STEWARDSHIP AND NATURE

Practice the Grazing You Preach

University of Vermont grazing specialist puts grazing practices to the test at home

by Amy Overstreet, Public Information Coordinator, USDA NRCS, Colchester, VT

Marc and Cheryl Cesario own and operate Meeting Place Pastures in Cornwall, Vermont, where they raise grass-fed beef and certified organic eggs. With 500-acres of certified organic pastureland, they harness solar energy that is converted into a wholesome and nutritious feed (grass) for their animals. Their Angus and Devon cows graze during the growing season, and are moved up to three times a day to new paddocks. “A lot of people see cows eating grass and think it’s easy, but it’s not,” explains Marc. There’s a lot that goes into making sure you’re capturing as much solar energy as you can and converting it to grass.”

Cheryl and husband Marc manage their farm using the practices and grazing techniques that she teaches other farmers about through her work as a University of Vermont Extension grazing specialist. Besides managing multiple herds totaling 290 head, they are also raising their daughter, four-year old Normandie Fleurette. “We try to incorporate her as much as we can,” said Cheryl. “We were driving past the farm the other day and she told me, “I love my cows.” The Cesarios are excited to see the next generation taking ownership and developing a sense of pride.

When asked why they chose to farm organically, Cheryl says it’s the only form of production they know. “In addition to all the biological benefits, organic production allows us, as a small farm, to sell our products outside the commodity market and capture a premium. That keeps us competitive in the marketplace and contributes to the viability of our farm.”

Feeding their cows on organically managed pasture is an integral part of the Cesarios’ farming philosophy: “Low stress and a forage-based diet make happy cows and our happy cows produce rich, flavorful meat that is nutritious, tender and of excellent quality.”

The USDA-Natural Resources Conservation Service (NRCS) has worked with the Cesarios to install soil and water conservation practices through the Environmental Quality Incentives Program (EQIP). Financial assistance through EQIP helped them adopt intensive rotational grazing and conservation practices to support it. As a result, they have improved their financial bottom line, reduced their dependence on off-farm inputs, improved the health of their soil, protected water quality, and saved time and money.

Rotating their animals also gives their pastures more time to recover after grazing periods.

“You’ll have 40% more yields in a six-week period by moving cows around,” explains Cheryl. “If you’re feeding hay to your animals in the middle of summer that could cost $30-50 a bale. If you have to put out three or four bales a day, that’s a lot of money when you look at the cost of purchasing feed instead of producing your own.”

In 2009, the Cesarios purchased their first 97 acres, and immediately consulted NRCS to find out how to transition the cornfields into organic pasture. They also planted a hedgerow and trees to provide a buffer for a nearby stream, installed watering tubs and water lines for their cows, and erected fencing to keep the cows out of nearby Beaver Brook. “We did most of our own fencing, but as we added acreage, the assistance we received from NRCS was so helpful because we could do more and make an even bigger impact with conservation,” said Cheryl.

The Cesarios worked with NRCS Soil Conservationist Tim McCoy, who helped them develop a comprehensive grazing plan for the health of their animals and their forages. “Fencing cows out of sensitive areas really speeds up the rate at which vegetation recovers,” McCoy said. Their grazing plan is

See Practice page 3
New Local & Regional Food Systems Website
Local and Regional Food Systems at Cornell (LRFS) recently launched a new, dynamic LRFS website to better demonstrate, strengthen, and build the network around local & regional food systems in New York State. Learn about the network of people, projects, resources, and locations of their work, connect with others who are working on food system issues; participate in events or online forums; share info on your Cornell or CCE based programs in LRFS; and explore CUCCE expertise across various areas of local food systems work. Visit the site at http://localfood.cornell.edu

Upcoming Workshop in Geneva: Navigating the Ag Labor Maze
Do you hire, or are you considering hiring, migrant or foreign-born labor? Do you want to improve your skills in supervising employees who come from different cultures, especially workers from Mexico and Central America? If yes, this workshop is for you!

New Project: The Labor Ready Farmer
Being prepared to hire, manage and retain skilled employees is crucial for farmers across New York. A new project, the “Labor Ready Farmer” (LRF), will offer a team-based approach to address this challenge by building skills of new farmers and Latino agricultural employees wanting to climb the ladder from labor to management.

Practice from page 2
paying off with improved yields and extended length of their growing season. “Good rotational grazing and long rest periods mean that our cows look really good,” said Cheryl.

The Cesarios are also managing pests by organically mimicking nature. They are experimenting with nest boxes and tree swallows to attract more birds to reduce populations of flies that can negatively impact the health of their herd. “Our animals aren’t coming back into a barn every day, so it’s a bit more challenging if a problem arises,” says Cheryl. “For us, disease prevention is critical.”

The Cesarios are a University of Vermont Extension grazing specialist and also mom to four-year old Normandie Fleurette.

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Vermont farmer Cheryl Cesario is a University of Vermont Extension grazing specialist and also mom to four-year old Normandie Fleurette.

Photo by Douglas Gayeton, Lexicon of Sustainability
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Cover photo: Hops on the vine almost ready for harvest.
Photo courtesy of Wikimedia/Visitor7

SMALL FARM QUARTERLY

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

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

Our Goals Are To:

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

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Anyone is welcome to submit articles for consideration. See our guidelines at smallfarms.cornell.edu/quarterly/writers/ and contact Steve Gabriel with inquiries. Articles should be 1,000 - 1,600 words in length with 2 - 3 high-resolution pictures.

Topics should be appropriate for a farmer audience, and not promote a single organization or business. We focus on articles with relevant information that helps to improve the practice of farming and agriculture in New York and the Northeast.

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Fruitable Friendship: Bittner is 2017 Friend of Extension

by R.J. Anderson

ITHACA, NY — Through his involvement with agriculture organizations across New York State and as owner and general manager of Bittner-Singer Orchards, Jim Bittner has developed many strong friendships through the years. On Thursday, Dec. 7, one relationship in particular was on full display as Cornell Cooperative Extension (CCE) recognized Bittner with the organization’s 2017 Friend of Extension award at Coltrive in Ithaca, NY.

A first generation farmer, Bittner’s 500-acre fruit farm in northern Niagara County produces apples, sweet cherries, tart cherries, and peaches, plums, apricots, nectarines and pears. It is also known for its innovative business approach, growing markets through UPick, delivery to retail farmers markets and supermarkets, and servicing CSAs.

“Jim was one of the first value-added growers in the state and is looked to statewide and nationally for his marketing prowess,” said CCE Executive Director Chris Watkins. “And he is very generous in sharing his expertise with others.”

In addition to his work on the farm, Bittner is president of the Niagara County Farm Bureau as well as secretary and treasurer for the Western New York Cherry Producers Cooperative (which he helped establish in 1991). He is also on the Agricultural Advisory Committees of Senator Gillibrand and Congressman Chris Collins and is past president of the New York Horticulture Society and the Barker Lions Club.

Bittner’s relationship with Extension can be traced back to his childhood spent in the 4-H program, with his parents serving as club leaders. In 1974, the Bittners received the 4-H family of the year award.

“I wouldn’t be the person or farmer I am today without 4-H,” said Bittner.

A 1980 graduate of Cornell University’s College of Agriculture and Life Sciences, Bittner’s devotion to farming has mirrored his support of Cornell and Extension, specifically CCE of Niagara County. His many roles with CCE Niagara include time spent as a 4-H volunteer, association treasurer and board president from 2001 to 2002.

Bittner was also on hand in 2003 for the launch of the New York Farm Viability Institute (then known as the Ag Innovation Center at Cornell). Eight years later, he was elected board president of the farmer-led non-profit, which provides grant funds for applied research and outreach education projects designed to help farms increase profits.

In 2012, Bittner deepened his support of CCE by becoming the New York delegate to the Council for Agriculture, Research, Extension and Teaching (CARET). Utilizing an integrated advocacy approach, CARET’s mission is to increase support for the land-grant system and secure necessary funding for research, extension and teaching.

“Jim’s leadership in these arenas has contributed greatly to the support of the applied research and extension programs of CCE educators across the state,” said Watkins. “He really is – and has long been – a true friend of extension.”

RESOURCES SPOTLIGHT

Announcing NYFC’s New Guidebook on FSA Loans!

The National Young Farmers Coalition just released Farm Service Agency Loans: The Ins and Outs of Growing a Farm with Federal Loans, an illustrated guidebook for farmers looking to secure credit from USDA. This is the first comprehensive plain language guide to FSA loans since before the introduction of the popular microloan in 2013. We’re excited to share it with you!

Written from the perspective and curiosity of a young farmer, the guidebook helps farmers navigate the ins and outs of the loan process.

It includes:
- the story of the USDA’s Farm Service Agency (FSA)
- a family tree of all the people who make loans at USDA through the FSA
- descriptions of FSA’s different loan types;
- charts with up-to-date interest rates and loan terms;
- case studies from farmers who received FSA loans;
- information about all the ways farmers can get involved through USDA committees to influence and improve the loan process.

