SMALL FARM QUARTERLY

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

Feature Articles

CORNELL small FARMS PROGRAM

SUMMER 2016

Supplement to Country Folks

STEWARDSHIP AND NATURE

Bloom Where You're Planted: Local Farmers Purchase Conserved Land

Local farmers plan to continue the legacy of environmental conservation left by Christine Kaiser in Stowe, Vermont.

by Brenna Toman

Conservation Success Begins Locally

Cradled by the looming curves of the Green Mountains to the west and the rocky spine of the Worcester Range to the east, Stowe is a thriving community patchwork of small farms, forestland, rural residences, and mountain recreation destinations. As land use changes over time and population increases, however, degradation to vital natural resources can be misunderstood or overlooked. Innovations in land protection and responsible stewardship by farmers can help change this.

For over 70 years, the Kaiser family has owned and operated an iconic farm, nestled into the scenic Nebraska Valley in Stowe. Christine Kaiser has been producing eggs, pork, chicken, and milk here for decades. Christine is ready to retire as new owners, Andrew and Annie Paradee, start a new farm tradition on the land.

Christine and the Paradees had help from Vermont Land Trust and Stowe Land Trust, who raised over $372,000 to purchase a conservation easement and facilitated the sale of the farm at its lower agricultural value. The new operation will offer vegetables, pork, and eggs available for on-farm purchase by community members and improve the woods for sugaring.

The new farmers, Andrew and Annie Paradee.

Photo by Stowe Land Trust

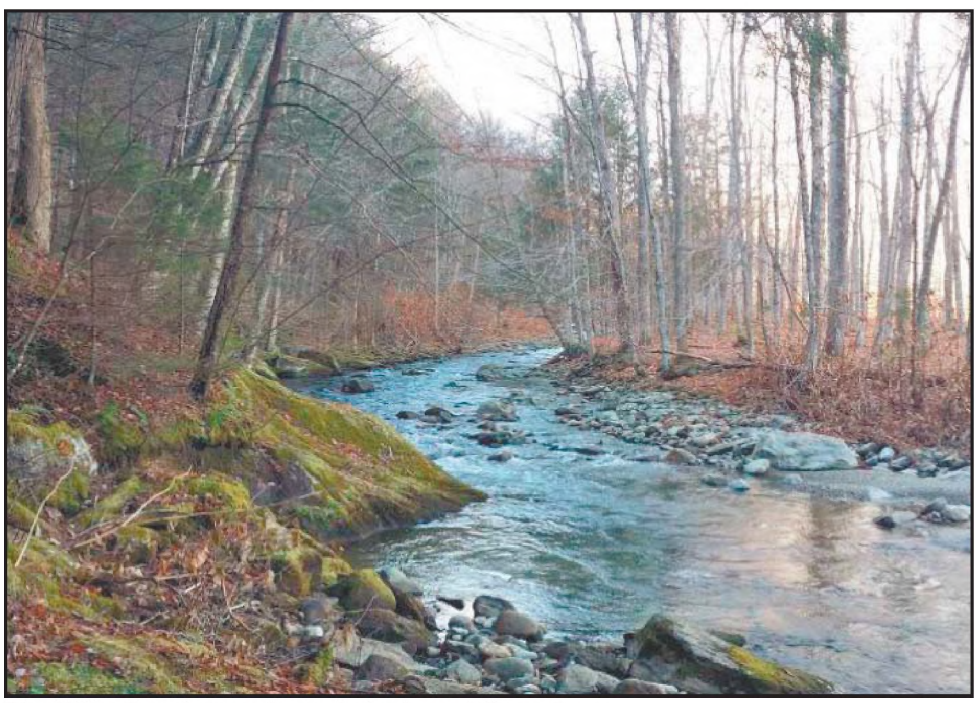
"It was important for Christine to know who was buying the farm," Annie Paradee pointed out. "It was a hard process and she persevered to make sure it got preserved." Stowe Land Trust discovered that Christine wanted to sell her farm through a post on Front Porch Forum and opened a conversation with her about conserving the land. Meanwhile, Christine approached the Paradees, a local couple interested in starting a farm of their own. She wanted to make sure the land would be passed down to local farmers with a vigorous conservation plan and existing ties within the community. After many months of legal talks and fundraising for the conservation easement, the farm was officially sold on April 29th.

A Legacy of Sustainable Farming

"It is still hard to believe that the farm is really ours now," said Andrew, watching their dog, Waffles, run and roll excitedly in the field. The Paradees' work on the farm has already begun. A quarter of an acre has been tilled for vegetables, and they plan on planting up to half an acre. The Paradees want to rotationally graze all of their animals, so they have started to construct a mobile chicken coop on an old hay wagon. The new farmers also plan to continue Christine's legacy of environmental conservation.

"We want to focus on maintaining and improving rather than using the land," said Annie. "We have a big responsibility to take care of it." Four solar panels stand tall, visible from the road before the farm is. The Paradees plan to use this renewable energy to power greenhouses so they can extend the growing season, as well as to light their home and other buildings. They plan to use a composted bedded pack to minimize nutrient runoff and create fertile soil for their hay and pasture lands. Their blend of conventional and heritage breed animals will be pastured and fed organic feed only.

Explaining the choice to support more heritage breed livestock and crops, Annie quoted Barbara Kingsolver, "You can't save the whales by eating whales, but paradoxically, you can help save rare, domesticated foods by eating them. They're kept alive by gardeners who have a taste for them, and farmers who know they'll be able to sell them."



The Miller Brook runs through the Long Winter Farm.

Photo by Vermont Land Trust

Innovative Water Quality Management

With community members concerned about sediment and nutrient loads from local farms, roadways, and other development draining into Stowe's waterways and Lake Champlain, a focus on river stewardship is imperative for this farm conservation project. The property contains 12 acres and 3200 feet of frontage on the Miller Brook, an especially important inlet to the Little River and consequently, Lake Champlain. The new farm plan for the property maps out how this stream will be conserved forever.

Riverside property has long been sought after for businesses and homeowners alike. As waterfront investments increased, towns and landowners built barriers, berms, and armor that protect the surrounding development from flooding and erosion. Over time, however, this method has created massive flooding and erosion events downstream.

Rivers are wiggly, meandering creatures at heart. Water moves at different speeds on either side of the river, and curves tend to become curvier as sediment is picked up on the inside curve and deposited on the outside curve. When left alone, the river will eventually form many 'C' shapes. The energy of the water can dissipate around this curve, and it can access the broader floodplain in a high water event. Once the 'C' gets closer to an 'O' shape, it is easier for the water to run in a straight line again, cutting through the top and bottom of the curve. This cycle keeps the balance between land and river in equilibrium.

When the natural curving of the river is restricted, the energy has nowhere to dissipate. The stream surges on, maintaining its energy until it eventually causes destruction somewhere downstream. This also reduces the possibility of soil creation, as fast moving water carries sediment away and into large basins like Lake Champlain instead of settling out in fertile floodplains.

The conservation easement, secured by Stowe Land Trust and Vermont Land Trust, will ensure that at least 50 feet on either side of the Miller Brook will remain forested and the river channel will be allowed to meander

See Bloom *page 3*

Cornell Small Farms Program Update

New Manual Available

The Cornell Small Farms Program is pleased to announce the new Baskets to Pallets Teaching Manual (1st Edition). The 16 lesson plans in the Manual are intended for an audience of small and mid-scale farmers in New York and the Northeast, who have been primarily direct marketing, but who are seeking to explore wholesale markets — specifically groceries, food hubs, restaurants or cooperatives. The Manual contains a series of presentations, discussions, activities, videos and other teaching resources that an agricultural service provider can adapt and tailor to local farmer audiences. The Manual incorporates two Case Study Farms, based on an actual produce and livestock farm currently operating in New York. Over the course of the Training, various Units examine the two farms from different angles, enabling trainees to understand real-life management, production, and promotion strategies through the lens of 'wholesale' marketing.

The lesson plans may be taught in sequence over the course of a two-day training, or excerpted for a series of shorter workshops. To access the Manual, fill out the user request form at http://smallfarms.cornell.edu/projects/wholesale. The Baskets to Pallets Teaching Manual was produced in collaboration with Cornell Cooperative Extension and Northeast SARE. For more information, contact Project Manager Violet Stone at vws7@cornell.edu or 607-255-9227.

Summer Field Day on Reduced Tillage in Organic Vegetables

Our Cornell Reduced Tillage Team is offering an in-depth field tour of strategies to improve soil health in organic vegetables. Our tour will highlight current research on integrating cover crops and reducing tillage for farms at multiple scales. We will demonstrate strip tillage for small-scale farmers and review impacts of new mulching and covering cropping techniques on weeds and crops. We will also have an in-field demonstration of measuring soil health impacts after different practices. Learn more about how these practices may impact pest or disease challenges, such as Swede Midge.

Date: August 17, 2016 from 4 to 7 p.m.
Location: Freeville Organic Research Farm at the HC Thompson Vegetable Research Farm, 133 Fall Creek Road, Freeville NY.
Register: This is a free event. For registration information, contact Ryan Maher at rmm325@cornell.edu. The event is sponsored by NOFA-NY.

For more details on our Reduced Tillage project, visit our projects page: http://smallfarms.cornell.edu/projects/

Grants Awarded to New York State Agricultural Experimental Station

The New York State Agricultural Experimental Station received four grants to support research in organic grains, malting barley production, and apple varieties for hard cider.

The grant comes from $1.1 million dedicated to projects that strengthen the research, promotion, and development of New York State's agriculture industry.

Cornell University College of Agriculture and Life Sciences Associate Dean and Goichman Family Director of the New York State Agricultural Experiment Station Dr. Susan K. Brown said, "We greatly appreciate this generous investment, which helps support the College of Agriculture and Life Science's (CALS) and its New York State Agricultural Experiment Station's (NYSAES) commitment to deliver outstanding science and outreach essential to the expanding brewing and farm-based beverage industry in New York State. Our partnership with growers, producers, and entrepreneurs, fosters economic development, and expands the diversity and quality of New York beverages available to consumers."

More information can be found at http://tinyurl.com/AgGrants

Message from the Editor

Summer is upon the farm and this always means sweaty long days where we often push our bodies and minds to their limit; sometimes not leaving the field until the sun has slipped down over the horizon. We are busy as farmers, and there never seems to be enough time in the day.

I've been reflecting on this recently – these notions of being "so busy" and not having "enough time" to get the list of tasks completed. In many ways these statements, which I say myself frequently and hear often from other farmers, are true. Yet we also are the victims of our own creation. We can choose to feel overwhelmed and busy, yet we can also choose to take time off and enjoy ourselves, too.

This year on our farm my wife and I have made a pact to be okay with the list not being done, and to be sure to carve our time for swimming, hiking, kayaking, and picnicking together with our dogs. As a farmer friend recently reminded me, "The farmers are the farm's greatest asset."

Just like our crops and animals, we need to be taken care of, too. Here's to a productive (and relaxing) summer for you and yours.

— Steve

Bloom *from page 2*

within its natural corridor without interference. Luckily, Christine's past participation in the USDA's Conservation Reserve Enhancement Program has already allowed a forested river corridor to generate. The Paradees are excited to keep up the buffer.

"We can't change the natural stabilizers of the river," explains Annie Paradee, "it has to go where it has to go." The continued forestation of the river's 'meander belt' will do far more than allow the stream to curve. Wildlife is drawn to native vegetation and the vertical diversity of a land gone wild. Roots will soak up water, nitrogen, and phosphorus, filtering the runoff water from the surrounding farm and watershed, while reducing the risk of soil erosion in events of high water. Continuing to protect watersheds, streams, and rivers will allow many rivers that are currently unstable to settle into equilibrium.

The conservation of the Long Winter Farm is a significant step forward for Stowe towards working with — not armoring against — the river that runs through it. The Paradees will continue to use responsible and sustainable practices to leave the land even better than they found it.

Brenna Toman is the Stewardship & Outreach Coordinator at Stowe Land Trust and a VHCB AmeriCorps Member. She can be reached at brenna@stowelandtrust.org or at 802-253-7221.

The Miller Brook runs through the Long Winter Farm.
Photo by Vermont Land Trust

SMALL FARM QUARTERLY - SUMMER 2016

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Photo by Becca Rimmel

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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Small Farm 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 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.

SOCIAL STRUCTURES

DIY Farm Fixes: Conflict

by Claudia Kenny

As farmers we are masters of the quick fix. We are good at mending fences on the fly and cobbling together a piece of broken equipment to finish the job before the day ends. Farm conflict, whether with family members, coworkers, employees, or even neighbors, is like any other problem we solve. Having a plan, some awareness, and a few tools can help out with the short-term fixes you need to get through the day.

Conflict is a normal part of any farm business. Conflicts come often when people have different values, goals, and perspectives. Conflict can be a positive force on the farm, if we manage it well. Conflict can create energy, focus and change. It can also cause us to revisit a decision and consider it more carefully. Conflict can help us understand what is important to us and to others. The way we manage conflict means the difference between the conflict becoming a negative or positive experience.

Fight, Flight, Freeze

Most of us are not at our best during a conflict. We say things we don't really mean, make accusations, and refuse to hear what the other person is saying. We get locked in a narrow mindset feeling like one way is the right way and the only way. There is a biological reason for this "my way or the highway" attitude!

According to neuroscience, we actually don't have our full capacity to see multiple perspectives or make complex decisions, when we are "triggered", or in fight, flight, freeze mode. When we are "triggered," stress hormones flood our body and then neural pathways to the prefrontal cortex, shut down. The prefrontal cortex is the area of the brain that helps us sort conflicting thoughts and right from wrong. This is a big deal! We feel tense, irritated and unable to stop thinking in a loop.

