

Small Farms Quarterly

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



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SPRING 2023

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Cover photo: Soil samples are collected from a pea/oats cover crop mix to better understand the long-term effects on soil health between tilled and no-till systems. Learn more about this research by the Cornell Small Farms Program at smallfarms.cornell.edu/projects/reduced-tillage.

SMALL FARMS QUARTERLY

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

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

Our goals are to:

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

Small Farms Quarterly is produced by Lee Newspapers Inc., and is distributed four times a year as a special section of Country Folks. Publication dates: January 9, April 3, July 3 and October 2, 2023.

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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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News from the Cornell Small Farms Program, Spring 2023

Welcoming a New Team Members to the Small Farms Program

The Cornell Small Farms Program team continues to grow, and we recently welcomed our newest team members, Sarah Bassman and Tim W. Shenk. Sarah and Tim introduce themselves below, and share more about what they'll be working on.

From Sarah:

I joined the Small Farms Program at the end of 2022 as an Extension aide tasked with providing administrative, logistical, and overall support of the program's expanding needs. Sometimes having an extra hand to help get a job done makes all of the difference, and I am here to be that extra set of hands for the Small Farms Program team and the farmers we serve.

I am very excited to join the Cornell Small Farms program in the new role of Extension/program aide. Before applying for this position, I spent a good amount of time learning about the program and immediately felt a deep connection to its purpose and motivation to contribute my skills toward its mission. My immediate goal is to expand upon the initial learning, develop an in-depth knowledge of the projects, and build new relationships to be able to anticipate needs and support growth. I look forward to helping with events both virtual and in person.

Originally from Ohio, I lived abroad in Germany after high school, moved to Las Vegas for a few years, and ultimately landed in New York State in 2007. Choosing to move to New York was largely inspired by a wonderful experience my husband and I had visiting a friend's small farm in Watkins

Glen. The inspiration turned into reality and this area has become where we truly feel at home. That "at home" feeling comes from an authentic connection and shared commitment for the land and community that surrounds us. Sourcing our meat, fruits, vegetables, and other staples from a wide selection of local small farms quickly became an exciting aspect of our lives that we had not before experienced.

From Tim:

I grew up in small-town Indiana helping my mom pick tomatoes and green beans in our small backyard garden. When I was eight years old and wanted a bicycle, my parents asked me how I proposed to earn the money for it. I decided to grow sweet corn. It was a drought year, so we made weekly trips to my small plot to water the rows of beleaguered corn with jugs of water I filled at home with the garden hose. I sold the runty ears to sympathetic friends at church and made \$55 – enough to buy a prized secondhand bike.

Now at the Small Farms Program, I've returned to my family's roots in agriculture, though I may not get to have my hands in the dirt as much as I'd like! I'll be responsible for the multifaceted communications strategy at Futuro en Ag and will support the project's Spanish language online and in-person education.

As Futuro en Ag's bilingual communications specialist, I bring expertise in Spanish language communication, journalism, research, popular education, curriculum development, and classroom pedagogy. I look forward to nurturing a growing network of Spanish-speaking farmers in New York State and beyond.

RT Project Uses Long-Term Research to Show Legacy Effects of Tarping on Soils and Weeds

Over the last eight years, our Reduced Tillage Project has managed a long-term permanent bed research trial to provide some answers to the growing number of questions about tarping and no-till organic vegetable production. We managed a sequence of vegetable crops – cabbage, squash, lettuce, broccoli, and beets – and used different tarping and tillage practices side-by-side. We may have lacked the crop diversity of a CSA farm, but we tried to make up for with a complexity of soil management practices. It was a complicated management matrix with 18 different experimental methods. They represented the tillage extremes and

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Message from the Editor

Dear farmers and friends,

Over the last few years, the Cornell Small Farms Program has been growing in both staff and program areas. With this growth comes an invitation to also reflect on how we must plan ahead to meet future needs. What are the emerging opportunities and challenges that our small-scale farmers will face?

To prepare, we are leaning into a strategic planning process. Just as you make a plan to invest your time and resources to meet your business goals, we too must think carefully about how we invest to best support you.

groups of farmers and educators. We will be asking these folks to tell us about hopes and challenges and to learn possible directions and priorities for the Program. In April, we will be taking all of this information into a staff retreat, where we will reimagine the program, our vision, and future directions.

As the plan starts to emerge, I will be inviting you to review and comment on different possible directions. Your feedback will help us direct our energies in ways to best grow a vibrant small farm sector.

As always, we are in this together.

Anu Rangarajan
ar47@cornell.edu
Director of the Cornell Small Farms Program

Over the next month, we will be hosting several focus groups with different

Cornell, CCE Responding to Farming Mental Health Crisis

As the nature of farming can lead to feelings of social isolation, it is important that farmers feel like they have people to talk to about their issues.

By Melissa Jo Hill

Nicole Tommell knows well the financial challenges today's farmers face. But over the last few years, Tommell – an agricultural business management specialist for Cornell Cooperative Extension – has seen those challenges mutate and multiply, requiring her to develop an essential new skill: mental health first aid.

"The agriculture industry was already under enormous pressure from things like environmental stressors, low commodity prices, and tight margins," said Tommell. "Then COVID hit. The bottom just dropped out.

"Livestock farmers couldn't ship their animals to processing facilities because of shutdowns. We saw dairy farmers forced to dump their milk. And if they're dumping milk, they're not getting paid," she said.

The financial stress was exacerbated by the health and family turmoil created by the pandemic. Nationwide, farming and ranching has one of the highest suicide rates of all occupations. According to the Centers for Disease Control, in January 2022 suicide rates for agriculture workers were 36 per 100,000.

"We've had farmers take their lives," Tommell said. "We've seen an uptick in opioid addiction and alcohol abuse. We don't talk about it because it doesn't match the idyllic vision of farm lifestyle we have, but our farmers struggle with depression and anxiety the same as general population while also dealing with the uncertainties of the ag industry."

After seeing COVID's impact on New York farm families, Tommell sought training from New York Farm Net to become a certified mental health first aid instructor through the National Council for Mental Wellbeing. NY FarmNet, a collaboration between the Charles H. Dyson School of Applied Economics and Management and the College of Agriculture and Life Sciences, offers mental health first aid trainings at CCE offices across the state to people like Tommell as well as industry professionals who interface with farms.

The program helps these workers recognize and respond to mental health issues specific

to farmers and their families. The group also provides free and confidential support to any farmer, farmworker, or agribusiness employee in the state.

NY FarmNet staffs its 1-800 number 24 hours a day, with answering services if no one is immediately available, said Kendra Janssen, its office manager. Consultants usually reach out within 24 hours to help callers.

"It's a really unique program in that we send both the business consultant and the mental health or family consultant together as a team," Janssen said. "Cornell is the only land-grant university with such a program in place."

Becky Wiseman, a licensed therapist who is one of NY Farm Net's consultants, works alongside agriculture business specialists to guide farmers, producers, and workers through rough patches. Together they address the problems holistically, offering emotional support alongside business and financial advice.

"Often we go into a home thinking that they need help addressing some financial issue. And then we find out that somebody in the family just died, or the marriage is in trouble," she said.

Because the nature of farming can lead to feelings of social isolation, Wiseman said farmers often do not feel like they have anyone to talk to about their issues.

"And the stigma that's attached to seeking mental healthcare is significant," she said. "We hear farmers and farm families that don't want others in the community to see their truck parked in front of a mental health center. I have met with farmers at a fire station because they did not want their family or their workers to know they were seeking help."

Tommell said CCE specialists are well-positioned to help farm families access NY FarmNet support. "We notice things when we're out in the field. Maybe a strain in relationships between spouses or children, people not caring for themselves or their animals," she said. "It's our job to help. By going through this training you may be able to pick up on those more subtle signs and



With training from Cornell's NY FarmNet program, Nicole Tommell, an agricultural business management specialist for Cornell Cooperative Extension, is helping farmers navigate mental health challenges as a certified mental health first aid instructor.

RJ Anderson / Cornell University

help folks earlier."

The mental health first aid course provides mental health first responders with the tools to help engage farmers who are showing signs of stress. "We talk about the importance of early intervention, and how to listen nonjudgmentally, to assess the situation, to give reassurance that there is help, and encourage appropriate professional help," Wiseman said. "We don't diagnose, don't even look at why people get into stressful situations. We look at the specific steps that we need to take as first responders in a mental health situation that may help a farmer in distress."

The training also helps first responders interact with their own feelings when encountering difficult situations. "Those of us working closely with the ag community over the past few years have been feeling burned out and exhausted, walking into sad situations and taking that home with us," Tommell said. "For me personally, taking this training gave me tools to better cope with that."

Tommell believes destigmatizing mental health and normalizing assistance is a huge obstacle that must be overcome. "We all know someone who has been touched by mental health problems, depression, suicide, alcohol or opioid addiction," she said. "We have to just bring that to the forefront, talk about it, and create pathways to help. And the mental health first aid training is a great step toward achieving that."

Hear more about helping New York State's farmers navigate mental health challenges on CCE's Extension Out Loud podcast at cals.cornell.edu/cornell-cooperative-extension/news-stories/extension-out-loud.

This article originally appeared in the Cornell Chronicle.

Melissa Jo Hill is a strategic communication specialist and writer for Cornell Cooperative Extension.

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strategies in-between.

Tarps are plastic, not a source of organic matter, so we added mulches to the mix to see how they work together. Trends are emerging out of the piles of data we collected and we are still working to share results as the experiment has come to an end. We are learning from more and more farmers how tarps can support the transition to using less tillage. Now we're trying to bring to light what is happening under them and how they work best.

On our website, you'll find a link to a new comprehensive publication, "Tarping in the Northeast: A Guide for Small Farms." This is a practical guide to understanding how tarps can be applied in different applications on the farm. It summarizes results from research trials and highlights farmer experiences across multiple states in the Northeast region.

In this edition of the Small Farms Quarterly, we speak to

new research that investigated the legacy effects of no-till and tarping practices on weeds through the lens of the weed seedbank on page 18. It provided another insight into how tarps and mulch can fill a niche for better soil and weed management in organic vegetables.

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Eight Things to Think About – Farm Diversification and Enterprise Analysis

Have you ever had a dream about adding or changing something on your farm, homestead, or business? Here's what you need to consider.

By Katelyn Walley-Stoll

Have you ever made a decision without making a budget first? Have you ever planted or grown or raised something without knowing who you were going to sell it to? Have you ever implemented a dream that went terribly wrong? Or a dream that went terrifically right?

I'm guessing that you said yes to at least one of these things! When conversations about farm diversification come up, I always bring it back to our shared experiences – as dreamers, as doers, as innovators, as people who say “Well, that could have gone better.” Specifically, to take this hot topic and break it down, here are my eight considerations that (I think) are universal in conversations about farm diversification.

1. Farm diversification comes in many shapes and sizes.

Farm diversification is the act of increasing the number of enterprises on your farm. In this case, enterprise is just a fancy word for “things to do or sell.” Farm diversification could be adding new products to sell, changing how you sell those products, and/or implementing new ways to make products. This is a great example of not putting all of your eggs in one basket (pun fully intended).

2. Diversification reduces income variability.

We all know that farming is an act with a lot of inherent risk. Farm diversification can help reduce production risk on your farm in several ways. As you add and sell additional enterprises to your farm business, you can reduce cash variability. Let's say you sell produce every summer at the farmers market. Your cash inflows are quite variable as you see a spike in the market season and little to no income the rest of the year. If you added selling eggs, for example, that's a product that would be available to sell, and earn cash from, throughout the year.

You also have the opportunity to spread fixed costs over more commodities – instead of that new tractor just plowing

corn fields, it can also plow pumpkin fields. With farm diversification, you can additionally utilize resources throughout the year and have a larger range of products to help increase market access.