The publication of this guidebook was funded by a cooperative agreement with USDA’s FSA Office of Program Education and Stakeholder Engagement to reach new audiences. That cooperative agreement also funded 10 workshops around the country which brought together young farmers who received FSA loans, local FSA loan officers, and farmers who were curious about how to capitalize their farms.

These successful workshops helped NYFC understand some of the strengths and challenges of FSA loans, which helped to shape this guidebook. NYFC continues to advocate for improvements to USDA programs at the national level.

In Transition and Hopeful for the Future

Vermont’s forest health and dedication to the forestry profession are developing new and innovative wood products industry are entrepreneurs developing new and innovative wood products and business models, logging, processing, specialty woodworking, construction, and wood heating. In addition, Vermont’s forest recreation economy generates another $1.9 billion in economic output and supports 10,000 jobs in forestry, logging, processing, specialty woodworking, construction, and wood heating. In addition, Vermont’s forest recreation economy generates another $1.9 billion in economic output and supports 10,000 additional jobs. While Vermont’s forests support high quality saw logs used in construction or by specialty woodworkers, the majority of wood presently in our forests is considered ‘low grade,’ typically used for pulp to make paper or chipped for heat or electricity. And due to a sharp decline in the region’s pulp industry, combined with the low-grade saw logs’ market, the low-grade wood has substantially dried up.

So, while markets for high quality wood are healthy, they cannot singularly sustain Vermont’s forest products industry. Without healthy markets for low-grade wood, Vermont is likely to see continued decline in the industry’s in-state infrastructure such as logging operations, sawmills and kilns, as well as the local jobs they sustained and the forest management service they provide.

Hope for the Future

Despite what sometimes sounds like a gloomy forecast for this industry in transition, I see hope for the future. Within the forest products industry are entrepreneurs developing new and innovative wood products and business models, logging and forestry professionals with impressive knowledge of and dedication to Vermont’s forest health and productivity, and talented woodworkers whose craftsmanship bolsters Vermont’s reputation for fostering creativity.

According to the 2016 Forest Sector Systems Analysis, commissioned by the Vermont Working Lands Enterprise Board, both protecting our forests and strengthening the entire industry are equally critical for Vermont’s economic and ecological future. Finding markets for low-grade wood, product innovation, workforce development, technical and business assistance, and financing were identified as major issues impacting the forest products sector. The analysis identified the need for network development and value chain facilitation to sustainably develop Vermont’s forest economy. This led to the creation of the Vermont Forest Products Program, coordinated by the Vermont Sustainable Jobs Fund in collaboration with the Vermont Working Lands Enterprise Initiative and the Northern Forest Center.

Network development accelerates industry growth by bringing together diverse stakeholders to tackle systems level change no one business or organization can do alone. Mod-
Stinging Nettles: Not Just for Breakfast Anymore

by Paul Hetzler

One of my favorite plants is either highly versatile, or very confused. On the one hand, professional herbivores like rabbits and deer refuse to even touch it, but many people, myself included, will gladly eat it every day it is available. While contacting it is painful, it has been proven to relieve certain chronic pain. It is steeped in over a thousand years of folklore, at one point imbued with the power to cleanse away sin, yet modern science recognizes it as a legitimate remedy for many disorders. Some gardeners consider it a bothersome weed, but others actually cultivate it.

The stinging nettle, *Urtica dioica*, is native to Europe, Asia, and northern Africa, but has been widespread through North America from northern Mexico to northern Canada for centuries. Experts disagree as to the number of nettle species and subspecies worldwide. To confuse matters, many of these cross with one another to form hybrids. Although a few species do not sting, if it’s nettle and it gives you a rash, it’s fair to call it “stinging nettle”.

Nettles sprout little hypodermic needles on stems, leaves, and even their flowers. Called *trichomes*, these glass-like silica-based needles inject a mixture of irritating chemicals upon contact. The cocktail varies by species, but usually includes histamine, 5-HTP, serotonin, formic acid and acetylcholine.

So why would one place this well-armed adversary in their mouth? Well, when nettles are cooked, the stinging hairs are destroyed. Furthermore, nettles are the tastiest cooked green—wild or domestic—that I have ever had. It tastes like chicken. Kidding—it tastes a lot like spinach, except sweeter. Nettles can be boiled, steamed, or stir-fried. They are great by themselves or in soups, omelets, pesto, casseroles, or pretty much any savory dish you can come up with.

One of the things I really like about nettles is that they are some of the first green things to get going after the snow melts. I should mention that only the tops of young plants are harvested to eat. The good thing is that the more you pick, the more young tops grow back. Eventually they will get too tall and tough, but frequent picking can stretch nettle season well into June.

On a dry-weight basis, nettles are higher in protein—about 15% —than almost any other leafy green vegetable. They are a good source of iron, potassium, calcium, and Vitamins A and C, and have a healthy ratio of Omega-3/ Omega-6 fatty acids. Because drying also neutralizes nettles’ sting, they have been used as fodder for domestic animals. Today nettles are commonly fed to laying hens to improve their productivity.

The University of Maryland Medical Center reports that nettles help relieve symptoms, such as difficulty urinating, of Benign Prostatic Hyperplasia (BPH) in men. In terms of using pain to relieve pain, the U of M Medical Center also states that research “...suggests that some people find relief from joint pain by applying nettle leaf topically to the painful area. Other studies show that taking an oral extract of stinging nettle, along with nonsteroidal anti-inflammatory drugs (NSAIDs), allowed people to reduce their NSAID dose.”

As The Cat in the Hat said, that is not all. You’d think the University of Maryland was selling nettles the way they seem to promote them. Consider this endorsement: “One preliminary human study suggested that nettle capsules helped reduce sneezing and itching in people with hay fever. In another study, 57% of patients rated nettles as effective in relieving allergies, and 48% said that nettles were more effective than allergy medications they had used previously.”

Gardeners use nettles as a “green manure” because they (nettles, that is—gardeners may be nitrogen-rich, but they’re not routinely added to soil.) are high in nitrogen, as well as iron and manganese. Nettles can also help attract beneficial insects.

What can’t you do with nettles? I guess they’re kind of like Dr. Seuss’ “Thneed.” Turns out you can wear them, too. Nettles have been used for 2,000 years as a source of fiber for cloth-making. During World War I, Germany used nettle fiber to make military uniforms. I have made cordage from nettle stems using a simple technique called reverse-wrapping.

If you have a nettle patch, put away the weed killer, and consider yourself lucky.

Paul Hetzler is the Horticulture and Natural Resources Educator for Cornell Cooperative Extension of St. Lawrence County.

For more information: paulhetzlemature.org

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Chainsaw Safety, Part 3: Unsafe Practices

by Rich Taber, CCE Chenango

This is the third installment in a series on chainsaw safety and operation, as part of our CCE Chenango grant project done in collaboration with the New York Farm Viability Institute, “Increased Farm Profitability and Diversity through Value-Added Forest Products Initiative”. We have been encouraging farmers and woodland owners to develop forest-based enterprises, many of which at one time or another require the safe use of chainsaws.

In part 1 (Fall 2017) we discussed personal protective equipment that is needed for the safe operation of chainsaws. In part 2 (Winter 2018) we elaborated on the specifics of each component needed for a fully functional personal protective system, which includes protection for head, hearing, eye, leg, feet, and hands. In this article we will discuss some of the specific unsafe and hazardous practices which commonly lead to chainsaw and tree felling injuries.

As mentioned previously, I have seen a number of television shows which depict chainsaw users committing horribly unsafe and dangerous practices, as well as having frequently witnessed such acts in person. I will list just a few of the many unsafe practices which can lead to injury or death; as a farm owner you must not allow you or anyone working on your farm, either as an employee or just a casual woodcutter, to conduct themselves in an unsafe manner.

The first major violation that I see is not using proper personal protective equipment, such as a proper helmet with head, eye, ear, and face protection. Next would be not using safety leggings or chaps. The majority of chainsaw injuries occur in the lower leg region. Finally, not wearing proper foot gear can result in cuts or feet being crushed under rolling logs.

The next area where I see a lot of safety violations is in the use of the chainsaw itself. Running a saw with a loose chain is hazardous, as the chain can fly off if it’s not properly tightened. Running a chainsaw with a dull chain tends to have the operator try to force the chain through the log, causing fatigue and inefficient use of the saw. There are several different ways to sharpen a chainsaw; attendance at a chainsaw safety course will get your sharpening techniques up to par. The chainsaw owner’s manual will show the proper chain tension, as well as the proper techniques to properly sharpening the chain.

Probably the most common and egregious error that I have seen is the “drop starting” of chainsaws. This is done by holding the saw in one hand and pulling the start cord with the saw held unsecured, with the other hand, in the air. The saw needs to be either on the ground or held and braced securely against a leg.

Oh, by the way, are you left handed? Sorry, but you cannot safely run a chainsaw left handed, and you are going to have to use it right handed. Using a chainsaw left handed can result in the chain being pulled back into your vulnerable body if it kicks back.

Kickback injuries: kickback occurs when the tip of the saw chain bounces back towards the operator, sometimes penetrating bones and flesh. These types of injuries can be prevented by not letting the top tip end of the bar hit something. I personally wear the scars on my face and left clavicle from a long ago kick back injury that occurred in 1983, and which I still occasionally feel slight pain from! Avoid kickback!

