de plantas

y máquinas neumáticas de defoliación para mejorar la coloración de la fruta. En la segunda estación, el equi-

po de NYSIPM realizó una discusión sobre el tizón de fuego, y plagas invasoras y con el apoyo Bulmaro Solís y de su equipo mostraron cómo revirtieron una infección grave por tizón de fuego que tuvieron en su huerto y salvaron un bloque de manzanas. IPM también capacitó brevemente el monitoreo de una plaga de insectos inva-
soras, la drosofila de alas manchadas, utilizando tar-

jetas adhesivas rojas.

En la tercera estación de este tour el equipo del Small Farms Program de Cornell se centró en cómo capaci-
tar a los empleados nuevos y existentes en el proceso de cosecha de manzanas para obtener frutas de óp-
tima calidad, la importan-

cia del rol de los supervi-
sores en la inspección de calidad y en la motivación y la buena comunicación con los empleados. Esta estación se llevó a cabo con la ayuda de empleados experimentados de Zingler Farm y se enfocó en la finca Zingler Farm, IPM también capacitó brevemente el monitoreo de una plaga de insectos invasores, la drosofila de alas manchadas, utilizando tarjetas adhesivas rojas.

FREE Shipping on qualified orders.
leaders, political leaders, food policy experts, economists, land trust representatives, labor experts, and teenagers – urban and rural – aspiring to become future food system leaders and agribusiness entrepreneurs.

“We intentionally organized focus groups to spark dialogue among these stakeholders who don’t normally talk to each other. We were amazed at how participants were delighted to hear perspectives they hadn’t heard before, despite their being in the same food system family,” said Schreiner.

One of the research partners on the project, Carlena Ficano, Ph.D., a professor of economics at Hartwick College, asserted, “The vision represents a first step towards a roadmap for accelerating sustainable agricultural economic development, creating green jobs throughout the farm and food sector, increasing food security and healthy food access, advancing equity, and mitigating climate change. We can fundamentally transform our food system to deliver on so much more if we treat it as the integrated and interdependent whole that it is, and if we build structures and engage leadership to grow in a way that delivers better for everyone – farmers, food businesses, consumers, alike.”

According to Kristen Park, Extension associate of the Dyson School at Cornell, “New York food is too good to be proud of – it plays a large regional food role that is second only to Pennsylvania in terms of production value. New York, however, has a disproportionately larger population compared to its farmland resources and food manufacturing facilities that constrains food self-sufficiency. In light of the growing population and the concurrent pressures on agriculture – narrow profit margins, competing land use demands, and climate change – research demonstrates New York’s need for a strategy to increase its agricultural food production to feed in-state consumers, export foods or commodities that it produces competitively, and import those in which it does not produce competitively.”

Focus group participants highlighted stark concerns about New York’s current food system. Summarized by Ficano: “They painted a bleak picture of a current food system that they perceive to be financially strained, ecologically unsustainable, discriminatory, and exploitive, with many products characterized as being sourced elsewhere, unhealthy, over-processed, subsidized ‘cheap’ food. We heard repeatedly that healthy, local food is a luxury for the privileged. Participants also lamented the experiences of farmers of color who encounter explicit and implicit discrimination, and commented that much current farm production relies on the exploitation of cheap labor of farmworkers.”

Schreiner noted, “The time for change is now. California and the Midwest, which represent America’s current foodsheds, are drying up and can no longer sustain current food production, nor feed a growing national population that is projected to increase by 110 million in the next three decades. We need to think holistically to re-imagine our food system, and then take action to get there.” Schreiner gave a Tedx Talk on the topic in 2019.

The Vision 2050 publication provides a number of solutions. According to Ken Jaffe, MD, a member of the research team, a CADE Board member, and a grass-fed beef business owner, “One of the most universal and important themes that emerged from our research, regardless of where someone sat on the political spectrum, was the need to shift consumer values and behaviors. We heard loud and clear that if we as a society had greater food system literacy, understanding the value of local food production and regenerative production practices, it would have a ripple effect on consumer demand. We heard lots of ideas on how to do that, all listed in the publication – including making food system education part of the standard public school curriculum.”

Shifting consumer behavior was also a key theme – recognizing that when values change, consumption patterns change. “According to stakeholders who participated, they want to see local food purchasing as the norm in New York, and be affordable to everyone, not just the privileged,” said Anu Rangarajan, Ph.D., director of the Cornell Small Farms Program and one of the researchers on the project.

Curtis Ogden, senior associate of the Interaction Institute for Social Change, who led the research focus groups in New York and co-facilitated the development of the Food Solutions New England network – a similar effort in six New England states involved in the development of the New England Food Vision – noted a consistent point of tension: “Many participants commented that they want to see farmers and fishers thrive and increase profitability, rather than scraping by, as many do now. But they also noted they wanted food to be affordable to people of all income levels, including low-income communities affected by food apartheid. How to simultaneously increase business profitability while increasing affordability to eaters became a question by many.” Food apartheid refers to a geographic area that lacks access to healthy, affordable food resulting from systemic injustice, particularly impacting Black and Brown communities.

“The answer to that question came down to this – we need eaters of all income levels to buy more local as a matter of normalcy, and not just occasionally at farmers markets. It needs to be widely available at grocery stores, specialty retail outlets, and in public institutions that can offer it for reduced prices, like food pantries, public schools, the SUNY system, hospitals, correctional facilities, and other public run institutions, and through SNAP/WIC benefits,” said Ogden.