3. Increasing or changing enterprises is added risk.

When considering adding any new farm enterprise, it's important to consider the possible consequences to your business. A new venture is risky with typically high first year losses, particularly if it's something that you'll need to gain new skills to master. There's also questions about market access if you're new to the game and the longevity/sustainability of new ventures, especially if they're jump on the bandwagon type crops (I'm looking at you goat yoga, hops, and hemp).

Additionally, farm diversification can take you from specialized and efficient production (I only milk cows) to “mile-wide, inch deep” inefficiencies (I milk cows, grow pumpkins, process cheese, train oxen, harvest cut flowers, and go to farmers markets every week). None of these unintended consequences are deal breakers, but they're all important considerations.

4. Clarifying your farm goals will help determine viability.

I haven't met a farmer yet who got into the business of farming because they loved paperwork and planning. But you should be sure that a new business venture fits into your farm's business plan. Don't have a business plan? No worries – we have loads of resources to help you build one that will work for you! Having a business plan in place will help you to clarify your personal and farm goals to verify your new venture will fit in.

5. Leverage existing resources before paying for new ones.

Your farm is filled with resources, even if it sometimes feels like those resources are running thin. These can be categorized into physical, financial, and human resources. If you're planning for a new venture that will require the

purchase or addition of several new resources, you should first consider if your farm has any underutilized resources that already exist that could be the foundation for a different enterprise.

6. Develop an enterprise budget to determine breakeven.

Who doesn't love budgets? An enterprise budget is a slice of your whole farm budget pie. This looks at the incomes and expenses associated with a specific enterprise on the farm, taking into account variable and fixed costs. Having an enterprise budget (we have resources to put those together too) will help you determine a breakeven price and the financial viability of a new venture.

7. Identify your market, and its capacity, beforehand.

Don't do anything without knowing who you're going to sell to. That's a marketing plan in a nutshell. You shouldn't start a new venture on your farm without first knowing where/who/what your market is and verifying that there's room for you.

8. Revisit, analyze, pivot, and improve.

But also have an exit plan. When you decide to embark on a new farm enterprise, be sure to hold yourself accountable for checking in on how things are going. Revisit your budget, your business plan, and your books often. Analyze if the new enterprise is serving you and your farm positively – have you seen an improvement in profitability? Cash flow? Is the new venture providing your farm with benefits that outweigh the cost and your time? If the answer to any of these questions is no, don't be afraid to pivot! Shift some things around, change markets or tactics, and see if you can make it improve. If you do these things without success, don't be afraid to enact your exit plan and try something new.

For more information about farm diversification, contact me (Katelyn) at 716.640.0522. This article was written as part of Cornell Cooperative Extension's “Diversifying Your Dairy” initiative. This material is based upon work supported by USDA-NIFA under award number 2021-70027-34693.

This article originally appeared on the Cornell Cooperative Extension Southwest New York Dairy, Livestock & Field Crops Program website.

Katelyn Walley-Stoll is a Farm Business Management Specialist and Team Leader with CCE's Southwest New York Dairy, Livestock, & Field Crops Program.

Stress Management Through a Decision-Making Framework?

Farmers are particularly susceptible to both chronic and acute stress, and one underappreciated strategy for reducing this stress load is our mindset and approach to decision-making.

By Erica Frenay

What causes you to feel stressed out? Major sources of stress in my life include, in no particular order, money, kids, livestock, my off-farm job, my farm business, and the general overwhelming sense of having taken on too much. You may of course experience many other sources of stress. As if that wasn't enough, the stress of our individual experiences is compounded by the miasma of collective anxiety that comes from local and global events: stories of racism, natural disasters, dire economic predictions, the national political circus, war... so much suffering at home and around the world. It's a challenge to protect your mental health while remaining a reasonably informed citizen. These pressures – among many others – are sources of chronic stress.

Acute stress can come in the form of major shocks that occasionally rock our lives, like illness, accidents, or that time all of our markets, kids' schools, and life as we know it were suddenly shuttered in spring 2020.

Those stressors don't have to weigh you down or impact your mental health.

You've likely encountered many strategies to reduce the impact of both forms of stress: meditation, mindfulness, yoga, etc. But if you haven't yet explored your approach to decision-making, you may be missing out on a major opportunity to lower your stress levels by improving your relationships, feeling clear that your decisions are moving you toward your vision of an ideal life, and improving your financial situation.

I can illustrate with some examples from our farm. The most challenging period of chronic stress for my husband Craig and me was the three years that we were building our home on our brand new farm. We had a newborn infant – who was cool with about four hours of sleep in 30-min increments each night – and a four-year-old. I worked three days a week at my office job and my husband ran his construction business full-time while we were also building the farm's physical infrastructure, building our home, developing markets, and managing livestock. It was a slog to get through each day.

The most life-altering acute stressor we've experienced at Shelterbelt Farm was a major fire in autumn 2021. The

“barn” that contained our friends' home, our farm store, workshop, and farm storage space burned down while we watched in horror.

As different as these two experiences were, the primary tool that helped us move through them both was the same: Holistic Management™ (HM). For over 20 years, HM has been improving our well-being by helping my husband and I feel clear on how we want our life together to be and giving us tools to make decisions that move us toward that vision. Ultimately, this has given us a sense of control over our lives, which is a useful illusion that can alleviate stress. I say “illusion” because there is so much in life that we can't control – like pandemics or fires – but HM helps you take control of what you can: your values and behavior, including the choices you make and where you focus your energy.

Maybe you've heard of HM as a grazing or financial planning tool, and it is helpful for both of those things, but the core of it is about decision-making. Not exactly sexy, but considering the

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Pasture Mix for Sheep

What grass and legume species are liked by sheep and are easily established?

By Ulf Kintzel

A recurring question I receive is the one of what grass and legume species to choose when a pasture is being reseeded. Exotic names are being tossed around. Pasture mixes that are offered by various seed companies often contain seeds of grass species I have found subpar for grazing sheep. In this article I will address what has worked best for me and perhaps spare you the disappointment of something exotic either not growing or not being much liked by sheep. Keep in mind that your climate zone needs to be similar to mine if you want to heed my advice.

It has been almost 17 years that I have farmed at the location of White Clover Sheep Farm. At our arrival here in Western New York not all of the purchased 100 acres of farmland was ready to be grazed. I had to reseed a seven-acre field of pumpkins into pasture. I turned this necessity into an opportunity and made this my very own test plot. I planted strips of late-heading orchard grass, rye grass, meadow fescue, a soft-leaved tall fescue, a more erect growing blue grass variety, and, after I ran out of seed and still had some area to be seeded, timothy. After grazing this plot for many years, I had one grass species and two legume species as winners.

Some of the grass species were not satisfactory. The species were either not hardy enough (meadow fescue) or were not much liked by the sheep (the soft-leaved and improved tall fescue) or needed more input to bring any acceptable yield (rye grass) or simply became irrelevant (blue grass). The one and only grass species that met and exceeded expectations on many levels was the late heading orchard grass. What's more, the sheep over time spread the orchard grass throughout that field by collecting seed in their wool and hair and transferring it to new areas. Where other grass species had failed, the orchard grass was taking its place.

The legumes I tried in my "test plot" were a New Zealand grazing white clover, medium red clover, birdsfoot trefoil, and Kura clover. The Kura clover was a failure right from the beginning. Very few plants developed. The ones that did develop were not grazed as willingly as other legume and grass species. The birdsfoot trefoil developed strongly but did not take the grazing well and the stand was diminished with each passing year. The medium red clover developed strongly and offered high yields. However, since red clover is a biennial, it needs to be reseeded from time to time, which I do when I frost-seed pasture in the spring. The New Zealand grazing white clover was a new experience for me at that time. It became the clear winner among the legumes. A thick stand developed and, since white clover is a perennial, has persisted over the entire time that we have been here.

Other areas of the farm had been simply neglected when we arrived. Weeds, mostly Canadian golden rod, and bushes of Tartarian honeysuckle and multiflora rose had started growing. I simply grazed and then bush-hogged these fields. At that time, there was no money left to plow these fields up. A young family of five, a new farm with a mortgage, and other priorities left me without additional funds to be spent on more seed.



Red clover has the added benefit of being relatively drought resistant.

Over time, "native" orchard grass moved in, the seeds spread by the sheep. (I put native in quotes because orchard grass is an Old World grass species but any old variety that volunteered and is unimproved is commonly referred to as native.)

The established main hay fields consisted mostly of timothy and were quite depleted of nutrients. Here too native orchard grass started to move in and after a few years of rotational grazing became the dominant grass species. Likewise, some clearings where I had cut brush and saplings started showing a lush stand of orchard grass after just a few years of grazing.

An adjacent 15-acre weedy field, growing mostly goldenrod and owned by an absentee landowner, also needed to be reseeded. I did so after I secured a long-term lease. Late heading orchard grass, white and red clover, and birdsfoot trefoil were chosen. The orchard grass and the clovers did well again and still do after more than a decade but the birdsfoot trefoil suffered the same destiny as the one in my reseeded pumpkin field. After an initial beautiful stand, it slowly disappeared, not enduring the grazing.

Ironically, birdsfoot trefoil is described as long-lived but didn't live long in my pasture. On the other hand, New Zealand grazing white clover is supposed to have limited longevity and yet all my white clover stands are thriving, some of them being up to 15 years old.

Last year it was time to plow up and reseed a field that was finally fully tilled but consisted of a lot of tall fescue which had volunteered in the many spots that had been previously wet and deprived of oxygen. It also had too many Canadian thistles. The fescue and weeds made it simply too unproductive. My

first inclination was to seed a late-heading orchard grass, which gives me an additional two weeks' time for haying in early spring. In addition, I planned on using one of my successfully growing New Zealand grazing white clovers mixed 50/50 with locally grown medium red clover. Then I started to think and asked myself if that was really the right choice.

I had a chance to start over with a 12-acre plot. Who knows if I'd get that chance again anytime soon during my remaining years of farming? After serious deliberation with myself I arrived at the starting point, thinking, "Why would you try something else if orchard grass and white and red clover grow so easily at your farm, yield so much, and are so much liked by your sheep?" So a late-heading orchard grass variety, a New Zealand grazing white clover, and medium red clover are the three pasture species of choice for me and the ones I recommend. That is my final answer.

Ulf Kintzel / White Clover Sheep Farm

Ulf owns and operates White Clover Sheep Farm and breeds and raises grass-fed White Dorper sheep without any grain and offers breeding stock suitable for grazing. He is a native of Germany and has lived in the U.S. since 1995. He farms in the Finger Lakes region. His website is whitecloversheepfarm.com. He can be reached by email at ulf@whitecloversheepfarm.com or by phone during the "calling hour" indicated on the answering machine at 585.554.3313.



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Give Stocker Beef Cattle a Chance

In Part 12 of our "What's Your Beef?" series on raising cattle on small farms, we share how stocker cattle can provide a quick, easy way to get into the beef industry without a huge investment.

By Rich Taber

If you are new to farming, or just want to take a break from the normal paradigm of raising beef cows and calving them out each year, then you might consider raising stocker cattle. A class of cattle known as "stockers" utilize pasture to add weight inexpensively. These are generally young, lightweight calves born in the previous year, purchased in the spring of their second year, that graze during summer. They are then sold at the end of the grazing season to farmers or feedlots that finish them to market weight.

Growing stocker cattle requires minimal investment in machinery and buildings compared to other types of beef cattle enterprises. This low barrier to entry provides an exciting opportunity for beginning farmers, whether they be new to agriculture or farmers interested in diversifying. Access to land (which can be leased) and capital to purchase cattle are the major requirements.

New York State does have a fair amount of land that would lend itself very nicely to grazing stocker cattle. The one major requirement is that you need is to have a good grazing infrastructure, consisting of good grass, watering systems, and fencing. You don't even need to own your own land for this type of enterprise and can get into it very nicely with leased grazing lands.