The chainsaw must be properly maintained, and a tool kit with all of the necessary tools must be close by, as well as a well-stocked first aid kit. It’s always a good idea to not work alone in the woods, or if you have to, to have your cell phone on your person so that you can call for emergency help if you need it. If you hurt yourself, it does no good to have the phone “back in the truck” several hundred yards away.

Be safe! Arms, legs, and fingers do not grow back!

In figure 1, Rich is fully outfitted in Personal Protection Equipment he is missing in figure 2.

This Personal Protection equipment includes:

1. a Helmet for head protection along with eye, ear, and face protection.
2. Gloves for hand protection.
3. O.S.H.A approved chaps for leg protection. Most chainsaw injuries are in the leg region.
4. Steel toed boots for foot protection.

In figure 2 he is holding the chainsaw left handed, which is a very unsafe way to operate a chainsaw because in this direction the chain brake does not protect the operator.

Below are examples of safe vs unsafe ways of starting a chainsaw. A safe starting position is braced against your legs or braced on the ground (8). Drop starting a chainsaw (9) in the air is unsafe.

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Below is an example of a loose and unsafe chain tension (6), and the correct tension (7).
**LOCAL FOOD AND MARKETS**

**Can Small Farmers Join the American Artisan Food Movement?**

by Maria Grimaldi

American consumers have created a sophisticated demand for locally produced Artisan foods that rival imported and industrially produced products. The 2018 NOFA-NY Winter Conference held in January presented a unique educational opportunity for farmers and food processors to understand the techniques of food preservation and production. Two presenters, Rachael Mamane and Jeffrey Roberts, are authors of recent books on small-scale food production, which explore techniques steeped in traditions brought to America by immigrants from around the world.

Jeffrey Roberts, Chelsea Green author of *American Artisan Cheese* (2007) and *Salted & Cured* (2017) lead 45 participants through a tasting menu, which presented a sequence of cheese and dry cured-meat pairs with four different craft beers. The cheese tasting began with a bloomy-rind semi-soft cheese, like Brie, made from Holstein cows’ milk. The delicate cheese called Noble Road was produced by Calkins Creamery of Honesdale, Pennsylvania. Noble Road brie was followed by a Spanish-style goat milk Moncacho produced by Sherman Hill Farm of Franklin, New York. Roberts explained the techniques of washing curds, that gave both Sherman Hills’ Moncacho and Calkins Creamery Cow Tipper its unique texture and flavor. In addition, Cow Tipper is an example of washing the rinds of the cheese during the aging process with ale giving an ordinary cow Dutch-style gouda a distinctive flavor. The biggest surprise of the “blind tasting” was the delicacy and sweetness of Northland Sheep Dairy’s blue-cheese called Black Mule Blue. Participants in the workshop could appreciate, through the tasting opportunity, the value of this truly fine sheep cheese, which explains its higher cost as sheep do not produce a high volume of milk and much of the volume is further lost in the cheese-making process.

Northland’s Black Mule Blue and the other artisan cheeses paired beautifully with the diverse flavors of several craft beers from Catskill Brewery and the European-style cure meats from the Muncan Food Corporation, Salumeria Biellese and Schaller & Weber, all New York City producers of charcuterie. Freshly baked bread from Bread Alone, organic artisan bread makers supplied the perfect accompaniment to the dry-cured meat as did condiments of Damson plum jam from Beth’s Farmhouse Kitchen, and Bread & Butter fermented pickles from Divine Brine, all New York small scale producers. The presentation showed the perfect marriage of small farmers with small-scale food and beverage producers.

Although traditionally cured meat has been dominated by pork, in a March 2015 Glynwood charcuterie workshop for Hudson Valley livestock farmers, Roberts introduced a goat prosciutto called Violino di Capra. Violino di Capra was developed in Italy’s Lombardy region centuries ago. The idea of diversifying meat to produce charcuterie rather than solely from pork is finding its way into the American supply chain.

Participants at the NOFA-NY Conference tasting had an opportunity to sample Babic, a smoked, delicately spiced, lamb salami from the Muncan Food Corporation in Astoria, New York. The sausage makers at Muncan are exploring adapting traditional pork recipes to accommodate a growing market of Muslim and Jewish customers. Clearly, the customer base for American artisan charcuterie is vast and could surpass that of small-scale artisan cheeses but the path for small livestock farmers to connect to larger scale processors still remains underdeveloped.

Rachael Mamane, author of *Mastering Stocks and Broths* (2017) is self-described as a gourmet cook whose mission now extends beyond her small-scale business of producing and selling culinary stocks and broth for home cooks to reducing food waste on a global scale. Although the first goal of her business, Brooklyn Boulion, was to add value to the harvest of local farmers by using their entire harvest to bring a locally produced culinary staple to home cooks, shopping at area farmers’ markets, Mamane recognized that her goal could and should encompass a greater good. What began as a small business has turned into a global crusade about environmental education and economic development. Mamane’s workshops at the NOFA-NY Winter Conference had as much to do with the problem of reducing food waste as the culinary techniques of making good stocks and broths for use at home.

Producing value-added products from bones and slaughterhouse waste presents an array of issues for meat producers and processors. Bone broths are presently being touted as especially healthy to consume, and proponents point to the traditional method of making soup from roasted animal carcasses and bones simmering slowly on the back of a wood stove to extract the maximum benefits from the bones. As appealing as this ideal method of slow cooking may seem, to be legally and safely sold in the market place, food safety regulations must be addressed. Bones must come from a USDA inspected processing facilities, and the production of the stock itself must be conducted in an Ag & Markets inspected commercial kitchen. Packaging and shelf life issues must also be addressed if a producer wants to increase volume and meet the scale of demand expected to sell alongside of commercial stocks and broths. Mamane’s business model is an example of how small-scale food processors and farmers can create added value by being socially and environmentally conscious in their work.

Maria Grimaldi works as an educator for the Northeast Organic Farmers Association (NOFA-NY) and a farm to market consultant with the New York Small Scale Food Processors Association (NYSSFP). Maria has over 30 years’ experience in the region as an educator and organic farmer. She is also passionate about advancing the importance of supporting sustainable farming for the health of people and the planet.

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MaryRose Livingston makes artisan sheep cheese using time honored traditional methods of introducing enzymes into milk. This process separates curds from whey. The curds are then washed, pressed into rounds and aged to make Northland Sheep Dairy’s unique American sheep cheeses.

Photo courtesy of Northland Sheep Dairy
Frequently Asked Questions When Starting Up a Hop Farm in New York

by Steve Miller

The following is some information that I have put together for people interested in getting started in hops. This information is a general primer to answer commonly asked questions. This is an exciting time for the industry with excellent potential for marketing to over 400 microbreweries around the state, with more applications pending. The NY Farm Brewery legislation creates new opportunities for on the farm brewing and sales. This legislation went into effect in January 2013, and you can contact Stefan Fleming at the Empire State Development Corp to get info on obtaining a Farm Brewery License at 585 399-7068 or Stefan.fleming@esd.ny.gov. There are about 180 new farm breweries in New York as of January, 2018, however their production is only about 70,000 barrels of the 1 million barrels produced by craft brewers in New York.

History
New York historically had a very important hop industry about one hundred years ago. In 1880, New York produced 21 million pounds of dried hops, the majority of the U.S. crop, which sold upwards of $1.00/pound. What happened, and why can we grow them again now? Disease pressure from downy mildew and powdery mildew, as well as aphids and spider mites made production much more difficult and risky. The industry started moving to the Midwest, eventually reaching the Pacific Northwest, in response to this disease pressure. Then along came prohibition, and the price of hops went from a high of $1 per pound to just 5 cents per pound almost overnight, and most of the hops in New York were pulled out of the ground.

There are several reasons why we can grow hops commercially again in New York. The industry in the Northwest has funded strong plant breeding and IPM research for many decades, and a good deal of effort has gone into developing new varieties with disease resistance. These varieties are doing well in New York and offer the best potential. Secondly, pest management options, both chemical and cultural, have come a long way in the last hundred years. These advances make commercial hop production viable once again in New York State.

Finances and Costs

What's the minimum acreage for a farm to make enough on hops to have a livable income?
If you are doing a good job of it, 10 to 15 acres should provide a good income. It doesn’t sound like a lot of land under cultivation, but it is a lot of work and about $12-$15,000 per acre investment to get started. Currently, there is no one in New York with more than 40 acres of producing hops but I do expect that to change in the future.

What returns can be expected and how many years does it take to get a return?
There is great potential now for growers in New York. Local prices are all over the board, anywhere from $8-$14 per pound for dried, pelleted, hops, with an average yield of 800-1,500 pound per acre if you are doing an excellent job. Some growers have obtained yields over 1,500 pounds per acre. Brewers currently pay from $4-10 per pound for hops grown on the West coast or from Europe, varying greatly on the amount they purchase, the variety, and market demand. Aroma hops in particular are in high demand by craft brewers, and predictions are that many acres of additional plantings are needed. Much of this has been planted out, and the market has softened somewhat. It is important to keep market prices in mind when developing a business plan, as brewers are conscious of their contracted prices for hops, and although most are willing to pay some premium, prices need to be realistic. Also, quality is more important than where they were grown, so “local” will not make up for poor quality hops.

