

SMALL FARM QUARTERLY

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



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SPRING 2016

Supplement to Country Folks

LOCAL FOOD AND MARKETS**Donate Your Extra Harvest to the Hungry...With Help***Reduce food waste and feed those in need with the help of gleaning*

by Elizabeth Burrichter

Nearly 40 percent of food produced in America goes to waste, and an overwhelming majority of that food ends up in landfills. This number is hard to swallow, not only for the environmental impact of filling landfills with methane-producing material, but even more so because approximately 1 in 10 people in our region are food insecure, according to data collected by Feeding America. This means that one in 10 people lack reliable access to a sufficient quantity of affordable and nutritious food. As a regional community concerned about the health of those that struggle without enough food, let's make fruit and vegetable "rescue" something that everyone can participate in.

Thankfully "food rescue" is finally gaining some traction in popular media. John Oliver managed to take a comedic look at food waste on his show "Last Week Tonight" this past July. In January, National Public Radio presented a story on the salt called "Thou Shalt Not Toss Food: Enlisting Religious Groups to Fight Food Waste". Even the Environmental Protection Agency has a new initiative to combat food waste, called the Food Recovery Challenge. This initiative "charges organizations and businesses to prevent and reduce wasted food." They suggest not only preventing excess waste, but also donating extra food and composting the rest. Whether or not you participate in their pledge, I am happy to see a large government agency direct our focus on reducing food waste and feeding the hungry.

Farmers are by no means the biggest culprits of food waste, especially when there is still no tax incentive to the farmer to donate unmarketable or extra food. There are several ways that farmers can play a critical role in serving the hungry. Whether a pest makes a crop unmarketable, or you

simply over plant a crop and have more than you can sell, get that extra food to an emergency feeding program whenever possible. There are programs throughout the northeast that can support you in this. If you can host a gleaning on your farm, please do!

I coordinate a program called Squash Hunger at Capital Roots, a nonprofit committed to improving access to healthy food in New York's Capital Region. We "rescue" surplus produce and bring it to food pantries, soup kitchens, and homeless shelters. We started small in 2004 by rescuing 6,200 pounds of produce through the help of our volunteers and community gardeners. In 2015, we redistributed 80,000 pounds to more than 60 community feeding programs, and we intend to continue to grow this program, with a goal of rescuing at least 100,000 pounds of produce in 2016!

We collect produce in several different ways. Squash Hunger provides pickup and delivery of farm donations within one hour of Troy, New York. We also organize volunteers to "glean" the remaining vegetable or fruit harvest at area farms. This activity keeps us busy, especially in the fall and during exceptional apple or vegetable seasons like 2015. Even a gleaning in a relatively small market garden can provide us with a variety of produce items in just a few hours to stock a pantry with the freshest and healthiest food it might have all year. Larger farms give our bigger volunteers groups a chance to fill our vans and trucks with fresh produce and make a donation to every site on our list. More than once I have had clients at food pantries tell me that the produce we deliver is the nicest looking food they have ever seen.

In addition to gleaning farm fields, we place donation bins



Farmer Molly at Colfax Farm helped us glean a variety of extra vegetables this past October
Photo by Elizabeth Burrichter

See Donate page 3


Tiara F1
Cabbage

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Cornell Small Farms Program Update

Seeking cover photography for SFQ
Are you a fan of taking photographs throughout the seasons on your farm? We need your help! We'd love to consider your high-resolution photo for the cover. Farm animals, vegetables, tree crops, and farmers are all great subjects. Please send submissions to sfg53@cornell.edu with "SFQ COVER" in the subject line.

Wholesale Market Watch
Wholesale Market Watch is a new listserve that provides information and resources to facilitate connecting small and mid-sized farmers to larger markets

such as food hubs, grocery stores, restaurants, online marketplaces and cooperatives. Are you a farmer, agricultural educator, or regional food-buyer in the Northeast? You can sign up to receive email alerts from Wholesale Market Watch at <http://tinyurl.com/MarketWatchListserv>. This listserve is part of a larger project called "Baskets to Pallets: Preparing Small and Mid-sized Farmers to Enter Food Hubs, Groceries, Restaurants and Cooperatives". Learn more about the project goals and activities <http://tinyurl.com/WholesaleMarketin> g. If you have an opportunity to share,

please send information to Project Coordinator Violet Stone at vws7@cornell.edu

New York Educators: Register Now for "Baskets to Pallets" Statewide Training
Are you an agricultural educator or service provider in New York State interested in supporting farmers seeking to enter food hubs, groceries, restaurants or cooperatives? The Cornell Small Farms Program and Northeast SARE are pleased to announce a new statewide professional development opportunity. 'Baskets to Pallets: Preparing Small and Mid-sized Farmers to Enter Food Hubs, Groceries, Restaurants and Cooperatives', will be offered on April 18th-19th, at the Cornell Plantations Visitor Center in Ithaca, NY.

In this two-day Training, the authors of the brand new "Baskets to Pallets" Curriculum will introduce a series of lectures, discussions, activities, videos and other teaching resources designed to prepare small and mid-sized farmers

in New York to enter new wholesale markets. The Training is open to 25 educators and agricultural service providers in New York State on a first-come, first-served basis. To register and for questions, contact Project Coordinator Violet Stone at vws7@cornell.edu or 607-255-9227. The Baskets to Pallets Training is supported by Northeast SARE, the Cornell Small Farms Program, and the Local Economies Project.

Cornell Institute for Climate Change & Agriculture: Cornell Maple
Cornell Institute for Climate Change & Agriculture has produced multiple videos on "Climate Smart Farming". In this Cornell Maple video, Steve Childs, the NYS Maple Specialist at Cornell Maple located in Ithaca, NY discusses extreme weather, climate variability, and adaptations taken to overcome weather challenges.

For more Climate Smart Farming resources and videos, visit <http://climateinstitute.cals.cornell.edu/climate-smart-farming/>.

Message from the Editor

We've been blessed with a milder winter in most of the Northeast, after two brutal ones. All three of these years set records for extreme weather, indicating that we are in for changes and challenges to agriculture over the coming years and decades.

Adapting to change, innovating, and responding to surprises are nothing new to farmers – in fact, it's one of the things we do best. The willingness to work toward solutions and find news ways of doing the old are very much the theme of the Spring 2016 issue, appropriate as we experience the dynamic change from dormancy to the growing season in the Northeast.

Our continued thanks goes to the writers and editors that provide such valuable information in these pages, so that we can all be better decision makers in the face of change. We welcome anyone to submit an article for a future issue for consideration, on topics of how you and your farm are adapting to a changing climate, changing economy, and changing consumer base. Happy Spring!

— Steve Gabriel

Donate from page 2

in small grocery stores and garden centers to encourage shoppers and gardeners to either purchase an extra item to donate, or to bring in extra bounty from their gardens. Volunteers regularly pick up the contents of these bins and bring them to one of many suggested community feeding programs in our area. This part of the program has offered us a unique opportunity to engage local consumers in battling hunger.

We also collect extra produce through our partnerships with Community Supported Agriculture (CSA) programs. When customers buy into a farm in exchange for a weekly share of the harvest, farmers are able to pay for inputs upfront and customers get a good deal on their bounty. Due to the nature of this system, customers may sometimes receive produce items that they will not eat. So that these extra items do not go to waste, participating CSA pick up locations host a 'Squash Hunger bin' to collect extra items and unclaimed boxes. Our dedicated volunteers deliver them directly to a food pantry, soup kitchen, or homeless shelter.