"The deal," in a nutshell, is as follows: Come springtime, you go to livestock auctions and

buy calves that were weaned the previous autumn, bring them home, and graze them into the autumn of their second year. If going to auction barns does not suit you, you can contact an order buyer who attends lots of sales and commission them to procure calves for you. Then you sell them and hopefully make some profit.

There are several advantages to this business model:

1. You don't need expensive buildings to house the animals, as this occurs during the warmer months of the year. Little to no cover is needed as the animals are in your possession spring through autumn, avoiding the harsh winter months.

2. You don't need a lot of expensive purchased or self-made hay, as the animals will be grazing for most of their time with you. Pastures, while not free, are indeed a lower input type of enterprise. You will need a little bit of stored hay or baleage to tide you over during dry spells.

3. You don't need to overwinter a bunch of hungry brood cows, thus negating most of the hay requirement. You also avoid the daily requirement of feeding and tending to those cows. You don't need to fight with an unhappy tractor that might not want to start all that well in the cold weather either. You can avoid howling winds, deep snow, ice, and frozen extremities.



Stocker cattle grazing during the warmer months of the year on rough land.

Rich Taber / CCE Chenango

4. You don't need much of any farm equipment to raise these kinds of cattle; maybe a smaller tractor and brush hog to keep pasture paddocks trimmed would suffice.

Like any animal enterprise, you will need to bring your "A" game with respect to health management and vaccination protocols. You don't want to be purchasing a bunch of calves from different sources and then dump them all together at one time; this is a recipe for disaster. You should consult with a veterinarian ahead of time about the best vaccination schedule.

You will need to have a handling facility on the property; stocker calves can be wild and feisty and a squeeze chute is of paramount importance in handling these animals. Some vets will refuse to come to your farm if there's no way to safely handle the animals. It can be downright dangerous trying to do management protocols on these animals if they are not restrained correctly.

Another consideration is training new animals to your electric fences. New animals might just sail through your existing fences if you bring them home and unload them without proper fence training. You may need to house them in a barnyard with stout perimeter fences as an "insurance policy." Then you set up electrified hot wires a few inches out from your permanent fences. It won't take too long to get the animals to get shocked and trained to the hot wires.

As far as grazing goes, you would follow all of the principles of rotational grazing that any other class of grazing animal takes. You are trying to get the animals to gain weight on grass; daily weight gains can range from 1.2 to 1.8 pounds per day. You need to have high quality grasses and move the animals through different paddocks every three to five days. You will need a good salt and mineral mix available to the calves as well.

Stocker cattle can be an excellent enterprise to "get your feet wet," so to speak, and to see if you like raising cattle. Give them a try!

An excellent document providing information on stocker cattle is the "Stocker and Backgrounding Self Assessment" available from the Beef Quality Assurance Program. This can be found at nybpa.org/assurance.html and bqa.org/Media/BQA/Docs/stocker_assessment.pdf.

This is the 12th installment in our ongoing series of beef management articles for the new and small-scale farmer. Previous versions may be seen in the archives of the Small Farm Quarterly at smallfarms.cornell.edu/quarterly/archive.

Rich Taber is Forestry, Grazing, and Livestock Educator with CCE Chenango. He lives on a farm in nearby Madison County with his wife Wendy where they raise and grazed beef cattle and other creatures.



These small calves will make ideal stocker cattle for the following year.



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ON THE FARM TIRE SERVICE

Farmer Veterans: Starting at Square One

Military service generates multiple transitions points for veterans, and these experiences can support a veteran's transition into agriculture.

By Nina Saeli

The life transition into the military begins the day individuals raise their right hand. On that day, a person becomes one of a small percentage of Americans who enter military service. It is the day your life changes forever. A servicemember may transition into a new job every 12 - 24 months, pack their belongings to transition to a new duty station every two to four years, or leave the safety of their home to deploy across the globe for an undetermined amount of time – each time, starting from square one; each time going into that new job, position, or location with more knowledge and skills than the time before.

Farming may be considered a far stretch from a veteran's past or current life experiences, and the decision to transition into farming may feel complex and daunting. Yet if veterans were to remember what it felt like that day they raised their right hand, swearing “to bear true faith and allegiance to the same...” and then reflected upon the endless trainings and experiences that prepared them to step out of their comfort zone and act and/or lead under conditions and circumstances that could literally blow up in their face, then farming may not feel so complex or daunting. Still, for many veterans without a farming background, it does mean once again having to start from square one.

The Cornell Small Farms Program (CSFP) understands this concept of starting a farm or agricultural business from square one so well that they named a course after it: “Starting at Square One.” This course, available to anyone considering starting an agricultural business, provides a stepping-stone for an individual's transition into farming. “The BF 101: Starting at Square One” online course emerged from my own experiences starting a farm from scratch, as someone who did not come from a farming background. We cover a lot of ground in the course, from getting clear on your resources and vision to evaluating land for farming, choosing enterprises, and financing start-up. We designed a second course to follow BF 101 that brings in additional essential explorations, called “BF 102: Exploring Markets and Profits.”

In autumn 2021, NYS veterans were offered free enrollment in this course, along with the option to attend veteran-only cohort sessions. When taking a CSFP course, an individual may be in the classroom with people from all over the U.S. and even across the globe. Additional veteran cohort learning sessions offer the opportunity for veterans to collaborate, exposing them to new careers, opinions, experiences, ideas, and facilitating network and relationship building.

Army veteran Sara Morganti and Marine veteran Joe Morganti started Morganti Farm LLC in Newfield, NY, to create an income stream from home. Sara enjoys the challenge of growing plants, raising animals, and learning how to be more efficient and productive. Joe enjoys being outdoors, and he feels that farming provides a grounding process for him. Sara and Joe currently manage just under 14 acres. Together they start their day feeding the animals, then focus on various farm chores, such as seeding, transplanting, weeding, or harvesting, depending on the time of year. Typical of many farm families with off-farm jobs, Sara attends to farm work until she goes to her off-farm job, while Joe works later in the afternoon until dark.

Sara and Joe took the online “Starting at Square One” course and attended the veteran-only cohort sessions. At that time, Sara and Joe were raising meat rabbits and growing vegetables. “In 2022 we added a half-acre of fruit trees and in 2023 plan to expand our vegetable crops to two acres, in addition to raising 100 laying hens and 150 meat chickens,” Sara said. They currently raise two pigs for personal consumption but intend to research raising pigs on pasture as part of their farm business.

Sara and Joe have taken other CSFP online courses, attended Farm Ops virtual and in-person events for veterans, and constantly read to stay abreast of agricultural science topics and new research. They understand that when it comes to establishing a farm business, one size does not fit all.

“Starting was a struggle. Going through the process of figuring out what works and doesn't work for us was a pretty lengthy process,” stated Sara.

The Starting at Square One course provides a menu of weekly webinars, relevant readings, homework assignments, and discussion forums to share reflections and questions. “The webinars usually feature successful farmers talking about how they got started and offering advice learned from hard experience. This combination of listening, reading, then applying concepts to one's own situation helps people absorb the course content,” Sara said.

Starting a farm business takes more than just understanding how to produce salable items; farmers must also maintain their equipment and wisely manage their profits to keep the farm business viable. “Purchasing the equipment we needed was super expensive and was compounded by having a lot of infrastructure repairs on both the farm and our house,” commented Joe. “We really wanted to do the right thing, but we have had to compromise to make it more affordable while we grow into what we want.”

Navy veteran Lou Russell Jr. purchased his 26 acres farm in Galway, NY, in May 2021. “Although it came with very little equipment or infrastructure, it did come with two cows as part of the sales deal,” said Lou. “Now I'm up to seven. I love the hard work, the rewarding feeling that comes with it, and the feeling of freedom in that I'm raising my own food.”

Lou decided to focus his farming efforts on the theme of “Farm Fresh Proteins” and his current product line includes beef, pasture raised pork, free range chickens, and eggs, and he recently added heirloom dry beans.

Lou often talks about how he did not come into farming with an agricultural background. “I fell in love over the years going to county fairs and visiting farms wherever I was stationed for various duty assignments,” he said. “I just decided to get started and would figure it out along the way. The Farm Ops project and the veteran cohorts have helped tremendously. Then I joined the Farmers Veterans Coalition and of course received support from other local farms as well. I made a lot of connections and have learned continually from my newfound connections at the local farmers market.”

Lou applied for and received scholarships for the CSFP “Starting at Square One” and “Getting Started with Pasture Pigs” online courses with veteran-only cohort session through the Farm Ops project. “Running any business today is difficult, and finding the time, resources, and people to mentor you through the process is one of the most important seeds for putting down a supportive root system and growth!” Lou stated.

The cohort sessions allowed Lou to interact with 23 other veterans also taking the “Starting at Square One” or “Pasture Pigs” online courses and five NYS farmer veterans currently raising pigs or operating other successful farm businesses. “If it were not for the veteran cohorts, there is absolutely no way my farm would be past even a germinated seed's phase of growth. I am so grateful to my brothers and sisters in the cohorts,” Lou said.

During a cohort session Lou was introduced to the concept of food aggregation as a means of providing fresh farm products to communities where farm products are difficult to obtain. Although still developing his business model, Lou now works with local and regional farmers, including farmer veterans he met during cohort sessions, to provide eggs, chicken, and pork to his local market.

Lou has an off-farm job in addition to his farming business, Jireh Organic Farms &



Sara Morganti with one of her famous layers, Greta.

Courtesy of Sara Morganti

Livestock of NY. He starts his day with what he calls “computer chores” – a combination of office work for his employer and tasks to support and run the farm business, such as purchases, social media, or whatever seems urgent at the time. He then transitions to outdoor farm chores, such as gathering eggs for packing and feeding the cows.

“We all have to work for someone and take orders, and veterans get a good amount of that while in the service. I always wanted to own land, and now that I'm farming, I take orders from customers to provide them farm fresh food, and my customers really appreciate what farmers do for them, which makes it all the more rewarding,” commented Lou.

Lou compares his farming learning curve to “drinking from a fire hydrant.” “Startup has been slow and with many frustrations, but I've learned to have patience. It's sort of like a deployment: you train, train, train, and when the time comes, you just go, whether you think you are ready or not – see you in six to 12 months!” he said. “The biggest challenges

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Outreach Supports Black Rural Landowners in the Northeast

Black landowners account for less than 1% of private Northeast forestland.

By James Dean

For Sydney Antonio, a love of forests took root during childhood summers visiting up-state New York, where she and her cousins explored family-owned property covered by red oak, white ash, hard maple, and other trees.

Today, she and her husband, Evon Antonio, sustainably manage 450 of those acres in Greene County as certified tree farmers and New York Master Forest Owner volunteers. But while their history and credentials resemble those of many fellow forest stewards, peers are often surprised when they meet.

“Quite frequently you sign up to go to a seminar, and when you show up everybody’s jaw drops because you’re Black and they never expected it,” Sydney Antonio said. “All of my life. I just chuckle to myself and pretend I didn’t notice.”

The Antonios shared their experiences in “The Stories Trees Have to Tell: Black Land Stewardship in the Northeast,” an outreach publication launched recently by Shorna Allred, professor of natural resources and the environment and of global development in the College of Agriculture and Life Sciences, and colleagues from UMass Amherst.

Supported by a grant from the College of Arts and Sciences’ Rural Humanities initiative through an Andrew W. Mellon Foundation award, the 30-page publication highlights the stories of five Black owners

of forestland in Massachusetts, New York, New Hampshire, and Vermont. The researchers share resources and recommend policies to expand access and support for current or prospective minority landowners facing legacies of discrimination.

“In the past, many Black landowners were denied access to federal programs supporting land ownership and farming, and that history of systemic discriminatory practices has to be acknowledged, recognized, and overcome,” Allred said. “We thought the place to start was to listen to minority landowners and understand the context for their land stewardship and land management.”