Below are a few techniques to help you manage conflict on the farm:

1. Notice when you are triggered and take a break

Noticing you are triggered helps you begin to shift from reactivity to managing your conflicts productively. **Cool off and do nothing for a little while.**

Author Claudia Kenny

Make a practice of noticing when you are triggered and in "fight, flight or freeze". Name it. Just noticing can help you shift from being triggered. Since we don't have access to our full capacity when we a triggered, building awareness will help you know when to take a break during a conflict instead of engaging.

2. Reflect

Reflect on the situation. Review your observations. *What happened, what did you see or hear, what words were said?* (think of what a video camera can see or record — just the observables). We often mix observations with evaluations and you will want to try to separate evaluations from your observations.

Evaluative Observation: "She angrily dropped her hoe and stormed up to the barn."

Observation: "She dropped her hoe and went to the barn."

Reflect on self. *What feelings do we experience as a result of the data we observe?* Usually there are a range of feelings. "I feel angry and disappointed and frustrated and most of all just really tired of the tension." *What are the needs or values that relate to those feelings?* For instance, if you are feeling angry it is easy to think it is because someone did something that really pissed you off. But we are the only ones who create our response. No one can really make us angry. What is it that you were really wanting, is there a value you care about? (ex. if you are really tired of the tension you might really value and want ease and peace etc.).

Reflect on the other. *How might the other person be feeling in relation to the observable data? What are the needs and values they might be holding that relate to those feelings?* Try to put yourself in their shoes and understand the situation from their perspective.

3. Talk about it

Sometimes we learn something about ourselves in the reflective process and don't need to talk about anything. If you decide a conversation is the next step here are a few tips.

Listen first. Focus carefully on what is said and reflect back the information and opinions. You don't have to remember every detail but try to get the gist of the story. Use their words and phrasing rather than your own interpretation. You don't have to agree with what they are saying. Check to find out if you are hearing them in the way they want to be heard.

Avoid reflecting back judgments. For example "Jon is a jerk" might be reflected back as "you are thinking Jon is a jerk." If the story is very long interrupt and reflect back in chunks rather than at the end. Interrupt by saying something like, "Let me see if I am understanding what you are saying so far is..."

Then check to see if you understand their feelings. Asking instead of telling someone how they feel is most effective. "So I am wondering if this is really frustrating for you?" If your guess is wrong the person will give you more information. "I am not frustrated, I am mad."

Reflect back what is most important to the person. Make a guess? "So are you really wanting _____?" (ex: things to run efficiently on the farm?)

When you feel the person has said everything that they wanted to be heard about see if they are willing to hear about your experience.

Share your experience. Share your observations, and the feelings that came up for you. Share what you care about now in relation to the conflict and what is most important to you? Focus on the problem or the issue and not the person.

4. Find Solutions

Make requests (not demands); accept a "NO" and be prepared with a second request. If you are not really willing to hear a no you are most likely making a demand and not a request.

You may want to propose "experiments" to test potential solutions.

5. Know when to get help

If you try these things and realize you are in over your head with a situation consider "borrowing" the skills of a mediator just in the same way you might "borrow" the skills of an accountant to help you figure out how to manage a tight financial spell. Mediators are third party neutrals trained in communication who can offer individuals conflict coaching or can offer two or more parties mediation.

Even the best fences need maintenance and repairs. If a broken fence is not repaired there are going to be problems. It is not the broken fence that determines the outcome but how quickly we notice and how we choose to respond. Same with our relationships to people and conflict. When we notice a conflict, and how we choose to respond or manage a conflict, makes a difference to the outcome.

Claudia Kenny has managed Little Seed Gardens with her husband in Columbia County, NY since 1995. Learning to manage conflict constructively has been vital to their farm's success which is dependent on webs of family, labor, community and business relationships. She has her Masters Degree in Conflict Analysis and Engagement and is currently Statewide Director of New York State Agricultural Mediation Program (NYSAMP). NYSAMP offers confidential, low or no cost mediation to the Agriculture community.

SOIL HEALTH

A Vegetable Farm Covered in Green

Blue Heron Farm uses grass strips and cover crops to improve soils, increase productivity

By Brian Caldwell

The arrangement of vegetable fields into a bed layout with permanent growing areas and separate wheeltracks (alleys) has several advantages. In contrast to systems in which beds are re-formed every year, compaction from tractor tires is confined to the non-cropped area. Beds can be managed individually by crop which simplifies planning. The beds may also be raised compared to the alleys if necessary, allowing them to dry out earlier for timely planting in spring.

These advantages can be augmented by leaving the alleys in permanent grass sod. Such grass strips between the beds allow workers to be in a clean area without mud, provide beneficial insect habitat, help dry the growing beds out earlier by transpiring water, reduce the tilled area, and build soil carbon. However, the grass strips need to be managed to prevent too much growth and consequent competition with the cash crops and the buildup of perennial weeds. These negative aspects have thwarted many organic vegetable farmers who have attempted to implement permanent beds with grass strips. Blue Heron Farm in Lodi, NY is one of the few who succeed with this approach. How do they do it?

First, some background. Lou Johns and Robin Ostfeld started Blue Heron Farm near Olympia, WA in 1981. They bought a semi-abandoned 150 acre farm, mostly wooded, and moved to Lodi, NY in 1986. They started over in their New York location where the soil was fairly productive but had drainage issues. The heavy traffic of vegetable production took its toll over the first several seasons. Compaction was an issue due to high clay content soils and shallow topsoil layer and likely to get worse. Lou and Robin had been thinking about a system of permanent beds with grass alleys, and perhaps this was a good opportunity to try it out. They had read and studied about the soil, and knew that good soil stewardship was key to productivity on their certified organic farm. Experts and other farmers, however, were not optimistic about the grass strip approach.

Plates welded onto the front of the rototiller keep stones off the grass strips.

By 1995 Lou and Robin were ready to embark on a radical idea. At this point they were growing about 12 acres of cash and cover crops. They laid out one of the three main crop fields in a pattern of 70" wide beds separated by strips just wide enough for the tractor tires. The "grass" strips were simply left to grow whatever grasses and weeds emerged. Beds were flat, not raised, because managing the sides of raised beds was problematical. They had their tractor axles extended to straddle such wide beds, which equaled the width tilled by their rototiller. And thus the 5-year process of converting the whole farm began.

Results were good enough to continue, though it took 10 years before their soils reached their full potential. In those first years of permanent beds, they encountered difficulty keeping the bed edges even with the sod strips. Uneven edges and stones thrown into the strips made mowing difficult, and ruined many lawnmowers. They welded plates onto their tiller to keep stones and soil in, and added spider gangs from Lilliston cultivator units to smooth the soil gently back toward the bed during tillage. (The spider gangs have since been removed and additional shielding has been added to the end plates of the tiller. These now contain all the soil and stones worked by the tiller in the bed.) Similar modifications were made to cultivators to maintain the bed edges. Also over the years, they widened the sod strips substantially. This allowed use of a riding mower on the widest ones, which was most useful in spring when the grass grew rapidly.

Permanent beds with grass strips at Blue Heron Farm.

By 2010, roughly 1/3 of each field was taken up by the grass strips. Lou and Robin felt that the benefits of the strips and the high productivity of the beds more than justified that apparent "loss" of growing area. The permanent beds were easy to track for crop rotation purposes, which was important given the high diversity of crops that Blue Heron Farm grew, often with multiple planting dates.

It is hard to know which aspects are fundamental for the success of this integrated system. Certainly, the equipment modifications enabling management of bed edges and weeds were critical. The farm uses overhead irrigation, so sod strips receive water as well as the crop beds — thus sod roots are not robbing moisture from the beds. Compost applications to the beds are fairly high. Nothing is applied to the strips, but the sod's roots probably scavenge nutrients from the beds. It is possible that the wide 70" beds are optimal to prevent sod roots from competing much with cash crops. When the strips are mown, clippings are usually blown into the beds, capturing nutrients and organic matter in the beds. Wood chips are present in the compost applied to the beds, which has likely improved water-holding capacity over time. Cover crops are used heavily, and beds are put into a grass/legume fallow every 10 years or so. All of these aspects may contribute to good results from this system.

The downsides of this system are the time required to mow the grass strips, and also the high level of skill needed to till and prepare the beds. Lou does all of the prep work. Over the years they upgraded to 4-wheel drive tractors which track straighter than 2-wheel. They maintain multiple mowers, and in May, it is often hard to keep up with the mowing. It is also possible that during very dry weather, the sod strips may reduce overall moisture in the fields, increasing the need for irrigation. These negative management factors are counterbalanced by the ease of working in the fields — plenty of room for workers, a clean area to put boxes and bunches of produce ready for packing, and no slogging through mud to move irrigation pipe. In very wet periods, nearby sod roots may actually help beds dry out more quickly.

However, the overriding factor may be persistence. Lou says, "Recognize the benefit of being persistent and focused on your goals. Don't give up too soon, but do stop and look at what you are doing and decide if it is worth it to continue on this path. Give yourself enough time to carry out your goals. Good results take time." Lou and Robin were convinced that their approach would yield rewards after they worked out the kinks.

A similar mentality governs crop practices on their farm. Cover crops are used extensively and with the sod strips, the soil is covered by green growing plants for almost all of the year. Two practices set them apart. Blue Heron Farm grows many July-planted storage crops including carrots and brassicas. These usually follow overwintered cover crops. Often the problem in this situation is that the cover crops reach maturity and threaten to set seed before the cash crops are ready to be planted. Lou and Robin devised a novel practice of mowing to solve this problem and get the most growth out of their cover crops. Cover crops (often a mix of wheat, vetch, and Austrian winter peas) are allowed to get 3' tall, typically in late May, then flail mowed at a height of 1'. The regrowth is dominated by legumes and is again mowed about a foot high.

The second regrowth is again dominated by the legumes. When it gets to a foot or so, it is mowed close to the soil level. All of the residue is then tilled in roughly. After a week or so, it is tilled again for July transplants. Timing can be altered a bit to allow for the extra tillage needed to produce a fine seedbed for root crops. Using this approach, cover crops are growing, covering the soil, fixing nitrogen and adding organic matter until shortly before planting. Bare fallow periods are eliminated.

Another remarkable practice is how Blue Heron Farm manages asparagus. For many organic asparagus growers, weeds are a constant struggle. Blue Heron overcomes this problem, again with cover crops.

In early spring before emergence if weather allows, the asparagus beds are tilled lightly to a depth of about 3". This does not harm the crop. Harvest proceeds normally. After the harvest is over, beds are again tilled shallowly, killing weeds but again not harming the asparagus crowns. The next day, a cover crop mix of soybeans, hairy vetch, field peas, and buckwheat is drilled to fill the beds. This mix, with asparagus ferns growing above, is left for the rest of the season. When the asparagus ferns yellow, the entire mass is flail mowed. It is roughly tilled in if time allows. Similar to their novel cover crop mowing regime, this process controls weeds, grows biomass, adds some fixed legume nitrogen, and protects the soil over winter.

Lou and Robin created a productive and profitable vegetable production system for Blue Heron Farm. They put together the pieces within a vision of improving soil health and managing their challenging soil moisture regime. Part of this was reducing tillage only to crop bed areas while maintaining soil-enhancing sod strips throughout their fields. Field traffic never compacts the beds. Beneficial insects live in the strips right next to the crops. They manage cover crops intensively and a high percentage of their land is covered in winter. All these practices result in a beautiful, viable, and sustainable farm.

Lush cover crops at Blue Heron Farm.

Reduced tillage takes many forms. This story is the 4th in a series featuring organic vegetable growers that have transitioned to reduced tillage systems toward greater farm sustainability. Experienced growers at diverse scales are developing reduced tillage strategies for tackling weeds, managing rotations and cover crops, and incorporating amendments. Look for past and future SFQ issues to learn the practices that are helping these growers build better soils. Contact Ryan Maher of the Cornell Small Farms Program for more information on this project: ryan.maher@cornell.edu

LIVESTOCK AND POULTRY

Pig Production Grows Quickly

by Jo E. Prout

Greene County farmer Bitta Albright is entering her fourth season in pig production, after starting with only two to raise for herself.

"They're very addictive. You can't just have one pig," she said. "We enjoy it. Oh, my gosh! I started with two for meat for my freezer. We got one a boyfriend. She had 13 piglets."

Albright's husband, Bill, is retiring from dairy farming and now keeps beef cattle, who share pasture with Bitta Albright's pigs.

"I've got six acres I pasture my pigs on," she said. "They're not too aggressive with the cows. They're very mellow-natured. They pasture well together. The pigs will eat the weeds the cows won't eat." Her pigs eat poison oak, horse nettles, and poison ivy, she said.

A row of pigs lines up for a tasty grain treat at Albright's Dairy Farm in Climax, New York.

"They rut the land — it aerates the land," she said. "They will go out in the wild and make their own nests, and farrow out there. They have six to 14 piglets in a litter. The gestation is three months."

Albright's pigs also have access to fenced woodland, a spring-fed pond, and barn shelter.

"They're friendly, and smarter than a dog. Good fencing is the key, and keeping them well fed, or they'll be gone!" she said. "You fool them once. That's it."

Describing the pigs as self-regulating, Albright said her pigs farrowed outdoors last winter during the coldest February in years, choosing their own place rather than the cozy barn.

"They eat hay, pasture grass, and grain," she said. "They have excellent night vision. They run out in the woods. The woods are fenced with electric to keep the pigs in, and predators out.