The first year in production you may get a few hops, with a partial crop the second season, and a full crop the third and fourth years. Expenses are variable, but most growers believe they need to have gross sales of more than $6-8,000 per acre to break even because of initial investment, equipment, harvesting and processing costs.

What are the fixed costs to start up and what are the variable costs for ongoing production?
It costs about $12-15,000 per acre to get started including labor, plants, trellises, irrigation, and equipment. Growers are looking at the possibility of sharing some things, such as harvesters, kilns, and pelletizing and packaging machines. USAHops.org has an excellent publication on the cost of hop production. Go to their website and look under resources for 5 acre, 10 acre, or 20 acre detailed spreadsheets.

What are the costs, such as harvesting machines, etc.?
Harvesting is one of the main costs in producing hops. Hand picking is not feasible for anything more than an acre or so. A stationary Wolf 140 or 170 harvesters will cost in the range of $30-35,000, but is not easy to find in the U.S. so shipping is involved from Europe. The Northeast Hop Alliance has one located at Morrisville College that is available for members to use. There are 15 more of these privately owned around the state. Keep in mind that the harvester you use needs to be within an hour of your farm, because of transportation time and costs. Growers are developing their own small-scale machines and several types may be available soon. For instance, Larry Fisher of Foothill Hops has built his own and will be sharing the plans. There are also plans from UVM in Burlington, VT for a harvester they designed and built with funds from SARE, as well as for a small-scale kiln and baler.

What other equipment is needed to grow hops?
Additional equipment includes a small tractor, trailer, weed sprayer, and crop spray. What is used in vineyard or orchard, truck, drying equipment, possible pellet, a cooler, and a building for storage and drying.

Growers should plan on drying their own hops, but there are three pelleting companies in New York that will pellet and package: Northern Eagle Hop Processing in Oneonta, Foothill Hops in Munnsville, and Pedersen’s Farm in Seneca Castle. Others may have opened since this update, and can be found listed in newsletters and on the northeasthopalliance.org website.

Marketing your hops
What is the demand for hops in New York State to local brewers and in the future?
Hops are easy to ship once dried, however the demand right now is from micro-brewers and local is “in”. The growth was slow at first, because the brewers want to be sure that they can get a consistent product, both in quantity, availability and quality. As the number of acres increases, the demand will also increase. Brewers like the quality that they are getting from local producers! The demographics of the consumers of these products are in their 20s and 30s and it seems unlikely that they will go back to more generic beers. This is a good indicator that there is plenty of room for longevity and growth in the craft beer industry. We estimate there is a need for at least an additional 400-500 acres of hops in New York to satisfy the domestic demand for hops. Craft brewing production in New York exceeds 1.5 million barrels a year now. Keep in mind that farm brewery production is less than 5% of that number, so you must be prepared to compete with West Coast hops to be successful.

Is it possible to be classified as an organic producer?
Yes, there are some growers going organic. It is more work and risky, I’d say and time will tell if brewers will be willing to
Is there a profitable online sales market?
I would say yes, but with a caveat. New York hops are going to be more expensive to produce, so many home brewers are looking to other regions still because they are less expensive. You would have to build interest in “local” or uniqueness on the part of home brewers in order to be successful.

Land preparation:
It is very important that you select the area where you will be growing and begin the set the land prepared. It should be well drained, have access to water for irrigation, be flat or have a gentle slope, and have good air circulation as well as full sun. Those are the key ingredients to site selection. I would start by going to your Cornell Cooperative Extension office in your county and obtain copies of the soil maps of your farm. The USDA NRCS or the County Soil and Water District staff can tell you about the particular qualities of each of the soil types.

I would also obtain a soil test box there for Dairy-one/Agro-one and send it in with the “F” form filled out for hops establishment. This will tell us if you need lime or other minerals to be added before you plant. I also would suggest that you ask the Extension staff about establishing a cover crop this year to cut down on the weeds. Buckwheat followed by clover is a good choice. Will you be organic? What is growing in the field now? Grass, weeds, corn? Atrazine carry-over can be harmful. You may want to kill off what is there with either tillage or cover crops or with glyphosate (Round-up) as perennial weeds and grasses will be a problem, and you want as little of those as possible before the hops go in.

Designing a Hops System
What is the system of growing plants that will produce the highest yield?
Hops are very delicate and can be damaged easily if not handled properly. The soil line and clog up a mechanical harvester especially the Wolf machines. Hand picking is not cost effective, taking about one person hour per mature plant to complete. We have 20 Wolf harvesters in New York and a number of smaller pickers manufactured in the state now. As acreage grows we may see more of these units or once built. Mobile harvesters are being built that can travel from farm to farm and have proven to be effective for use in the last few years.

What is the process to dry and possibly pelletize the crop?
After harvest, the crop needs to be dried right away. Use plenty of warm air, no more than 100-120°F, as air that is too hot will destroy flavors. Once dried, the hops can be stored in air-tight bags in a cooler. Before pelletizing, they may need to be ground in a hammer mill and then pelletized, vacuum sealed, and again, stored cold. In New York, a 20-C license is required from NYS Department of Agriculture and Markets in order to carry out any of these practices, including drying. An additional variance is required for vacuum sealing.

What is the shelf life of product?
This depends on quality, but usually a year if the hops are processed right and vacuum packed in Mylar bags, gas flushed and kept in a cooler or freezer. Many growers don’t pelletize until they have orders ready to ship.

What varieties are in demand?
For the most part brewers are looking for the more aromatic varieties, as they can get the bittering varieties more easily from the Northwest. Common varieties include Cascade, Willamette, Mt Hood, Fuggle, Liberty, and Perle are aroma varieties, and Brewers Gold, Chinook, Centennial, Nugget and Newport are a few bittering varieties that are being grown in the Northeast. We also must consider disease resistance. Mt Hood, Centennial, and Columbus (CTZ) for example, are not resistant to downy mildew. Saaz, and most of the German varieties have had mixed results in the East so far, but growers are experimenting with these. Varieties like Citra and Mosaic are proprietary and we currently cannot obtain stock to grow them.

Finding more information
For more information, I would start by going to the Northeast Hop Alliance website at www.northeasthopalliance.org and read through some of the literature that is listed on the resource page. Copies of our newsletters are listed there, as well as articles from University of Vermont. UVM has a great resource site at http://www.uvm.edu/extension/crops/oil/hops

Also, consider joining the Northeast Hop Alliance. The Alliance supports research and development of the industry and is a small investment for your farm. The NeHA growers will likely be putting in a group order for coil each fall. Doing bulk purchases of supplies can save on start up costs.

As mentioned previously, USAHOPS.org is the site for the Hop Growers of America and they now have some excellent resources for small growers, especially the spreadsheets for 5,10, and 20 acre hop farm startups. These are very accurate for the eastern growers and you can put in your own numbers as well.

Cornell Univ. and Cooperative Extension offers a Cornell Guidelines for Hop Production for $28 plus shipping. There is also a new hop research yard planted at the NYS Experiment Station in Geneva. Variety and pest management trials will be carried out there.

For the last seven years we’ve held a hops conference in Troy and Morrisville, NY. A 2 DVD set (approx.7-10 hours) is available from each conference for $30 each for the first 5 years and $60 each for the others because there are more DVDs per set, including shipping, no tax. Any two sets of DVDs can be purchased from Cooperative Ext of Madison County, (315) 684-3001.

P.S. If interested in brewing, contact: NYS Brewers Association PO Box 25353 Rochester, NY 14625, (315) 256-7808, www.thinknydrinkny.com

If you are interested in growing malt barley contact Kevin Gano, CCE of Herkimer County at khg2@cornell.edu, (315)866-7920, http://www.nvmteam.org/billstорagereries.blogspot.com

For more on growing hops go to the northeasthopalliance.org or contact me, Steve Miller, Executive Director, Northeast Hop Alliance at hops.educator@gmail.com or (315) 525-7299.

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Concerned Citizens and Vilified Farmers: Thoughts on Animal Welfare Complaints

The growing divide between farmer and citizen intersects at the topic of animal welfare

by Jason Detzel

I received a call today from a concerned citizen who was worried about some cattle that had been left out for the winter. I was happy that they called me first instead of the authorities, and we had a calm and intelligent conversation about animal welfare and the realities of animal husbandry on farms. Although motivated by good intentions, her understanding of livestock anatomy was not complete. My job is to provide just this information to whoever may need it. As I was speaking to this person, I realized that each party, the farmer and the citizen, was completely ignorant of the other's intentions and concerns. So in this installment I am going to paint a picture of both parties to provide some understanding of where they are both coming from and how we can all work to be better communicators, farmers, and citizens.