According to one of the farmer focus group participants, “New York State regulates New York farmers unlike any other state, yet the New York City schools buy cheap applesauce from Virginia. If New York grows economic and political power in New York institutions should be required to buy New York produced and processed food.”

Another focus group participant reflected, “How do we normalize local food buying? We could go past 30% and create even more incentives. Let’s bring SUNY universities and hospitals into the picture. We guarantee a price for corn bushels across New York State, so why can’t we create a fixed marketplace that farmers can rely on?”

“It would help small farms if institutions and restaurants who have a commitment to buying local food go beyond small token purchases from local farms. Perhaps a program where they commit to buying a certain percentage from farms within a certain radius and can then advertise that, or be on lists that show they are doing more than a token purchase,” said another participant.

One of the research focus groups was centered solely on youth voices, and brought together teens affiliated with FFA’s Cobleskill chapter; Vines, a community-based food justice organization in Binghamton that runs a “Grow Binghamton Youth Program”; and the Community Food Advocates “Youth Food Advocates” program based in New York City. Ashley Yang, a teen member of the Youth Food Advocates program who participated in the youth focus group said, “I’m a youth advocate from New York City who is advocating for healthy, affordable, equitable, and culturally appropriate meals. I’d love to see universal free school lunch [across New York State] and reduced stigma around it. We currently have ‘New York Thursdays,’ where we get local farm apples and milk for school districts. I would love to see more of this as a new normal, so it’s not just once a week, but every meal. We need politicians to support this end goal.”

Anna Lilia Araiza, director of youth leadership at Community Food Advocates, commented on why engagement of youth is so important for reshaping our future food system: “It’s critical that we center youth voices in this process, since our decisions today will shape the food system that they’ll one day inherit. We’re delighted that our young leaders played a strategic role in the Vision 2050 process.

“They are not only savvy food consumers, but they are also deeply concerned about the environmental and social impacts of our food system.”
Dealing with the Year of the Drought

In Part 10 of our “What’s Your Beef?” series on raising cattle on small farms, we share some of our strategies to overcome the obstacles faced in a drought year and what you need to know to keep your cattle producing.

By Rich Taber

As beef producers, we endure all kinds of weather and climatic calamities in our Northeastern climate. Each season brings its own uncertainties to the table. However, I have lived in Central New York for several decades and do not remember drought as bad as this one! Yes, we’ve had a few drier than normal summers, but nothing like this year. The summer of 2021 was exactly the opposite! Last summer hayfields lay unknown for much of the summer because of the constant on and off rain that we had, and hay quality suffered for that. At least the pastures grew very well! The normal summer slump in grass production that occurs almost every year was minimal.

This past year, however, grass growth all but stopped almost completely! The summer of 2022 has been bone dry with far below normal amounts of rain received, and subsequently below par hay and pasture yields. How should we contend with this calamity which many of us don’t have a whole lot of experience dealing with? Sometimes we have had somewhat below normal amounts of rainfall, but it always seems to rain sooner or later, alleviating much of the negatives associated with a drought. Not in 2022! By the time that you are reading this, it will be autumn, and the grazing season will be winding down. There will still be time to react to hay shortages, however, before winter sets in. What lessons can we learn this year to prepare us for the future, in this era of ever frequent climate catastrophes?

Whether we are grazing beef cows on pastures or winter feeding them, the fact remains that we need to provide three pounds of forage dry matter (hay equivalent) for every 100 pounds of body weight, for every animal, every day. If we don’t accomplish that, then the animals do not receive enough nutrients and will not perform in the desired manner. If we are trying to grass finish animals, then nutritional needs are even more critical.

First, let’s consider hay for the winter. If you make hay for yourself, then I’m sure that your inventories are much less than last year at this time. First cutting seems to have been about normal, as the conditions in late May and June were not too catastrophic at that time. However, second and third cuttings of grasses were way down. Stands with a lot of alfalfa, being a deep-rooted crop, seems to have done okay to an extent, but as mentioned, stands heavy in grasses have done very poorly. Whether you make your own hay or buy it in, you need to be considering purchasing some before the prices climb to high levels this winter. As I write this in late August, I have seen hay for sale frequently on social media for about the same prices as last year, so don’t wait too long, as the prices have nowhere to go but up in the coming months! You might even consider selling a few animals to lower your feed needs but watch the markets carefully so that you don’t take a bath on their prices. Much of the South, especially Texas, has been liquidating their herds because of an almost total lack of pastures and hay. Market prices will be in disarray all over for quite some time.

For grazing considerations, you may need to be feeding some of that precious winter feed to make up for grazing deficits in summer. Resting intervals for paddocks will need to be increased drastically as well. It certainly pays to have extra hay in storage, in reserve, to feed as needed when pastures lag behind. Don’t leave animals in their paddocks too long either. Overgrazing can cause serious harm to your pastures.

Sometimes it’s a good practice to brush hog your paddocks after the animals move through them, as the animals don’t like to graze upon brown, dead, parched, weedy paddocks. This year in particular, I have seen much of my grazing paddocks turn into brown, weedy, stalky plant material that the beasts don’t want to eat. You can use brush hogs, flail mowers, a diskbine, a sickle bar mower, or an old haybine — whatever works for you to accomplish the purpose. I know that I don’t get too excited about running and deprecating tractors and brush hogs and burning through $5/gallon diesel fuel operated: works on pressure up to 40 PSI.