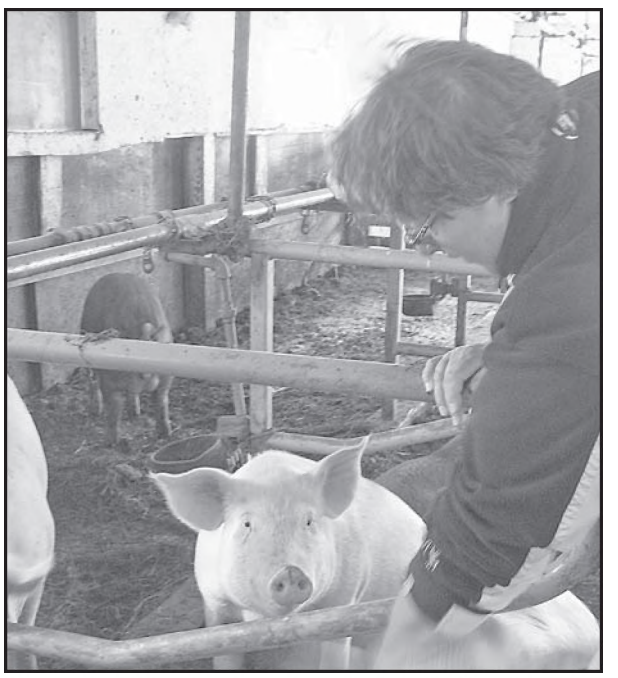
"You have to set it up right," she said. "We have set it up to work for us."

"Water is the key to every animal. With fresh water, they will grow well," Albright said. "A pig will drink five to 10 gallons of water in the summer."

In six months, Albright's pigs will be 250-pound animals. Her large-animal veterinarian visits twice a month, but Albright's pigs rarely need restraint — she feeds some grain to the animal being treated, gives him a belly scratch until he is comfortable, then the vet is able to examine the pig, she said.

"We are small farmers. If you have only a few animals, they have to be friendly. We're too old to chase them!" Albright said. "They must be friendly so you can handle them, and check their hooves and teeth."

"If they're not friendly, they're going down the road," she said of sending a pig to the butcher.



Bitta Albright scratches her sheltered pigs, that are now ready for market.

All photos by Jo E. Prout

Choosing breeds

"There are no micro pigs," she said. She raises Yorkshire and Hampshire crosses, and the heritage breeds, Red Wattle and Berkshire pigs.

"The Berkshire is known for dark meat and marbling," she said. "The Yorkshire is the number-one breeder in the country for commercial for bacon — it's longer. The Hampshire is known for ham."

The Red Wattles are known for their meat's fine texture and for their fast growth, she said.

"I like to cross breed them," Albright said. "It gets you a little stronger animal, and gives you a healthy, strong piglet that grows in six months — you get more for your money."

Bitta and Bill Albright raise pigs on six fenced acres in Greene County, New York, and sell them from the farm and at local farmers' markets.

Types of production

Sows can have one or two litters per year, but Albright generally breeds hers once.

"Every sow is different," she said.

Sales of her pig products are seasonal, she said. Piglets are popular in the spring, when small farmers buy them from her and take them home to raise for six to eight months, before putting them in their freezers. She sells a dozen or more piglets each year at market price, generally at $100 per piglet.

Customers also purchase fully-grown pigs from Albright, and order custom butchering included in the price. A pig will take up four square feet in a freezer, she said.

"Not everyone wants to breed pigs," she said. "For some, it's easier to buy piglets and raise what you need."

Her pigs will be between 100 and 175 pounds hanging weight after they are butchered, she said. She does not let them grow too large, or they would have too much fat on them, she said.

Her pigs are given no hormones, medications, or vaccines.

"Mine are pastured," she said. "It makes for a very hardy animal."

"I use a USDA-certified butcher I found on the USDA website," Albright said. "Always get someone who is recommended. Ask fellow farmers."

Albright drives her pigs to a butcher in Stanford, NY.

"It tastes different. It's just awesome," she said of her own products. The bacon is leaner than bacon bought in grocery stores, she said. Customers can order jowl bacon, regular bacon, Irish country bacon, or Canadian bacon. She does not use nitrate-smoked processes.

"It has less salt, and they get a better flavor,"

See Pig *page 8*

YOUTH PAGE

A Frosty Night from a Young Farmer's Perspective

Every spring, all farmers struggle with frost and jump through hoops trying to keep their farm safe; and that's exactly what this small, family run produce farm in New Jersey did.

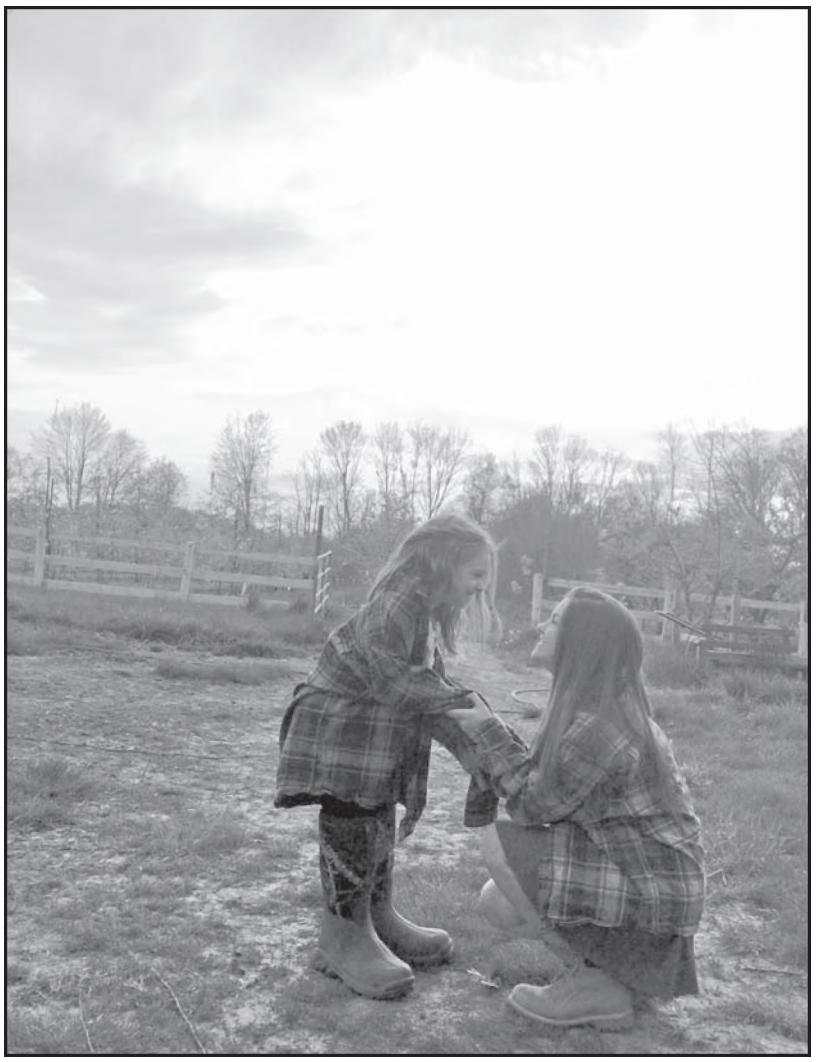
by Lianna Bonacorsi

Just about eight years ago, my family had outgrown our tiny house in Trenton, NJ, with the birth of my little sister Nora, the fifth child. My father had grown up on a muck farm in Oswego, NY, and my mother in a small town just outside of Albany, NY. They had always dreamt of owning a fruit farm, and eight years ago their dreams became reality in Hunterdon County, NJ. It was a change for all of us; my older sisters (ages 12 and 13) were switching from an urban middle school to a rural, very small, grade K-8 school that both my younger brother (age 5) and I (age 8) also attended. This was the beginning of a real family adventure, one that would last forever and make memories that would never be forgotten.

Of all the challenges we've had to face, weather might just have been our most difficult. Not just hurricanes Sandy and Irene, or the insane winters with four feet of snow overnight, but the frost. All farmers know and understand the all too real threat of frost, myself included. Every spring, we all know to expect some damage on our blossoms, whether it be to peach or strawberry, it happens. However, this year farmers have been noticing some odd and unfortunate numbers.

Recently New Jersey residents have enjoyed some fantastic working weather: nice high 70s, even some days in the low 80s. On the other hand, we've had some cold fronts come through where nights got into the very low 20s. There was one night in particular when every farmer's favorite weather source was finally in agreement with one fact: it was going to be cold, cold enough for a 90% kill on our already first bloom buds, which is 21 degrees for peaches, inconveniently one of our larger crops. This frost started as an advection frost and later in the night became a radiant frost. An advection frost usually occurs on a windy night, where there's no inversion, and the temperature is less than 32 degrees Fahrenheit. A radiant frost would usually occur when it's calm and clear out; there is inversion, and the temperature is greater than 32 degrees Fahrenheit up higher, and a frost or freeze at the ground level.

Allow me to set the scene of our dinner table the night before the frost: My father at the head of the table sipping his homemade wine, discussing all chances of saving our fruit with my mother, also enjoying wine. My siblings and I sit quietly eating our venison, salad, and applesauce, my little sister only piping in to suggest that we lure the deer to our field with corn in hopes that their body heat would raise the temperature a few degrees. While she is quite the comedian and pretty cute, we were still all stressed out. While looking at the pros and cons of our options, our local fruit agent had advised us to burn fires, and to, "not be a boy scout about it", in his words. If we had prepared more in advance, we could have considered the variety of chemical options for protecting our fruit, but because we're a smaller farm and only run by our family, they were not taken into consideration at the dinner table that night.



Lianna, age 15, and her little sister Nora, age 8, pose for a picture in their peach orchard at sunset.

Photo by Lianna Bonacorsi

My parents had never started fires to save our fruit before; they never felt it necessary before that night. The state of New Jersey had already announced it was permitting farmers controlled open burning for a few nights that week due to the low temperatures. It was really only that day that we would be lighting fires every ten feet or so throughout one of our two orchards.

When I got home from school that day, my mother and I began using our tractors to bring wood out to the field, making little stacks of seven or eight pieces, which we did until the sun went down. Meanwhile, my father worked on fixing three huge fans, strapping them to our tractor, and getting the tractor plus a generator into the upper field where we didn't plan on lighting fires that night. We knew it wouldn't save our whole upper field, but we had to focus on just one.

That night was comprised of lots of caffeinated tea, heavy coats, my little sister and I crumpling paper to start fires, and my parents up all night keeping the fires lit. It was hard work, loading wood onto tractors endlessly; there's no fun way to phrase staying up all night in the low 20-degree weather working. Not to mention, my father had work the next morning as he's a chemist working five days a week from 8 a.m. till 5 p.m., and my mother had volunteered to help with a fundraiser at the local school the next morning. Their dedication and hard work is really something. The entire time I was preparing for the cold night, all I could think about was our warm, juicy peaches in July; so ripe that they just wanted to fall into your hands from the tree, and when you bit into them their intense flavor could make you cry from joy as the delicious juice erupted all over your face and hands. Losing our peaches would've been a big disappoint for both us and our customers, as our peaches are definitely a highlight to the farming season.

While I'm not sure that all of that time and hard work actually did save our peaches, farming has once again has taught me a lesson. Everything I've learned from just one night is astonishing, about the difference between advection and radiant frosts, solutions for different frosts, the temperatures for 10% and 90% kill of different stages of blossoms, controlled open burning for farmers that New Jersey allows, and so much more. Lucky us, I'm certain we'll face more frost in years to come.

Lianna Bonacorsi is a high school student from Hunterdon County, NJ; devoted to her family, farm (bonacorsi family farm), art, and writing. She can be reached at: liannalovespopcorn@gmail.com.

Pig *from page 7*

Albright said. "I eat it myself. It's delicious."

Grocery stores can add solutions to meat for better coloring and flavoring, she said.

"Read the label on pork chops. It's not all pork," she said. "There's no pork chop that looks so pink and juicy that you buy in the store." Cooking store-bought meat causes it to shrink down, she said.

"Our stuff doesn't shrink. You get what you pay for," Albright said. "People who bought my meat have come back."

"Locally grown pigs — farm to table," said her husband, Bill. He takes care of the beef side of their farm, while Bitta sells directly to customers both from their farm and at farmer's markets. She frequents the closest to her, in Coxsackie, each Wednesday.

"If you're looking to be a homesteader, this is the best thing to do. Pigs till the land, eat weeds, and forage the woods," she said. "Once you're in a routine, they're very easy to take care of."

She makes sure her pastured pigs are friendly, scratching them and talking to them as she gives them grain.

"It's all how you treat your animals," she said.

Jo E. Prout is an award-winning journalist who resides in Greene County, New York

For more information, find Albright's Farm on Facebook at https://www.facebook.com/Albrights-Farm-321728647994894/

STEWARDSHIP AND NATURE

Climate Smart Farming

How is the Changing Climate Affecting Your Farm?

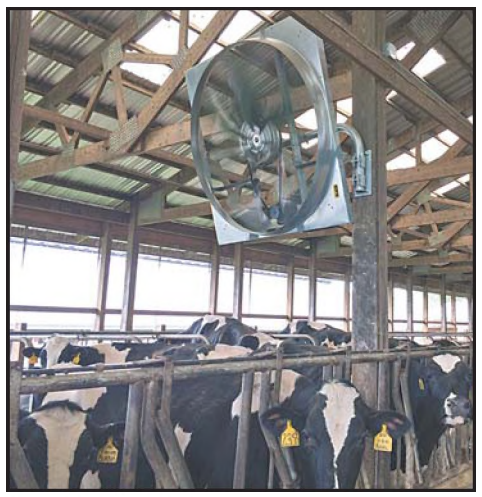
by Jonathan Lambert

As many are certainly aware, the earth's climate and weather are always in flux. However, the rate of change in climate conditions and severe weather events we are seeing today is far beyond what previous generations have had to face, and is having a noticeable impact on farmers in the Northeast. Challenges such as heavy rainfall, summer heat stress, short term drought, and heightened pest and weed pressures are becoming more prevalent due to climate change, putting farmers in the region under increasing pressure.