The publication – shared with government agencies, nonprofits, land trusts, and Extension offices – is part of “Your Land, Your Legacy,” an initiative that encourages sound stewardship practices, estate planning, and communication to help families sustain ecologically and financially valuable forests over generations.

Individual planning and stewardship decisions are critical in New York, Allred said, where about three-quarters of the state’s 19 million acres of forestland is privately owned. Black owners are rare – estimated to own just 1% of private forestland across the Northeast, according to the researchers. Those interviewed for the publication echoed the Antonios in saying that while it hadn’t deterred them, they knew few, if any, peers who looked like them.

“All my mentors and those in my technical



Evon and Sydney Antonio sustainably manage 450 acres of forestland in Greene County, NY.

assistance network have been giving, wonderful, and nice,” said Charles Harrison, who owns land in Ulster County, NY, and in Massachusetts. “But they all don’t know what it’s like personally to grow up Black, let alone a minority, doing something like this.”

The five featured landowners each discuss how they acquired their property, their stewardship goals, issues they’ve faced, and obstacles or opportunities ahead. Harrison, for example, tapped many Extension resources online, including Cornell ForestConnect, but sought more technical and financial support for a packaged food startup utilizing some of his land.

At the policy level, the researchers recommend facilitating networks for Black landowners and increasing conservation-based estate planning, access to land and assistance programs, and other engagement to address stereotypes and racial disparities in ownership.

A recent grant from the U.S. Forest Service will advance the project’s next phase, focused on developing peer-to-peer learning networks. Allred said the effort would be modeled after the U.S. Endowment for Forestry and Communities’ Sustainable For-

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Ancient Farming Strategy Holds Promise for Climate Resilience

“Duragna” is a mix of wheat and barley, and sometimes other grains too, planted together rather than one type of grain sown in orderly rows.

By Susan Kelley

Morgan Ruelle, Ph.D., was living in the remote mountains of Ethiopia in 2011, researching his dissertation on food diversity, when he kept hearing about a crop that confused him.

The farmers repeatedly mentioned a grain called “duragna” in Amharic that had no equivalent in English. “They kept saying, ‘Well, it’s not really wheat, it’s not really barley,’” Ruelle said. “I was just kind of stumped by it for several weeks.”

Eventually a farmer explained that duragna was actually a mix of both wheat and barley, and sometimes other grains too, planted together, rather than one type of grain sown in orderly rows.

He had stumbled upon one of the few places in the world where farmers still sow maslins, or cereal species mixtures, which can contain rice, millet, wheat, rye, barley, triticale, emmer, and more.

The knowledge the farmers shared with Ruelle led to a paper by current and former Cornell researchers that suggests maslins, which have fed humans for millennia but now are largely forgotten, have the unique capacity to adapt in real time to increasingly unpredictable and extreme weather caused by climate change.

The research, funded by a grant from the Cornell Atkinson Center for Sustainability, braids together previous work in agronomy, ethnography, archeology, history, and ecology. It shows maslins – from a Latin word for “mixed” – have been used for more than 3,000 years and in at least 27 countries, from northern Africa to Europe and Asia and later North America. Wild maslins may have even given rise to agriculture.

“Subsistence farmers around the world have been managing and mitigating risk on their farms for thousands and thousands of years

and have developed these locally adapted strategies to do that,” said former Cornell postdoctoral researcher Alex McAlvay, the paper’s first author and now a researcher at the New York Botanical Garden. “There’s a lot we could learn from them, especially now, in a time of climate change.”

More Rapid Than Evolution

At first, Ruelle (now an assistant professor of environmental science and policy at Clark University) thought farmers were growing maslins together, and then separating the components during the harvest – easy enough with other mixed plantings like fava beans, which grow tall, and low-growing field peas. But wheat and barley? “I couldn’t imagine them going through the field and saying ‘This is wheat, this is barley.’ That just seemed very difficult.”

Then he began to realize why farmers think of the mixture as a single crop. Women began telling him they use it to make bread, beer, injera (a sourdough pancake) and kollo (a popular snack of roasted cereals, legumes, and oilseeds). The wheat and barley are planted together, harvested together, and prepared and consumed together. “Right away we were thinking, the proportions [of wheat and barley] must change year to year,” Ruelle said. “It’s this continuously evolving responsive entity. On its own, it’s operating outside the farmer’s control to respond to whatever conditions happen.”

For example, if an unusually heavy rain destroys half the plants, the plants that are still standing are well adapted to that rain event, said Anna DiPaola, a doctoral student and a co-author of the paper. “Nature is giving the farmer feedback and saying ‘This is well-adapted. Plant this again.’”

And if a drought makes it a bad year for wheat, barley, which tends to be more drought resistant, will compensate and produce a better yield, Ruelle said. “So no matter what, you’re going to be able to make bread with this.”



Nikoloz Lomsadze, senior pastor of a church in Dedoplistskaro in eastern Republic of Georgia, looks over his field of mixed barley and wheat. He uses the grain mixture for holy sacraments and church feasts.

McAlvay found farmers extolling that benefit during research in the country of Georgia. On their first field trip there, in summer 2022, he talked with a priest who was growing a mixture of wheat and barley, which he uses for holy sacraments and church feasts. “He said, ‘If one fails, at least we have the other.’ The translator used the exact same words that the translator in Ethiopia had used. I thought, ‘Wow, this is a phenomenon,’” McAlvay said.

The proportions in the mixtures shift from year to year, automatically adapting to the growing conditions at hand. If an area is getting increasingly drier, the wheat won’t grow as well, and the seed the farmer saves for the next planting will automatically include less wheat and more barley, McAlvay said.

“It’s more rapid than evolution. If you had just one weak variety, it would take a long time to adapt,” he said. “But if you have multiple species and multiple varieties, those shifts

can happen very rapidly.”

That capacity makes maslins a perfect strategy for dealing with climate change – especially because they are more immediately scalable in a way that other polycultures aren’t. New machinery would be needed to harvest beans and corn grown together. “But we’ve had the technology to harvest these grains for a long time,” McAlvay stated.

Moreover, researchers have been encouraging farmers to adapt to future average conditions, whether warmer or drier, Ruelle said. “But I’m much more worried about variability in the weather increasing, and farmers having to deal with a really hot year followed by a really cool year or a late season followed by an early season,” he said. “I hear farmers in Ethiopia saying ‘I don’t know what to do – the weather is so unpredictable now.’”

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estry and African American Land Retention Network, which successfully built networks in southern states where Black land ownership is more prevalent – but still down dramatically over the past century.

“As a community dedicated to the health of the land and the people that depend on it,” the researchers conclude, “we have an important role to play in using our knowledge and skills to help all those interested in land ownership to achieve their goals.”

Additional partners and funders for the project to date include the USDA’s Renewable Resources Extension Act; the Cornell Small Farms Program; UMass Amherst’s Family Forest Research Center; and a grant provided to the Center for Northern Woodlands Education from the Bailey Charitable Foundation.

This article originally appeared in the Cornell Chronicle.

James Dean is a staff writer for the Cornell Chronicle focusing on social sciences; law and public policy; and architecture, art, and planning.



Charles Harrison owns 68 acres of wooded property in New York and Massachusetts. Lisa Godfrey / Provided

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Ancient farming from 10

Maslins could help farmers thrive in a wider range of conditions, he said. "We're raising awareness about an Indigenous system that helps farmers deal with variability."

An Ancient Strategy

Despite having once been so widespread, the strategy of sowing maslins has flown under the radar, said disease ecologist and agroecologist Alison Power, a co-author of the paper and a professor of ecology and evolutionary biology, and science and technology studies, in the College of Arts and Sciences. Ruelle and McAlvay were post-docs in her lab.

Power hadn't encountered the concept until she read Ruelle's dissertation as an adviser on his committee, even though she had been working in the field since the early 1980s. "I said, 'They do what?'" Power recalled. "The most surprising thing to me was that it goes back so far and that it's such a widespread practice that continues to this day in several parts of the world. Most of us in the agroecology community – this was not something we were aware of."

She credits Zemedet Asfaw, a professor of ethnobotany at Addis Ababa University, with helping the Cornell team and others understand the practice.

Although maslins may not be well known now, they may have grown together in the wild and formed the basis of farming in the Fertile Crescent, the researchers say. There's evidence that before domestication of these crops, people were planting mixtures of the wild versions, McAlvay said. Wild einkorn and wild emmer grow together, as do wild barley, wild rye, and wild oats.



A farmer holds multiple varieties of wheat and barley from his field in Kutabir District, Amhara, Ethiopia.

"I've talked to some Israeli scientists who said that they never find wild wheat without wild barley," McAlvay said. "These grains have been co-evolving for many, many thousands of years."

In addition to human food, maslins have been widely used for livestock fodder; barley/oat, oat/rye and oat/wheat mixtures were planted in North America at least until 1889.

Maslins started falling out of favor starting in the 18th century – not because they didn't work, but because of mechanization of harvesting equipment as well as scientific agriculture that encouraged farmers to plant one uniform type of cereal to produce a uniform product for the industrialized food industry.



Mixed grains grow in the Republic of Georgia. Researchers on the project say Georgia is arguably the center of wheat diversity; at least 12 different types of mixtures were traditionally grown in the country until recently.

But the practice continues today in Eritrea, India, Georgia, Greece, and Ethiopia. In Sudan, farmers grow a mix of rice and sorghum in areas that flood predictably; rice grows in flooded zones and sorghum grows under drier conditions.

In addition to its climate-adaptation benefits, maslins can produce greater and more stable yields, are more tolerant of drought, and better resist pests and weeds, when compared to single crops.

That's because multiple types of plants respond differently to stressful conditions. The plants' different characteristics, such as height and root depth, and different ecological roles mean the plants grow complementarily, rather than in competition, and use light and below-ground resources more efficiently compared to single crops.

A mix of Eritrean wheat and barley outperformed sole-cropped wheat and barley by 20% and 11%, respectively, and yielded a higher quantity of flour per unit compared to pure barley in a field trial. Power said many questions about maslins remain. Do maslins provide better nutrition than monocultures? Could maslin components be used to track environmental trends? How do ecological mechanisms underpin maslins' performance?

"What we'd like to do is experiments, to test the notion that these could be useful in all the ways that we propose in the paper," she said.

Fieldwork in Ethiopia was put on hold due to the pandemic and political conflict there. So the team began testing their theories closer to home – at Cornell's Thompson Vegetable Research Farm in Freeville, NY.

Praying For Aphids

Anna DiPaola popped open her laptop computer and fired up a PowerPoint presentation that will become the first chapter of her doctoral dissertation. She launched a slide deck showing 66 orderly test plots measuring two meters by two meters in which she's growing different varieties and combinations of barley and wheat on the test farm in Freeville. "I wanted to plant North American seeds in a North American field and see if the concept holds up here," she said.

As a member of Power's lab, she's testing whether different combinations of wheat and barley will be more resistant to barley yellow dwarf virus, which affects the economically important crops barley, oats, wheat, maize, triticale, and rice. The virus can yellow the

plant's leaves, stunt the roots, delay seed development, reduce yield, and increase the plant's susceptibility to fungi.

Aphids carry the virus and transmit it to the plants when they eat the plants' sap. "Most farmers are not hoping for aphids to attack their crops," DiPaola said. "I was praying for aphids."

Insights from her work will contribute to the team's upcoming research in Georgia and Ethiopia. The goal will be to ask farmers how and why they plant maslins, to collect seeds, and to test hypotheses. They'll do nutritional analyses to understand whether micronutrients could be lost by planting monocultures.

"This is a huge portion of the diet for many people," McAlvay said. "So if you're not planting the black barley, the red wheat, and just growing white wheat, are you suddenly missing iron or some of these other compounds? There's a big problem in Ethiopia already, with the hidden hunger issue of micronutrient deficiency."