Sometimes, however, we need to be more creative in our paddock management. When pastures lag behind, don’t leave animals in their paddocks too long either. Overgrazing can cause serious harm to your pastures.

Vision from 10 –

Food system. We are proud to see them leading the way for the next generation of food justice organizers.”

The research also found that enhancing supply chain efficiency is critical for increasing profitability, especially for New York’s majority small and mid-sized farms that cannot meet market demand for scale. “In a state where three-quarters of our farms are small, and where that trend is increasing, we need efficient processing, aggregation, and distribution systems, including in urban centers.

There’s a lot New York State can do to address that, like holistic planning and investment in the supply chain — encouraging and incentivizing collaboration among food hubs and distributors, for example. Today’s norm is competition and inefficiency, resulting in higher costs for those businesses, such that they either go under, cannibalize each other, or pass the buck to the consumer,” said Miguel Gomez, Ph.D., a member of the Vision 2050 research team, leading national researcher on supply chains, and professor at the Dyson School at Cornell.

Another area of tension that emerged during the research was the friction between livestock farmers and climate justice leaders. “Although we know that feedlot production of confined cattle produces greenhouse gases that worsen climate change, there is research that indicates that grazing-based production can remove carbon from the atmosphere and sequester meaningful amounts of carbon in soil. This research indicates that grazed grassland can offset greenhouse gas emissions, especially in temperate climates with good rainfall like in New York. Since grasslands represent the largest fraction of New York ag land, and dairy is the largest economic sector in New York ag, research on this question has major implications for ‘climate smart’ dairy and beef production and for climate policy in New York and beyond. This research should be a priority in New York, and will help design New York’s climate policy for ag,” said Jaffe.

In one of the focus groups, a climate justice leader conveyed frustration at dairy farmers in the Finger Lakes where manure runoff causes the proliferation of algae blooms. “Why are dairy farmers so indifferent?” she posed. A dairy farmer in the same focus group conveyed his mutual concern, but acknowledged most dairy farms are just getting by, don’t know what to do, and can get defensive because their businesses are under pressure at every turn.

“It’s not easy for farmers to transition from conventional to what is now referred to as ‘regenerative practices.’ It’s a complete change in operations, management, equipment, financing, certifications, and markets,” said Jeff Potent, member of the research team and adjunct professor of international and public affairs of Columbia University. “We need to provide financial incentives to farmers by investing in them and offering technical assistance to support a transition, not throw sticks that demonize or punish them. And at the end of the day, farmers will respond to market signals, so consumer buying patterns will also and ultimately make a difference.”

Increasing the number of farmers and farm...
Another pet peeve that I have is seeing some animals grazing continuously grazed pastures from early in spring right through summer and on into autumn, right up until snow flies. Continuous grazing is a poor management strategy in the best of times, and in a drought year there is even less grass for the animals to graze. Remember, those ruminants need to take in about 3% of their body weight daily on a dry matter basis to thrive. If this is what your pastures are like, then the needs to be supplemented with extra feed.

I drive around the countryside and see many animals grazing week after week in stripped down pastures that have little or no feed value, and with no supplementation. Letting cows and calves into a stripped-down pasture is okay as far as exercise is concerned, but without proper amounts of grass available or supplemental hay available, the animals will not perform as we would like them to. Ruminants, being ruminants, are going to graze whether there’s much grass there or not, but this is just an illusion that they are taking in enough feed. I have a barnyard winter sacrifice lot that my cows will still graze in some, even with good pastures and hay are available to them. Do not be deceived – just because cows are grazing does not mean that they are taking in anywhere the nutrients that they need! The cow’s milk production will be way down, and the calves will gain little or not at all from a lack of sufficient milk and good grass. This is a situation bordering on animal cruelty.

We can only hope that next year will bring us better weather patterns. Farming is always a gamble, but if we are prepared then we can weather the storm.

This is the 10th installment of articles in our series on raising and managing beef cattle.

New York to truly fulfill its potential. But that’s why we need to look holistically, work with our political leaders to develop a state strategic plan, and take ourselves out of industry silos and individual geometries. The most common comment we got from stakeholders about Vision 2050 was “Thank goodness someone is finally doing this and we need to continue these conversations!” Our key recommendation to New York leaders is to sustain these discussions, bringing people together who don’t normally connect and strategize together. It would be great if NYS Agriculture and Markets could convene annual summits to do that,” she said.

For more information on Vision 2050, visit cadefarms.org/vision-2050.

The Center for Agricultural Development and Entrepreneurship (CADE) is a nonprofit organization whose mission is to increase the number and diversity of successful farm enterprises and related businesses in upstate New York. CADE seeks to build a vibrant food system in which locally owned agricultural businesses thrive and consumers are nourished by healthy, sustainably produced food.
Anticipating the Next Forest: Ecology and Management for Sustaining Forests

Consider a long-term timeframe to think about private forests specifically and broadly; how they used to look, how they have changed, and visualize what future private forests will provide to future owners overcome the obstacles faced in a drought year and what you need to know to keep your cattle producing.

By Peter Smallidge and Gary Goff

Periodically, maple producers and woodlot owners should pause and consider their woods, both their sugarbush and their other woodlands. Consider a long-term timeframe to think about private forests specifically and broadly; how they used to look, how they have changed, and visualize what future private forests will provide to future owners.