Many farmers are already taking the initiative to increase their resilience to extreme weather and increasing energy costs, and some are beginning to capitalize on opportunities that climate change may bring. Still, making decisions based on future scenarios is a complex endeavor, and is muddled even more by trying to discern between long-term climate shifts and possibly normal weather variability. It is a necessary step however, as farmers will have to make changes to keep ahead of the trends predicted for the Northeast over the coming decades. Many farmers are already experimenting with new crops and crop varieties, for example, as temperatures rise and growing seasons lengthen, and some are investing in forms of renewable energy such as solar and biogas.

Flooded NY corn field.

Photo by George Shinn



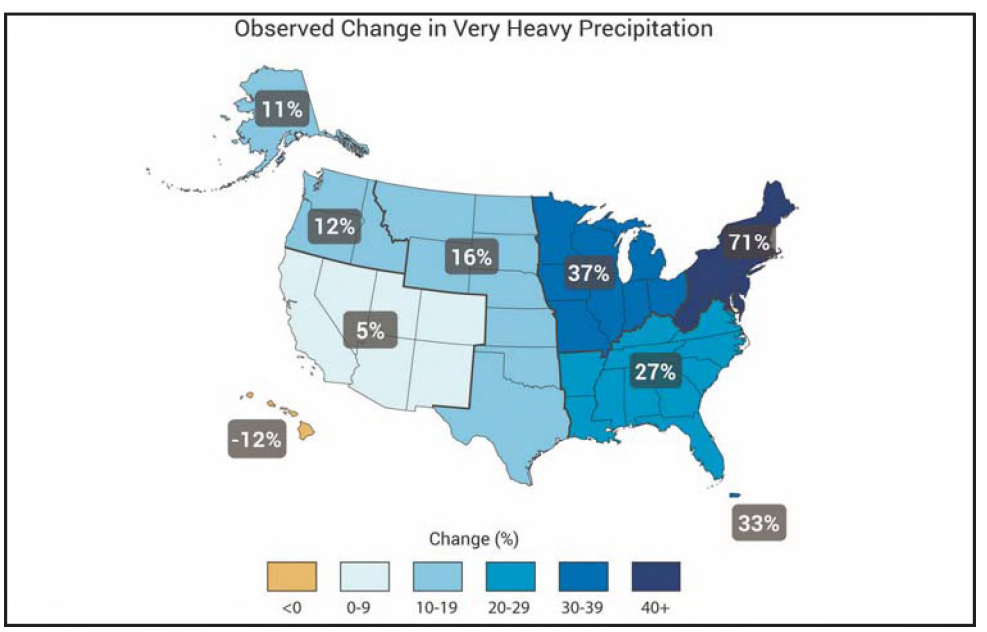
Cow Cooling Fans
Photo by Allison Chatrchyan

What We Can Expect Now and in the Future

As a region, we are already experiencing warming and increases in the amount and severity of extreme weather. Average temperatures across the Northeast have risen by over 2°F since 1970, and average winter temperatures are 4°F warmer. Extreme rainfall events (>2 inches in 48 hours) have increased by 71%, and yearly rainfall averages in the region have increased by 3.3 inches in the past 100 years. These changes are forecast to continue to be exacerbated by climate change, with yearly average temperatures from 3 to 5.5 degrees warmer by 2050, precipitation coming in more intense bursts with longer gaps in between, and the threat of up to a foot of sea level rise in coastal regions in the next 3 decades.

For agriculture, these changes will result in more flooding, intermittent drought, heat stress, increases in diseases, pests, and weeds, and even increased freeze risk and damage. It is important to remember that the severity of these future projections depends on the amount of heat trapping gases emitted throughout the world, including by farms here in the Northeast. Through mitigation actions, the agricultural industry can contribute to lessening climate change by reducing greenhouse gas emissions and sequestering carbon (for example, by incorporating plant material in soils). Agriculture can also adapt to some of the inevitable impacts, and some farmers are already doing so, which can be seen throughout the region. Winter cover crops are becoming more popular, the proportion of no-till/low-till fields is increasing, and more farms are turning to solar, wind, and biogas to supplement their energy needs. Many farmers are also seizing opportunities that exist in longer and warmer growing seasons as well by planting longer season crops and even experimenting with varieties of peaches, melons, and European wine grapes that might not have grown in our area 30 years ago.

In order to make these changes, however, farmers need more localized information on the impacts and challenges posed by climate change to their operations, as well as possible solutions. If not already being used, farmers may want to consider the following recommendations in response to the new challenges coming with our changing climate, now and in the future.



Percent increases in the amount of precipitation falling in very heavy events from 1958 to 2012 for each region of the U.S.
Courtesy of http://nca2014.global change.gov/report/our-changing-climate/heavy-downpours-increasing

Key Impacts and What Farmers Can Do

Flooding

The trend of increasing heavy rainfall events is expected to continue, and will pose challenges such as: interfering with the timing of planting and harvesting, soil loss due to erosion, root damage, reduced yield, crop loss, and nutrient runoff. Farmers can adapt by: promoting water infiltration by increasing soil organic matter, reduced tillage, cover cropping, planting riparian buffers, investing in tiling or other drainage systems, and when feasible, shifting planting dates to avoid wet conditions.

Sea level rise is also a worry for farmers near the coast, with storm surges becoming more severe and reaching further inland, and freshwater wells and aquifers running the risk of saltwater contamination. Farmers can respond by promoting water infiltration, maintaining wetland buffers, and developing emergency response plans for severe flooding that may prevent access to fields and roads.

Short-term Drought

While the Northeast does not face the severe water shortages predicted for some other regions of the United States, it still faces the risk of increasing short-term summer drought. This is due to warmer temperatures and longer growing seasons, which will increase crop water demand while summer time precipitation remains the same or possibly declines. Drought can cause declines and variations in yields for rain-fed crops, and can be especially damaging in high-value fruit and vegetable crops. Farmers can adapt by increasing irrigation capacity, improving irrigation efficiency, and experimenting with drought-tolerant crop varieties.

Heat Stress

The growing season across the state has already increased by an average of 8 days, however the number of summer heat stress days (exceeding 90°F) is also expected to increase substantially, with winters continuing to grow milder as well. Warmer summer temperatures have been shown to lower yields and quality for certain grains by speeding the development cycle and shortening the period during which grain heads mature. Additionally, other heat-sensitive crops such as potatoes, cabbage, snap beans, and apples may become more challenging to grow. Farmers can adapt by exploring new varieties of heat-resistant crops and diversifying crop production to reduce reliance on heat-sensitive crops. Over the longer term, farmers can also capitalize on the opportunity that longer growing seasons present.

Growing crops indoors to increase resiliency.
Photo by Rachel Erlebacher

Heat stress is not only a challenge for plants, but can also have detrimental consequences for livestock. Keeping cool with the increased heat projected with climate change will be critical for maintaining the milk production levels that have made dairy the dominant industry in the Northeast's agricultural sector. Challenges include dangerous and unhealthy conditions that reduce productivity and reproductive capacity, and fluctuations in the availability and cost of feed such as corn grain and silage. In 2005, an unusually warm year, milk production waned by 5 to 15 pounds per cow, per day at many dairies, leading to losses of 8 to 20% of production.

Dairy producers can adapt by preventing over-crowding and improving barn ventilation,

See Climate *page 15*

SOIL HEALTH

Crucifer Cover Crops for Small Farms

by Thomas Bjorkman

Cover-crop radishes have become a real hit with many Northeast growers to help improve their soil health. This article will cover some ideas on using radishes and some related crucifer cover crops to help growers fine-tune their practices so that they get more value out of this cover crop.

My group has done a great deal of work with crucifer cover crops sown in the fall. They provide excellent soil protection, produce good organic matter, scavenge nitrogen from deeper soil layers, and are mostly gone in the spring.

While radishes tend to survive far into the winter south of Interstate 80 (roughly the lower 2/3 of the U.S.), they typically die early north of Interstate 80 (the top 1/3). Growers in more northern regions may find that an alternative crucifer is the best way to get the radish benefits they're looking for. Forage turnips, in particular, are more cold tolerant than radishes and survive more of the winter while offering the same benefits.

For vegetable production, I like using turnips on raised beds that I want to plant early in the spring. The turnips are planted in the middle of August after a harvest of onions or beans. They grow vigorously through the fall, producing a lot of lush green leaves. Those leaves are full of organic nitrogen, and they stay green through much of the winter. Come spring, they decompose as soon as the temperatures warm up and

Radishes in December look alive but are doomed. Even though there many green leaves, the aboveground part of the radish is already pithy and dry, and the below ground part fully waterlogged.

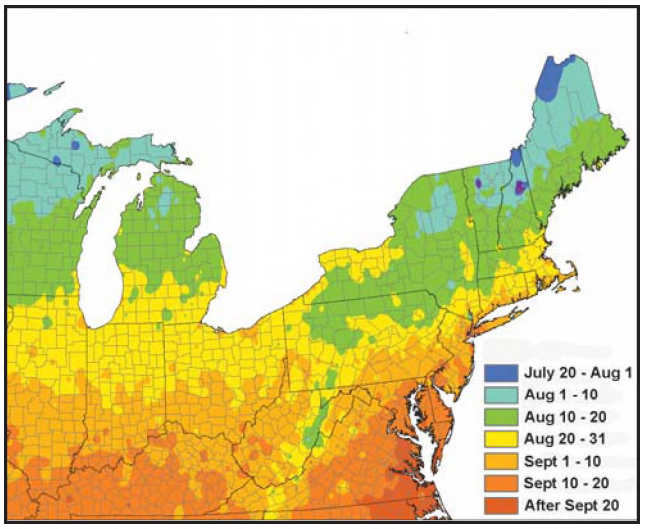
Type	Varieties (least winter hardy to most)	Comments
Forage Radish	Tillage Radish Biodrills Ground Hog Nitro Sodbuster Soil First	Winter kills early in winter. Makes two-inch-wide holes in surface soil, but the thinner taproot does a lot of the work. Similar to oilseed radish, but the thick part of the root goes deeper. The top of the radish can stick out of the soil several inches, making the field difficult to walk through. Some growers are using rows of radish in a grain cover crop to simulate zone tillage.
Yellow Mustard	Tilney (Low glucosinolate) Idagold (High glucosinolate)	Bolts quickly any time. Excellent for chickweed suppression. Bolted plants hold hold snow in place. Tilney mustard can also be frost seeded in February or March.
Brown Mustard	Florida Broadleaf Caliente 199 Pacific Gold	High glucosinolates. Can also be sown during the summer, when it makes a rosette for goodground cover. Slower to bolt than yellow mustard
Rapeseed	Rangi Bonar	Begins as a rosette, but will begin to bolt in the fall. Bolted plants die during the winter, but after mustards
Forage Turnip	Appin (More bulb) Pasja (Slow bolting, more leaf)	Makes a strong rosette and bolts later than rapeseed. Rosette provides good soil cover for minimal winter growth. Can survive until after snow melts, thereby releasing nitrogen that will be available to the following crop. These high-protein varieties have more nitro gen to release than others.
Winter Canola	Dwarf Essex (least hardy) Athena Wichita Sumner (hardiest)	Survive winter. Slow growing in fall, so the weed suppression is weaker. Bolts in spring. Can frost heave if sown late.

worms go to work on the roots. The result is a bed that is essentially ready to plant. I can use a light cultivation to kill any new weed seedlings and to rake off the small amount of residue. Not needing to do any field prep in the springtime contributes a great deal to maintaining soil health. Rather than reduce soil health by vigorous tilling, growers can gain soil health, and save a lot of work, by simply leaving the cover crop to die naturally over the winter.

By spring there are only vestiges of the turnips left in the ground.

Success with these cover crops depends on planting at the right time. There's unfortunately little leniency on timing. Regardless of how cold tolerant a given species is, the planting date is about the same. In central New York it is from the 10th to the 25th of August. Planting too early can result in the cover crop going to seed in the fall, while planting too late results in undersized plants that fail to suppress weeds, don't produce the desired biomass, and don't make the deep roots that alleviate compaction and recover nitrogen.

One helpful aspect for the small farmer is that this cover crop seed is relatively inexpensive to use and can be stored for several growing seasons. The seed cost is generally $3 to 5 a pound, and seeding rates are less than 10 pounds per acre. Indeed, the plants tend to inhibit each other so planting more heavily than recommended can actually cause a substantially weaker stand.



The target planting date has a fairly narrow window that varies across the Northeast. [This map is taken from a research publication. For the purposes of this article we need to make the dates 10 days earlier.]

The Northeast is right on the edge of the region where Brassicas are winter-hardy, so there are big differences in survival among the varieties. Varieties that are consistently winter hardy in one climate zone may be erratic in the next, and consistently killed one zone colder. The performance of a variety or species in a particular location is worth knowing when choosing what to buy. Most varieties of crucifer cover crop will winter-kill, leaving the field ready for planting spring-seeded crops early in the season. But be aware that even the tenderest varieties can have some survivors in the field after mild winters. Unexpected survivors need to be killed before they make seed so that they don't become weeds. The flowering time varies by species, but is often in late April or May. The plants most likely to survive are those that are large enough to have strong anchor roots but are small enough that they do not start to swell (turnips and radishes) or bolt (mustard and rapeseed).

There are a multitude of properties all Brassica cover crops offer to the farm:

- They are excellent for disease suppression, winter weed suppression, and tilth improvement.
- They help soil re-aggregate if roots are allowed to decompose in undisturbed soil.
- Their deep taproots can recover residual nitrogen. This nitrogen is available to next crop if the cover crop dies in the spring.
- All are inexpensive to use because the seed price is low ($1 to $4 per lb) as is the seeding rate (5 to 10 lb/ac).
- Small seeds, which require careful sowing, mean less bulk to plant.
- Most work best if sown in late August and left all winter. The window closes fast.
- Most respond well to nitrogen, just like other cole crops. Plants suppress each other at higher seeding rates.