And they're looking into whether maslins could offer even more benefits related to climate change. Compared with monocultures, maslins may produce more biomass – and take up more carbon than monocultures – because they tap into different nutrients and levels in the soil.

"What's exciting to me is wheat is the third-most grown crop in the world, millions of hectares," McAlvay said. "If you converted a large swath of what is just wheat into wheat and barley, you could actually make a difference."

This article originally appeared in the Cornell Chronicle.

Susan Kelley is the features editor for the Cornell Chronicle.



A farmer in Ambasel District, Amhara, Ethiopia, holds a mixture of wheat and barley varieties harvested from his field. Locally, this mixture is called "megamegu." Alex McAlvay / New York Botanical Garden

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Smart Marketing for Specialty Mushrooms

Results from a 2021 survey of specialty mushroom growers around the U.S. offer an interesting glimpse into this growing industry.

By Kristen Park and Steve Gabriel

In January 2021, the Cornell Small Farms Program conducted a survey of specialty mushroom growers about their cultivation and marketing practices. We want to thank the growers for providing this valuable information which benefits the specialty mushroom industry and helps us develop our future research and education for growers.

When we talk about specialty mushrooms, we are not including the white button mushroom or even the portobello or cremini mushrooms (all *Agaricus bisporus*). Rather, we are talking about specialty mushrooms that include shiitake, oyster, lion's mane, king oyster, and others. These species tend to be more fragile to cultivate, pack, and transport. Thus, local producers have an opportunity to grow and sell specialty mushrooms to local markets which prioritize fresh and high-quality product.

Based on increasing demand for information from the Cornell Small Farms' specialty mushroom program in the last decade, our sense was that the interest and adoption of mushroom farming was on the rise. Therefore, we surveyed mushroom farms to find out more about their operations and markets.

From our survey, we found that most of our respondents (two-thirds of them) grow specialty mushrooms as part of a diversified farm, alongside other crops such as vegetables, forestry products, fruit, and livestock. The remaining respondents are specialists and grow and sell only fresh mushroom.

In general, the operations are small, with 72.9% of respondents selling less than \$50,000 in annual farm gross receipts. Growers use an average of 3.3 persons for their workforce, which was reported as self, family, or outside labor.

Many respondents (64%) reported a higher demand for specialty mushrooms than they could supply. This was true for respondents regardless of size.

Popular Mushrooms & Products

What kind of mushrooms are specialty growers producing? Shiitakes are the most popular specialty mushroom species, grown by 79.7% of respondents. Although shiitake is the most popular, oyster and lion's mane cultivars are also very popular, as well as several other emerging species including

king oyster, chestnut, maitake. Still others are found wild by foragers.

Selling value-added products made from specialty mushrooms is a large part of many of our respondents' businesses. About two-thirds of growers also make and sell value-added products, including dried mushrooms, tinctures, powdered mushrooms, and pâtés. Dried mushrooms are the most popular value-added product sold by respondents, and just as many respondents, although not selling them currently, plan to do so in the future. Powdered mushrooms also are sold as a condiment or flavoring. Although not as many respondents are currently selling powders, many of them (46.1%) plan to in the future.

Prices

Our mushroom growers sold most of their products at farmers markets, CSAs, or at a grower's farm stand, and prices received by our survey respondents through these direct-to-consumer markets were higher than prices for wholesale markets, such as restaurants, retailers, and institutions. The average direct-to-consumer price for all specialty mushrooms was \$15.99 while the average wholesale and institutional price was \$11.62, about 73% of what the direct price was.

In direct-to-consumer markets, "other" mushrooms were the highest priced (\$19.40). These "other" mushrooms included wine cap, pioppino, strophia, maitake, coral tooth, black pearl, morel, lobster, bears head, reishi, almond, comb's tooth, chanterelles, and chicken of the woods. Many of these types of mushrooms are often either foraged or are very specialized.

Lion's mane (\$17.22), chestnut (\$16.59), King oysters (\$16.49), and shiitake (\$15.01) were priced in the middle, and oysters were the lowest priced (\$14.18).

Quality and locally grown influence how much growers can charge. The high quality and local nature of a product may support higher prices. Some other factors influencing price often include proximity to urban markets or tourist areas as well as presence of competition from other producers in the same market.

When setting prices for products, it is important not to just copy what is seen "in the market" but also balance demand for your products with the ability to pay for all production, marketing, ownership labor, and management costs. Growers need to understand how to price their products as a critical function of their enterprise. See the resources at CornellMushrooms.org for more information.

Final Thoughts

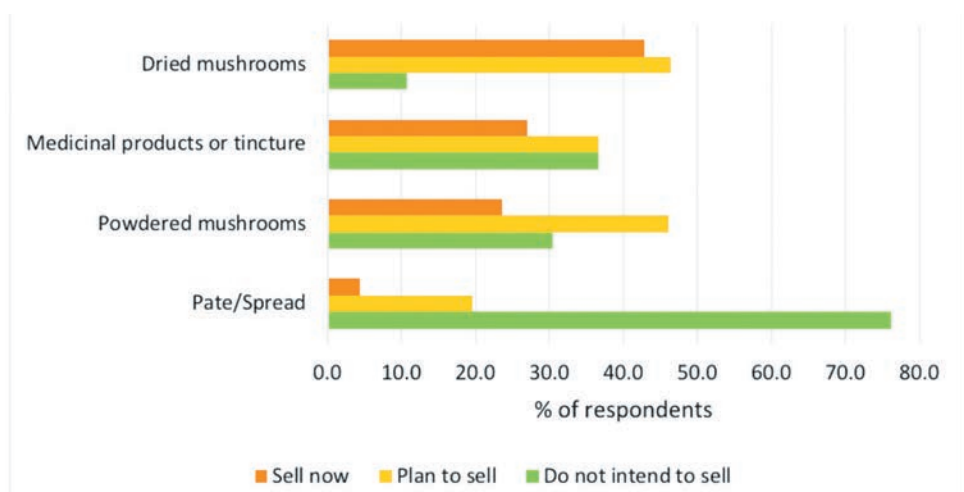
The survey results seem to offer a promising opportunity for established and new growers, where market demand remains higher than supply, high quality and locally produced mushrooms are valued, and where pricing remains high on a per pound basis. The price points and reports of high demand is notably still positive almost 10 years after we first heard this from growers.

The specialty mushroom project of the Cornell Small Farms Program will take these research results and continue to develop useful, targeted materials for specialty mushrooms growers. There are many supporting resources available at the main site, CornellMushrooms.org, including growing guides, webinar recordings, and information on marketing, regulations, and other aspects of running a specialty mushroom enterprise.

This material is based upon work supported by USDA-NIFA and Northeast SARE program under sub award number ENE19-156-33243. Visit cornellsmallfarms.com/2021-mushroom-survey for the full results.

A version of this article also appeared in "Smart Marketing," a newsletter for Extension publication in local newsletters and for placement in local media.

Kristen Park is with the Dyson School of Applied Economics and Management and Steve Gabriel is with the Cornell Small Farms Program at Cornell University.



Mushroom products sold by respondents, current and future items

Square One from 8

are easy to guess – always more things to do and learn than you have time or resources. You just have to move slow and steady, and when you look back you won't believe where you are compared to where you were when you started. As for the progress of my farm – if not for Cornell Small Farms, Farm Ops, and the veteran cohort, I can surely say I would not be selling 'farm fresh eggs' or have the Homegrown by Heroes member-

ship. The cohort for me is the purest form of support in a judgmental-free zone. We can only succeed together!"

Nina Saeli retired from active duty in 2009. She and her husband, Jeffrey, own and operate Centurion Farm in Locke, NY. Nina now works with the Cornell Small Farms Program as coordinator of the Farm Ops project supporting veterans in ag.

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New Tomato Bred to Naturally Resist Pests and Curb Disease

A Cornell researcher has completed a decades-long program to develop new varieties of tomato that naturally resist pests and limit transfer of viral disease by insects.

By Krishna Ramanujan

A Cornell researcher has completed a decades-long program to develop new varieties of tomato that naturally resist pests and limit transfer of viral disease by insects.

Martha Mutschler-Chu, a plant breeder and geneticist who leads the program, recently deposited an initial set of insect-resistant tomato research lines in the USDA germplasm system and the Tomato Genetics Resource Center at University of California-Davis, which will be available for anyone to access the plants for research.

This spring, Mutschler-Chu will complete development of a new set of 20 elite lines, which will then be made available to any interested seed company, which may breed the pest resistant traits into commercial varieties. Breeding new varieties could take seed companies up to five years before they start selling new insect resistant varieties.

For growers, these benefits will offer less crop loss and fruit damage while also eliminating or reducing pesticide use and protecting the environment.

Pest resistance in these tomatoes was adapted from a wild tomato native to Peru, *Solanum pennellii*. The Andean tomato has little hairs called trichomes that excrete droplets of sugar compounds, called acylsugars, which repulse insects. In this way, the plants safely and naturally deter a wide variety of insects, preventing them from feeding, eating leaves, and transferring viruses, or laying eggs, where larvae might damage plants.

"The new lines combine better quality plants and fruit with high acylsugars levels, a combination seed companies need to transmit the acylsugar trait into commercial varieties," said Mutschler-Chu, professor emeritus in the School of Integrative Plant Science, Plant Breeding and Genetics Section, part of the College of Agriculture and Life Sciences.

In field and laboratory tests of the initial research lines, plant scientists from Cornell and seven other university partners (North Carolina State University, University of Georgia, Clemson University, University of Florida, UC-Davis, University of California-Riverside, and Tennessee Tech University)

found that the right levels and form of acylsugars controlled western flower thrips that spread spotted wilt virus, and sweet potato whiteflies, which transmit yellow leaf curl virus. As a result, significantly fewer plants were infected with these devastating diseases and, in field trials, those infections occurred late in the season.

"For best virus control, I've suggested that seed companies use a dual-layer approach: create hybrids with both the acylsugar trait and standard virus resistance genes," Mutschler-Chu said. If insects manage to infect a plant with a virus in spite of the acylsugars, virus resistant genes provide additional protection.

"It's a system that will protect the virus resistance genes utility because if there's less virus getting into a plant, the probability that the virus will have a random mutation that generates a strain that overcomes the resistance also goes down," Mutschler-Chu said. Similarly, since acylsugars are non-toxic and don't kill insects, there is less selection pressure for insects themselves to become tolerant, so they adapt more slowly to the repellent.

The new elite lines, soon to be available to seed companies, have had most of the wild genes from *S. pennellii* that promote agronomically undesirable traits removed from their genomes. Mutschler-Chu retained critical acylsugar genes while removing many other wild genes that caused negative traits such as excess branches, small fruit, and an off-flavor. While initial research lines contained about 12% wild *S. pennellii* DNA, the newest lines are down to approximately 2.5% wild DNA.

In broader terms, the work practically demonstrates a



Martha Mutschler-Chu, professor emeritus in the School of Integrative Plant Science, Plant Breeding and Genetics Section, checks tomato plants in Guterman Greenhouses.

Jason Koski / Cornell University

process for incorporating a valuable trait, based on a safe natural compound, controlled by numerous genes, and that is effective against viruses and multiple pests, a strategy that could also benefit other crops, Mutschler-Chu said.

While the elite lines will be released non-exclusively for any seed company to breed traits into their commercial varieties, they will need to apply for a license with Cornell's Center for Technology Licensing before they can sell seeds.

The work was funded by the USDA.

This article originally appeared in the Cornell Chronicle.

Krishna Ramanujan covers life sciences research at Cornell University.

A Path to Farm Community

The Cornell Small Farms Program's "Reconnecting with Purpose – A Renewal Experience for NY Farm and Food System Educators and Change Makers" fosters 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.