For most of our private woodlands, the soil will continue to grow plants. The question is whether those future plants will provide the variety of benefits that the owners desire, including products for sale and ecological services and values that forest owners provide to society. The process of forest regeneration, if and how it happens, will determine what we can anticipate in the future forest.

Several recent studies, and some not so recent, have called attention to the problem within some forests to regenerate desired species to provide the next forest. To highlight some recent information: (1) A study in which we participated surveyed foresters about their observations from the most recent stand (a working unit of the forest) they visited that should be capable of regeneration. These foresters reported moderate or successful regeneration in only 30% of those stands – a 70% failure rate. Successful regeneration was defined as desirable species at least five feet in height. (2) A study by the Nature Conservancy, based on a review of U.S. Forest Service data, used a regeneration index and found that timber species were regenerating on 43% of permanent monitoring plots. (3) Dr. Ralph Nyland reported in a ForestConnect webinar in February 2009 that the overwhelming predominance of exploitive cutting has often led to failed regeneration or significant complications with the regeneration process. These three independent assessments all concluded that Northeastern hardwood forests are facing a concerning future. Other barriers, such as invasive earthworms and soil acidity, further complicate forest regeneration in some locations.

A Bit of Context & Background

In a simplistic way, we can think of the forest as two layers: the upper canopy and the understory. In forests less than about 40 to 50 years of age, we seldom worry about understory layer of desired species of seedlings, or advanced regeneration, because the forests have a long time horizon. At about 75 to 100 years old, however, the anticipation for regeneration should heighten because some tree species may be approaching the end of their lifecycle and/or sawtimber species may become sexually mature and owners may consider selling or removing these to become established and survive long enough to reproduce itself.

As woodlot owners and maple producers, trees are a significant part of our interest in the woods. As the forest grows we can harvest the volume of some trees that would otherwise die, and we may eventually plan for the re-establishment of large sections of our forest. Timber harvests and thinning in the sugarbush and woods must be sustainable to ensure continued flow of products and forest services. Regeneration of new young-aged seedlings is the first step in sustainability. Failure to ensure appropriate numbers (often thousands of stems per acre), sizes, and growth of desired species may disappoint some forest owners and may erode the confidence of society in our capacity for responsible and sustainable forestry. Regeneration thus requires that new trees become established, the number of stems per acre is appropriate, those new trees represent the desired mixture of species, and stems have a quality that will provide for future desired products.

Tree regeneration, our focus here, requires the coincidence of the availability of propagules or seeds, the receptivity of the site (the seedbed) for the seedling to become established, and adequate growing conditions at the site for the seedlings to grow toward maturity. If the timing or quality of one of these three factors doesn’t align, regeneration typically fails. Trees may require years to become sexually mature and owners may need to conduct specific management activities to create an appropriate seed bed and growing conditions. Thus, regeneration is a process through time.

As a forest approaches maturity, there are tipping points beyond which successful regeneration becomes less assured and likely more costly. If a seed source is absent due to exploitive or selective logging, such as diameter limit cutting or high-grading, regeneration may disappoint some forest owners and may decline. If we first consider the human benefits associated with trees, the lack of regeneration may change aesthetic qualities, habitat for hunting, and over a long period of time.
multi-decade timeframe the lack of forest products that provide revenue and local jobs. The future success of timber production, maple syrup production, wildlife mast trees for hunters, and fence posts depends on an adequate level of success of the regeneration process.

Many species of wildlife benefit from new regeneration. In a mature forest, the presence of desirable forest tree seedlings is important to maintain micro-environmental conditions. These mature forest seedlings also provide nutritious browse, nesting habitat, and escape cover. Other wildlife species depend on different environmental conditions provided by successful regenerations in early successional habitats. An important consideration for wildlife is that the unique growth form and fruit production of various species makes them more or less suitable for various wildlife species. Because of deer pressure (more on this topic later), some unpalatable species can dominate and the habitat can become unsuitable for some desired wildlife.

What Limits Forest Tree Regeneration? Why is There a Problem?

Trees are long-lived and some forest owners may call a forest home for multiple decades and legitimately not become involved in the process of forest regeneration. In a section of woods, barring any manipulations to the canopy or seed bed, the number of trees will diminish and the stand will die out over time. The remaining trees are the same stems, though larger, as when these owners started.

In many ownerships, a commitment may require that land managers and owners have a commitment to sustaining the forest canopy and the forest floor. This commitment may require that land managers and owners have a commitment to sustaining the forest canopy and the forest floor.

Finally, because tree regeneration depends primarily on the seeds, parent trees of appropriate genetic quality need to be present or have been recently present. Often, however, as described by Dr. Nyland, exploitive cutting removes the best quality and largest trees and shifts the potential for seed production to fewer species of poorer quality and capacity to produce seed. Exlusive cutting, also known as high-grading, has the potential to eliminate some species from a stand and thus prevents that species from providing propagules and effectively regenerating. In some circumstances, such as a properly executed clearcut, seed and propagules are known to be in the soil seed bank or available from adjacent trees and seedlings establish successfully after the overstory is removed. Exploitive cutting is distinct from clearcutting; the high-grading activity will typically limit owner options for regeneration. When properly applied, clearcutting will ensure that seeds or propagules are available to result in adequate numbers of seedlings per acre to regenerate the harvested area. Owners who have acquired a high-graded forest will need to find good technical assistance to provide for desirable tree regeneration.