We are certainly not the only organization doing this important work, and chances are, there is a group in your area that can support your food donation effort. Just in our part of New York, we have been able to collaborate with other gleaning groups to connect even more farmers with those who need this extra food the most. A local land trust called Agricultural Stewardship Association connected us with Comfort Food Community in Greenwich, New York, a community center that hosts a food pantry well stocked with fresh food items sourced through gleaning. A new gleaning group south of us, coordinated by Audrey Berman and Laura Engelman, will be working closely with 15 farmers in Columbia County this season to glean produce for delivery to pantries in their area. They are sponsored by Philmont Beautification, Inc. and are currently seeking additional funding to expand their work. Stiles Najac coordinates the Glean Mobile, a project of Cornell Cooperative Extension in Orange County. They glean more than 200,000 pounds of produce for donation each year!

If farmers, gleaning organizers, and volunteers can work together to rescue and donate extra produce, many more underserved members of our community will have access to fresh and healthy food. Vermont Law School hosts a program called the National Gleaning Project. On their website they list gleaning and food reclamation programs that work all across the country. This is a great resource for farmers to find support for donating produce. Harvesting, packaging, and delivering produce for free is a lot of work, but you do not have to do it yourself. I urge farmers to use this resource and host a gleaning whenever appropriate, and I urge anyone who is able to volunteer for a food rescue program to do so. Gleanings give non-farmers a chance to connect with their local food economy, get their hands dirty, and make a big difference in the health of those who need community feeding programs to get by. Gleanings give farmers and non-farmers alike the chance to work together to alleviate hunger in our communities.

Liz Burrichter coordinates the Squash Hunger program at Capital Roots, and is a beginning farmer in Eastern New York. She can be reached at elizabeth.burrichter@gmail.com.

For assistance in finding an outlet for your extra harvest, please email Liz Burrichter at squashhunger@capitalroots.org or call our office at 518-274-8685 to ask about our Squash Hunger program.

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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.

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FARM TECH

The Safe and Efficient Use of Tractor Three-Point Hitches

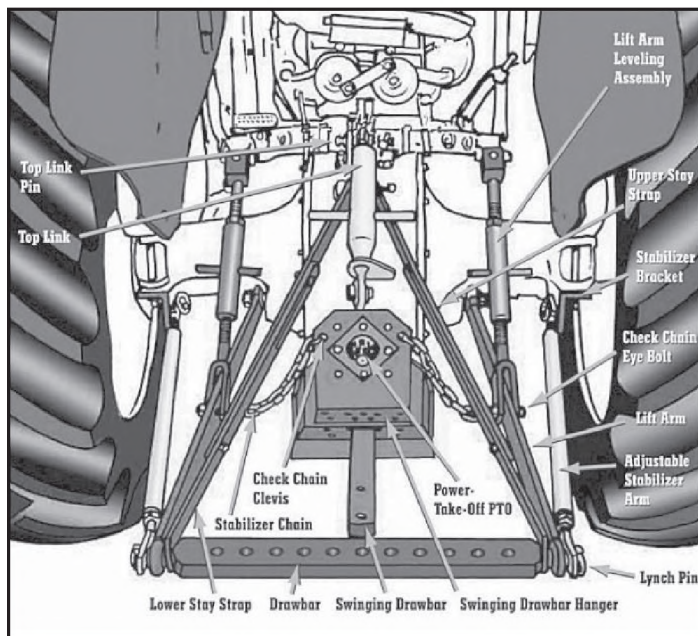
by Rich Taber

Tractors can be wonderful devices to accomplish a whole bunch of different tasks on a farm. Three-point hitches are an integral part of most tractors nowadays; they are so useful that even draft horse enthusiasts are adapting some forecarts with such useful devices. However, there are certain guidelines to follow in the use of three-point hitches, for human safety and efficiency of operation.

In my young and poor days, I remember the first tractor on my own farm in the early 1980's was an ancient 1940'sish John Deere B with no starter, a hand crank fly-wheel ignition system, no hydraulics, a drawbar, and with no three-point hitch, and no muffler. Much like the different stages of life that fishermen go through: stage one, you want to catch many fish and any fish will do (any tractor will do); stage two, you want to catch fewer but bigger fish (tractors with three-point hitches); and stage three, you want to catch the occasional trophy level fish (one or two fairly modern well equipped tractors). At that point in my life I was desperate for any tractor; this was my stage one tractor that set me back \$500.00. However, there was very little that I could do with this machine, other than pull wagons with the drawbar.



A typical fully functioning three point hitch



Picture courtesy of tractorbynet.com

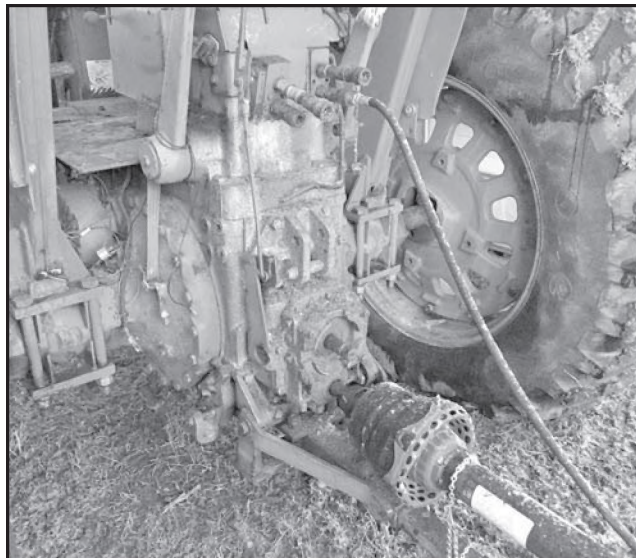
Sadly, I had to part company with this obsolete, inefficient machine. Over the ensuing years I slowly worked my way up the chain with succeeding, but better equipped and safer tractors.

Not all tractor drawn farm implements require the use of a three-point hitch, but many of them do. Haying, tillage, brush hogging, planting, wood splitting, snow removal, broadcast spreading fertilizers, digging postholes, hauling round bales, logging winches; the number of tasks accomplished with a three-point hitch is innumerable.

In my decades as an agricultural educator, I have observed several mistakes that new and beginning farmers make with the use of three point-hitches. Incorrectly and unsafely mounted hitches can result in safety hazards and inefficient use of the implements. Attaching and detaching three-point hitch implements can be fraught with health hazards if proper care and diligence is not taken.

A diagram is included which shows all of the parts of a three-point hitch. It shows a drawbar fastened between the two arms, which is not commonly used, but can be.

Three point hitch implements are normally attached to the top link, and the two bottom ends of the lift arms. You must have the correct types of pins to attach everything, which I collectively call "hitch hardware". These include lynch pins and pins for both ends of the top links. Some common mistakes are to use incorrectly sized or broken lynch pins and top link pins, and without respect to the proper "cate-

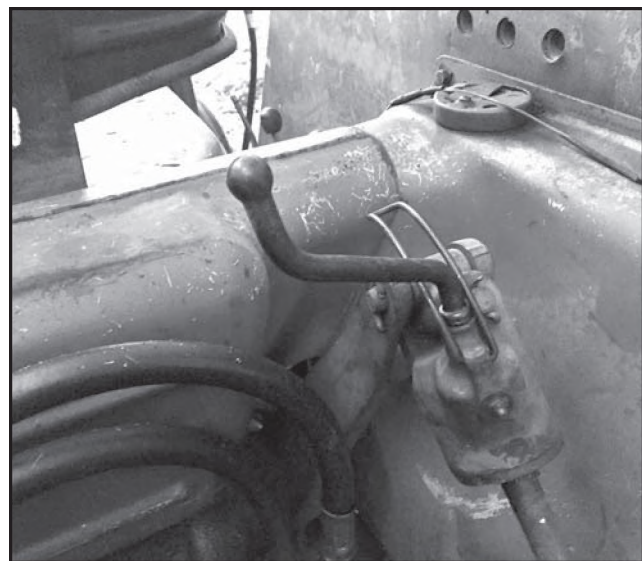


A tractor with no three point hitch which can only be used for towed implements

gory" of hardware. Three-point hitches come in different categories: Category I, Category II, Category III, etc. The take home lesson is that different categories use different size hardware to fasten the implement to the tractor. I have seen all kinds of "MacGyver", or less charitably, "cob-job" types of arrangements for hardware, such as using old bolts, nails, or anything else handy to hitch the implement. This is how accidents happen when your implement falls off the tractor at the most inopportune time. A trip to your local farm supply store or machinery dealer should avail to you all kinds of correct hitch goodies that you might need.