By Violet Stone

"One of the hardest things we must do sometimes is to be present to another person's pain without trying to 'fix' it, to simply stand respectfully at the edge of that person's mystery" – Parker Palmer

There are so many articles and videos emerging right now bringing attention to how taxing the work of farming in these times can be to farmers' minds, bodies, and spirits. We know that the challenges are not just in the hard physical work, the constant adaptation to extreme erratic weather, the breadth and depth of skills required, and the often elusive profit margin. Farmers, like all of us, need time and strength to focus on tension in relationships, wellness and health, healing from trauma, and a sense of belonging, connection, and community.

Those who are helpers and supporters of farmers (sometimes called service providers) are seeking ways to alleviate the isolation and distress farmers face. Some are designing mental health curriculum and offering trainings. Others are producing videos and resources. Yet these service providers who are incorporating farmer mental health

programs have their own challenges to contend with: an endless to-do list, a treadmill of email correspondence to stay ahead of, funding shortages, required trainings, organizational upheaval, and staff turnover, among others.

So what can we do when it seems neither farmers nor supporters can add one more "thing" to their plates, yet nearly everyone is stressed out, disconnected, fatigued, or depressed?

That is where our program "Reconnecting with Purpose: Renewal for Agricultural Educators and Changemakers" seeks to help. In this program, our participants – a mix of educators, change-makers, land stewards, farmers, and activists in the farm and food system – convene in a retreat space where we begin by settling into a long, slow, luxurious stillness. Once centered and grounded, we as facilitators begin by inviting the group into a carefully curated journey of themes and reflections. For some, this means naming barriers and burdens, and letting go of them or finding ways around them. For others, it means rediscovering and reclaiming

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Establishing a Vibrant On-Farm Market

Marketing at Red Wing Farm grew from a farm stand into a community cornerstone.

By Avery MacLean

In the first segment of this three-part series, I wrote about how my partner and I established a small market garden, Red Wing Farm, as college students. In this segment I will detail how we were able to establish a vibrant market in a rural and isolated location.

Red Wing Farm is a market garden located on Grindstone Island in the St. Lawrence River. With a summer population of approximately 1,000, Grindstone Island is only accessible by boat, which significantly limits our access to markets. When we planted our first garden in spring of 2021, our primary goal was to learn about diversified vegetable production and we had no concrete marketing strategy.

When crops started maturing in June of our first season, we realized it was time to make a game plan. There was a small farmers market located on the mainland, in the town of Clayton, NY, and we signed up for the season. The market was supported largely by tourists who came to shop for handmade crafts and baked goods. There were three other established produce vendors at the market who supplemented their harvest with nursery plants and produce sourced from distributors out of Syracuse, NY.

Farm community from 13

birth gifts and strengths that are life-giving. For everyone, it means leaning in to our inherent human capacity to deeply listen, receive, and support one another.

As facilitators, we are not experts of wellbeing nor do we have academic degrees in mental health-related fields. We are genuinely caring and committed to creating a safe and trustworthy container for our participants to uncover and speak their truths. We both lead and follow, share and listen alongside our peers and colleagues. We are grateful to draw from a set of practices and principles put forward by the Center for Courage & Renewal to guide our ways of being together in the program. These touchstones come from multiple wisdom traditions and have served thousands of communities around the world over the past 30 years. As facilitators, we practice them not just in "Reconnecting with Purpose" but in many aspects of our work and lives.

Two of these practices are offering attentive, open-hearted listening and asking open, honest questions. During the program, these practices are very simply the only ways we relate to one another in small groups. Too often when we confide a quandary or chal-

It didn't take long for us to realize that our bunches of spring greens were unable to compete with melons, peppers, and tree fruit. Not to mention that our journey to the farmers market was long. First, we loaded our harvest and supplies into a wagon pulled by tractor, then into the boat, then finally into our truck on the mainland. After a few weeks of schlepping and minimal sales, it was clear we needed an alternative plan.

After our unsuccessful attempt at the local farmers market we decided to try to sell our produce on the island, and the idea of "farm stand" was born. Despite having a substantial summer population, Grindstone Island lacks community and commercial gathering space aside from the Methodist church and a winery. Our goal was to create a weekly community event on Saturday mornings. We offered free hot coffee, a variety of baked goods, and whatever produce was available from the garden each week. We painted signs and placed them around the island. We advertised our new event at church, at the Grindstone Island Winery, and on the island's community Facebook page.

When our first Saturday arrived, we didn't expect anyone to come, our farm being located at the dead end of a long dirt road

and folks being busy with summer activities. However, when 10 a.m. came around a slow stream of ATVs rolled across our field. As word of mouth spread, our weekly crowd grew each week. In comparison to the farmers market, we were making five times the income in half the amount of time.

In addition to the farm stand, we offered surplus crops to the local natural food store in Clayton, NY, the Hunner's Market. We were fortunate to develop a friendship with the owners who understood the nuances of farming and were grateful to receive any local and organically grown produce as it was available.

As we expanded our growing space in our second season, we decided to try to expand our market for produce as well. We decided to offer a small 10-week CSA to island members available for pickup on Wednesdays. The idea is that this would add another harvest day to our schedule and teach us about another method of marketing produce. Our CSA members were offered perks such as free access to U-pick flowers and herbs and 10% off produce at the farm stand.

In our first two seasons farming on Grind-



Their farm stand offered whatever produce was available from the garden each week, plus free hot coffee, a variety of baked goods, and more.

Avery MacLean / Red Wing Farm

stone Island our marketing strategy for produce was fluid and evolving. Because of the nature of our location and community, we were able to establish a vibrant market and community gathering space on the farm. I attribute our success in part to the resources and strategies that were provided to us by the Cornell Small Farms Program and our local Cooperative Extension office.

In addition, communicating with our community directly via Facebook and email lists kept our customers up to date and engaged. Offering diversified and seasonal products ranging from produce to baked goods con-

Establishing 15

lenge we are facing to a friend or colleague, they fire back advice or their own solutions. When we are received with attention and questions in service of helping us hear ourselves – our inner teacher – it opens exploration. It can be surprising – even startling – to realize how simple it is to invite the voice of truth and clarity from our inner depths. The more practiced we become inviting and listening to our inner teacher, the more we become empowered by the reservoir of gifts, strengths, energy, and courage stirring and awakening within us.

At the end of our five-month journey together, we have uncovered a lot. Our respective learning, realization, and discovery is unique to each of us. Some quit their jobs or take a break from farming to pursue a vocation that is more aligned with their needs or passions. Others return with a renewed sense

of what is alive and meaningful and how they want to create change. In our closing circle, participants usually express that the greatest gift of the program is the sense of love, care, and connection they felt in community.

While meaningful and lasting friendships do form, eventually as time goes by and our lives evolve, our group begins to lose touch. But the ways of being together – the ways of stepping into luxurious stillness, receiving others with open-hearted listening, and asking open questions, inviting and learning from our inner teachers – those ways create love, care, and connection toward ourselves and others wherever our paths take us.

Violet Stone has worked in the regenerative agriculture field in various roles for over 20 years. She is the program host of Reconnecting with Purpose, supported



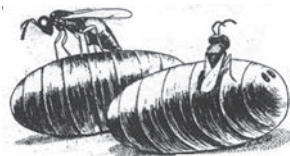
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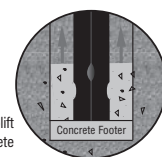
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Stress management from 5

hundreds of decisions we make every day, harnessing their power can have sexy results, like increased profitability, joy, and stronger relationships.

Practicing HM begins with identifying your fellow decision-makers in whatever you're managing, whether it's a family, a farm business, an organization – or even just yourself. Who gets to decide what happens within that entity? In our case, my husband Craig and I are the decision-makers, though once our kids reached the age of 7 or 8 we started including them in decisions too.

The decision-makers sit down together and have some deep conversations about how they want their lives or their work together to be: harmonious? Financially lucrative? What does each decision-maker need in order to feel content?

Statements usually cover time, money, relationships, creativity, spirituality, health, and ecological impact, but can include any themes important to the decision-makers. Responses to these questions form the very beginning of a "Holistic Context" or "Holistic Goal."

Craig and I wrote our first Holistic Goal in 2002 – long before we had children or a farm – and fully revised it at least five times in the first decade, usually after realizing that we were failing to use it for decision-making because it was too basic, too poetic, or paraphrased too much from the HM textbook (because we wanted it to be "perfect"). It needed to be in our own words, and straightforward enough to easily use to guide our decisions. Our most recent draft articulates our desire for a thriving farm, loving family, strong sense of community, cozy home, good health, and enough time and money to travel and learn.

We also describe living in a place where the people feel a

strong sense of community, where farming is valued, biodiversity and soil health are strong, and all people feel welcomed and supported regardless of their identity.

Of course, not all of this has been realized yet, but the power of a Holistic Goal is in stating your intentions and desires in the present tense, and then investing everything you have within your power – your time, energy, and money – to make it happen.

There's much more to the whole process of writing a Holistic Goal; I only described the first part. And while writing it is a helpful exercise, it's only when you actually use your Holistic Goal to make decisions that it comes to life. There's a series of questions from HM to guide that process too. Because it's better learned from practicing with help during a course, as opposed to simply reading about it, I encourage you to take an Intro to HM course if you're curious – holisticmanagement.org is the best place to look.

So how did any of this help Craig and I survive the periods of both chronic and acute stress in our lives? During those early years of building our home, family, and business all at the same time, we could look at our Holistic Goal and see that even though our lives felt exhausting and hard in the moment, we still had (or were moving toward) the life we had described. We were building that cozy home to shelter our growing family. We were creating that farm that would nourish our family and community, and we were surrounded by loved ones who enriched our lives with good food and laughter. We could also see that at some point it would get a little easier (the baby would eventually learn to sleep more than 30 minutes at a time, right?).

Having this shared perspective on our life helped us know that even though the days were hard, we were moving in the right direction. This knowledge allowed us to operate as a team and support each other through that long challenging period, rather than taking out our frustrations and exhaustion on each other.

When the fire took away the heart of our farm in 2021, our 10

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tinuously drew in our customer base and allowed them to purchase much of their weekly produce on the island. Finally, we offered sliding scale pricing in order to be accessible to all members of our community.

customers has driven our success in the past two seasons.

In the final segment of this three-part series, I will expand on our plans for the future and how we intend to move forward into our third growing season.

Our marketing circumstances are no doubt unique, and we are lucky to be surrounded by a supportive and engaged community. Being able to adapt to our market and the demands of our

Avery MacLean is a recent Cornell graduate and worked as an intern with the Cornell Small Farms Program.



Red Wing Farm's goal was to create a weekly community event on Saturday mornings at their farm stand.

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Crece el liderazgo agrícola latino en el condado de Suffolk con Futuro en Ag

Ocurría algo peculiar en el curso de desarrollo de liderazgo agrícola de Futuro en Ag de Cornell Small Farms Program, celebrado en enero en el condado de Suffolk. Las flores colocadas en la sala de conferencia se mantuvieron en condiciones impecables durante todo el curso: no mostraron signos de estrés ni siquiera después de varios días. Al final descubrimos por qué.

A Mildred Alvarado, Nicole Waters, y Tim W. Shenk

Ocurría algo peculiar en el curso de desarrollo de liderazgo agrícola de Futuro en Ag de Cornell Small Farms Program, celebrado en enero en el condado de Suffolk. Las flores colocadas en la sala de conferencia se mantuvieron en condiciones impecables durante todo el curso: no mostraron signos de estrés ni siquiera después de varios días. Al final descubrimos por qué.