First off, let me paint a picture of Farmer Joe’s life so far. Joe grew up with his four brothers and his parents on a diversified farm in the Hudson Valley. He began working with his dad at a very young age. He participated in 4-H and FFA and even won the dairy bowl one year. As he entered his teens, his parents were adamant that he not take over the farm and he struggled watching his parents toil for little return. Everything that Joe knows from farming he learned from his father and his peers. These people were counseled and guided by various farm agencies across the land (including Cornell Cooperative Extension) in what were the best practices at the time.

Now Joe is grown, and his parents have finally relinquished management of the farm to him and his family. He does his best despite slumping milk prices, a droughty summer, and then last week a few concerned citizens calling the humane society, the state police, and the local livestock sanctuary over concerns about his dairy cattle. They said that the cattle looked skinny, that they did not have a barn to live in, and that there was mud in the pasture. Joe cannot understand that after having a hand in raising thousands of animals the best way he knows how, and after winning many awards for his practices and herd health, that he is now the subject of an animal cruelty investigation. Joe is devastated and angry. Why would these people single him out? He is just getting by, his animals are well cared for, and he would never abuse any animal.

The reason he is singled out is that typical citizens are so far removed from agriculture that they do not understand the realities of farm animals or most animals for that matter. With our big brains full of empathy but low understanding of science, it is easy to anthropomorphize animals in the wild and on farms. Most people who make these calls are genuinely concerned and that is a great thing. What is also great is that what the farm is doing is transparent for all to see. Joe is not hiding anything, is very active in social media showing off his farms everyday. It’s when farming practices are obscured that we should get worried. I understand that these people think these animals may be being abused, but regardless of your stance on animal cognition it is obvious that animals are much better adapted to environmental stressors than our fleshy, heat losing bodies. Cattle are particular well suited to the climate of the Northeast, so long as they are allowed to slowly adjust to the cold and make the necessary physical and metabolic changes necessary. In order to naturally adapt, they need to spend time outside, to allow the lowering temps to trigger them to grow heavier hair coats, for fewer hours of light to slow their metabolism, and for the fresh air to help to contain diseases that tend to thrive in the crowded conditions you would find in a barn but never in nature. Cattles hooves are flat and fat because they tend to walk on grass and in muddy wet surfaces. These are just a few of the many adaptations that animals have developed for a life outside.

On the other side of the fence we have the concerned citizens. These folks did not grow up in agriculture. They have been bombarded by commercials and exposé outlining some very horrific animal husbandry practices on commodity farms and are demanding more accountability in agriculture. There are agendas and budgets and lobby’s that are focused on making you support their particular organization. They have developed scientifically calculated campaigns designed to both elicit emotions for either side and to open up your wallet and take a bite. This media presence has caused folks to see all production models as inherently unhealthy for people and animals alike, and they feel they are providing a voice for the abused and the voiceless. What the folks who called the authorities didn’t understand is that the last thing this farmer wants is for his animals to be hurt or hungry. Not only does it hurt his bottom line, but it goes directly against everything he was taught. Not every farm is a disgusting filth pit of death and not every farm is the idyllic white picket fence yard. Farms are in between and those who criticize would do themselves a great service if they were actively visiting farms and speaking with their local producers. And that is where Cornell Cooperative comes in. My hope is to continue educating all of those that I meet, to listen and take in what each party is concerned about. We are all part of the same community, and embedded in that word is communication. As soon as we shut someone out because of their basic views, we are doing everyone a disservice.

When the authorities come to Joe’s he feels betrayed and removed from his local community. He is bombarded by accolades in some circles and then vilified in others and all for doing what he thinks is right. When this happens it only reinforces his and the farming community’s fear because they consider it to be extremism. This anger leads him to further divide the community and shut down the dialogue.

We are now actively seeking to develop a response team with the local Sheriff’s office and the ASPCA to address livestock abuse investigations. So if you see something that bothers you, call me. If you don’t understand why a farmer is doing something, call me. If you would like for me to host a class that brings together farmers and citizens to have a safe, and productive dialogue about farming, let me know. If you love animals like I do and want to talk about your pet pig Fluffy, call me. The point is that through education and dialogue we can all increase our understanding of animals and the roles they play in our lives.

I know this is controversial and there is a LOT more to say on this subject. One of the best things that farmers can do at the risk of being vilified, is to show animals in their true state in the winter. Many dogs live outside year round and would overheat inside next to the hearth. Cows sometimes get muddy and ice forms on their coats. Basically, make your farm transparent. If that’s the norm will no longer be the white picket fence yard of an ornamental farm. And the best thing citizens interested in the welfare of the animals they see on farms can do is talk to their neighbors. Ask them questions or for a tour of the property, and most importantly, speak to them. Instead of anonymously calling the sheriff’s department, introduce yourself and start a conversation. Don’t privilege what you watch on television or read in magazines over the knowledge of the members of your community. We can’t effect change in our community unless we all work together.

RESOURCE SPOTLIGHT

Farmers.gov Website Launched

U.S. Secretary of Agriculture Sonny Perdue recently unveiled Farmers.gov, the new interactive one-stop website for producers maintained by the U.S. Department of Agriculture (USDA). Farmers.gov is now live, but will have multiple features added over the coming months to allow agricultural producers to make appointments with USDA offices, file forms, and apply for USDA programs.

The website gathers together the three agencies that comprise USDA’s Farm Production and Conservation mission area: Farm Service Agency, the Natural Resources Conservation Service, and the Risk Management Agency. Farmers.gov is mobile device-friendly and can identify for farmers the most convenient USDA office locations. New functions will be added shortly, including an interactive calendar, farming success stories, an online appointment feature, digital forms, and a business data dashboard.
GRAZING MANAGEMENT

Low Cost Seeding Methods for Improving Pastures and Haylands

by Rich Taber and Ken Smith, Cornell Cooperative Extension of Chenango County

Methods to improve old unproductive pastures and hayfields that are both effective and economical are a common challenge for farmers, and especially so for new and beginning farmers. The time and cost for re-seeding includes multiple passes of tractors and tillage machinery including plowing, disk harrowing, spring tooth harrowing, rock picking, planting, and packing to establish a new planting, far more work and cost than many farmers can afford. Also, many upland pastures are too steep and rocky to plow, and which can be severely eroded if tilled at the wrong time. An effective no-tillage/less tillage approach to re-seeding these unproductive pastures and hayfields would be a great benefit to many farmers who depend on pastures or hay for their livestock.

Past studies done with Sustainable Agriculture Research and Education (SARE) grants have shown that it is possible to successfully no-till plant seedings of red clover and hairy vetch. In an effort to build on these earlier no-till seeding studies, Cornell Cooperative Extension of Chenango County, in collaboration with SARE, did trials of no-till seeding of red clover, hairy vetch, white clover, perennial ryegrass, orchard grass, birdfoot trefoil and Kentucky bluegrass on six farms in upstate New York. The farms included four organic Amish farms, one conventional dairy farm with no herbicide, and one conventional farm that used glyphosate, as a control. Four of the farms used a no-till seed drill, and two of the organic Amish farms used spin on hand seeders.

Each farm had a test site with six contiguous 1-acre plots. All of the sites were tested for pH, and four of the farms had lime spread, two farms already had the necessary pH of 6.2. The lime spread had an Effective Neutralizing Value of 90% to bring all the soils to 6.2.

The following seed combinations were seeded in at the seeding rates recommended by the seed supplier:

Plot 1: control, no seeds
Plot 2: Perennial Ryegrass and Trefoil
Plot 3: Red Clover, White Clover and Kentucky Bluegrass
Plot 4: Hairy Vetch
Plot 5: Red Clover and Orchard Grass
Plot 6: Kentucky Bluegrass and White Clover

The no-till planting of all seed plots was done in May and June of 2016. The year was very dry, with drought conditions persisting through the summer, which greatly impacted the germination of the seeds. As might be expected given the dry conditions, the seeds that were drilled germinated much more quickly than those that were spun on the soil surface. Prior to seeding, the hand-spun sites were heavily grazed by either cattle or draft horses to remove as much plant material as possible, ensuring good seed to soil contact.

The results of the plots were evaluated with seedling counts in 2016, with photographs, and with forage analysis in 2017. The main take away from the study was that in nearly all cases, each seeding treatment on each farm provided improved results compared to the control of existing plants in the field. As might be expected, the results of the study varied by farm and by planting method, but overall forage analysis shows that each of the seed combinations provided improvement of forage quality when compared to the controls.

In the first year, the drought year, the best producing crop early was hairy vetch drilled into the glyphosate treated field. This produced a thick crop of hay despite the dry weather. However, on the other farms, the hairy vetch did not do as well. The one plant that seemed to do best in most of the seeding was perennial ryegrass. It seemed to establish in most of the test sites and contribute to better forage quality. Otherwise, the red clover and white clover plots improved forage quality the most.

In terms of management recommendations, our conclusions were that no-till seeding will provide improved forage quality on most farms. If the pasture to be re-seeded can be grazed down by animals as much as possible to remove competing vegetation before seeding this is a great advantage. A no-till seeder was more effective at establishing seeds quickly in dry conditions in the short term, but seed spread on dry ground with a spinner appears to eventually germinate and will also improve forage quality.