Recommendations

Deer – Recreational hunting is a time honored and important cultural practice. In previous decades and in some specific areas, hunting pressure is sufficient to truly impact deer abundance. However, in most areas recreational hunting is insufficient. Owners and managers will need to find a way to exclude deer. Cornell’s Arborist Forest has demonstrated the effectiveness of slash

reallocate sunlight to desired species. Numerous resources are available on methods to control interfering vegetation and forest vegetation management (youtube.com/ForestConnect).

Exploitive Harvesting – Exploitive harvesting, thoroughly applied, can take decades to correct. If possible, avoid this activity by being informed, asking questions, and working with foresters and loggers who have a commitment to sustaining forest systems. That commitment may require that your revenue is less in the short run. If you inherit an exploited woodland, you will need to work through a process of allocating sufficient

Next Forest 15

(above) Deer require approximately seven pounds (fresh weight) of forage per day. One estimate calculated 600 seedling tips per pound or 4,200 seedling tips per deer per day. At this impact, deer are a profound force in the forest. (left) Red oak seedlings are desired by many owners for timber, fuel, wildlife, and aesthetics. The seedlings in foreground is heavily browsed, de-formed, and stunted. A tree caged, in background, is one example of a deer exclusion tactic that is effective for efforts to protect a few stems on a few acres.

walls as a novel and cost-effective exclusion technique (www.slashwall.info). Other deer exclusion techniques are available, and all have cost and success attributes that dictate which is the best for a given situation. The presence of deer impact will often result in challenges from interfering vegetation.

Interfering Vegetation – In most situations the presence of interfering vegetation is a result of prolonged and extensive deer impacts. It is futile to manage the vegetation without also managing the deer, although sequence might vary with the circumstances. Similarly, reducing deer impact, through effective hunting or exclusion, typically requires disturbance of the interfering vegetation to

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By Sarah Thompson
NYS, Cornell Launch New Grapevine Certification Program

A revitalized grapevine certification program to provide growers in New York and North America with clean, virus-tested plant material verified by the most stringent testing standards in the world.

By Sarah Thompson

The New York State Department of Agriculture and Markets (AGM), in partnership with Cornell AgriTech, has launched a revitalized grapevine certification program to provide growers in New York and North America with clean, virus-tested plant material verified by the most stringent testing standards in the world.

Three New York nurseries are participating in the voluntary program and offering certified vines to growers in the U.S. and Canada. New York-certified grapevines from these nurseries are verified as free of nine viruses that cause significant economic losses to vineyards across New York and North America.

Grapevines, like humans, can be infected by multiple viruses. But there are no vaccines (or chemical sprays) for grapevine viruses, and no genes or groups of genes have been found in wild or cultivated grape species that confer stable virus resistance. Unless removed from the vineyard, infected vines spread disease to healthy ones, shortening a vineyard’s productive lifespan by up to 75% and causing delayed ripening, poor fruit quality and 30% to 80% reductions in yield.

“The only effective way to deal with viruses in vineyards is prevention,” said Marc Fuchs, professor of plant pathology and plant-microbe biology at Cornell AgriTech. “Using clean, virus-tested planting stocks is the key to reducing the presence of viruses in newly established vineyards and lessening their detrimental impact on New York growers.”

New York’s new virus-tested certification program is the product of a 15-year collaboration driven by the three primary grapevine nurseries in the state – Amberg Grapevines in Clifton Springs, Double A Vineyards in Fredonia, and Hermann J. Wiemer Vineyard in Dundee. New York grape growers and the nurseries brought in Fuchs, Cornell AgriTech, and the AGM not just to reestablish an earlier program discontinued in the 1980s, but to create something new and innovative.

“This certification program is critical to the economic well-being of grape growers in New York State,” said NYS AGM Commissioner Richard Ball. “We’re proud to partner with Cornell AgriTech, whose expertise in using the latest technology allows us to detect, with extreme accuracy and in a short amount of time, viruses in grapevines, helping protect our $6.5 billion wine and grape industry.”

According to Fuchs, the testing frequency and aggressiveness of New York’s certification program is now the highest in the U.S.

Allison Usavage/Cornell CALS

or abroad. First, nurseries establish increase blocks using virus-tested plant material from foundation vineyards managed by the USDA’s National Clean Plant Network. Cuttings from these mother blocks are used for grafting and propagating certified nursery stock.

Each year, state horticulture inspectors sample 25% of increase block vines (scion and rootstocks) in spring and autumn and submit them blind to Fuchs’s lab for testing; after four years, 100% of vines have been tested. Inspectors also visually double-check certified nursery blocks twice per season. If something looks off, they sample and test.

Currently, Fuchs’s lab tests for nine viruses economically relevant to New York growers: grapevine fanleaf virus, tomato ringspot virus, tobacco ringspot virus, arabis mosaic virus, grapevine leafroll-associated viruses 1-4 and grapevine red blotch virus. Using the latest virus-screening technologies, his team has shortened the turnaround time for test results from years to weeks or days. And if new problematic viruses emerge, AGM has a streamlined process for making protocol changes.

Margaret Kelly, assistant director in the Division of Plant Industry at AGM, said this stringent monitoring is essential to catch viruses that may have been introduced into clean material during propagation, and provides the level of insurance growers need.

“Grapevines are perennials,” Kelly said. “You can’t just start over fresh next year. These plants are in the ground for generations, which is why certification is so important.”