En silencio, durante los recesos, los participantes en el curso, que eran líderes de equipo de un invernadero local, cuidaban estas plantas en macetas. Uno podaba las flores marchitas, otro introducía su dedo en la tierra para comprobar el nivel de humedad. Uno hubiera imaginado que no serían tan cuidadosos. Sin embargo, en el invernadero ellos cultivan flores todo el día. ¿No quisieran descansar? Al parecer no. Este pequeño detalle nos dio a los facilitadores del curso una idea de los diligentes y apasionados que son en su trabajo.

Nuestro papel en los cursos de desarrollo de liderazgo agrícola de Futuro consiste en crear un espacio para que los empleados, líderes de equipo y supervisores de las fincas de habla hispana desarrollen habilidades de gestión en los entornos multiculturales en los que trabajan. Los agricultores y empleados latinos con los que trabajamos están deseosos de aprender herramientas para mejorar el liderazgo, la creación de equipos y la resolución de conflictos.

Un gerente se preguntaba por qué los empleados de su equipo no se abrían fácilmente a él para contarle sus problemas o preocupaciones. Otro participante respondió con un refrán español, En boca cerrada no entra mosca.

“En mi país” explicaba, “nos enseñan a no decir nada aunque estemos molestos o tengamos algunas ideas. Cuando intenta hablar es cuando llama la atención y nos metemos en problemas.” Los participantes aprendieron que podían estar haciendo suposiciones o valoraciones incorrectas sobre las acciones de otra persona si no comprendían su origen cultural.

En el proyecto Futuro en Ag nos hemos comprometido a apoyar el desarrollo del liderazgo de personas del sector agrícola que han sido ignoradas. Por ejemplo, dos líderes de equipo que participaron en nuestro curso dijeron que era la primera vez que recibían formación de gestión en Estados Unidos. Uno llevaba 26 años trabajando en Long Island, el otro 41. Futuro en Ag pretende llenar ese vacío, aportando formación innovadora a una comunidad con pocas oportunidades para el desarrollo profesional.

Al curso celebrado en enero en el condado de Suffolk asistieron 24 líderes de equipos agrícolas de 12 países distintos, lo que supone la formación más diversa del proyecto hasta la fecha. Estos líderes de equipo vivieron una experiencia intensiva de desar-

rollo profesional, abordando temas como la comunicación empresarial y organizativa, la formación de equipos, la resolución de conflictos y la inteligencia emocional en el liderazgo multicultural. Cuando se les preguntó por su motivación para asistir, su respuesta fue clara. Además de adquirir conocimientos técnicos, a los líderes de equipos latinos les interesan las oportunidades de mejorar sus capacidades de gestión, comunicación y liderazgo.

El proyecto Futuro en Ag pretende ofrecer estas oportunidades en colaboración con los propios agricultores latinos. Escuchamos y recogemos las opiniones de productores de todo el estado, y nos asociamos con operaciones agrícolas inclusivas y proveedores de servicios para garantizar que nuestro plan de estudios satisfaga las necesidades expresadas por las comunidades agrícolas latinas a las que servimos.

Futuro en Ag: Cultivar Productos, Cultivar Líderes

El curso de Futuro en Ag del condado de Suffolk fue un encuentro único de culturas, que reunió a líderes de diferentes partes del mundo. Comenzamos el curso compartiendo nuestras historias familiares, objetivos y esperanzas para el futuro. Quedó claro que todos representamos los sueños de nuestros padres y abuelos, independientemente de dónde hayamos nacido.

Los participantes compartieron las características de los líderes que han cambiado sus vidas e inspirado el desarrollo de sus propias carreras agrícolas. Valoraron a los directivos amables, relajados y respetuosos que celebran sus logros y comparten sus retos. Apreciaron a los directivos que confían en ellos para tomar decisiones, les hacen sentirse valorados y modelan un liderazgo justo e integrador.

Este ejercicio ayudó a los líderes de equipo a reflexionar sobre su propio estilo de gestión: ¿Cómo podrían reflejar esas cualidades positivas con los empleados a su cargo? Se tomaron en serio ese reto y al final del curso empezaban a verse a sí mismos como parte de la próxima generación de líderes de la agricultura en el Estado de Nueva York. La mayoría aspiran a ser propietarios de sus propias casas, fincas y negocios agrícolas. Están entre los que proporcionarán alimentos, puestos de trabajo, estabilidad a la comunidad y administración de los recursos naturales y las economías regionales.

Los líderes latinos se enfrentan a muchos de los mismos retos que tiene cualquiera que intente ganarse la vida en la agricultura. Además, tienen que navegar las dificultades añadidas de las barreras lingüísticas y culturales. Basándose en esta experiencia, los estudiantes de Futuro han hecho las siguientes recomendaciones para un liderazgo agrícola más eficaz:

- Definir los roles y los objetivos basados en los valores y las habilidades del equipo, así como las del negocio.
- Desarrollar estructuras organizativas innovadoras e integradoras que sean a la vez

representativas y funcionales.

- Confiar y delegar funciones clave en empleados clave.
- Mostrar un aprecio explícito por el trabajo de las diversas comunidades.
- Comunicarse de forma que se entienda fácilmente y tener la paciencia para repetir la instrucción y la formación tantas veces como sea necesario para capacitar a nuevos líderes.

Para bien o para mal, los conflictos forman parte de nuestras vidas. A través de nuestro trabajo con las operaciones agrícolas multiculturales, hemos encontrado que los conflictos se centran en conflictos interpersonales y de liderazgo, sin embargo, dada la composición demográfica de la industria agrícola actual del Estado de Nueva York, no se puede pasar por alto la falta de comprensión cultural y el bajo nivel de habilidades de comunicación. La comunicación efectiva, la comprensión cultural, el establecimiento de objetivos comunes y la provisión de oportunidades de formación adecuadas para todos los niveles de empleados son recomendaciones adicionales proporcionadas por los estudiantes de Futuro para disminuir los conflictos en el lugar de trabajo y construir un fuerte liderazgo multicultural dentro del negocio. Los líderes agrícolas latinos deben tener acceso a oportunidades educativas que vayan más allá de las habilidades técnicas, para incluir todos los aspectos de la gestión agrícola. Es esencial que los empleados se sientan apreciados y comprendan la importancia de su trabajo para el negocio agrícola.

Proporcionar un Futuro, No Sólo un Momento

El proyecto Futuro en Ag continuará sirviendo a la comunidad agrícola latina de Long Island a través de nuestra fructífera asociación con Cornell Cooperative Extension (CCE) del condado de Suffolk. La Directora Ejecutiva Vanessa Lockel y la dirigente del Programa Agrícola Nora Catlin nos acogieron el verano pasado, presentándonos a agricultores locales y proveedores de servicios. Esto condujo al curso de enero y a la representación de Futuro en el Foro Agrícola del condado de Suffolk.

“Futuro en Ag, y el Cornell Small Farms Program, presentan una gran oportunidad para

que los habitantes de Long Island provenientes de todo el mundo no sólo aprendan cómo funcionan realmente nuestros sistemas alimentarios, sino que también exploren una futura carrera en la industria agrícola,” dijo Lockel. “CCE Suffolk se enorgullece de asociarse y colaborar con este proyecto de empoderamiento.”

Lockel subrayó que una de las principales misiones de CCE Suffolk es crear un condado de Suffolk más inclusivo y celebrar la diversidad del condado. Señaló que hay casi tres millones de residentes latinos en Long Island y compartió el compromiso de asegurarse de que la programación de la agencia se extienda a esta importante población.

Probablemente las manos que cultivaron las flores de su mesa, podaron el árbol de manzana para su vaso de sidra, o cosecharon los vegetales que tiene en la nevera, pertenecen a un latino. Los latinos representan el 70 por ciento de la mano de obra agrícola de Nueva York, y nuestro objetivo es ayudar a los agricultores latinos a labrarse un futuro en este estado.

Más información a smallfarms.cornell.edu/projects/futuro.

Mildred Alvarado, Nicole Waters, y Tim W. Shenk componen el equipo del proyecto Futuro en Ag del Cornell Small Farms Program.

Mildred Alvarado y Nicole Waters, núcleo del equipo de Futuro en Ag

La vida tiene una forma curiosa de reunir a la gente y unimos en torno a objetivos comunes y metas más allá de nosotros mismos. Aunque Mildred creció en una pequeña finca de café en Honduras y Nicole se crió en una parte rural del estado de Nueva York, hemos descubierto que los agricultores de todo el continente americano tienen mucho en común.

Veíamos a nuestros padres trabajar duro, cultivando la tierra para llevar alimentos a nuestra mesa y productos a los mercados locales. Estamos orgullosos de alimentar a nuestras comunidades. Nos esforzamos por garantizar un futuro mejor a nuestros hijos.

Mildred suele decir de sus padres:

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Growing Latino Leadership in Suffolk County with Futuro en Ag

Something peculiar was happening at the Cornell Small Farms Program's Futuro en Ag farm management skills course in Suffolk County in January. The flowers set out in the conference room stayed in pristine condition throughout the course – they didn't show signs of stress even after several days. We finally discovered why.

By Mildred Alvarado, Nicole Waters, and Tim W. Shenk

Something peculiar was happening at the Cornell Small Farms Program's Futuro en Ag farm management skills course in Suffolk County in January. The flowers set out in the conference room stayed in pristine condition throughout the course – they didn't show signs of stress even after several days. We finally discovered why.

Quietly during breaks, participants in the course, who were team leaders at a local greenhouse, were tending these potted plants. One person deadheaded wilted flowers, another stuck a finger in the soil to check the moisture level. One would think they would take a break from this. After all, they grow flowers all day at the greenhouse. Yet this small detail gave us facilitators a glimpse of how diligent and passionate they are about their work.

Our role in Futuro Farm Management Skills Development courses is to make space for Spanish-first farm employees, team leaders, and supervisors to develop management skills in the fast-paced, multicultural environments they work in. The Latino farmers and employees we work with are eager to learn tools to improve leadership, team-building, and conflict resolution.

One manager wondered why the employees on his team didn't open up to him easily with problems or concerns. Another participant responded with a Spanish idiom: En boca cerrada no entra mosca, which translates to "A fly doesn't fly into a closed mouth."

"Where I'm from, we're taught not to say anything if we have an idea, or if we're upset," he explained. "When you open your mouth is when you draw attention to yourself and get in trouble." Participants learned that they might be making incorrect assumptions or



Graduates of the Futuro en Ag Farm Management Skills Course, Suffolk County, January 2023.

Graduados del Curso de Liderazgo y Gestión Agrícola del Condado de Suffolk, enero del 2023.

Nicole Waters / Cornell Small Farms Program

assessments about another person's actions if they didn't understand their cultural background.

In the Futuro en Ag project, we're committed to supporting the leadership development of people in the ag industry who have been overlooked. For example, two greenhouse managers taking part in our course spoke up to say that this was the first managerial training they'd ever received in the U.S. One had been working on Long Island for 26 years, the other for 41. Futuro en Ag fills that gap, bringing innovative training to a community with few opportunities for professional development.

The course in Suffolk County in January was attended by 24 farm leaders from 12 different countries, marking the project's most diverse training to date. These team leaders went through an intensive professional development experience, tackling topics such as business and organizational communication, team building, conflict resolution, and emotional intelligence in multicultural farm leadership. When asked about their motivation for attending, their response was clear. In addition to gaining technical skills, Latino farm managers are interested in opportunities to improve their management, communication, and leadership skills.

The Futuro en Ag project seeks to provide these opportunities in collaboration with Latino farmers themselves. We listen and gather feedback from farmers across the state, and we partner with inclusive farming operations and service providers to ensure our curriculum meets the expressed needs of the Latino agricultural communities we serve.

Futuro en Ag: Growing Produce, Cultivating Leaders

The 2023 Futuro en Ag Suffolk County cohort was a unique gathering of cultures, convening leaders from different parts of the world. We began the course by sharing our family histories, goals, and hopes for the future. It became clear that we all represent the dreams of our parents and grandparents,

no matter where we were born.