In regard to which types of plants that farmers might want to consider for their own plantings, each of the different legumes seemed to do well on some farms but not on others, but perennial ryegrass seemed to establish well in most sites. Consequent-
SEED STORIES

Stories, Seeds & Infographics

New ways of telling stories in the 21st Century

by Petra Page-Mann

There are so many ways to tell a story. Over tea, reading a book, at the theater, or in the Small Farm Quarterly. In the 21st Century, ‘infographics’ are a fresh way of telling your story. And just in the nick of time.

The attention span of American adults continues to dwindle, and is currently estimated at 10 seconds. (Are you still with me?!)

How we tell stories more important than ever.

What is an infographic?

An infographic is a visual image, often a chart or diagram, used to represent information or data. But they’re going so far beyond charts.

Infographics embody the wisdom, ‘a picture is a thousand words.’ Statistically, people remember 80% of what they see and do compared to just 20% of what they read.

Take a look at this infographic just made by Fruition Seeds, 7 Essentials of Seed Starting (and simple solutions to common mistakes).

We created this infographic as many farmers and gardeners want to start seeds more successfully. Dreaming of the season ahead, a dear friend asked me to make a list of the “7 essential things she needed to know” to start seeds successfully this spring.

A few days later I was making supper with another dear friend whose illustrations are as vivid and whimsical as her gardens and stories. Eureka! She and I had SO much fun laughing and learning as we brought life to the 7 Essentials of Seed Starting (and simple solutions to common mistakes) in infographic form.

My hope is that these tips and tricks, broken down into such accessible, bite-sized graphic stories, will surround you with the insight they need to start seeds more successfully.

What tip is most valuable for you? Let us know!

And hope to see you on our farm in the Finger Lakes one day. (Because that’s where all our stories really begin.)

Growing up in her father’s garden in the Finger Lakes of New York, Petra believes each seed and each of us is in the world to change the world. In 2012 she founded Fruition Seeds to share the seeds, knowledge and inspiration gardeners need to be more successful in the Northeast. Don’t hesitate to strike up a conversation: petra@fruitionsseeds.com

RESOURCES SPOTLIGHT

What happened to the New York ROPS Rebate Program?

by Matthew Alfultis, National ROPS Rebate Program

Within agriculture, tractor rollovers account for the most fatalities (approximately 125 per year), as older tractor models lack proper protection. In 2006, the ROPS Rebate Program was launched in New York to help farmers install rollover protective structures (ROPS) on any tractor without one. ROPS, when used with seatbelts, are proven to be 99% effective in preventing serious injury or fatality in the event of a tractor overturn.

Since the start of the Program, we have facilitated the installation of 1,600 roll bars across New York State, preventing at least 26 deaths and numerous injuries in the process. Due to its popularity and success, the Program was extended to six additional states between 2010 and 2016. As of June 2017 the Program expanded to form a national program to address tractor safety across the United States.

Rebranded as the National ROPS Rebate Program, we are still committed to helping farmers in New York obtain ROPS. Although it’s now a national program, there is still state-allocated funding available in New York and other Northeast states. We encourage anybody who does not already have a ROPS to get one. The Program will rebate the entire cost of the ROPS, including shipping and installation costs, up to 70% with a maximum out of pocket of $500 to the farmer. If you are interested in the Program, or have any questions, please give us a call at 1 (877) 767-7748 or apply online at www.ropsr4u.com.
Book Review for The Lean Farm Guide to Growing Vegetables by Ben Hartman

The Lean Farm guru is back with another book to lean farm our vegetable growing.

by Karen Vesper

This book is a follow-up to his first book, The Lean Farm, and it takes growing vegetables to a very specific and direct-ed level. I think this book is helpful to beginning farmers as well as longtime farmers who enjoy learning new and different ideas to help ease some of the load for vegetable farmers. It is definitely a text for small farm work and the organization to help each farm become more efficient.

This book is different from others on the same topic because of the intricate nature of the directions, details and the how-to guides for vegetable farming. This is a thorough look at the lean way to grow vegetables, but can be utilized for many more operations in all of farming.

Part I - Leaning the Timeline
Chapter 1-Planning the Year with Heijunka and Kanban

The first chapter begins with an explanation of some of the Japanese terms and tenets that Ben Hartman lives and farms by. Explicit planning calendars and farm maps are included to visualize the details of the crops they are growing and where they are being grown. Lean pull production is described and how what customers want drive the work and the crops that are produced.

Chapter 2-Leaning Up Bed Preparation
Bed preparation is covered in this chapter, utilizing such components as compost, soil amendment, aeration and blending. This chapter also includes tractor buying tips and helpful terms and suggestions to guide the reader’s purchases of equipment, both motorized and handheld.

Chapter 3-Compost Making, Small Farm-Style
Hartman delves into his use and creation of compost on his farm, as a thorough study of what materials he uses, how they are handled and what is needed in order to get the type and quality of compost that he needs for the best production of his crops. The details in this chapter are very clear and explicit.

Chapter 4-Successful Seed Starting
“Get every seed to germinate.” This is the goal on Hartman’s farm to eliminate waste, one of the five core principles. Care is given to literally every seed to make sure that it has the optimal chance to grow, especially in the first few critical weeks. Everything is covered in this chapter from when the seed is put into the soil, where it is placed, the kind of medium it is placed into, etc. This chapter is a complete ‘go to guide’ for how to start any seeds, excellent details and directions.

Chapter 5-Transplanting by Hand
Efficient motion is the key to successful transplanting, according to Hartman. Each step of the process is outlined and discussed as well as spacing, tools needed, and the exact placement for specific vegetables. Guides from bed preparation to flat size for each seed to techniques are covered with extensive detail in this chapter.

Chapter 6-Paper Pot Magic
The paper pot system offers many advantages; speed, space and saving time in the field. A detailed description of how to seed the paper chains, use the paper pot transplant, and the tricks and special uses for the tool.

Chapter 7-Four Lean Tips for Direct-Seeding
Proper ground/soil, specific seasons with particular seeds, good technique and timing will give good results for direct seeding. There are four tips that Hartman gives for direct seeding success. His constant work to improve all of his production systems for growing seeds continues in this chapter.

Chapter 8-Weed and Pest Control-without Muda
Transplanting is the most important weed-control method that Hartman uses on his farm because it gives crops a head start on weeds. He discusses several other methods to control weeds, such as: never allow a weed to seed, time your direct seeding and the June 1st rule. He eliminates pests by using row covers and beneficial insects, among other techniques.

Chapter 9-Collecting Cash: Leaning Up Sales
“How many times have we touched our crops?” is a question that Hartman asks himself because with lean farming the touches are few and the lines of work are straight. Using delivery metrics, smooth flow for markets and eliminating overproduction waste will bring profits to the farmer and product to the customers.

Chapter 10-Lean Applied to Our Best-Selling Crops: Seven Case Studies
Hartman shares in this chapter his continual research to improve all of his production, with specific crops. His studies include his work with: tomatoes, baby greens, kale, head lettuce and romaine, carrots, turnips, radishes and beets, and peppers. The specific details, directions and experiences that he shares in this chapter are invaluable to others who are growing vegetables. Much can be learned from this chapter alone.

Part II-Staging for Flow
Chapter 11-Finding Good Land
In this chapter, Hartman shares how important good land is in contributing value, while poor land contributes to waste every day. There are six recommendations for choosing land, and many resources are included and explained within the chapter. This chapter should go along with you as you look at and try to find land for your farm.

Chapter 12-Infrastructure and Farm Layout
Every aspect of production for a vegetable farm is included and covered with precise ‘how to’ directions to be followed, step-by-step. This chapter discusses processing room to cold-storage rooms to gashouse to vehicle access lanes. This is literally the map to setting up a farm and all of the areas you need. It reads almost like the directions to setting up the houses in a Christmas train village. Nothing is missing in this chapter!

Chapter 13-Leaning Up Greenhouses
Designs of many different types and styles of greenhouses are discussed from where to build it, how tall and wide it should be, what must be included, and why management of these greenhouses is so important to your profits.

Conclusion: The Kaizen Farm
A history of Japan’s farming and animal husbandry begins this chapter to show how and why Hartman has adopted these methods of lean farming. He discusses their need for constant improvement as well as their devotion to eliminating waste and freeing up more time for their family and things they want to do in their free time.

The only thing wrong with this book is that it should be spiral-bound and laminated so that you can take it out in the field with you! Excellent motivator to get started in farming!

Karen Vesper is a second career gal, working on an agribusiness degree, beginning farmer, and overall agriculture enthusiast.
Eligible donations include fresh fruits and $5,000 market value of qualified donations up to able credit equal to 25 percent of the fair across New York. It is offered as a refund-ful foods in underserved communities meet the growing demand for fresh, health- the state. Increased donations will help and other emergency food programs across products to eligible food pantries, food banks ing, packaging, and distributing local prod- The tax credit was enacted to compensate Yorkers in need. vide more than seven million meals to New 2017, which helped provide more than seven million meals to New Yorkers in need. The tax credit is expected to save farmers a total of $10 million annually. Farmers across the state donated more than nine million of food in 2017, which helped provide more than seven million meals to New Yorkers in need.