Eric Amberg, whose nursery sells a significant amount to out of state customers, said that having a virus-tested certified option is becoming an increasingly important aspect of purchasing for growers, especially those east of the Rocky Mountains. Canada also recently recognized the New York certification program so growers there can import certified vines, opening a nearby market that’s been clamoring for high-quality planting material for years.

“When I look at our demand for and sales of clean plant material now, I can’t imagine where we’d be if we hadn’t decided to participate,” Rak said. “Our customers are happier and we’re excited for the future.”

Funding for this program was provided from the New York State Environmental Protection Fund, the USDA-APHIS Farm Bill and the New York Wine and Grape Foundation.

Sarah Thompson is a writer for Cornell AgriTech.
Lean Management: Practical Applications and Challenges on Dairy Farms

Real world examples illustrate how farmers can implement Lean Management to reduce waste and streamline production activities.

By Barry Putnam and Mary Kate MacKenzie

Lean Management is a systematic approach to analyze and continuously improve the flow of information, materials, and work in a manufacturing environment. Lean systems maximize production efficiency by minimizing waste and disruptions. Lean principles and practices emerged from the Japanese auto manufacturing industry in the 1950s, and managers participating in them across many other industries, including agriculture.

As farm managers strive to utilize labor and other inputs more efficiently in response to rising costs, Lean Management offers a promising tool.

When trying to understand what Lean is, it can be challenging. It is helpful to think about what Lean is not. Disorganized procedures that waste time and materials, frustrate employees, or cause disruptions in production activities are definitely not Lean. How much time do managers on your farm spend responding to crises and putting out fires versus setting up systems that eliminate the root cause of those problems? How often does a 10-minute task take 20 minutes (or more) because the right tools and materials are not immediately available? How often does a failure to communicate critical information cause a quality defect or production delay?

Lean Management invites farm operators to shift away from a reactive problem-solving mindset toward proactive process design grounded in continuous improvement.

In spring 2021, the Pro-Dairy Farm Business Management team identified Lean Management as an opportunity to help dairy operators measure and improve performance. We developed a Lean Activity Project to teach farm managers about Lean principles and practices, and we asked each participant to implement a Lean process improvement during the summer 2021 project timeline. Their projects addressed a wide range of production activities across different business areas. Several farms focused on the shop, developing Lean processes for inventory shop parts and performing equipment maintenance. One farm cut 12 minutes off skid steer preventative maintenance by purchasing a rolling cart and assembling all the necessary tools and supplies on the cart before starting work on the skid steer. Employees can use the same cart to assemble parts and supplies for other maintenance tasks, further reducing wasted steps in the shop.

Other Lean shop projects addressed flows of information. One farm developed a new procedure for assembling shopping lists to streamline purchasing. Another standardized their process for recording and tracking vehicle maintenance. A third farm piloted the use of smartphone apps to create-to-do lists, assign tasks, and improve communication among shop employees.

These process improvements will help farms stay on top of preventative maintenance and make shop employees more productive while reducing delays caused by supply shortages and equipment breakdowns.

Farms also implemented process improvements related to livestock handling and management. One dairy set up a gate repair kit in each barn, and implemented a procedure for inventorying and restocking supplies in all the kits. This change saved time on gate repair and reduced the risk of cows getting into the wrong group due to broken gates. Another farm set up a new storage area for medications in the calf barn, eliminating unnecessary steps taken by employees who manage and treat calves.

Some of the largest efficiency gains documented by participating farms came from changes to the layout of the feed center or the fuel center. One dairy previously experienced feeding delays on a weekly basis when delivery trucks blocked access to the feed bins. After moving feeding bin augers to the opposite side of the feed center, an employee can now load the wagon while the delivery trucks unload, eliminating waiting and disruptions to the feeding schedule. Another dairy set up an old fuel tank next to the feed center and transported diesel from their fuel center to their feed center using an existing fuel truck. As a result, equipment used at the feed center now gets fuel at the feed center, eliminating 6.5 trips per day, on average, down a bumpy driveway to the fueling center and back. The farm estimates this change will save 657 hired labor hours per year.

Lean Management Website

Cornell CALS PRO-DAIRY has developed a website with Lean Management resources. As farm managers strive to utilize labor and other inputs more efficiently, Lean Management offers a framework to design production processes that minimize waste and disruptions without sacrificing safety or quality. Over time, managers who adopt Lean systems can shift the entire culture of their organization to enhance employee engagement and productivity. This website offers an overview of Lean Management for an agricultural audience and provides guidance to implement Lean principles and practices within your own farming operation. Find the link on the “Business” page under “Our Expertise” at cals.cornell.edu/pro-dairy or access the direct link at cals.cornell.edu/pro-dairy/our-expertise/business/lean-management.

Lean Management 17

This dairy repositioned the augers to the opposite side of the feed bins so the feeder and delivery trucks can access the bins at the same time. Before making this change, the feeder had to wait for delivery trucks to finish unloading once a week. Now employees can deliver feed on time 365 days a year, eliminating weekly disruptions to the feeding routine. The addition of a whey tank at the feed center further streamlines the loading and mixing routine.

Image provided

Lean production systems are complex, offering endless opportunities to streamline and improve procedures. Our project examples demonstrate that farm managers can achieve measurable results by implementing low-cost changes in a relatively short timeframe. One change often leads to another, as farms that successfully implemented one Lean improvement came away with ideas for more. Several participating farms also reported positive impacts on employee morale. Employees responded well to process changes when managers included them in the planning process and implementation of Lean Management.