Detailed information on how to manage each of these, and where to buy seed, is at the Cornell website, covercrop.net.

A turnip cover crop in the fall makes a solid cover with a lot of succulent high-protein leaves.

NEW AND BEGINNING FARMERS

Farmers Should Know Their Responsibilities, Workers Their Rights

by Elizabeth Henderson

A farmer who runs a mid-sized vegetable farm fires a worker. The only reason she gives is that the worker wears purple too often. Does this farmer have the legal right to fire a worker this way? When I ask this question of the would-be farmers who take my workshop on creating a fair farm only about half get the answer right. If you employ workers on your farm or you are thinking of hiring workers, it is a good idea to inform yourself about the legal responsibilities of farmers and the rights of farm workers.

At-Will Law

The answer to the question above about the employer's right to fire a worker for no particular reason is yes: at-will law (present in 49 or the 50 states) allows employers to fire workers without the need for providing a "just cause" or a warning. However, there are many limits to this right of the employer. An employer cannot discriminate against a worker for a whole list of reasons that include race, ethnicity, or age. An employer cannot fire a worker for getting sick or injured.

Farmers are advised to develop clear written policies and contracts and to discuss their expectations with employees and even post the policies for all to see. For a template for labor policies that farmers can download and adapt for their farms, see the Agricultural Justice Project (AJP) tool-kit: (http://agriculturaljusticeproject.org/?page_id=116.) Courts tend to interpret employee handbooks as promises to follow the written procedures they contain, so if an employer does not follow his own rules, the court may side with the worker.

At-will, of course, gives workers the freedom to leave too, but the power in the situation is very much with the employer. To prevent successful lawsuits by disgruntled former employees, a smart employer will have written policies, adhere to them, keep a file with a record of every evaluation and warning, and be able to show a good reason for terminations. It's wise to maintain transparency and allow employees access to these files as well as encouraging everyone to discuss issues openly.

Safety

Workers have the right to a safe work place. If an employee is hurt on the job, the employer is liable for damages. That is why most farm employers invest in Workers Compensation, insurance that covers on the job injuries and disease. Workers Comp for farm labor is a legal requirement in most Northeast states. NY and VT exempt farms with very small payrolls - $1200 a year in NY, $10,000 in VT. Part-time employees, borrowed employees, leased employees, family members and volunteers are included under the workers' compensation law. Also included are unpaid student interns. For only a few dollars more, employers can add disability insurance that covers off-farm illness and injuries to employees. NY workers' compensation law excludes farm laborers from the requirement that employers provide disability insurance to employees. Workers' Compensation is a "no fault" system – who is to blame for an injury is not an issue. Ultimately, the Workers' Compensation Board decides whether an injury or illness is covered.

Brigitte Derel and Katie Lavin work in Peacework packing shed.
Photo courtesy of Craig Dilger

Abundant information on farm safety is easily available. The New York Center for Agricultural Medicine and Health (www.nycamh.org) has a remarkably thorough collection of guidelines in both English and Spanish for preventing accidents on farms covering tractors, PTOs, hearing protection, manure pits, livestock handling, etc., etc. In NY and a couple of other NE states, NYCAMH will provide farms with FREE on farm safety assessments and safety training. They are also offering small grants to improve farm safety from the John May Farm Safety Fund. In its tool kit for farmers, the Agricultural Justice Project (AJP) provides a guide to creating a farm safety plan and model farm safety policies The Occupational Safety and Health Act of 1970 gives employees the right to file complaints about workplace safety and health hazards,

Jonathan transplants tomatoes, spring 2016, at Peacework Farm.
Photo by Elizabeth Henderson

and, if you fear retaliation, you can request that your name not be revealed to your employer. Employees can make complaints online at www.osha.gov, or download a complaint form and submit it to the regional OSHA office.

The recently updated Worker Protection Standards (WPS) require that employers provide annual training in pesticide hazards to workers who may be exposed. The training must take place before exposure and tell workers how to protect themselves. Employers give farm workers access to chemical information sheets (Material Safety Data Sheets). The full regulations are available on the EPA website: http://www.epa.gov/pesticide-worker-safety/revisions-worker-protection-standard

See Farmers *page 13*

FARM SAFETY

Northeast Ag Safety & Health Coalition Meets for their Second Annual Meeting

By James Carrabba, The New York Center for Agricultural Medicine & Health - NYCAMH

On May 3-4, 2016, the Northeast Agricultural Safety and Health Coalition held their second annual meeting at the NYCAMH office in Cooperstown, NY. The very first meeting of the Coalition was held here at NYCAMH in May 2015. At this year's meeting there were eighteen individuals from six different Northeast states present, which included; Maine, Maryland, New Hampshire, New Jersey, New York, and Pennsylvania. The purpose of the Coalition is to bring together individuals from the Northeast region who have a passion for promoting agricultural safety in their home states and to start a coordinated network that can aid in facilitating this work. Formation of the Coalition was initially spearheaded by Dr. Doug Schaufler and Dr. Dennis Murphy, both from Penn State University. Most of the Coalition members are Cooperative Extension Educators who are passionate about delivering agricultural safety and health education in their communities, in addition to their regular extension responsibilities.

The goals of the Coalition include:

- Building capacity for agricultural safety and health education in the region
- Provide professional development opportunities for coalition members
- Establish a network of ag safety educators for the Northeast, which will be accomplished with periodic meetings, conference calls and a Northeast Ag Safety and Health Coalition listserv
- Develop low cost, easy to replicate hands-on educational demonstrations (with supporting lesson plans) that can be delivered by members
- Search for funding sources that will support the work of the coalition members
- Identify educators from the other Northeast states who would like to join the coalition such as Massachusetts, Rhode Island, Connecticut, Delaware, and West Virginia

Participants conducting a safety audit with the FARM-HAT audit tool

At this year's meeting, the participants were able to be involved in several different learning activities that were presented as examples of things that they could conduct back in their home states. Some of the highlights of the Coalition meeting included:

- A mock PTO entanglement demonstration which used a full size tractor and a Tyvek suit stuffed with newspaper to represent a person becoming wrapped on an unguarded PTO shaft.
- Safety demonstration lesson plan overview. The participants divided into small groups, reviewed current lesson plan drafts, and provided edits and feedback for improvement. The completed lesson plans will not be printed in a book but will be available online for print out.
- Davis Hill from Penn State gave an overview of the Farm Family Emergency Response training and provided copies of these training materials to interested participants.
- Farm Safety Audit Training. The group spent approximately 2 ½ hours at a local dairy farm conducting farm safety audits using FARM-HAT (Farm/Agricultural/Rural/Management-Hazard Analysis Tool). Dr. Dennis Murphy from Penn State provided training on three items for tractors, agricultural machinery, and ag buildings. Based on the training, the group was asked to complete audits individually on fencing, SMV emblems, PTO mastershields, electrical panel boxes, utility vehicles, and several other topics. After everyone completed their audits, Dr. Murphy reviewed the scores, discussed any score variations and gave general feedback about the audit format.

The group discussed expanding to additional states in the Northeast that have not had representation at last year's meeting and this year's meeting. The states not yet represented in the Coalition include; Delaware, Massachusetts, West Virginia, Connecticut, and Rhode Island. While most Coalition members are Cooperative Extension personnel, individuals interested in agricultural safety and health from other ag organizations, such as state departments of agriculture could also be included.

Feedback from a post-meeting evaluation was very positive. Several members felt that the meeting should be expanded to three days next year to allow for more in-depth training. Next year's Coalition meeting may be held in a different location. The group discussed other training topics and several attendees supported the idea of farm visits and audits but with different types of agriculture such as fruits, vegetables, or direct marketing operations. Another suggestion was to include hands-on activities concerning grain-handling safety.

NYCAMH was once again honored to be the host site for the second annual meeting of the Northeast Ag Safety and Health Coalition. If there are any other Cooperative Extension personnel, or others who are interested in learning more, or in joining the coalition, please contact me at 800-343-7527, ext 2216 or e-mail me at jcarrabba@nycamh.com. A program of Bassett Healthcare, NYCAMH is enhancing agricultural and rural health by preventing and treating occupational injury and illness.

Farmers *from page 12*

Wages and other benefits

Federal and State wage and hours laws protect workers' rights to be paid for all of the hours they work. The Fair Labor Standards Act (FLSA), a federal law, requires that most employers pay a minimum hourly wage and pay time and a half for overtime over 8 hours a day and 40 hours a week. However, FLSA exempts farm labor from the time and a half overtime requirement.

Additionally, if a farm does not have more than 500 days of agricultural labor in a year (roughly equivalent to seven employees employed full-time in a calendar quarter) the farmer is exempt from paying federal minimum wage. But that is not the end of the story. Farmers must still comply with state minimum wage laws which vary by state. New York, Rhode Island and Connecticut require agricultural labor to be paid at the general state minimum wage which is $9 in NY and $9.60 in CT and RI. In Vermont, New Hampshire and Maine, agricultural work is exempt from the state minimum wage so is paid at the federal rate unless exempt under FSLA.

Currently the federal minimum wage is $7.25 an hour. Massachusetts has an agricultural minimum wage of $8 an hour. Meals and lodging may be credited against the minimum wage, but only with a written agreement between the employer and the employee, and the limits are different from state to state.

For picking berries and tree fruit, some farmers pay "piece rate" which encourages workers to pick faster. They pay a certain amount per pound or other unit. State and federal laws require that the "piece rate" be set so that the slowest worker still makes minimum wage. Therefore, the farmer must have a good system for keeping track of each worker's pickings, or else be at risk of being accused of wage theft. Knowing this clause, some farmers decide it's easier to comply with an hourly wage approach.

Whether workers are entitled to time and a half for overtime depends on both the federal and state definitions of farm work. In some states, if a worker is driving a delivery truck, packing vegetables from some other farm, or selling at a farmers' market, the worker is not doing farm work. An employer may have to pay workers differently if they are doing both farm and non-farm work. In "A Legal Guide to the Business of Farming in Vermont," attorney Annette Higby helps us understand federal law:

"The FLSA uses a two-pronged definition of agriculture that includes both primary agricultural activities as well as those activities that are secondary or incidental to carrying out the farming operation. The primary definition includes "farming in all of its branches" – cultivation and tillage, dairying, growing and harvesting horticultural crops, raising livestock, bees, fur-bearing animals, and poultry. Anyone performing these activities is engaged in agriculture regardless of whether he or she is employed by a farmer or on a farm.

"Agriculture — and thus the exemption — also includes activities that are secondary to the farming operation. Those activities must be performed by a farmer on a farm "as an incident to or in conjunction with such farming operations" to be considered "agriculture." For example, employees who build a silo or a terrace, or those who dig a stock well, are exempt when those activities are performed in conjunction with a farming operation. Logging activities, for example, are also exempt when they are part of a farming operation. But when these employees work for an employer engaged exclusively in forestry or lumbering, they are not considered agricultural employees. These secondary activities must be subordinate to the farming operation. If they amount to a separate business, they lose the agricultural exemption." From: http://www.uvm.edu/farmtransfer/LegalGuideV.pdf

Conflict Resolution and Grievances

Workplaces with perfect harmony all the time are as rare as hen's teeth. So farm owners are well advised to be clear about their approach to conflict resolution. Workers have the legal right to talk with their employer about workplace problems. When everyone on a farm knows who to talk to and what the process is for resolving conflicts it makes for a much happier workplace. There are examples of conflict resolution policies in the AJP farmer tool-kit, at http://agriculturaljusticeproject.org/?page_id=116.

Interns/Apprentices/Trainees

Whatever name you give it, federal law regards on farm interns and apprentices as employees and to avoid fines, the employer must pay at least minimum wage for all hours worked. For a farm, taking on interns is not cheap labor. It is a commitment to providing a real learning experience and means that the farmer will be acting as teacher as well as employer. The California Guide to Labor for Small Farms offers several models for on-farm training that meet legal requirements. The standards for whether or not someone is considered an employee are clearly articulated in the U.S. Dept. of Labor's Factsheet #71 (https://www.dol.gov/whd/regs/compliance/whdfs71.htm) which offers a six-part test for whether a person is an intern or part of a permitted "training program":

1. The training, even though it includes actual operation of the facilities of the employer, is similar to that which would be given in a vocational school.
2. The training is for the benefit of the trainees or students.
3. The trainees or students do not displace regular employees, but work under their close supervision.
4. The employer that provides the training derives no immediate advantage from the activities of the trainees or students, and on occasion his/her operations may actually be impeded.
5. The trainees or students are not necessarily entitled to a job at the conclusion of the training period.
6. The employer and the trainees or students understand that the trainees or student are not entitled to wages for the time spent in training.

The New England Small Farm Institute (NESFI) has excellent materials on mentoring and on-farm training which you can order from their website: www.smallfarm.org

Some people take up farm work as a way to learn the skills for owning and running their own farm someday. Others do farm work for many years and may even choose to make that their life's work. Our movement for a local, sustainable agriculture needs both more farmers and more professional farm workers. Knowing the responsibilities of an employer or the rights of a worker provides the basis for a positive relationship so that small farms function as integrated teams.

In her keynote speech at the NOFA-NY Winter Conference, Rosalinda Guillen, Director of Community to Community, spoke eloquently about "good hard work," and about how her father, a long time farm employee, taught her and her siblings to work with pride and with appreciation for the beauty of working close to nature. If we want our network of small farms to be a way of life that is worth sustaining, farm work must be a respected vocation that is compensated appropriately for the values farm workers provide for society.

Source for more information:

• "A Legal Guide to the Business of Farming in Vermont," - http://www.uvm.edu/farmtransfer/?Page=legalguide.html

• A Legal Guide to Farming in New Hampshire and accompanying videos - http://www.nesare.org/State-Programs/New-Hampshire/Farm-labor

• California Guide to Labor for Small Farms, Aug. 2013 NCAT and CA FarmLink. – Much of the information in CA specific, but some applies country wide. Main goal of publication – to boost on-farm learning opportunities and help farms that train interns do it legally. Appendix has template for intern contract and a sample time card for employees.