Another common error is to not have sway bars attached to the three-point hitch, resulting in implements that whip back and forth and quite unnerving when bouncing over rough or frozen terrain, sometimes causing damage to the implement or tractor tires.

When buying a used tractor, that machine may not have had its three-point hitch adjusted in a long time, hence the three-point hitch leveling lever may be long rusted shut. You frequently have to level the hitch before using it, and you will then have to spend time "freeing up" the leveling lever. A healthy supply of WD-40 or its ilk should be kept on hand.



A critical three point hitch leveling arm which can easily be rusted and frozen

From a safety standpoint, some implements can be hazardous to try to mount, in that they are heavy, awkward, and cumbersome to get correctly attached. Additionally, beware of the three-point hitches on older tractors with obsolete and inconsistent lifting capacities. I once had an empty three-point hitch fertilizer come crashing down on my back, as I was between the spreader and the hitch lever and was reaching forward to the lever to lower it. Nothing much was happening, and I kept slowly lowering the lever when all at once it came crashing down on my back. If the spreader has been full of fertilizer, I may have taken that big trip upstairs many decades ahead of schedule.

A supply of good hand tools, such as ball peen hammers, wrenches, draw pins, and extra hitch hardware should be kept on hand, and a toolbox mounted on one of the tractor fenders to contain all of that will ensure that you always have what you need on hand.

Be safe, be careful and good farming!

Rich Taber of CCE Chenango is a long time farmer, and agriculture and natural resource educator. He lives with his collection of tractors, all but one of which has a three point hitch, on a diversified livestock, poultry, grazing, and woodlot operation in Madison County, named "Great Northern Farm", which he runs with his wife Wendy who operates the family meat business. He can be reached at 607-334-5841, extension 21, or email: rbt44@cornell.edu.



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Using the Scale of Permanence as a Tool for Land Evaluation

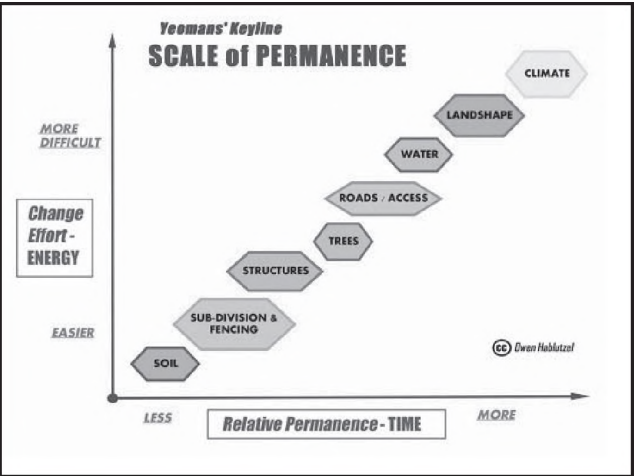
by Steve Gabriel

Whether looking for land to purchase for farming or planning the use of an existing property you own, the task of understanding and taking advantage of the unique environmental qualities your site has to offer can be daunting. As with any ecosystem, the ecology of a farm is complex, and takes time to unravel. Taking the time up front to properly understand your landscape means a greater likelihood of success down the line.

Before discussing some practical tools for evaluating land, it's important to emphasize that in my experience, the most successful farmers spend time listening to the land, in other words learning directly from it the limits and opportunities a given parcel has to offer. In most cases, it is far better to match a given enterprise or system to the land, rather than try and work to shape the land to match the system. This is, in fact, the underlying concept behind the scale of permanence.

The scale of permanence is a tool developed by farmer and engineer PA Yeomans Australia in the 1950s as part of a strategy for farm use he called keyline design. The scale was the backbone of this system for whole farm planning, and was originally dictated as:

1. Climate
2. Landshape
3. Water Supply
4. Roads/Access
5. Trees
6. Structures
7. Subdivision Fences
8. Soil



Thanks to Owen Hablutzel for use of this image.

The basic idea is that, as one moves down the list, the elements of a farm system become less permanent; that is, they take less energy to change and are less permanent as a factor for planning, as indicated by the graphic.

More recently, permaculture designers Dave Jacke and Eric Toensmeier updated this list to reflect a bit more complexity and to factor in the impacts of social systems on the farm:

1. Climate
2. Landform
3. Water
4. Invisible Structures (Social and economic factors)
5. Access and Circulation
6. Vegetation and Wildlife
7. Microclimate
8. Buildings and Infrastructure
9. Zones of Use
10. Soil
11. Aesthetics and Experience

Looking at the list, we can note that the factors of landform and water, while potentially changeable on the farmscape, would require large machines moving earth around, while

the simple planting of a bed of flowers or the removal of old farm debris could dramatically improve the aesthetics and experience of a site. In the same sense, building a proper pond (landform, microclimate) would be a change that would last hopefully at least several hundred years, while a well-installed livestock fence (buildings & infrastructure) would be impressive if it reached the 100 year mark.

The exact order of the list can be variable depending on the site and situation. One item on the list might come as a surprise to some: #10, or soil, is far down on the list, which implies that it is relatively easy to change. While it is true that largely the structure (sand/silt/clay) and parent material (bedrock) of the soil are certainly permanent and nearly impossible to change, having in some cases formed over thousands of years, as farmers we know that one of the quickest item we can affect is the health and vitality of our topsoil, or the top 10 – 24". Through rotational grazing, amendments, cover cropping, aeration, etc the change in productivity and organic matter can in fact change rapidly.

Another brain twister is #4, which is called invisible structures, meaning the unseen forces that affect the landscape. I personally like to call this "social and economic factors" that affect the farm, which can be anything from your personal finances to the influences of neighbors or the zoning and legal limitations of your municipality. This again might be higher or lower on your personal list depending on where you live and what your specific situation is.

Zones of Use

Another one that may not be obvious at first glance is Zones of Use, #9 on the list. This refers to the zone planning tool in permaculture, which encourages assessing and also designing activities on the farm in relation to energy and resource needs.

Zones are determined by:

1. How often that element is visited (how often it needs you & how often you need it)
2. How much maintenance is required (intensive care — vs. totally left to nature)
3. Access to water supply/energy sources (most to least)
4. Amount of land required (smallest to largest)
5. Compatibility with other elements

#	How often visited	Activities
Zone 0	Center(s) of activity	House, barn, tool shed
Zone 1	Visit daily or multiple times, small intensive	Gardens, vegetables, annuals,
Zone 2	Visit daily	Small animals,
Zone 3	Visit several times a week, or less	Fruit and nut trees, larger livestock
Zone 4	Visit seasonally	forest products, firewood
Zone 5	Visit once per year or less	Hunting, recreation, wildlife

The chart gives a rough sense of how zones could be divided up. As with all things, context matters, and various enterprises don't always fit into a neat little box. For example, on our farm, the woodlot is not zone 4 but zone 1; we harvest mushrooms there almost daily in the growing season, as well as raise ducks, tap trees for syrup, and host

kids programs in the woods. On other farms, the woodlot may only be visited in the winter or spring for firewood harvesting.