By Crystal Stewart Courtens

NOFA-NY winter conference, scheduled for Feb. 2-5, can then participate in the seed conference part of the conference. Folks together for an in-person kickoff meeting. Everyone is excited to help 65 commercial growers produce a marketable seed crop well. Seeds will be worked together to offer a guaranteed market for regional seed companies. Farmers will work together to offer a guaranteed market for regional seed companies.

To help 65 commercial growers produce a marketable seed crop well, Seeds will be worked together to offer a guaranteed market for regional seed companies. Farmers will work together to offer a guaranteed market for regional seed companies.

The effort to help 65 commercial growers produce a marketable seed crop well, Seeds will be worked together to offer a guaranteed market for regional seed companies. Farmers will work together to offer a guaranteed market for regional seed companies.
Vegetable Seed Production Course and Mentorship Available to Growers Throughout the Northeast

In order to increase the number of growers able to produce high quality, regionally adapted seed in the Northeast, a group of educators, experienced seed producers, and regional seed companies will be working together to offer training in seed production and a guaranteed market for specific seed crops during 2023 and 2024.

By Crystal Stewart Courtens

Today’s market gardener in the Northeast finds themselves a net user of seed, not a net producer. However, as we have seen a resurgence in local food supply in the last 40 years, we have also seen the beginning of a rebirth of regional seed. Many reasons to grow seed are the same now as they were for previous generations of farmers: to ensure a reliable supply of seed of a needed variety, to offer something unique to the customer, to preserve and promote treasured heirlooms, and to grow a value-added product for a seed company or direct seed packet sales. Organic growers will find another benefit to seed growing: it helps the farmer meet the “seed rule” standards of organic seed usage and helps reduce seed costs.

In order to increase the number of growers able to produce high quality, regionally adapted seed in the Northeast, a group of educators, experienced seed producers, and regional seed companies will be working together to offer training in seed production and a guaranteed market for specific seed crops during 2023 and 2024. This effort is funded through generous support of a Northeast SARE Research and Education grant.

The effort to help 65 commercial growers produce a marketable seed crop will begin in January 2023. We will bring folks together for an in-person kickoff meeting. Everyone can then participate in the seed conference (part of the NOFA-NY winter conference), scheduled for Feb. 2 - 5, followed by five weeks of online coursework developed and led by experienced seed producers and hosted by the Organic Seed Alliance. The course is designed to help growers determine whether seed production is a good choice for their farm first, and then to guide them in selecting an initial seed crop to try. During the course folks will form learning cohorts of five - 10 growers who will work with a mentor throughout the 2023 growing season to successfully produce a marketable seed crop.

Organic Seed Alliance, the host of our online courses, has created the Seed Commons, a virtual space for seed growers from across the country to convene and share knowledge, resources, and camaraderie. For more information visit organicseseedcommons.org.

Caterpillar tunnel with onion and lettuce seed. These plots are paired with outdoor grown lettuce and onion seed to compare the differences in quality and yield. Images provided by Barry Putnam.

Vegetable Seed 18

Lean Management from 16

corporated their ideas, and when the changes made their jobs easier.

One of the biggest challenges that dairy operators reported was deciding where to start. With so many possible places in which to deploy Lean Management, it can be overwhelming to select just one. Dr. Abbot Maginnis, director of the Lean Graduate Certificate Program at the University of Kentucky, recommended during a presentation at the 2022 Northeast Dairy Management Conference selecting one model area within the business to begin implementing Lean improvements. By restricting the scope of Lean Management to one area of the business, managers and employees can learn to develop and sustain Lean systems in a limited way, building skills and confidence before spreading the approach to other areas of the business. Starting small can also help farm managers gain buy-in from employees before tackling larger projects.

It is easier than most people think to get started with Lean Management. The keys to success include starting small and engaging frontline workers. With practice, operators can shift away from a reactive, problem-solving mindset toward a more proactive approach to identifying and reducing waste. Dairy operators often think about managing assets, yet they also manage processes. Lean challenges operators to adopt a process-centric lens. Change takes time and requires discipline, commitment, and practice. However, to quote Clarence W. Barron, grandfather of financial reporting, “everything can be improved.”

This article appeared in PRO-DAIRY’s The Manager, published by Progressive Dairy. To learn more about Cornell University CALS PRO-DAIRY, visit pro.dairy.cals.cornell.edu.

Barry Putnam is an Extension Support Specialist with the Farm Business Management Team at Cornell PRO-DAIRY. Mary Kate MacKenzie is the Farm Business Management Specialist with CCE’s South Central NY Dairy and Field Crops Team, which covers Broome, Cayuga, Chemung, Cortland, Tioga and Tompkins counties in New York.
**Raising Sheep on All Grass**

Ulf Kintzel will be a keynote speaker at the Seventh Organic Farming Conference at the Event Center in Mt. Hope, Ohio, on Nov. 10 and 11, 2022

By the Organic Farming Conference Committee

Ulf Kintzel owns and operates White Clover Sheep Farm and breeds and raises grass-fed White Dorper sheep without any grain feeding and offers breeding stock suitable for grazing. He is a native of the former Communist East Germany and has been shepherding in the U.S. since 1995. He and his family live in the Finger Lakes area in upstate New York.

Kintzel will be a keynote speaker at the Seventh Organic Farming Conference at the Event Center in Mt. Hope, Ohio, Nov. 10 - 11.