• Farmer Legal Action Group FLAG (Minnesota) - http://www.flaginc.org/
- Farmers Guide to Farm Employees: Federal and Minnesota Labor and Employment Law for Small-Scale Family Farmers, August 2012, Farmers' Legal Action Group, Inc.
- Farmers' Guide to Farm Internships: Federal and Minnesota Labor and Employment Law, February 2013, Farmers' Legal Action Group, Inc.

• From the New England Small Farm Institute: www.smallfarm.org
- Cultivating a New Crop of Farmers – Is On-Farm Mentoring Right for You and Your Farm? A Decision-Making Workbook ($20)
- The On-Farm Mentor's Guide – practical approaches to teaching on the farm ($35)
- DACUM Occupational Profile for On-Farm Mentor, 2001.

Order these online at http://www.smallfarm.org/main/bookstore/publications/

BUSINESS MANAGEMENT

Successful Farm Succession

Recent estate tax trends can help northeast farmers with succession planning.

By John H. Lavelle, CPA, LL.M., Attorney at Law

Congress and some state governments in the Northeast have been handing family farmers a series of presents in the last few years. Specifically, estate and death taxes, one of the major obstacles in transitioning family ownership in smaller farms, have almost become a thing of the past. With one less thing to worry about, farmers can concentrate on the other issues that must be handled to keep the farm in the family.

Background

At the federal level, the transition was not as fast as it was stunning. Starting with the 2001 Tax Act, estate tax exemptions were raised to $1 million (doubled for a properly planned married couple), with added increases scheduled every year or two. This culminated with a $3.5 million exemption in 2009, followed by a year of no estate taxes. After that, Congress panicked with a series of generous temporary laws, with exemptions at $5 million and adjusted for inflation.

Out of nowhere, Congress made these new temporary regimes permanent in the 2012 Tax Act. Effective January 1, 2013, finally some certainty was achieved for federal estate taxes after over a decade of temporary and expiring changes. Taxpayers can now plan with this new law. Currently, these provisions provide an estate tax exemption of $5.45 million, which again is doubled for a married couple, or $10.9 million in total.

There is even some good news starting to happen at the state level. New York is most informative. Two years ago, New York still had a $1 million exemption at the time the federal exemption was $5 million plus, making estate planning more complicated for taxpayers domiciled in New York or nonresidents with New York farmland. Two years ago, out of nowhere, New York enacted a five-year phase in to eventually equal the federal estate tax exemption. Currently, the New York exemption is $4,187,500, and by January 1, 2019, it will link up with the federal exemption. Properly planned, this means a married couple has $8,375,000 to work with before a dollar of state estate tax is due.

So what does this mean to Northeast family farmers? For all but the largest farms in the most valuable areas, these exemption levels will exclude the entire value of many farm operations, land and all, from estate taxes. Compared to family succession planning done as little as seven years ago, this changes everything. In addition, successful farmers' estate plans that are as little as three years old may be woefully out of date because of this major change in the tax environment.

The New Planning Paradigm

As estate taxes recede as an obstacle to successful farm transitions, income taxes become much more important. In the ninety-plus years that the federal estate tax and income tax have co-existed, this is the first time that income tax rates generally exceed the estate tax rates, and the latter are often "zero". In estate planning, there is usually a choice that has to be made: save estate taxes, or, save income taxes. Often, both cannot be done at the same time. When the estate tax rate was much greater than the income tax rate, the farm family usually chose the strategy that saved the most dollars. Now, the rules are almost reversed, and income tax techniques can be more important than anything else.

Every successful farmer always has income tax issues. Estate planning and farm transition planning must catch up with this new importance of the income tax. Out of date plans can now cost more in income taxes on the next generation than the estate taxes imposed on the senior generation's estates. While this is not exactly an apples to oranges comparison, the long term economic impact of reliance on a 20th century plan in today's world, can be very costly to our future farmers.

So the new planning challenge is to transition the farm to the next generation while not burdening them with the income tax problems of the senior generation. This could be everything from fully depreciated buildings and equipment to land with an original cost of $100 an acre that is now worth $5,000 an acre or more. Traditional estate planning would have reduced or mitigated estate tax costs at the price of transferring the same income tax problems to the next generation. This had the advantages of making the inter-generational transfer more affordable, while locking in the next generation to a history of outdated income tax practices and problems.

Evening barn check at the author's thoroughbred breeding and racing operation in Schoharie County, NY.

Retooling Old Strategies for New Purposes

Fortunately, to assist today's successful farm families, there are a number of income tax strategies that can be deployed, now that estate taxes may not apply. Your advisers today must be well-versed in income tax planning as well as family dynamics, estate planning, and business planning in order to bring together all the aspects of a successful transition plan. Here are a few examples of things that work under this new era of planning that would not have been considered a few years ago.

Die with the Farm. For the first half of my career, this would have been the worst plan ever. High estate taxes would have put a big strain on most small farm families. These costs often made it difficult or impossible for the next generation to succeed at farming, and led directly to the sale of the family farm. Most of us spent a lot of time advocating for various transfer strategies that the senior generation could use to get the farm over to the children without a huge estate tax.

What a difference a few decades make! Now only the largest, most valuable farms have to spend any time on the estate tax issue. For everyone else, letting the senior generation die owning the farm can be a huge benefit. For income tax purposes, all of the farm property owned by the senior generation at their deaths receives a new cost basis. So in the case above, for income tax purposes, the land with an original cost of $100 an acre would get a $5,000 an acre "stepped up" basis for the next generation. Same would apply to the buildings, equipment, livestock and so forth inherited by the children. So no inherited gains on the sale of these assets, new depreciation starts over, and the whole income tax history of the senior generation is wiped clean.

Now, when we say "Die with the Farm", there is more to it than that. What if the senior generation is worried about long-term health care and nursing home costs? This can be a bigger cost to the farm family than estate taxes ever were. Is there a way to get the income tax benefits above and protect the farm from the senior owners' long-term care costs? Absolutely. By visiting a competent elder law adviser, farm families can learn how to better position themselves for care costs, while continuing to have the property receive the income tax benefits associated with ownership. Part of any transition plan should be protection for the farm property retained by the senior generation as they age.

Sunrise greets the manager's porch at Cotton Hill Farm, home of Windhorse Thoroughbreds, LLC in Schoharie County, NY. Photos by Patty Lavelle

Cashing in with Purchased Development Rights (PDRs). Many senior generation family farmers believed that their farm real estate would be the source of their retirement funds. With any degree of success, the farm operation would allow their children and successors to buy them out from their farm ownership. Unfortunately, most seniors are finding that the profits are not sufficient to fund anywhere near a fair price for any portion of the real estate, without leaving the children strapped for cash for decades. Sometimes mortgage financing at today's low interest rates can help. But more often than not, it leads to the subdivision and sell off of the most valuable road front property, which ultimately leads to more development pressure on the remaining farm, and the ultimate loss of the farm business.

State and local governments and conservation organizations have noticed this destructive pattern and have come up with better solutions. The purchase of development rights, known as a PDR, allows farmers in developing areas, to realize cash proceeds in exchange for giving up their ability to develop the property for something beyond farming. In many cases, family farms have no intention of doing anything but farming, so this source of cash does not upset the transition plan. Although it is a taxable sale, it is generally at favorable rates and solves the retirement income needs of the senior generation. If a farm has high conservation values and is located in a heavily developing area, it may qualify for some of these scarce PDR funds.

Conservation Easements (CEs). Along with all the tax goodies that the year-end 2015 tax act made available, was the restoration of the enhanced conservation easement tax benefits. For successful farmers in high income tax brackets, this technique can be a home run. CEs work like PDRs in the sense that future development is prohibited on the farm property. Unlike PDRs, the development rights are donated in whole or part to a land trust. This donation can now offset up to 100% of the income of a qualified farmer. In addition, the existence of the CE lowers the value of farm property, making it easier for the next generation to acquire either by purchase or gift. Or, if the property is very valuable and the senior farmers have a taxable estate in excess of the exemptions, a CE can lower the value for estate tax purposes and provide additional estate tax benefits.

This is a thumbnail sketch of the exciting new world of planning farm transitions in a world with a lot less estate taxation. Working with a qualified adviser, farm families may find that more solutions are available to them compared to just a few short years ago.

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GRAZING

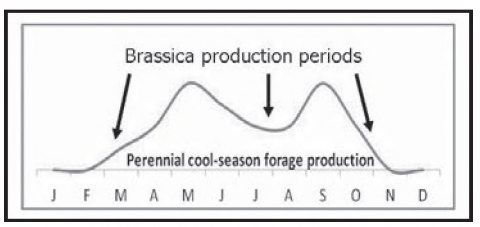
Incorporating Forage Brassicas into a Grazing System

Planting brassicas in your pasture provides more than just high quality forage.

By Dr. Leanne Dillard

Forage brassicas are annuals that can be utilized as pasture during the spring, summer, and fall grazing seasons. Forage brassicas include varieties of rapeseed (rape), radish, turnip, swede, kale, and hybrids. They are quick maturing and can be grazed 60 to 120 days after planting, depending on species. They are able to produce up to 4 tons of DM/acre, and varieties of turnip, radish, and swede produce a highly palatable and nutritious tap-root that can be grazed during the last rotation of the season.

Brassicas contain a high crude protein (CP) concentration (20 – 25%), net energy of metabolism [(NEM) 0.65 – 0.80 Mcal/lb] and total digestible nutrient (TDN) concentrations (65 – 70%). In dairy cattle, a mixture of turnip and forage sorghum was shown to increase milk yield, milk solids, and protein in cattle during summer compared with sorghum alone; however, a reduction in milk fat was seen. Brassicas have also been reported to increase daily gain of beef cattle and sheep compared with other cool-season forages.

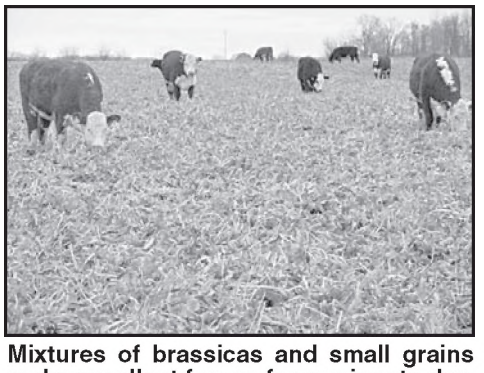


Seasonal brassica production periods in the Mid-Atlantic States
Creator: Leanne Dillard

Besides being a high quality feedstuff, brassicas also have multiple environmental benefits. Tillage radish has been used for many years in no-till systems as a method to alleviate soil compaction. Brassicas are also useful in remediating soils high in phosphorus, by taking up P and incorporating it into their plant tissues. Furthermore, there is evidence that a plant metabolite in brassicas (glucosinolate) can reduce enteric methane emissions from ruminants consuming brassicas or brassica by-products (e.g., canola meal). This results in a decrease in the environmental impact of animals, and increase animal production efficiency.

Forage brassicas are most commonly grazed. They can also be stockpiled, ensiled, or fed as greenchop. Due to the low dry matter, haying is not an option. Successful grazing management can be accomplished through strip or rotational grazing. Once forage has reached ~14", animals can begin to graze. This can vary depending on species and variety used. If multiple grazings are desired, forage should not be grazed below a height of 6 – 8 inches. The root-bulb of turnip, radish, and swede can be grazed during the last grazing rotation of the season. If ensiled, a higher dry matter forage should be included to ensure proper fermentation and reduce nutrient losses. The diets of livestock with high production/growth rates (e.g. lactating dairy cattle, stockers) can be fed up to 50% brassicas. In other classes of livestock (e.g. non-lactating dairy cattle, cow-calf pairs), brassicas should be treated as a supplemental feed due to the high-energy content of the forage and grazing should be limited to only a few hours/day.

Brassicas are an acquired taste and an adaptation period may be required for some animals. This can be achieved by giving access to low-quality hay, allowing access to perennial pastures, or planting brassicas as a mixture with other forages. Alternatively, animals experienced with brassicas can be used to train naïve animals to graze both the leaves and the root-bulb of plants. Brassicas are an excellent forage for cattle, sheep, goats, swine, and poultry. Equine species should not be fed brassicas due to concerns with toxicity. A trace mineral that includes Cu and I should be fed to livestock to prevent possible deficiencies and small ruminants tend to be more susceptible to these mineral deficiencies than cattle. Sheep Cu



Mixtures of brassicas and small grains make excellent forage for ruminants during the spring.
Photo courtesy of the USDA-NRCS

Tillage radishes provide high quality nutrition while alleviating soil compaction in no-till systems.
Photo by Leanne Dillard

requirements are lower than that of other ruminants, thus Cu supplementation of sheep should be done with care, especially if co-grazing multiple species. Nitrate poisoning and bloat have been reported in ruminants consuming pure brassicas pastures. This can be avoided by planting brassicas in a mixture with other forage species or only allowing limited access to brassica pastures. Due to off-flavor, a withdrawal period of 4 hours prior to milking and 7 days prior to slaughter is suggested; the withdrawal time will decrease as brassicas decrease as a percent of the total animal diet.

Our research group, using funds from the Northeast SARE program, is conducting laboratory and on-farm research to determine the establishment methods and methane reduction potential of several brassica varieties for use in pasture-based dairy farms throughout the Northeast. Currently, we are gathering information on the current use of brassicas in the forage programs of these farms. If you are currently a dairy producer and would be willing to share information regarding your current forage and grazing management with us, we would be appreciative if you would go to: https://www.surveymonkey.com/r/BWR3RDC to fill out an on-line survey or you can contact us directly at Leanne.Dillard@ars.usda.gov or 814-863-0947.