The big picture

Zooming back to have a look at the whole scale of permanence, it is likely that a few of the items will be the main challenges for you on your land. The degree to which others have been decided for you in the past also comes into play here; some sites are a "clean slate" while others already have established infrastructure and patterns of use. Especially in the latter case, it's worth considering making changes if the previous owner's decisions don't match with your own.

In my experience, the most critical elements that rise to the top for most farms and landscapes are water/landform, access and circulation, and microclimate. Paying careful attention to these aspects of the farm planning are critical to avoiding costly problems and headaches years after you get going.

Of course, none of the elements can be considered alone, as all the parts of any system always operate in relationship to one another. For example, planning for road and pathways along with access and circulation can avoid flooding damage to critical infrastructure. Fencing paddocks that are a similar microclimate will also help you consider management as the variable season unfolds each year. And thinking about how you move people, animals, materials, etc. around the farm will save you precious time and energy, which may seem insignificant in small doses but definitely adds up over time.

Using the Scale

There are many useful applications of the scale of permanence. The first is to simply create your own list of the elements that are important to your planning, which might mean eliminating some from the above group. Second, you can describe with words and even map with drawings each of the elements to get a better sense of your landscape, or a piece of land you are considering for purchase.

A chart, available at <http://tinyurl.com/scaleofpermanace>, gives you a starting checklist of items to consider for each category, along with notes for what resources can help you learn more about your property.

Steve Gabriel is a farmer in Mecklenburg, NY and extension educator for Cornell Small Farms Program as well as editor for this publication. He can be reached at sfg53@cornell.edu



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LIVESTOCK AND POULTRY

Dairy Grazing Apprenticeship

by Ellen Fagan

New York State is the third leading producer of dairy products in the United States. However, if its dairy industry continues to follow the trend it's on, it might not be for long. Dairy farms have been disappearing from New York's landscape for decades. From 1998 to 2007, New York lost over 2,000 dairies. Most of the farms exiting were smaller dairy farms, and, with an aging population of farmers, the few smaller dairies that remain are a threatened species. Small dairies are an important component for a healthy and diverse farm industry and support thriving rural communities.

The loss of 100 dairy farms in a single county could cost over \$30 million per year. The Cornell Dairy Farm Business Summary has shown that dairies that use grazing as a form of production are more profitable than non-grazing dairies of the similar size. Because of this, the Cornell Small Farms Program is leading the New York Dairy Grazing Apprenticeship (DGA). The DGA is a nationally recognized apprenticeship where a young person can work on an existing grazing dairy farm to receive on farm training and also complete required college training.

Unless born into a dairy farm business, if a young person has an interest in dairy farming it's difficult to get their foot in the door for many reasons. Their barriers can include a lack of access to farmland, capital, and skills. The Dairy Grazing Apprenticeship was created by and for farmers to address this challenge. Wisconsin based grazing dairyman and for-



mer ag instructor, Joseph Tomandl III identified the decline of the small grazing dairy farm in the United States, and sought to develop a program to strengthen the dairy infrastructure and create opportunities for current and future dairy farmers like himself. Thus, he created the Dairy Grazing Dairy Apprenticeship, the first accredited Apprenticeship for farming in the nation.

The DGA follows the same process as any other apprenticeship. It is a program designed to prepare skilled worker for a specific trade while they work as a full-time paid employee. Thanks to the DGA, "Dairy Grazier" is now a federally recognized occupation. According to the DGA's website "A dairy grazier is a farmer who uses managed grazing. In managed grazing systems, the majority of farm acres are planted to perennial forages and cows are rotated through paddocks of high quality grasses that are allowed to rest and regrow. Using this cost effective method, dairy graziers are able to restore natural resources, produce high quality milk, and remain profitable in both conventional and value-added markets." In the DGA, apprentices work under the mentorship of approved "Master Dairy Graziers" for a duration of 2 years. At the end of the program, it is not unusual for this relationship to lead to a business partnership or even plan for a transition of farm ownership.

ensure the apprentice's skill development. In return for being a mentor, the Master Grazier gets a long term, dedicated, and engaged employee who might even become a business partner in the future.

Why Grazing?

There are a few reasons for this. Firstly, as a young farmer, buying in grain feed can be expensive and buying machinery to harvest crops is a significant investment. Managed grazing is a method to lower input costs, while at the same time improving animal and environmental health, that many successful dairies practice. It also means an easier way to get into dairy farming for younger people who do not have much capital.

What does one do with a Dairy Grazing Apprenticeship?

There are a few options! The DGA general prepares any person to own and manage their own farm. An apprentice might find an avenue to their own farm through the apprenticeship by gaining equity in livestock or land. As said before, the Master Grazier and apprentice can plan to become business partners at the beginning of the apprenticeship, or the Master Grazier might plan to transition the farm to the apprentice all together. The DGA is flexible and depends on the Master Grazier's and apprentice's goals. The DGA is also a good way for a young person to try dairy farming before they commit to it completely.

What does the DGA involve?

The DGA is a 2-year, 4,000-hour hybrid program of on the job training and related instruction. The Master Grazier and the apprentice, with the guidance of an education coordinator, use the structure of a training manual, or "the job book", to ensure the development of the specific skills that the apprentice will need to be a successful Master Grazier. The related instruction likely will be in the form of online classes on the apprentice's time. For New York, this aspect of the apprenticeship is still in planning.

How do I sign up to be an apprentice/Master Grazier?

Although the program is still in development in New York, potential apprentices and Master Grazier can make a profile online at dga-national.org.

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DAIRY**Vermont Farmstead Frozen Yogurt Speeds Up Production with Slow Money*****Vermont investors, capital providers, and entrepreneurs connect at Slow Money Vermont events to boost local farm and food economies and communities***

by Rachel Carter

Creamy farmstead frozen yogurt in vanilla, chocolate, maple, and coffee flavors is pumped into 300 Cobb Hill Frozen Yogurt pints a week — a number that has more than doubled from this time last year.

“A year ago, it took us three production days to do what we can now do in one,” exclaims Jeannine Kilbride, director and owner/partner of Cobb Hill Frozen Yogurt in Hartland, Vermont.

Last May, Kilbride presented at a Slow Money Vermont Entrepreneur Showcase event, making the case for a new batch freezer to double production of the artisanal frozen yogurt made in small batches from the milk of Jersey cows at Cedar Mountain Farm — also a part of the Cobb Hill community.

Cobb Hill

Cobb Hill is home to a co-housing community of 23 families who live and work on a 270-acre farm in Hartland, Vermont. Cobb Hill encompasses Cedar Mountain Farm — a cooperative dairy, produce, and meat farm; Cobb Hill Creamery — producers of Cobb Hill Cheese and Frozen Yogurt; as well as maple syrup, Shiitake mushroom, and Icelandic Sheep meat producers. All of the community enterprises located at Cobb Hill work together to create an ecologically sound and sustainable system for providing food for their families and the local community.