Participants shared characteristics of leaders who have changed their lives and inspired the development of their own agricultural careers. They valued friendly, relaxed, and respectful managers who celebrate their achievements and share their challenges. They appreciated managers who trust them to make decisions, make them feel valued, and model fair, inclusive leadership.

This exercise helped team leaders reflect on their own management style: How could they reflect those positive qualities with employees under their charge? They took that challenge seriously and by the end of the course were beginning to see themselves as part of the next generation of leaders in agriculture in New York State. Most aspire to own their own homes, farms, and farm businesses, and they are among those who will provide food, jobs, community stability, and stewardship of natural resources and regional economies.

Latino leaders face many of the same challenges as anyone trying to make a living in agriculture. In addition, they have to navigate the added difficulties of language and cultural barriers. Based on this experience, Futuro students have made the following recommendations for more effective farm leadership:

- Define roles and goals based on the values and skills of the team, as well as the business.
- Develop innovative and inclusive organizational structures that are both representative and functional.
- Trust and delegate key functions to key employees.
- Show explicit appreciation for the work of diverse communities.
- Communicate in a way that is easily understood and have patience to repeat instruction and training as often as necessary to empower new leaders.

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Tarps, Mulch, and Timing: No-Till Tools to Rob the Weed Seedbank

Research shows how the legacy of tarping and mulching can lead to fewer weeds in no-till vegetables.

By Stephen Stresow and Ryan Maher

The Woes of Weeding

One of the persistent challenges for organic vegetable farmers is managing weeds. These floral foes emerge each season from the weed seedbank – a collection of all the weed seeds in the soil. Now consider wanting to make the transition to no-till. Without tillage or herbicides, many farmers hesitate to make the leap or even risk giving it a try. Despite the challenges, a growing number of small farms are trialing new practices and finding no-till success.

Many of these farmers are utilizing tarps. Tarps can be used in many different ways, often after some form of tillage to help create a stale seedbed before planting crops. The short-term signs of success are often visible; many of us are enchanted by seeing white thread weeds emerging from warm moist, tarped soils. We can see those weed seeds germinate, search for light, and finally succumb to the darkness in a process known as “fatal germination.” Tarps can also be used to facilitate no-till systems by acting as a substitute for tillage and by killing living weeds between crops. In any case, tarps serve as a valuable placeholder on the farm, holding beds between crops and keeping weeds from gaining a foothold. The benefits of tarping can then take the form of fewer weeds in the following vegetable crop. As those successes add up, crop by crop and year by year, one question remains: How does continuous use of these no-till practices stack up to affect our weeds over time?

One way to answer that question is to measure the weed seedbank. The seedbank offers a glimpse into how effective our history of management has been at managing weeds. A large seedbank hints that weeds have been able to mature and “deposit” their seeds into the soil. Management strategies that work to draw down the seedbank have the potential to reduce the number of weeds in subsequent seasons.

To try and understand the legacy effects of no-till tarping practices, we have looked to our long-term permanent bed research experiment established at Cornell’s Thompson Vegetable Farm in Freeville, NY. In this experiment, we have managed a sequence of crops – cabbage, winter squash, lettuce, broccoli, and beets – over eight years. Over the course of this experiment, we have compared two unique tillage systems: 1) conventional tillage with a rototiller, where soils were tilled intensively between crops, and 2) a no-till system with



In our experiment, when it was time to plant in spring, chickweed (and other winter annuals) were already well-established in bare soil and required multiple tillage events to kill.

tarping, where tarps were applied between each crop instead of tillage to prepare seed beds for planting with little to no soil disturbance. To add some complexity, and a layer of organic matter, each of these tillage systems were implemented with and without the addition of rye mulch. Mulch was applied by hand at a rate of five to six tons/acre to select crops over the course of the crop rotation.

We have many lessons learned through this work (some still to emerge), but for the purpose of this article, we’re only going to get into the weeds about weeds! After seven years, we set out to measure the soil seedbank of this experiment to understand the legacy effects of our management practices and learn how to best rob the seedbank of its weed-spawning abilities.

How do you measure the weed seedbank?

We estimated the seedbank using field-collected soils that were brought into the greenhouse. Getting weeds to grow usually is not a problem, but since our goal was to flush every weed from these soils, we gave them some special treatment. For four months, the soil got warm, 72° F tem-

peratures, was fertilized weekly, and was mixed every four weeks as a kind of stimulated tillage event. It also had wet/dry cycles that mimicked early spring rains. We even treated the soils to a seven-week cold stratification period to overcome seed dormancy for species that may have required it.

The result was multiple flushes of weeds until the soils and weeds (and interns) were exhausted. Each weed that emerged was identified, counted, and removed, and together they gave us an interesting story.

Which weeds did we find?

We found 15 different weed species with the two most dominant ones being hairy galinsoga (*Galinsoga quadriradiata*), a summer annual, and common chickweed (*Stellaria media*), a winter annual. Many vegetable farmers in the Northeast cite galinsoga as their most problematic weed species, responsible for yield losses of 10% to 50%. This is partially due to galinsoga having no seed dormancy, being able to set seed as soon as 35 days after emergence, and producing multiple generations in a single season. Chickweed, too, can create about four generations per year and can reroot from cuttings in moist conditions.

We’ve been managing these soils for years so the prevalence of these two weeds was not too surprising – it was how many and where they showed up that was more insightful. Neither of these species has seeds that survive for more than a couple of years in the soil, which means that if you can keep them from setting seed you can start to see reductions in their populations. Understanding weed traits is important for developing management strategies that target specific weeds. For lifecycle descriptions of your common weeds and strategies to manage them on the farm, look to the comprehensive new SARE publication, “Manage Weeds on Your Farm: A Guide to Ecological Strategies.”

No-Till, Tarping Triumphs

We found that no-till with tarping had 66% to 80% fewer weeds than conventionally tilled soils.

In our trial, tarps were most often applied in the early spring or over winter. When applied during this timeframe, tarps are poised to reduce winter annual weeds, like chickweed. At the beginning of planting season, chickweed is already firmly

Weeds 19

Futuro en Ag from 17

For better or worse, conflicts are part of our lives. Through our work with multicultural ag operations, we have found conflicts to center on interpersonal and leadership conflicts, yet given the demographic makeup of the current agricultural industry of NYS, a lack of cultural understanding and low communication skill sets cannot be overlooked.

Effective communication, cultural understanding, establishing common goals, and providing adequate training opportunities for all employee levels are additional recommendations provided by Futuro students to decrease workplace conflict and build strong multicultural leadership within the business. Latino farm leaders should have access to educational opportunities beyond technical skills, to include all aspects of farm business management. It is essential for employees to feel appreciated and to understand the relevance of their work to the farm business.

Providing a Future, Not Just a Moment

The Futuro en Ag project will continue serving the Latino ag community of Long Island through our fruitful partnership with Cornell Cooperative Extension of Suffolk County. Executive Director Vanessa Lockel and Ag

Program Leader Nora Catlin hosted us last summer, introducing us to local farmers and service providers. This led to the January course and Futuro’s representation at the Suffolk County Ag Forum.

“Futuro en Ag, and the Cornell Small Farms Program as a whole, presents a great opportunity for Long Islanders of all descents to not only learn how our food systems actually work, but also to explore a future career in the agricultural industry,” said Lockel. “CCE Suffolk is proud to partner and collaborate with this empowering project.”

Lockel stressed that a core mission of CCE Suffolk is to create a more inclusive Suffolk County, and to celebrate the county’s diversity. She noted that there are nearly three million Latinx residents on Long Island and shared a commitment to making sure the agency’s programming extends to this significant population.

Chances are, the hands that tended the flowers on your table, or expertly pruned the apple tree for your cider, or harvested the vegetables in your fridge, belong to a Latino. Latinos make up 70% of the agricultural la-

bor force in New York, and our goal is to help Latino farmers create a future for themselves in this state.

More information is available at smallfarms.cornell.edu/projects/futuro.

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Mildred Alvarado, Nicole Waters, and Tim W. Shenk are members of the Futuro en Ag team at the Cornell Small Farms Program.

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Weeds from 18

established in untarped plots. These “shoulder season” tarps covered the soil when winter annuals were actively establishing, preventing them from getting their footing and maturing to set seed.

Tarps may have also reduced chickweed through fatal germination as soils begin to warm in the beginning of the season. This early season weed control can give crops a competitive advantage over weeds, leading to further reductions in weed populations.

Mulches Make Do

Mulched soils had on average 30% to 40% fewer weeds than plots without mulch.

Using mulch in a tilled system reduced galinsoga by 46%. No-till with tarping, with or without mulch, had about 90% less galinsoga than the conventionally tilled soils. The no-till with tarping and mulch system had an average of just 10 galinsoga plants per square meter, compared to 153 in conventional tillage without mulch.

We think these results were largely due to the fact that mulches have weed-suppressing power throughout the growing season when summer annual weeds like galinsoga are expected to emerge. For example, we found that galinsoga thrived in winter squash years, and tarping alone was not enough to maintain season-long weed suppression. In the later years of our experiment, we started using tarps in summer between spring-planted lettuce and autumn plantings of broccoli, which could be another strategy to break up summer annual weed lifecycles.

Stress management from 15

years of intentionally investing in the nebulous concept of “building community” paid off in ways we never could have imagined.

Eighty people showed up to seven work parties to clear the mess left by the fire. Their presence – a direct result of intentions set in our Holistic Goal to invest time and love in our local community – reminded us to look to the HM decision-making

process that had served us so well. Despite the haze of our trauma, having a familiar framework to guide us meant that we were able to quickly assess our available resources, consult our Holistic Goal, and use the decision-making process to figure out what to do next. We are now well into rebuilding the structure, and its next iteration will include an improved farm store and apartment, as well as a com-



An example of weeds germinating in the greenhouse from field-collected soil. The top tray is from an untarped plot and the bottom tray is from a tarped plot.

Our results show that both tarps and mulch have their role in drawing down the weed seedbank by combining multiple tactics that target different species. Reducing the seedbank takes time and vigilance! One year of many weed escapes can set weed management efforts back many years, hence the adage “one-year seeding, seven years weeding.”

Regardless of the weed management strategy employed, sustained efforts to reduce the seedbank can have benefits for years to come.

munity gathering space and a commercial kitchen, both of which will allow new possibilities to emerge for the future of our farm and family.

There’s a lot we don’t have control over, and stressful things happen almost every day. But we can control how much we allow this stress to affect our health. HM helps you remember that you have control over your focus, time, and money. It helps you plan how you want your life to be and harness your decisions

to move you toward that. When the worst happens, it still offers a framework to recover and keep yourself moving toward your vision. In short, it helps you to be resilient, which is a life skill that seems increasingly critical in these uncertain times.

This article was also published in the Spring 2023 issue of the Natural Farmer, the newspaper of the Northeast Organic Farming Association, and is reprinted here with permission.



Three weeks after transplanting broccoli in our experiment, no-till with tarping plots (right) had lower early-season weed emergence than conventionally tilled, untarped plots (left).

Stephen Stresow / Cornell Small Farms Program

To learn more about tarping and ways to implement this practice on your farm, visit the Reduced Tillage project page at smallfarms.cornell.edu/projects/reduced-tillage.

Stephen Stresow is a Horticulture BS/MPS student from El Paso, Texas, researching sustainable vegetable production with the Cornell Small Farms Program. Ryan Maher’s work began with the Cornell Small Farms Program in summer 2013 and focuses on research and Extension in soil health practices for vegetables.



While watching the heart of our farm burn down was traumatic, our recovery was hastened by using the holistic decision-making process to create a plan to rebuild.

Erica Frenay is the online course manager and live-stock specialist for the Cornell Small Farms Program. She and her family also own and operate Shelterbelt Farm in Brooktondale, NY.



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