Dr. Leanne Dillard is a Research Animal Scientist at the USDA-ARS Pasture Systems and Watershed Management Research Unit in University Park, PA. She can be reached at 814-863-0947 or Leanne.Dillard @ars.usdsa.gov.

Climate *from page 9*

minimizing heat exposure by feeding during cool parts of the day, increasing water availability, and adjusting cows' diets. Other, more long-term solutions to alleviate heat stress include: improving cooling capacity through additional fans, sprinklers, and misters, insulating under barn roofs, or building new barns with improved cooling capacity for future heat conditions.

Diseases, Pests, and Weeds

Interactions between climate, crops, insects, and diseases are complex. However, evidence suggests that climate change will increase disease, pest, and weed pressure, as more pests and weeds survive mild winters and warmer summers allow for new species to invade and native ones to grow faster. This environment will require improved rapid response plans and monitoring efforts that allow for targeted control of weeds, diseases, and pests. Wide adoption of integrated pest management (IPM) will also help farmers manage new pests with minimal economic, environmental, and health risks.

Freeze Risk

In the past few years, late season freeze events have struck orchards and vineyards after plants had already bloomed, causing serious crop losses. Farmers can implement several strategies to guard against these freezes, including: using heaters and wind machines to circulate warmer air in vineyards or orchards, irrigating before or during potential freezes, and paying close attention to detailed weather forecasts.

How to Get Started

To help farmers increase their resiliency, reduce risks, and reduce costs on their farms, the Cornell Climate Smart Farming (CSF) program was launched in 2015. The CSF Program is developing several new decision tools that allow farmers to examine future climate scenarios for their farm, and how to make more informed decisions based on climate models and best management practices. The next article in this two-part series on climate smart farming will be available in the fall, and will focus on these decision tools, the support that the Cornell Climate Smart Farming program and extension team can provide, and how farmers can start making changes now to get ahead of the curve. In the meantime, check out the resources, videos, and tools at our website, and explore the USDA Northeast Climate Hub's website for other science-based information as well.

Jonathan Lambert is a staff member with the Climate Smart Farming Program at the Cornell Institute for Climate Change and Agriculture in Ithaca, NY.

For more information on the Climate Smart Farming Program and the Cornell Institute for Climate Change and Agriculture, navigate to our websites at climatesmartfarming.org and climateinstitute.cals.cornell.edu. Contact us via email at cicca2014@ gmail.com

Climate Change has been the focus of research at Cornell for many years now, with over 50 faculty and researchers in the College of Agriculture and Life Sciences alone contributing to studies on the topic. The Cornell Institute for Climate Change and Agriculture works closely with a number of these researchers to produce information for websites, factsheets, and research/policy briefs. These materials have greatly informed this article, especially two fact sheets in particular, titled "Farming Success in an Uncertain Climate" and "New York's Changing Climate," authored by Professors David Wolfe and Art DeGaetano, respectively. These fact sheets can be accessed at the following web link:
http://climatechange.cornell.edu/posts/?what=featured_resources

HIGH TUNNELS

Old Order Farmer has Ivy League Role

by R.J. Anderson

In Penn Yan, NY, commercial vegetable grower Nelson Hoover does not own a car, a computer or a PhD. In fact, as a member of the Groffdale Conference Mennonites, Hoover's formal schooling ended after eighth grade. But, for over a decade, the 28-year-old has been at the forefront of vegetable growing innovation in the Finger Lakes region. He's also one of the Cornell Vegetable Program's (CVP) most trusted research and outreach partners.

Sitting on just 3.8 acres, Hoover's tidy five and a half year old farm is just a stones throw from rolling hillside vineyards that overlook Keuka Lake. Pulling into the driveway, visitors are greeted by a modern barn that houses a horse and buggy. Across the driveway, a swing set where his two young daughters play stands next to the entrance of the family home. A pair of cats wander about.

Behind the barn sits the heart of Hoover's growing operation: a trio of plastic-covered, climate controlled high tunnels. Spanning 30 feet wide and stretching more than 100 feet long, the tunnels along with his two greenhouses lengthen Hoover's growing season and give him more control over the production process.

"The high tunnel and greenhouse system allows me to do three things," says Hoover. "The controlled environment helps me optimize yield, have better control of the quality of the fruit, and take advantage of higher market prices generated by early season demand."

In addition to bringing his own fruit to market, Hoover specializes in starting early-season plants for other commercial growers. This past March, he sold plants to growers from as far away as the Ohio-Kentucky border.

"What's unique about Nelson's operation is that he's a successful wholesale grower operating on just a few acres," says Judson Reid, a Cornell-trained horticulturalist and CVP Extension Vegetable Specialist. "The high tunnels help minimize his footprint and allow him to get the most bang for his buck through intense crop turnover."

They also make him an ideal research partner for CVP. A Cornell Cooperative Extension regional agriculture team, CVP assists farmers in 12 western New York counties — the largest vegetable producing region in the state — by helping them apply Cornell research and expertise to their local growing operations.

Old Order farmer Nelson Hoover and Cornell Vegetable Program Educator Judson Reid evaluate a high tunnel tomato plot at Hoover's Penn Yan, New York farm.

Two of those counties, Yates and Seneca, are home to high concentrations of Old Order communities. Within these communities, Amish and Mennonite vegetable farms have experienced significant growth in both numbers and influence in recent years. They now operate 99 percent of the dairy farms in the area, and a Mennonite-run produce auction is the region's largest.

Working to maximize vegetable quality and output in Yates and Seneca Counties is Reid, who specializes in small farm operations and high tunnel growing. Over the years, he has become one of the region's most trusted agriculture education voices — even within those communities typically separate from outside influence.

"Jud is recognized as a resource through his programming and his work getting the state's produce auctions going," says Hoover, who estimates he and Reid have known each other for 16 years – back to when Hoover's father, Howard, began sharing his first high tunnel designs with CCE educators. "Jud's research and knowledge carry a lot of weight in this community and others. A lot of growers around here factor Jud's insight into what type of varieties they plant and sell and how they use their high tunnel space."

Though CVP's science is respected across the state, Reid recognizes the success of his team's work ultimately is seeded in the interpersonal relationships cultivated by its educators. "Without earning trust and buy-in from our constituents, CVP's expertise would be wasted," says Reid. "By no means do I work exclusively with Old Order farmers; it's just that in this area they happen to own the majority of vegetable-growing operations. So it's important I spend time learning their techniques and gauging their results. Our research is a two-way street."

Penn Yan, New York vegetable farmer Nelson Hoover adjusts the height of a sidewall on one of his three high tunnels. The tunnels are frequently used to conduct research trials with Cornell Cooperative Extension educators.

One of the keys to accessing that street has been Reid's successful work with Hoover, with whom he conducts two to three research trials a year.

"Nelson's farm is ideal for researching whether a technique can be implemented on a wider scale," says Reid. "Because he is such a competent technician and fastidious record-keeper on what grows and sells well, I have real-life data that I can present to other farmers in the region as well as farmer groups throughout the state in the form of educational programming."

Together, Reid and Hoover have conducted trials in areas such as pest management, disease resistance and crop revenue maximization. A recent project examined optimal practices for growing hanging baskets of flowers in combination with tomato plants.

"That one was very successful," says Reid. "We measured if the shade created by hanging baskets impacted tomato yield while also collecting data on the overall economic performance of the high tunnel with both crops. We found that hanging baskets at a density of 16 square feet per basket allowed Nelson to maximize the yield of his greenhouse space without limiting yield of his in-ground crop."

The success of those trials also has mutually benefitted Nelson and CVP. And it's also helped Reid and his colleagues build credibility with other Old Order farmers.

Nelson Hoover, a Mennonite farmer from Penn Yan, New York who conducts research trials with Cornell Cooperative Extension educators, waters grafted tomatoes in one of his two greenhouses.

"By seeing the output that results from our relationship with Nelson, other Mennonite and Amish farmers are more apt to interact with our program to exchange ideas and information," Reid says. "Forty out of the 41 high tunnels in Yates County are on Old Order farms, so those relationships are extremely important for furthering and sharing our research."

Reid recognizes, however, that data points alone are not enough to earn buy-in from practitioners of Old Order faiths, and he's spent years studying the customs and conventions of Amish and Mennonite cultures. Most of his breakthroughs, though, can be traced to a willingness to roll up his sleeves and get his hands dirty.

"Early in my career, I would spend entire days on Amish and Mennonite farms pruning and harvesting tomatoes right alongside the growers like Nelson's father," says Reid. "That led to getting invited in for a meal or to sit down for a cup of coffee on the porch and laid the groundwork for more involved interactions down the road.

"Over the years, I've been fortunate to develop friendships within those communities which has led to getting invited to events such as weddings, funerals and baptisms," continues Reid. "Accessing those social circles has further allowed me to understand the subtleties of how to move in those communities without offending people. Doing so has yielded some outstanding and important research and fulfilling friendships."

Like all tunnel growers, Nelson Hoover is focused on expanding and maximizing his spring and fall growing windows. But he also puts a lot of effort into improving the high tunnel soil during the winter. To help facilitate that, he grows winter grains such as barley and triticale.

"Few other growers are doing cover crops in their high tunnels," says Reid. "It's another unique aspect of Nelson's farm."

For Hoover, cover crops represent a vital step in protecting the indoor soil that supports his livelihood. "Soil care is supremely important to me and cover crops are a big part of that," he says. "I've found that the triticale is good for feeding the biology of the soil, managing its nutrients and the addition of vegetative material improves its physical state.

"Watering it regularly is also key," Hoover adds. "It's important to keep the soil moist so that the biology stay active. You have to treat soil as an active as living system. When it gets dry, the biology is turned off — and that's a very bad thing."

R.J. Anderson is a communications specialist/staff writer for Cornell Cooperative Extension.

COMMUNITY AND WORLD

Making Connections through Soil Health

Local Farmers in Western New York are working together to create a network of local soil conservation knowledge through the newly formed WNY Soil Health Alliance.

by Jena Buckwell

Modern agricultural pollution is a widespread crisis throughout the United States that alters both the health of our natural landscape and our communities. Agricultural runoff of sediment and associated nutrients entering tributary streams, in particular, is a situation closely monitored by NYS DEC that not only damages essential natural resources, but also results in yield losses for local farmers due to declining soil health. In fact, NYS DEC's list of impaired waterways often shows agricultural operations as a suspected source of stream impacts throughout the state.

With an economic structure that relies heavily on agriculture and more than half of their land actively used for agricultural production, Orleans and Genesee counties in Western New York have a lot to gain from improved soil management practices. To assist in bringing improved conservation soil management strategy to the farmers of WNY, the NYS Department of Agriculture and Markets acquired a grant for the development of a Conservation Tillage Alliance in Genesee and Orleans Counties. Orleans and Genesee's Soil and Water Conservation Districts (SWCD), as well as a handful of local farmers have worked together over the last year to begin development of what has been deemed the Western New York Soil Health Alliance (WNY SHA). The intention of this group is to provide local information in a farmer-to-farmer network relating to conservation tillage, cover crop management, and general soil health. Donn Branton, of Branton Farms in Le Roy, NY sites his reason for getting involved in the WNY SHA as a desire to share his successes and failures in soil management, with a hope to help others avoid the same mistakes he has made over the years. While the group will ultimately function as an entirely farmer-led group, Orleans and Genesee County SWCD currently serve as facilitators of the grant, providing operational assistance, such as membership recruitment, workshop organization, and communications.

Dennis Kirby of Orleans County SWCD uses a rain simulator to demonstrate water infiltration and erosion for two different soil samples at the WNY Soil Health Alliance's Cover Crop Workshop in December 2015.
Photo by Jena Buckwell

Workshop in December 2015.
Photo by Jena Buckwell.

Thus far, the group has hosted a couple workshops with excellent turnout and interest. The workshops have served as a platform for presentations from both representatives of the academic world regarding the science of soil health, and of local farmers sharing their personal hands-on experiences, successes and failures in cover cropping and conservation tillage. The farmer discussions in particular have been a big hit, providing information from on-farm trials from farmers working with the difficult clay soils and cold winters farmers in WNY have grown accustomed to managing in conventional ways. For the WNY SHA, the great turnouts they've experienced for their discussion-style workshops have been exciting proof that farmer's are interested in learning more about what's going on below the surface of their soils, and are ready to do what needs to be done to improve agriculture in WNY for future generations.

In addition to workshops, the WNY SHA manages a website that serves as a landing spot for information about upcoming workshops, and soil health resources. The website also hosts an on-going and expanding source of local knowledge through "On-Farm Trial" interviews and write-ups. These articles provide accounts of local farm trials in cover cropping, conservation tillage, interseeding, and alternative uses for cover crops as livestock feed.

To date, On-Farm Trials has followed farmers in Orleans and Genesee counties with a variety of challenges, constraints, and lifestyles. Featured farmers include Branton Farms (Le Roy, NY), Toussaint Farms (Ridgeway, NY) and Stein Farms (Le Roy, NY), all of which are family-run farm businesses that have been working with conservation tillage methods for many years. All farms that have been interviewed are reduced or no-till and have a couple years of exploring various methods of cover cropping, including interseeding and aerial applications. Aerial seeding is particularly popular at Hartway Farms (Albion, NY), where farm life is carefully balanced by farm owners who also maintain full-time off farm jobs, making the time saving elements of aerial broadcast seeding and no-till essential to how they run their farm. On-Farm trials chronicle the how, as well as the why of caring for soil health and the environment as a farm business. Farmers who have participated in sharing their cover cropping and conservation tillage experiences through the On-Farm Trials series note environmental improvements ranging from no algae growth in farm ponds, clean and topsoil free snow banks lining their fields in the winters, thriving earthworm populations in their fields, and more. From an economic standpoint, a farm family like Stein Farms does double duty with their cover crop, using it as feed for their dairy herd, as well as an important source of biomass, nutrients, and protection for their fields. In the future, the On-Farm Trials series hopes to cover small-scale vegetable, and pasture raised meat producers, in addition to more field crop producers. If you are a farmer experimenting with cover cropping, conservation tillage, or any other soil health method, and would like to share your story with us, please contact WNY SHA through their website or by email.