The co-housing model provides community members with use of the land, barn space and other materials, as well as tax breaks — all adding up to savings on production costs. Kilbride originally worked in the cheese making enterprise. She and partner Donn Cann made the decision to expand into yogurt as a way to specifically use as much milk as possible to support the farm model for the community.

“The low production costs allow us to pay a little more for the milk which enables the dairy farmers to make more,” Kilbride explains. Cobb Hill Frozen Yogurt is produced with non-homogenized whole milk from the Jersey cow herd at Cedar Mountain Farm. “Cobb Hill offers many value added opportunities— maple syrup is produced here that could be made into maple candies just like how we buy milk and make into frozen yogurt. And, we never have a shortage of milk if someone wanted to make more fresh cheese,” she adds.

Using economies-of-scale, Cobb Hill Frozen Yogurt is under contract to buy a certain amount of milk to sustain the poundage so the Cedar Mountain Farm dairy partners can be profitable and can continue to produce the milk needed to make value-added products like cheese and yogurt. This

Cobb Hill Frozen Yogurt owner partner Jeannine Kilbride

**Photo by Robert Eddy
See Vermont page 9**

**FARM BUSINESS****Expect Change: Why and How to Help Your Employees Adjust**

by Anita Deming

When I first started at Cornell Cooperative Extension in January of 1978, the first meeting I went to on a State level was about how important it was to change extension to become more responsive to our clientele. Since I was new to extension, I thought what a great idea; this meant everyone else had to change except me. Now I am among the “old” guard, and something that I have learned about change is that it happens. In fact, change is happening even faster than ever before. Just when I learn something, it changes. (Periodically, I have to remind my daughter that I went to college with a slide rule, as she chides me on not being up to speed with the new computer programs.)

A few years ago I read a book by Ken Blanchard on change called, “Who Moved My Cheese?” It uses a metaphor of a mouse in a maze that learned one path to the cheese and then the cheese was moved. At first the mouse was very confused, but eventually it walked around and found some cheese in another place. After a couple of times the mouse learned very quickly to look for the cheese in a new place and less time was lost before the new cheese was found. If the cheese was totally removed, the mouse would look for a while before giving up.

What did Blanchard infer from this exercise about change and motivating people?

- “Change Happens = they keep moving the cheese
- Anticipate Change = get ready for the cheese to move
- Monitor Change = smell the cheese often

so you know when it is getting old

- Adapt to Change Quickly = the sooner you let go of the old cheese the sooner you can enjoy the new cheese
- Change = move with the cheese
- Enjoy Change = savor the adventure and the taste of the new cheese
- Be Ready to Quickly Change Again and Again = they keep moving the cheese.”

What have I learned about change over the years? I am not as afraid of change as I used to be. I used to fear that I would not be the “best” in new situations. However, I have found that learning new things is fun, challenging, and sometimes rewarding. In fact, I am not likely to be the “best” if I don’t change. I have also learned that not all change is good, but worrying about it is not productive either. Better to find out if it works and if not, change again to something that does work.

Several studies on change and employee motivation have shown that change can demoralize people who do not understand or support the need for change, or who do not understand where their rewards come from. Studies show that some employees remain motivated and happy by including them in the planning for change and decision making on alternatives. Other studies show that participation in decision making is not wanted by some employees. It seems that different employees react differently to involvement. Which type of employee would you like to hire? One who wants to evolve with the business and help develop positive changes in your business or one who does not want to be involved (“Just tell me what to do. I don’t care”)?

3 Tips for Helping Your Employees Deal with Change

- The first thing you learn as an employer is that it is impossible to motivate someone that is not already self-motivated. Hiring the right personality is often more important than their present knowledge of facts.
- The next crucial thing is for your employees to understand and support the mission of your business, e.g., do they believe that it is important to feed the world cheese? Do they want to be a part of making that cheese?
- Finally, employees need to know the factors upon which they are being judged and have some control over those factors in order to perform at their best. For example, as the process of “making the cheese” changes, are your employees rewarded for adjusting their schedule and work load to accommodate the change? Do they have feedback on the success of the new cheese making process or ideas to make it better?

As the leader of a mission-based organiza-

tion, I sometimes feel that my primary role is to listen to staff and volunteers for ideas about needed changes. Often they will identify problems first and have the best ideas for fixing them. My job is to find out how to pay for changes and how to implement them to better meet our mission to help our farmers, citizens, and communities locally and across New York State.

Anita Deming is Executive Director with Cornell Cooperative Extension of Essex County, and has been an agricultural educator for more than 30 years. She founded the Adirondack Harvest project with many local farmers and interested in consumers in July 2004. Anita can be reached at 518-962-4810 x409, ald6@cornell.edu

For more information on agriculture in Northern New York, visit the Cornell Cooperative Extension of Northern New York website at www.ccennny.com and www.nnyagdev.org. Cornell Cooperative Extension provides equal program and employment opportunities.

“Cheese” for Thought

- “It is not necessary to change. Survival is not mandatory either.” — W. Edwards Deming
- “Insanity: doing the same thing over and over again and expecting different results.” — Albert Einstein
- “Change means movement. Movement means friction. Only in the frictionless vacuum of a nonexistent abstract world can movement or change occur without that abrasive friction of conflict.” — Saul Alinsky
- “Progress is a nice word. But change is its motivator. And change has its enemies.” — Robert F. Kennedy
- “Change is inevitable - except from a vending machine.” — Robert C. Gallagher

From Vermont *page 8*

created the need for Cobb Hill Frozen Yogurt to increase production and efficiency and for that, they needed a batch freezer.

So, when Kilbride learned of the Slow Money Vermont Entrepreneur Showcase, she prepared and was selected to present to a group of investors and capital providers last May in White River Jct.

Avid Slow Money Vermont member, Vermont Community Loan Fund, was in the room and connected with Kilbride,

resulting in a \$13,050 loan for the new batch freezer, which has indeed doubled production and then some — 300 pints a week compared to 140 per week a year ago. The loan also preserves one full-time job and opens the space for Kilbride to transition out of the cheese making business into frozen yogurt full-time.

Tips for Producers

As Cobb Hill Frozen Yogurt production has increased, Kilbride has learned a lot about product development — from ingredients and test batches to researching competition and packaging.

“It’s important to learn who to call for what you need to include on labeling in regards to the Food Safety Modernization Act (FSMA), non-GMO labeling, and nutritional labeling,” offers Kilbride. “The increase in regulation has added a lot of administrative time and costs that you need to prepare for.”

This summer, Cobb Hill Frozen Yogurt jumps from three to five distributors and anticipates a solid increase in sales — considering numbers have already doubled from last winter, prior to adding the two new distributors. Being proactive about the FSMA rules is serving to be paramount.

“We just jumped through a hoop getting a third party audit part of the food safety rules (FSMA) and received a passing grade and may now be able to enter into Whole Foods. Food businesses who are ahead of the curve may have more opportunity to get into new and expanding market channels,” says Kilbride. “It is important to try to set up your food safety plan first — before falling prey to the high prices companies solicit for food safety plan development. Audits are requested by stores or distributors so be prepared ahead of time by having a food safety plan intact.”

Another suggestion to producers — seek out financing



The Jersey cow herd at Cedar Mountain Farm supply the milk for Cobb Hill Frozen Yogurt

Photos by Robert Eddy



Donn Cann pours Cobb Hill Frozen Yogurt

Porcelain Doll

F1 pink pumpkin

(20-24 lbs.) Porcelain Doll is an exotic pink pumpkin perfect for fund raising October activities. PM resistance.



Cedar Mountain Farm daughter Mauve holds Cobb Hill Frozen Yogurt

opportunities that match your scale of production. If there is a Slow Money chapter in your region, get involved!