The tax credit was enacted to compensate farmers for costs associated with harvest- ing, packaging, and distributing local products to eligible food pantries, food banks and other emergency food programs across the state. Increased donations will help meet the growing demand for fresh, health- ful foods in underserved communities across New York. It is offered as a refund- able credit equal to 25 percent of the fair market value of qualified donations up to $5,000.

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A fact sheet on eligibility requirements for the tax credit is available at https://tax.ny. gov/busfarm-donations-credit.htm

Grant Opportunities Available to Support Farmland Protection
Governor Andrew M. Cuomo has an- nounced the availability of $5.5 million through two new grant programs for farmland protection.

New York’s Farmland Protection Implemen- tation Program has been expanded to allow applicants to implement an Option to Pur- chase a Perpetual Conservation Easement, also known as an Option Agreement Proj- ect. This project expedites the process by pre-determining the value of development rights when submitting an application for the purchase of a conservation easement.

A total of $5 million will be available to eli- gible applicants, including municipalities and counties. Grants up to $500,000 will be awarded to cover costs associated with ob- taining an Option Agreement Project.

Applications will be accepted until the avail- able funding is fully committed and all appli- cants must submit proposals through the Grants Gateway. For more information, contact David Behm at david.behm@agri- culture.ny.gov.

Additionally, the new Land Trust Grants pro- gram has $500,000 available to advance farmland protection strategies identified by counties and municipalities. The program provides competitive grants of up to $50,000 to land trusts. It will inform landowners of programs that protect prop- erties from conversion to non-farm uses and connect landowners with farmers inter- ested in leasing or buying properties.

For more information, contact Jeffrey Ke- hoe at Jeffrey.kehoe@agriculture.ny.gov or by visiting https://www.agriculture.ny.gov/ RFPS.html

News and Notes for New York Farmers from the New York Farm Bureau

Tax Credit Available to New York Farm- ers for Charitable Food Donations
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RESOURCE SPOTLIGHT

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Cornell Group Explores Future of Indoor Farming

by Jill Monti

Indoor farming entrepreneurs and experts came to Cornell in early November with a goal: leverage the innovation at the College of Agriculture and Life Sciences to create viable businesses for local vegetables and produce grown indoors.

Known as controlled environment agriculture (CEA), the systems combine greenhouse environmental controls such as heating and lighting with hydroponic and soil-less pro- duction, enabling year-round production of fresh vegeta- bles. The process extends the growing season through a range of low-tech solutions – such as row covers and plastic-covered tunnels – to such high-tech solutions as fully au- tomated glass greenhouses with computer controls and LED lights.

Led by Neil Mattson, director of Cornell CEA and associate professor in the School of Integrative Plant Science, Cornell has become a world leader in CEA research. In early No- vember, the Cornell CEA Advisory Council, which was formed in 2015 to expand the retail and food service mar- kets for products grown using CEA, hosted on campus more than 80 entrepreneurs and stakeholders from across the Northeast to discuss the state of the indoor farming in- dustry, urban agriculture, supermarket trends and new technology.

At the conference, the group announced the formation of the Controlled Environment Agriculture Global Association, an organization to foster growth, understanding and sharing ideas related to controlled environment agriculture and as- sociated industries.

Erico Mattos, executive director of the newly formed Green- house Lighting and Systems Engineering (GLASE) con- sortium, presented his vision to advance CEA by bringing

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Hydroponic tomatoes growing in a Cornell greenhouse. Photo by R.J. Anderson/Cornell Cooperative Extension

Hydroponic tomatoes growing in a Cornell greenhouse. Photo by R.J. Anderson/Cornell Cooperative Extension
together expertise from industry and academia to create solutions.

“The CEA Advisory Council meeting provided a great opportunity to connect with key players from the different segments of the CEA supply chain in New York. I was impressed with the quality and quantity of the ongoing initiatives in this area supported by Cornell University professors and staff members and the level of engagement from the industry members,” Mattos said.

Mattos said private companies and public research from Cornell offer collaborative opportunities that can advance the CEA industry.

Cornell graduates from the CEA program have been in high demand from companies who wish to leverage their skills and knowledge. Little Leaf Farms, a leader in indoor lettuce production founded by Paul Sellew ’79 and based in Devens, Massachusetts, has hired numerous graduates.

“These talented individuals have provided immediate contributions to our business,” said Tim Cunniff, Little Leaf Farms executive vice president of sales and marketing. “It is exciting to see how Cornell is expanding its commitment in controlled environment agriculture to include the business of running a CEA operation. Cornell is in an excellent position to advance a scalable local food movement, and all of us at Little Leaf Farms are excited to be part of the process.”

Paul Brentlinger, who served on the grower panel and is the second-generation owner of CropKing, said his business and Cornell “have similar outlooks on the future generations of farmers, and we support Cornell as much as we can with their goal of educating the next generation of CEA operators.”

Laura Biasillo, agricultural economic development specialist at Cornell Cooperative Extension (CCE) of Broome County, said: “CCE is the ‘boots on the ground,’ providing everything from technical assistance to the business planning, cost analysis and financing needed by startups and business that are expanding.”

The conference attracted participants from traditional agricultural businesses interested in adding CEA to existing operations, to individuals with significant business experience, to those not yet in agriculture.

“The diverse perspectives made the conversations highly engaging, and building a network for this emerging New York ag sector was one of the key benefits of the conference,” said Aileen Randolph, outreach and communications manager of the New York Farm Viability Institute. “Now it’s up to the participants to do the hard work of utilizing this information for their specific business planning process.”

Jill Monti is the technical lead at the Cornell Institute for Food Systems Industry Partnership Program.

Neil Mattson, director of Cornell CEA and associate professor in the School of Integrative Plant Science, at left, leads a tour of Cornell greenhouses in November. Photos by R.J. Anderson/Cornell Cooperative Extension
Call the Dogs Off the Lions
Be nice to dandelions, “the official remedy for disorders.”

by Paul Hetzler

April showers bring May flowers, but not all posies are a welcome sight. Although it is quite possible they arrived on the Mayflower, dandelions do not get the esteem they deserve as plucky immigrants that put down firm roots in a new land, vitamin-packed culinary delights, and multipurpose herbal remedies.

On this latter point, dandelion is so well-respected that it garnered the Latin name *Taraxicum officinale,* roughly the equivalent of “the official remedy for disorders.” There are many reported health benefits of dandelions, including as a liver support and for alleviating kidney and bladder stones, as well as externally as a poultice for skin boils. I don’t pretend to know every past and present medicinal use of the plant, and I strongly recommend consulting a respected herbalist, as well as your health care provider, before trying to treat yourself.

That said, the University of Maryland Medical Center has devoted an entire web page to dandelion, and it cites some peer-reviewed studies. I had previously heard that dandelion was used as an adjunct diuretic treatment, but had not found any references. However, the University of Maryland Medical Center states that:

“Preliminary animal studies suggest that dandelion may help normalize blood sugar levels and lower total cholesterol and triglycerides while raising HDL (good) cholesterol in diabetic mice. Researchers need to see if dandelion will work in people. A few animal studies also suggest that dandelion might help fight inflammation.”

I’d say that’s not bad for a weed. You can buy dried and chopped dandelion root in bulk or in capsule form at most health-food stores, or you can get it for free in your backyard, providing you don’t use lawn chemicals.

Dandelion’s common name comes from the French “(la) dent de lion,” or lion’s tooth, referring to the robust serrations along their leaves. Leaves vary widely in appearance, though, and aside from their yellow mane, not every dandelion is as leonid as the next. Apparently the French have a corner on the common-name market, because the other dandelion moniker is “pis en lit,” or “wet the bed,” as the dried root is strongly diuretic. More on that later.

Dandelion greens are best in early spring before they are done flowering. Harvesting late in the season is kind of like picking lettuce and spinach after they have bolted—edible, but not at their best. If you had a few dandelions take root in your garden last year, they are probably ready to uproot and eat right now. Sort of a new twist on the phrase “weed-and-feed.”

Young greens can be blanched and served in salad, or else boiled, but I like them best when chopped and sautéed. They go well in omelets, stir-fry, soup, casserole, or any savory dish for that matter. Fresh roots can be peeled, thinly sliced and sautéed. A real treat is dandelion crowns. The reason they flower so early is that they have fully-formed flower bud clusters tucked into the center of the root crown, whereas many other flowers bloom on new growth. After cutting off the leaves, take a paring knife and excise the crowns, which can be steamed and served with butter.

Roasted dandelion roots make the best coffee substitute I have ever tasted, and that’s saying something because I really love coffee. Scrub fresh roots and spread them out on an oven rack so they are not touching each other. You can experiment with higher settings, but I roast them at about 250 until they are crispy and dark brown throughout. Honestly I can’t say just how long it takes, somewhere between 2 and 3 hours. At any rate I always roast them when I have to be in the house anyway, and check them frequently after the two-hour mark. Grind them using a food processor or mortar and pestle. Compared to coffee, you use a bit less of the ground root per cup.

The beverage tastes dandy, but as mentioned above, it is more diuretic than coffee or black tea. I have never found this a problem, but if your morning commute frequently involves a traffic snarl, choose your breakfast drink accordingly.