Moving forward, WNY SHA will be developing into a 501(c)3, and continuing outreach through their website, email, and educational workshops. The alliance aspires to recruit members who are interested in doing their own trials with help from other members, and sharing their findings to expand the knowledge base of the farm community as a whole. Ultimately, the goal of the WNY SHA is to reduce agriculture's negative impacts on the environment, while simultaneously improving the long-term productivity of their soils and efficiency of local farming practices to ensure that farmers can rise to the challenge of feeding a growing population in a sustainable way.

Branton Farm's Rogator set up for interseeding crops.

The Western New York Soil Health Alliance (WNY SHA) is a farmer-to-farmer network that aspires to create connections in the farming community of WNY, and encourage responsible environmental stewardship through soil health education and outreach.

WNY SHA hosts regular workshops in Genesee and Orleans counties, hosting academic presentations, as well as farmer led discussions concerning soil health. WNY SHA also provides resources to farmers through their website, including information for upcoming related events, recommended resources, and On-Farm Trials.

If you are interested in learning more about the alliance, or would like to fill out a member form, please visit wnysoilhealth.com. Dennis Kirby, OCSWCD facilitator can be reached at dennis.Kirby@ny.nacdnet.net and Molly Cassatt GCSWCD facilitator can be reached at molly.stetz@ny.nacdnet.net.

All are welcome to join WNY SHA. Residency of Genesee or Orleans county is not required.

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Want to learn more about Soil Health? Check out these recommended resources.
— Building Soils for Better Crops, by Sustainable Agriculture Research and Education (SARE), 3rd Edition
— Sustainable Agriculture Research and Education (SARE) Cover Crop "Topic Room"; www.sare.org/Learning-Center/Topic-Rooms/Cover-Crops
— Managing Cover Crops Profitability, by the Sustainable Agriculture Network; www.mccc.msu.edu/documents/ManagingCCProfitably.pdf

RESOURCE SPOTLIGHT

Cornell Crop and Pest Management Guidelines – A Management Tool for Small Farmers

If you've been looking for up-to-date crop and pest management information, the Cornell Crop and Pest Management Guidelines are for you!

Referred to as the Cornell Guidelines, this series of publications provides useful crop and pest management information for small-scale growers. Each Cornell Guideline title is routinely updated to reflect current crop production practices and the latest pest management strategies (including pesticide options) for emerging and existing pests of economic concern. The Cornell Guidelines are designed as a practical guide for producers, consultants, educators, pesticide dealers, and others involved in producing agricultural crops.

Currently, Cornell Guidelines are available for the following:
- Berry crops (excluding grapes).
- Field crops.
- Grapes.
- Greenhouse crops and herbaceous ornamentals.
- Hops.
- Tree fruit.
- Trees and shrubs.
- Vegetables.

The Cornell Guidelines are available as a print copy, online-only access, or a package that combines print and online access. Cornell Guidelines can be purchased through any Cornell Cooperative Extension office or from the Cornell Store at Cornell University. To order from the Cornell Store, call 844-688-7620 or order online at http://store.cornell.edu/c-875-pmep-guidelines.aspx.

Certified Naturally Grown Offers Mushroom Certification Program

Certified Naturally Grown (CNG), a grassroots organization that offers peer-review certification for direct-market farmers and beekeepers, is launching a Mushroom certification program in May 2016. Nearly 800 farmers and beekeepers throughout the United States are CNG certified, mostly for produce, but also for their livestock, apiary, and aquaponics operations.

In recent years, CNG staff noticed a rise in applications from mushroom producers. It became apparent that the CNG produce standards didn't adequately address the particulars of mushroom production, as they're tailored for soil-based farming.

With assistance from an Advisory Council of experts, CNG crafted a set of standards specific to mushroom production. These standards cover all aspects of indoor and outdoor mushroom production, including substrate materials, pest control and disease management, water, substrate disposal, sterilizing and pasteurizing substrate, and containers. They are posted online at CNGfarming.org/mushrooms, where visitors can register for updates. The complete program will launch in Summer, 2016. Applications will be taken online, and the peer-inspections will be carried out by fellow producers. Learn more at CNGfarming.org.

"One Stop Shop" – Starting a New York Winery

by Jesse Strzock, Lindsey Pashow, and Anna Wallis, ENY-CHP

Have you thought about starting a winery? Over the last few years, New York has been working to try and make this easy and painless from a legal standpoint. Extension educators are here to help and have put together some helpful links at the end of this brief article. In a future article we'll cover more of the business and planning side to winery and vineyard management.

Multiple winery license options exist from a microfarm winery to "regular" winery in New York. The relatively inexpensive farm winery license has been a major incentive for starting farm wineries. The NYS Liquor Authority describes a farm winery / special farm winery license as the following: "Authorizes licensee to annually manufacture and wholesale up to 250,000 gallons of wine and/or cider made exclusively from NYS grown agricultural products. Must be located on a farm." A microfarm winery is similar but may manufacture and wholesale considerably less.

If you're not producing your inputs you need to be particularly careful with what you purchase depending on what kind of license you have. This leads to legal definitions, quantities, etc., quickly taking us into the territory where we send you to other professionals. Sam Filler, Director of Industry Development for Empire State Development, has directed the "One Stop Shop" for New York's wine, cider, spirits, and beer industries since 2012. Contact Sam Filler and the "One Stop Shop" at nysbevbiz@esd.ny.gov or (518) 227-1535. Please note – starting January 1, 2017, Samuel Filler is to become the Executive Director of the New York Wine and Grape Foundation replacing Jim Trezise.

Helpful Links. Remember to make sure they are up-to-date!

- Wholesale Application Instructions: http://www.sla.ny.gov/system/files/Wholesale-Application-Instructions-061713.pdf
- Wholesale Application: http://www.sla.ny.gov/system/files/Wholesale-Application-061515.pdf
- Wholesale Fee Chart: http://www.sla.ny.gov/system/files/Wholesale-Fee-Chart-03112016.pdf
- Temporary License to Start Making Wine: http://www.sla.ny.gov/system/files/TemporaryWineryorFarmWineryPermit033115.pdf
- Alcohol Label Information NYS: http://www.sla.ny.gov/system/files/Advisory_2014-7_-_Brand_Label_Registration.pdf
- U.S. Department of the Treasury: Alcohol and Tobacco Tax and Trade Bureau https://ttb.gov/index.shtml
- U.S. Department of the Treasury: Alcohol and Tobacco Tax and Trade Bureau Wine Label: https://www.ttb.gov/wine/index.shtml
- Starting a Farm (Cornell University): http://www.nebeginningfarmers.org/resources/guides/farming-guide/
- NYS Wine, Beer, Spirits & Cider – One Stop Shop: http://esd.ny.gov/nysbeveragebiz.htmlesd.ny.gov/nysbeveragebiz.html

Remember, you will need to contact New York State Agriculture and Markets (1-800-554-4501) for when the time comes to arrange an inspection of your winery.

NEW AND BEGINNING FARMERS

Know Your Costs

Starting a small farm is a beautiful dream. Equally important is to know your costs and capability in the first year.

by Krati Pachori

Rows of bountiful green spinach, vines of beans hanging low, juicy tomatoes hanging down from the branches, and sweet red strawberries running across the field; a farm life has beauty and abundance which many people have dreamed for, at least once in their lifetime. As the saying goes "You need a farmer three times during a day." Living the dream is a totally different experience. Whether it's someone who manages a small garden or a large multi-acre farm, dealing and accepting the vagaries of nature and one's own limitations are lessons that are constant challenges. As farmers, we learn to be judicious with our resources, we realize those factors that are out of our control, and we accept that being on the farm means both pleasant and unpleasant surprises from time to time.

Many beginning farmers start a small farm with hopes and realistic expectations. They do research, gain field experience, travel the world WOOFing in different countries, all to make themselves better prepared for the farming world should they decide to start their own agriculture enterprise. However, all of the experience of working on another farm can prepare a farmer for everything except managing capital. A lot of perspective shines from "above" when one's own money is at stake. How come I never knew this? And, being new to farming, financial aid from government or incubator farms is often out of question. Most agricultural loans for farmers are for those who have tested their idea for three to five years and know what they are doing. Not for those who are just starting out and dream about lying in their serene fields waiting to see Aurora Borealis at night. Since money is coming from your own pocket, a farmer thinks twice before making an investment. And even after all that thinking, one may not be ready for the initial capital costs that come up along the way.

Spring planted garlic

Farm on a rainy day

The wisdom says it is good to start small, it minimizes risks. However, even when starting on a small scale, the costs can easily add up. Add to this the uncertainty of weather, soil and not knowing where to sell your produce, it's enough to wake a person at untimely hours of night. Like one night in April 2016, I woke up at 3:00 a.m. by the sounds of gusty winds and frightened by the thought of my hoop house blown away on the road. I covered my face in blanket and tried to sleep to take care of it in the morning since it was pitch dark outside. The next morning my husband told me he went out at night to fix the hoop house as one side of it was lifted in the air by strong winds. With the northeastern weather, an amount of initial investment goes towards unforeseen damage control and measures to protect your plants (or bearing the cost of weather related damage) from the harsh weather. Sure, some cold hardy plants have tolerance toward cold, but once young seedlings are out in the field, they are in the hands of Mother Nature.

When you work on someone else's farm, capital cost is something which you tend to ignore while gaining the valuable field experience. It is only when one starts on their own two feet and after dealing with some ups and downs that we realize what all can be done within your resources for protective and corrective measures. One has to realize, as a beginning farmer, that one cannot control or offset all that is bad (weather, aphids, groundhogs, drought etc) right during their first few years.

I started farming on a half acre piece of rented land in March 2016. I am growing 10-15 different varieties of vegetables and herbs organically this season. Even before a seed had sprouted, my costs of building the infrastructure and material costs to start seeds indoors, was higher than I expected (seeds, potting mix, seed trays, building a small hoop house etc.). Though I had sufficient savings from my day job that I quit last year to cover the costs, I still wanted my costs to be low. There is no shortcut that I could think of since some very basic infrastructure has to be set up. The costs can be daunting to someone who has not even tested the feasibility of their idea and explored the markets.

Any new endeavor starts with a degree of optimism and a degree of self-doubt. There are always unexpected costs that are encountered when one starts a farm operation. It is most often a dilemma whether a certain investment is bene-

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ficial in the long run or a quick fix to do damage control. In farming, there is always more than one way of doing things based on location, resources and help at hand. Should I ask an expert for benefits of sheet mulching or should I just lay black plastic, what kind of irrigation system to use, should I take university courses or learn on the go, all such and many more questions arise when money is at stake.

I do extensive reading on topics where I need help or those that are unknown to me. There is a lot of advice for new farmers on ways to save money and be productive and be healthy and establish peace on earth. I have utilized a lot of advice from the wealth of information available on internet but still found that even the best tools and most efficient time saving techniques do not always save money and work for me. But advice on certain topics has helped me from time to time.

However, there is only so much a farmer can accomplish within the first few years of starting his operations. Money has to be put on table in order to best utilize it for one's purpose. The learning and risks for a beginning farmer is manifold when his own stakes are involved. Doesn't mean one has to become bankrupt to learn (you can stop before that) but one has to have a certain degree of mental grit to experiment with their own money (and some cushion to be safe).

I am totally new in the city where I have started my small farm operation. It took two months to recognize the faces of neighbors after winter turned to spring and people finally got out for running and walking their dogs. Starting in a new place is challenging because it is takes some time (and fun) to get to know people and markets. The risk of investing in infrastructure and committing time for the farm seems all the more daunting when you move to a place where people, land, and weather are all greeting you for the first time.

I welcome challenges even if they bring a little fear. My initial investment in my farm has until now crossed $1300 when I initially thought I would only invest $500. Could I have saved the money by just throwing seeds on the ground and waiting for them to turn into plants? Probably not. I am attaching a list of all the materials I invested in my farm this year. Whatever investment I have put in my farm, I have found it to be necessary.

The next time you come across a small farmer who is just starting out, know that he may not share his troubles with you or ask for help. Get personal and make him feel connected. Help him know you. Words of wisdom, opportunities to network and making sure he feels encouraged to pursue his endeavors are indirect ways to help your farming community. Like all business ventures, farmers, big and small, should have a team of enthusiastic people, within their enterprise and outside, who share their vision of growing safe food for the community.

Capital Costs

Materials

Wildflowers
Vermont Seed Company Seeds
Baker Creek Heirloom seeds
Soil Testing
Cress seeds
More vegetable seeds
Fish Emulsion

Infrastructure

Hoophouse materials from Home Depot
Pots (Single)
Garden Labels
Seed starter trays
Growing trays
Potting Mix (organic)
Pitch fork
Spade
Fence posts (20)
Woodsaw + Hammer
Trash bin for food scraps
Water sprayer + clips
Wheelbarrow + Potting Mix
Additional Seed Trays
Pot for planting ginger
Fence
Leaf Compost 10 yards
Pulverized Lime
Rototiller Rental
Hose Pipe 100 ft + Spray Nozzle
Pulverized Lime (more)
Small Mask
Gloves
Agribon Row Cover

Watercress and Cilantro bed

Krati Pachori is a beginning farmer growing vegetables and herbs organically on a farm in central New Jersey. She can be reached at p.kp.krati@gmail.com. She also writes a blog about challenges, surprises and fun of growing food for the first time at http://feetinthedirt-zone6.blogspot.com/