Slow Money

Slow Money is a way to connect farm and food enterprises with the investors in their communities to grow sustainable food economies. The fast money of Wall Street compromises healthy and resilient local economies, so socially-minded investors are taking their money elsewhere — to the farms and food businesses that nurture the communities where they live. While reshaping how investments are made in the food system takes time, the Slow Money movement is picking up speed in interest from investors. Investments being made in local and organic food enterprises across 46 states and seven countries are over \$48 million since Slow Money began in 2009 with the publication of founder Woody Tasch’s book, *Inquiries into the Nature of Slow Money* (Chelsea Green Publishing).

In the Northeast, Slow Money chapters include Maine, NYC, two in Massachusetts (Boston and Pioneer Valley), and the newly formed Slow Money Vermont — developed through a task force connected to Vermont’s Farm to Plate food system plan. Slow Money Vermont is helping Vermont reach its Farm to Plate goals to increase investments and financial partnerships in food system enterprises.

Slow Money Vermont recently launched the Vermont Food Investors Network to help investors and entrepreneurs develop local food investments through networking and online partnerships with Milk Money Vermont. Up next for Slow Money Vermont organizers is to hold another Entrepreneur Showcase to continue to connect food businesses with capital providers and investors, and to host the 2016 Slow Money Regional Gathering.

Rachel Carter is the communications director at the Vermont Sustainable Jobs Fund, a non-profit organization created by the State of Vermont to help develop Vermont’s sustainable agriculture, renewable energy, and forest product businesses. She can be reached at 802-318-5527 or rachel@vsjf.org.

Sources for more information:

Cobb Hill Co-Housing <http://www.cobhill.org/>
Cobb Hill Frozen Yogurt <http://cobhillcheese.com/frozen-yogurt/>
Milk Money Vermont <http://milkmoneyvt.com/>
Slow Money <https://slowmoney.org/>
Slow Money Boston <http://slowmoneyboston.org/>
Slow Money Maine <http://www.slowmoneymaine.org/>
Slow Money NYC <http://slowmoneynyc.org/>
Slow Money Pioneer Valley (MA) <http://www.pvgrows.net/working-groups/working-group-slow-money-pv-chapter/>
Slow Money Vermont <https://www.facebook.com/SlowMoneyVermont/>
Vermont Community Loan Fund <http://www.investin-vermont.org/>
Vermont Farm to Plate <http://www.vtfarmtoplate.com/>

NATURE AND STEWARDSHIP**A Vermont Farmer's Last Resort***This farmer worked his way across the country and back, finally landing in Vermont.*

by Julianne Lovergine; edited by Amy Overstreet

From Massachusetts, to California, to Tennessee, this farmer worked his way across the country and back, finally landing in Vermont. "I missed the seasons in New England," he says. Together, Sam Burr and his wife Eugenie Doyle searched for the perfect spot to begin their first independent farming operation, but understood that starting out can be challenging. So, when they came across a house that rattled and shook when the granite trucks passed, with a barn across a busy road, and another family in the shed with no running water, it seemed like a last resort.

Sam and Eugenie's adventure with Last Resort Farm began in 1980, as a small conventional dairy farm in Brookfield, Vermont. They later relocated to Monkton and bought a larger herd of registered Jersey cows, but chronically low milk prices drove them to sell the herd in 1994, turning their focus to hay, vegetable and berry crops. With a young family, and health and safety as a concern, they transitioned to organic and became certified.

Ninety of the 279 acres on the farm are tillable, with 80 acres in hay, over 6 acres in berries and vegetables, and several more in cover crops. They farm with their son, Silas, a couple of full-time seasonal employees, and several part-time helpers. Their berry specialties consist of strawberries, raspberries, blueberries, currants, and gooseber-

ries. Vegetables include asparagus in the spring, greens, beets, carrots, garlic, onions, corn, and tomatoes in the summer, and potatoes, sweet potatoes, squash, pumpkins and fresh ginger in the fall. Silas has also been working on an aquaponics project raising rainbow trout and basil in the barn.

The Doyle-Burrs specialize in garlic, growing 1500 pounds annually. "Garlic is a fascinating crop," Sam says. "If you take the same variety, and grow it in different places, it will look different both because it takes up nutrients in the soil like iron, that will make it very red, and due to growing season length, it may develop a totally different number of cloves on each bulb, and acclimates itself to the farm where it has been grown."

The diversified family farm focuses on local markets, selling to area co-ops, small groceries, restaurants, and the Richmond and Winooski farmers markets. Nearly 100% of their produce is sold within 20 miles of their farm. They also provide pick-your-own berries in the summer, a year round farm stand, and a farm share program that allows members to come to the farm and select the produce of their choosing. "The farm share program is our version of a CSA. They give us \$100 and we give them a card with \$110 on it and they come to the farm and pick out what they like," says Sam.

As with many farms, eventually some improvements were needed on the land. In 2012, water quality monitoring systems detected an impaired section of Pond Brook,

which was identified as the largest contributing tributary for nutrient loading into the Lewis Creek Watershed. The Lewis Creek Association later conducted field assessments and found a number of large gullies on Last Resort Farm. "These gullies were starting to eat into the fields," Sam explains. "Plus you could see when there was a weather event, the brook was sullied." His awareness of water quality degradation in Lake Champlain and the contribution of agricultural runoff, combined with his ethic for conservation stewardship, led him to research what he could do to protect soil and water on his own farm.

In an effort to explore and compare the effectiveness of different conservation practices, two techniques were used to reduce gully erosion on the farm. Working through the Vermont Agency of Natural Resources (ANR) Ecosystem Restoration Program, the Lewis Creek Association received a grant to install 'soft engineering' in one of the gullies. Also referred to as 'engineering with nature,' it is an alternative to more traditional materials, such as stone (rip rap). This gully was treated with softer, hand placed materials, including brush and small logs, and used grading and gully shaping to reduce water velocity. Benefits of this approach include a more natural appearance, reduced cost, and less disturbance, but it may require more maintenance, and not last as long as more traditional materials.



Sam Burr is owner and operator of Last Resort Farm in Monkton, Vermont, where he has worked with conservation partners to help stabilize soil erosion in an effort to protect and improve water quality.

Photos by Amy Overstreet, USDA NRCS

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In contrast, the USDA Natural Resources Conservation Service (NRCS) provided technical and financial assistance to help stabilize three of the gullies utilizing more traditional engineering practices and materials. Through NRCS' Environmental Quality Incentives Program (EQIP), Sam worked with Soil Conservationist Marybeth Whitten and Soil Conservation Technician Pete Lossmann to install a rock-lined water-way practice, ensuring that the most critical gullies were stabilized. The benefits to this approach include proven success in combating erosion, and a longer life span due to the durability of the materials.

The application of these diverse engineering techniques will serve as a good demonstration in the effectiveness, durability, and lifespan of different methods. Sam initially felt that bringing in the stone to fill the gullies with large machinery might be an issue. "These are pretty sensitive areas anyway, so you have the potential to create problems at a time you are trying to solve problems," he says. "But they were able to time it appropriately; that winter we had enough frost in the

ground and not too much snow. We were able to get heavy trucks through successfully and operate the excavators on the steep banks with minimal disturbance." The stabilized gullies have been in place for about a year now, and the two approaches will be monitored through photographic documentation at specific set points.

Sam feels strongly about protecting the environment. He currently serves on a town committee that reviews applications for town funds to help finance conservation projects. "Some of the farms here have been reluctant to work with government programs - and so by trying to show people that there's assistance available, and everybody is working toward the same goal, and given the new legislation requiring farmers to protect water quality, we're trying to work with our neighbors to see what we can do to improve the quality of the water in the brook."