I have not tried dandelion wine, a tradition that dates back centuries in Europe, and so have no firsthand experience to report, but scads of recipes can be found on the Internet. Several friends and family members have tried it, with negative and positive reviews pretty well split. I have no idea if it is personal preference or wine-making skill that is so evenly divided.

Given all the virtues of dandelions, it is amazing how much time and treasure our culture puts into eradicking them. It seems to verge on an obsession with some people, who drench their lawn with selective broadleaf herbicides like 2,4-D, dicamba and mecoprop. These all come with health risks to people, pets, non-target trees, shrubs and herbaceous plants, not to mention hefty price tags.

For those who perhaps take the whole lion connection too far and can’t sleep at night if there are dandelions lurking on the premises, I’ll share a secret to getting them out of the landscape. Setting the mower to cut at four inches high will not only get rid of most weeds, it will help prevent diseases, and will greatly reduce the need for fertilizer. But, I say we stop trying to kill the only North American lion that is not in danger of extinction, and learn to appreciate and use it more.

Paul Hetzler is the Horticulture and Natural Resources Educator for Cornell Cooperative Extension of St. Lawrence County.

For more information visit paulhetzlernature.org

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SOIL HEALTH

Take Me Out to a Tarped Field:
Learning a Small-Scale Organic Method to Reduce Tillage with Less Weeds

Reduced tillage practices take many forms. This story is part of a series featuring reduced tillage practices for organic vegetable growers on the way to greater farm sustainability. Growers at diverse scales are tackling weeds, managing rotations, and integrating cover crops while minimizing soil disturbance. Look for past and future SFQ issues to learn the practices that are helping these growers build better soils. Visit http://smallfarms.cornell.edu/projects/reduced-tillage/ or contact Ryan Maher of the Cornell SFP for more information on this project.

by Ryan Maher and Brian Caldwell

Baseball fans know tarps are critical for keeping fields clean. Heavy rain falling on the diamond can quickly spoil a game. When you’re running for cover, turn your eyes to the field and you will see a crew working in unison to unroll a tarp over two-thirds of an acre. Hopefully the delay is short, less than an hour, and fine-grained infield soils are protected. Once removed, all that water moves to grass edges, and credit to that massive grounds crew, baseball resumes without a puddle. This is just one of the luxuries of modern baseball. Small-scale organic vegetable farmers don’t have it so easy, but increasingly they too are using tarps. Growers are using tarps to manage weeds and improve soil conditions, but it’s taking longer than the line for peanuts in a 3rd inning cloudburst.

Tarping practices are taking many different forms, but the primary goal is usually the same. Organic farmers want to kill weeds. Often, beds have been prepared: tilled, shaped and fertilized as usual. But instead of planting right away, black, impermeable plastic tarps, 100 ft. long and multiple beds wide, are secured until the time is right to pull off and plant. In this way, tarps are another take on creating a “stale seed bed”. Both tillage and warmer temperatures under black plastic combine to wake up weed seeds. With adequate moisture, weeds germinate but eventually die without light. When tarps are removed weeks later, if the soil is not disturbed for planting, or perhaps just enough not to bring up new weed seeds from below, the tarp application can reduce weed pressure for the crop further into the season. Sometimes sourced as silage bunker covers, agricultural tarps are durable 6 mil plastic that can then be rolled or folded and reused multiple times over several years. The use of plastic for organic weed control is not new. Black plastic mulch is common practice. The key difference in this approach is that tarps are completely removed before planting, as opposed to being left in place and planted into. There is clearly a wave of interest among small-scale organic vegetable farmers in tarping practices. However, many questions remain. Good weed management is more complicated and tarping clearly drives other changes in soils beyond weeds, like temperature, soil biology, fertility and the flow of water. And how can tarps be used with less tillage?

Reducing tillage with tarps
Not all farmers are using tarps after their planting beds have been tilled and prepared. Sometimes tarps are being used to reduce or even substitute for tillage. We have shared the story and no-till practices of Seeds of Solidarity Farm in MA in a previous SFQ article (Fall 2016). Building off this and other farmer experience, research at Cornell University and University of Maine has been looking at the tillage-like benefits tarps provide and what kind of “legacy” they leave to subsequent crops. Standard organic farming practices rely heavily on tillage to control weeds, but also for other goals like killing cover crops, breaking down crop residue, and creating a warm, fertile seed bed for planting. Tarping, if used as a reduced tillage practice, needs to provide some or all of these tillage benefits.

Tarping has significant effects on soils. It does not solarize soils at extreme high temperatures like carefully sealed, clear, transparent plastic, but soil temperatures do rise a few degrees on average, even when a tarp is placed over straw mulch. We know that soil microbial activity responds to soil temperature, so tarps can help convert organic nitrogen into plant-available forms. Meanwhile, rainfall does not infiltrate tarped soils and instead pools on the tarp surface or sheds off the sides. This can restrict nitrate leaching and conserve otherwise mobile nutrients in place, at least for a time. While it is not totally clear how these two processes balance out, crops can inherit a flush of nitrogen fertility at planting without any soil disturbance. We have found that overwintered tarps can build up over four times more soil nitrate in spring when compared to untarped, conventionally tilled soils. They may also improve the availability of nitrogen from slow release fertility sources, like compost. Finally, in spring, since tarped beds do not absorb runoff from snow and storms, they are not waterlogged and can be ready to plant earlier than untarped beds.

Tarps can help control weeds without tillage. There are many ways to create a stale seed bed and timing is often the big challenge. Using a flame weeder, for example, requires finding the right time to burn off weeds and not young crop seedlings. Timing is still a question for tarps and weeds. How do they best fit in an intensive vegetable rotation and how long do they need to stay on? It can depend on the time of year and the type of job. Plan for at least 3 weeks but don’t expect to control all weeds or kill perennials, particularly in early spring. Tarping in summer can give more heat benefits tarps provide and what kind of “legacy” they leave to subsequent crops. Standard organic farming practices rely heavily on tillage to control weeds, but also for other goals like killing cover crops, breaking down crop residue, and creating a warm, fertile seed bed for planting. Tarping, if used as a reduced tillage practice, needs to provide some or all of these tillage benefits.

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crop. But timely tarping, where we cover beds that are otherwise not getting the attention they deserve, also keeps weeds from maturing and going to seed, reducing weed pressure over time.

Surprisingly, we have seen little, if any, decrease of surface residues under tarps. We have been tarping for May and June plantings, taking advantage of the longer tarp time windows in winter and early spring. We have laid them over winter-killed cover crops, young winter rye, and bare soil from late harvested crops. Some farmers report faster decomposition of crop residues, perhaps due to increased earthworm activity, but we have not observed this in our trials. These remaining residues can interfere with direct seeding and could harbor pathogens. So it is important to consider tarp applications in a rotation and the soil conditions that are necessary for planting the following crop. For example, choose low residue beds for direct seeding, or when residue is high, use transplants. Prepare beds beforehand, so they need only limited or no disturbance after tarp removal. Build and level beds before cover cropping and finely chop and evenly distribute cover crops or crop residue with a flail mower before tarping.

Overall, we have found tarping can substitute for tillage by producing warm, fertile seedbeds that are weed-free for planting and moist but not too wet. Often when conditions are too wet or cool for tillage, tarps can still go down or come off. Meanwhile, no heavy equipment has compacted soils and soil organic matter and structure are not disturbed.

What about labor? Laying and moving tarps does not require a field crew but does require lugging 50 to 75 pounds of plastic, plus sand bags. The process has some similarity to applying floating row covers, but there is no crop to worry about underneath. Choose less windy days or work with the wind on your back and check tarps occasionally on windy sites. They collect water and can get messy. Don’t try to use tarps that are too big. Tarps that are greater than 30 by 100 feet require more hands and displace more water. When looking to tarp multiple plantings, several smaller tarps provide more options for synchronizing with different planting dates. If possible, direct any surface water toward perennial alleyways. Tarps are attractive because they can offer timeliness, add flexibility without adding field passes, and save time when time is most valuable. Beds are ready to go when it is time for the second seeding or whenever transplants are grown out.

More to learn
There are many questions to explore. Of great interest is how to best combine tarps with cover crops. Ideally, they should complement cover crops rather than substituting for them. We need cover crop benefits, like live roots, organic matter additions and legume-fixed nitrogen. Tarps may provide a way to kill cover crops without tillage, independent of cover crop maturity. We know that tarps create warm, humid conditions, but we don’t know how they affect worms, soil microorganisms, fungi, or soil-borne disease. How reliable are tarps for degrading plant residues? What methods are critical to achieving the best weed control for the following crop? And can we use more permeable materials, like landscape fabric, and get comparable benefits with less water issues? Research and farmer experience will help us fine-tune this powerful tool. We’d like to think baseball has some lessons to share too, but we’ll have to remember to pack the poncho and peanuts and watch more carefully at the next game.

Ryan Maher (rmm325@cornell.edu) and Brian Caldwell (bac11@cornell.edu) research reduced tillage practices for organic vegetable systems at Cornell University.