After visiting a sheep farm as a youngster, Ulf decided he wanted to become a shepherd. He spent school vacations working on that farm, and eventually did an apprenticeship in Germany to become a shepherd. "There was something appealing to me about sheep," said Kintzel. "I was never intrigued the same way by cattle, goats, or other livestock."

For many people there’s nothing quite as idyllic as a flock of sheep peacefully grazing on a pleasant spring day. Long esteemed as valuable livestock, sheep are gentle animals that are well suited for many types of farms and homesteads. But they also present unique challenges.

If you’re considering raising sheep on your property, there are a few things to take into account, and the first is that not all sheep are the same. Second: will your farm work as a grass farm supporting a flock of sheep as you learn the art and skills of a shepherd?

Farmers getting started with sheep often wonder about what is good pasture for sheep. Frequently, they are either putting sheep on land that has not been grazed in some time and needs to be "renovated" or they are putting sheep on land that had been used for dairy or beef. Many questions come up about what sheep need and want in a pasture.

Kintzel has the knowledge and experience to help you learn about grass and sheep. He said, "In a sheep farming operation that relies on grazing alone without feeding any grain, the pasture is of utmost importance. If the demand is such that the lambs should be finished in a time as short as possible, the pressure is high. I am in that situation. I finish my lambs between three and six months with the average being four to five months. The target weight is 80 to 90 pounds live weight or 40 to 45 pounds hanging weight. That requires that the lambs are getting pushed almost every day to eat as much as possible.

"Several factors such as climate, soil, and amount of input (fertilizer) influence what kind of grasses and legumes should be selected. Here in upstate New York, I use only cool-season grass species. I have mainly Honeyeye silt loam soil. Additionally, I have some Lansing silt loam and some Lima silt loam soil. These soils are all limestone derived, which means the need to lime is limited. I will consider some applications of lime in the future in certain areas of my farm but have not yet felt the need to do so. The only input I have chosen so far is hay that I am buying, which I feed mainly in the pasture during the winter. I do not buy any commercial

By Sarah Thompson

Parallel to these education efforts, we are also conducting some initial research to determine whether growing seed in a controlled environment (caterpillar/high tunnels) will increase the quality or yield of seed crops. Our model crops are onions and lettuce, both of which are being grown in replicated trials this season and will be grown on daughter sites on farms next season. There are many research questions related to Northeast seed production, but this first will be a starting point to help farmers understand where they might grow different seed crops for best results in this region with more frequent rains than traditional seed growing regions.

If you are interested in being a part of the seed education cohort, fill out our quick intake form by visiting cornell.ca1.qualtrics.com/jfe/form/SV_eVE6pUHbKOS2c1 or using the QR code below. If you have any questions about the project, or need help accessing the form, you can reach Crystal at cls263@cornell.edu.

Crystal Stewart Courtens is a regional vegetable specialist with the Eastern NY Commercial horticulture program, specializing in research and Extension work to benefit small and organic farms in 18 counties. She has specialized in garlic research, and is excited to expand into the horticulture side of seed production.

Vegetable Seed from 17

Angela has been stewarding Iroquois corn for much of her life, and works tirelessly to increase her people’s connection to their sacred foods and to increase food security for the Onondaga Nation by managing the Onondaga Nation’s farm. Angela has also graciously agreed to teach workshops for the commercial seed keeping track about the history of native seed appropriation and ways that we can all work to respect the unique integrity of native seeds essential to the culture of Native peoples.

Crystal Stewart Courtens is a regional vegetable specialist with the Eastern NY Commercial horticulture program, specializing in research and Extension work to benefit small and organic farms in 18 counties. She has specialized in garlic research, and is excited to expand into the horticulture side of seed production.

**QR code**

For many people there’s nothing quite as idyllic as a flock of sheep peacefully grazing on a pleasant spring day.
NY Onion Growers Can Keep Yields while Cutting Chemical Use

A surprise finding from new research on controlling pests and disease in New York commercial onion fields will enable the state’s producers to cut their use of synthetic chemicals without sacrificing yield.

By Sarah Thompson

A surprise finding from new research on controlling pests and disease in New York commercial onion fields will enable the state’s producers to cut their use of synthetic chemicals without sacrificing yield.

The study, conducted by scientists at Cornell AgriTech and published in the journal Agronomy on May 28, showed that by following action thresholds to determine when to apply insecticides to control onion thrips — a major annual pest — farmers could use 50% to 100% less fertilizer without reducing yields.

The results of more than three years of field trials also showed that farmers could use 50% to 100% less fertilizer without reducing yields.

“The number one reason farmers give for using action thresholds is mitigating the development of insecticide resistance,” Nault said. “The next new, good chemical tool may not come until 2025. They can’t afford to lose this one.”

In his new study, Nault and post-doctoral researcher Karly Regan aimed to further hone their integrated pest management strategy for onion thrips. They knew growers who continued using weekly spray programs instead of action thresholds were taking a significant risk by increasing the likelihood of resistance developing.

But Nault also found studies that may not come until 2025. They are a little more work, but Torrey said he anticipates saving at least $100 per acre in chemical costs on his 2,200 acres of onions, in addition to the ecological rewards.

“Thrips are a major pest, and we need to look at ways to manage them,” he said. “This research was supported by a grant from the USDA’s National Institute of Food and Agriculture and Specialty Crop Research Initiative. This article originally appeared in the Cornell Chronicle. Sarah Thompson is a writer for Cornell Agritech.
THE LAND. THE FOOD. THE PEOPLE.

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