Sam and Eugenie have been farming for over 30 years - a long stretch for some. But when asked why he rises each



USDA-NRCS worked with Sam through the EQIP Farm Bill program to install traditional engineering practices, like stone, to stabilize gullies that were contributing to impaired water quality. The benefits to this approach include proven success in combating erosion, and a longer life span due to the durability of the materials.

morning and goes outside every day, Sam replies: "We feel very fortunate to be here. The family that was here before us was here for five generations. This farm is a real resource and a beautiful resource, so, making it sustainable and keeping it going is why we're here. It's been a real home for us, we raised our three kids here, and we feel very fortunate."

"Sam's involvement and input throughout the project helped to shape it and make it a success. His work ethic and stewardship of the land leave me with no doubt that the Doyle-Burrs will be on this land for five generations, just like the previous family," said Lossman.

Julianne Lovergine is an Eco AmeriCorps Member and NRCS Conservation Assistant in Williston, VT

For more information about conservation programs and assistance, contact your local NRCS office or visit www.nrcs.usda.gov



Working through the Vermont Agency of Natural Resources (ANR) Ecosystem Restoration Program, Sam worked with the local Lewis Creek Association who received a grant to install 'soft engineering' in one of his gullies. It was treated with softer, hand placed materials, including brush and small logs, and used grading and gully shaping to reduce water velocity.



A young kale plant looked up from her furrow.

"You planted me with such care," she said to the farmer,
"let me return the favor by
preparing your payroll."

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LOCAL FOODS AND MARKETS**Binghamton Farm Share: Supporting Local Farms and Communities***A modified CSA program bringing local produce to low-income areas.*

by Kate Miller-Corcoran

Community Supported Agriculture, or CSAs, are important in connecting consumers to farmers. CSA members invest in a farm for an entire season, pledging support in return for a weekly box of produce harvested directly from the land they are investing in. These shares are picked up at a specific location, giving people direct access to produce and other farm-fresh products. However, not everyone has reliable transportation to these locations, which are often found at farmer's markets or central shopping areas, and farmers often do not have the capacity to be in multiple locations. That's where Binghamton Farm Share comes in.

Binghamton Farm Share is a modified CSA program, born from a study done in 2012 by the Center for Agricultural Development and Entrepreneurship (CADE) in Oneonta, NY, with funding from the Healthy Urban Food Enterprise Development Center of the Wallace Center in collaboration with VINES (Volunteers Improving Neighborhood Environments) and the Healthy Lifestyles Coalition. The study was performed in order to determine the best way to increase access to good food in local food deserts. It found that convenience and price were the top priorities for residents when it came to buying food. Binghamton Farm Share achieves both of these.

Each week of the growing season, Binghamton Farm Share goes directly into neighborhoods that lack fresh, healthy produce to distribute CSA shares from local farms. By accepting SNAP benefits and providing a 50% discount to income eligible members, residents can better afford this good food. Eligibility for the discount is determined by income guidelines set forth by the federal department of Housing and Urban Development and subsidized in part by the City of Binghamton's Community Development Block Grant and funding from United Way. Getting into these communities is helping people eat healthier while getting the most out of their food budget. Ninety-three percent of members surveyed reported learning to prepare new vegetables through Binghamton Farm Share. One customer said, "I tried several new veggies and found a love of them. I also liked the fact I could try a new vegetable and if I did not like it, it did not cost me a big part of my weekly food budget."

Binghamton Farm Share relies heavily on the relationships that have been cultivated with the partner farms. They are the backbone of the program. CSAs normally benefit farmers because they receive payments upfront for the season and this money is used to help with the initial costs of getting the growing season started. While the partner farmers do get paid 100% of the regular cost of each share, BFS partner farms allow the program to collect payments throughout the season. These farmers trust that BFS will work to retain members through strong representation of their farms at distribution sites, proper care of their shares, and

**BFS Partner Farms discuss best practices.**

Photo by Danny Morales

**A Premium share from Early Morning Farm - \$32/week (10-12 items).**

Photo by Emma Lecarie

education of members. In return, BFS trusts that the partner farms will deliver quality, fresh produce on schedule for the members receiving shares from their farm.

Through a capacity building grant from Northeast Sustainable Agriculture Research & Education (NESARE), Binghamton Farm Share is working to strengthen the partner farms through technical trainings and access to mini-grant funding. Through on-farm and classroom based trainings in collaboration with Cornell Cooperative Extension of Broome County (CCE-BC), these workshops cover topics such as marketing, labor, packaging, and building community. Bringing in experts in these fields who can tailor their teaching to agriculture helps these farmers to obtain knowledge about these topics in a succinct, applicable way.

The first on-farm training was held this past October at Early Morning Farm. Owner Anton Burkett led the other farmers on a tour of his packaging facilities. It is helpful for the farmers to learn from one another and have the ability to ask real-time questions while discussing different ways of operating their CSAs. Continuing to have the partner farmers of BFS gather together for these workshops creates a community where farmers can feel comfortable to share ideas.

While it is important to BFS that the partner farms have the capacity to sustain the program as it grows, it is equally as crucial that the program grows its capacity to have more members for the farmers to sell shares to. Binghamton Farm Share works to recruit and retain share members throughout the season.

Simply giving people access to healthy food isn't enough. Members need to understand how to use the produce they receive each week or it will go to waste and the member will likely leave the program. BFS members are provided with weekly recipes that coincide with the produce found in their share. CCE-BC also periodically sends nutrition education staff to distribution sites with prepared samples, enabling members to try vegetables in new ways. As a new initiative in 2016, BFS is introducing an education workshop called "Binghamton Farm Share 101," which will cover short and long term storage as well as preparation tips. The aim is to have a hands on informational so that people can make the most of the program.

The best educational resource Binghamton Farm Share has are the volunteers staffing distribution sites. Many are local to the neighborhoods being served and often start as share members. Member and volunteer Tracey Horsford commented that volunteering "is a way of being able to meet people in community." Because these volunteers already have experience with the share contents, they are a great source of practical knowledge for the community.

These volunteers also create a feeling of community at each individual distribution site. Volunteer and member Wendy Pursel

See Farm Share page 13

FARM BUSINESS

Do You Need Workers' Compensation for Your Small Farm?

by Reuben Dourte

Workers' compensation insurance is a subject that is dreaded by many agricultural businesses, and for good reason. First, carrying workers' compensation insurance is a mandate in every state. That means that qualifying farmers don't have much "choice" as to whether or not they purchase this coverage.

Secondly, very few insurance companies offer workers' compensation programs for agricultural employers, making coverage outside of a state fund often hard to find. Since laws can vary from state to state, it's hard to be all-inclusive when discussing Workers' Compensation, so it should be noted that it is important to consult with a licensed insurance agent in your home state before making decisions about your insurance plan.

Workers' compensation insurance arose out of the need for injured workers to have some sort of restitution in the event that they were injured on the job. Before workers' compensation laws, injured workers were often left without the means to provide for their families or receive medical treatment.

It's important to note that the laws in most states are written to be compensatory in nature, meaning they are designed to pay an injured worker for both wage loss and medical expenses, regardless of fault. What this means is that a worker who makes a bad decision while on the job, or does something that their employer has warned against, can still collect benefits under their employer's workers' compensation policy. Common law establishes that in exchange for the employer agreeing to pay for workplace injuries, regardless of fault, the employee gives up the right to sue their employer in the event they are injured. The employee's compensation is limited to wage loss and medical expenses, or their "sole remedy".

Each state has different laws in regard to situations where an employer can be sued, but these situations become very limited when the employer is compliant with workers' compensation laws and therefore receives the aforementioned Common Law defenses. It's important to note that non-compliant employers who don't carry worker's compensation policies give up these common law defenses and expose themselves not only to the cost of personally paying for

injured workers' wage losses and medical expenses, but also to negligence lawsuits brought by the injured employee(s). Additionally, many states issue fines for non-compliance and, depending on the level of the infraction, an employer could be charged with a misdemeanor, or felony, for not carrying a workers' compensation policy.

In some states, like Pennsylvania for example, agricultural employers wrongly believe they are exempt from workers' compensation laws. States that have agricultural exemptions have strict guidelines that must be met by an employer. Keeping with our Pennsylvania example, there is a specific payment threshold that cannot be exceeded per employee; per year and/or a maximum number of days any one employee can work per year. If you think your farm qualifies for that exemption, it is imperative you discuss this in detail with your insurance agent to make sure you remain compliant.

In states with this exemption, farm insurance companies will often offer coverage called Farm Employer's Liability, which will protect you in the event that one of your employees claims your negligence directly caused them injury during employment. This is not a substitute for worker's compensa-

tion, which pays regardless of fault; however, it is an important coverage to include on your policy if you employ seasonal labor.

Remember, open and honest discussions with your agent are always the first place to start when determining workers' compensation compliance in the state in which you do business.

Reuben Dourte is an Account Executive at Ruhi Insurance specializing in Farm and Agribusiness Insurance. He can be reached through <https://www.iruhl.com/>.

Because specific details can vary between state jurisdictions, this article is for discussion purposes only, should not be construed as legal advice for situation specific circumstances, and employers should consult the worker's compensation laws and a licensed insurance agent in their home state before making decisions about their coverage.

Farm Share from page 12

said of her experience, "It was nice to meet others who are wanting to better the food system for their selves and others. It makes a difference when you meet others who want things to be better and healthier." Member surveys cite both the friendliness and knowledge of the distribution site staff as well as how members felt they had made new connections with like-minded people, such as Wendy, in their community.

These community connections are important and Binghamton Farm Share continues to try and strengthen and maintain them, which can be a challenge in neighborhoods that tend to be transient. BFS relies on the connections that both the volunteers and the distribution sites have already made with residents. For example, BFS distributes out of a local community center where the Healthy Lifestyles Coalition is housed and works with the staff there when doing outreach. Having a familiar person in the neighborhood approaching doors and talking to residents often results in a better outcome because of the level of trust that has already been established. The longer BFS distributes in an area, the more connections are made organically within the community. Community leaders are often the first to participate in BFS and then share by word of mouth the benefits of the program.

In 2015, Binghamton Farm Share sold over \$45,000 in shares. That is money going from an untapped market of low-income consumers directly to local farmers. The program has grown over the past three years of operation, having gone from a median of 33 members in its year of inception to a median of 110 members in 2015. Thanks to member education and the implementation of the Share Bank, which is available for member use if a payment cannot be made, the retention rate continues to rise. It was up this year to 70% from 60% in 2014. In 2014, 130 families came through the program. The number doubled in 2015, when over 286 people were served, 124 of them children. Only growth is predicted for the foreseeable future as 2016



Share member at Carlisle Community Center in Binghamton

brings expansion to a rural location, an additional farm and an additional pick up day. BFS plans to continue to connect farms and consumers, expanding access to fresh, affordable food and helping keep money to local food economy for years to come.

Kate Miller-Corcoran grew up on a dairy farm in Windsor, NY, where her family has been farming for 4 generations. She received her BA in English from Penn State University and her Master of Arts in English from SUNY Cortland. Currently, Kate is the Program Coordinator for Binghamton Farm Share.

For more information on Binghamton Farm Share, visit www.vinesgardens.org/farmshare or www.facebook.com/BinghamtonFarmShare or contact farmshare@vinesgardens.org.

For more information on the Healthy Lifestyles Coalition, visit <http://www.eatwellplayhardbinghamton.com/> or <https://www.facebook.com/eatwellplayhardbinghamton> or contact healthylifestylescoalition@gmail.com



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Book Excerpt: Bio-Integrated Fly Farming

Permaculture designer and farmer Shawn Jadrnicek is a master at engaging free forces of nature to create sustainable food production systems. Jadrnicek's groundbreaking insights go beyond the philosophical foundation of permaculture to create hardworking, energy-saving farm-scale designs.

The following is an excerpt from his new book The Bio-Integrated Farm (March 2016) and is printed with permission from Chelsea Green Publishing.

During the last decade the farm and garden world has been abuzz about the black soldier fly. Native to North America, *Hermetia illucens* currently has a worldwide distribution in tropical and warm temperate regions. This small insect plays a large role in the decomposition of plants, animals, and feces by quickly composting waste and generating a high-protein feed for chickens and more.

Unlike common houseflies, adult black soldier flies aren't found in kitchens, buildings, or picnic areas. Therefore, they aren't vectors of disease or filth. In fact, black soldier fly larvae suppress housefly larvae by 95 to 100 percent by outcompeting them in the manure. Meanwhile, they reduce manure mass by about 50 percent over four hours when properly fed. The adult fly measures 3/4 inch long and looks similar to a wasp. You usually see the large flies hovering above compost piles or manure, depositing eggs nearby. The adults live for five to fifteen days, mating and reproducing. Their lack of functioning mouths indicates they live only to reproduce.



Hermetia illucens, Black Soldier Fly Larve
Photo source: Wikimedia

I first encountered black soldier fly larvae feeding on the fresh waste near the top of my home compost pile. The large larvae, about an inch long, had distinct segments all along their writhing bodies. The maggots were moving in a mass in a rotten watermelon placed on the compost. As they feed, they rid the waste of harmful bacteria and convert it into larval biomass. Unlike earthworms, black soldier fly larvae tolerate a wide variety of temperatures and moisture levels in waste. The larvae also consume waste faster than earthworms. And best of all, you can raise the larvae in special containers called digesters, from which the larvae will self-harvest into a bucket for collection as a feed for animals.

At the Clemson University Student Organic Farm (SOF), we use soldier fly digesters equipped with ramps to take advantage of the larvae's natural tendency to vacate the waste before pupating. After they've fed voraciously on the waste, the larvae pull themselves up the ramp with a specialized mouthpart and fall into the bucket. Every one to five days, we collect the larvae and feed them to chickens, fish, prawns, or anything else in need of a high-quality protein and fat.

My first attempts at raising soldier fly larvae involved homemade digesters constructed from recycled worm

bins. I have also worked with David Thornton, organic and biofuels project coordinator for Clemson University, to attach larger bins to greenhouses for sea-son extension. Though the larvae consumed massive amounts of waste, our harvest was lacking. We lost many larvae to cracks and crevices, and some larvae never left the bin because of poorly designed ramps. Dr. Craig Sheppard at the University of Georgia developed a design for the most successful large larval rearing digesters. Constructed of concrete, the digesters are equipped with ramps on two sides, sloped at angles between 35 and 40 degrees. A gutter is located at the end of each ramp. The larvae crawl off the ramp and into the gutter, then fall into a bucket. Commercial plastic digesters are now available and work well. They come in two styles, a large round digester with a diameter of 4 feet (ProtaPod) and a smaller rectangular digester (BioPod). Both have ramps ascending either side, directing larvae into a hole and bucket for collection.

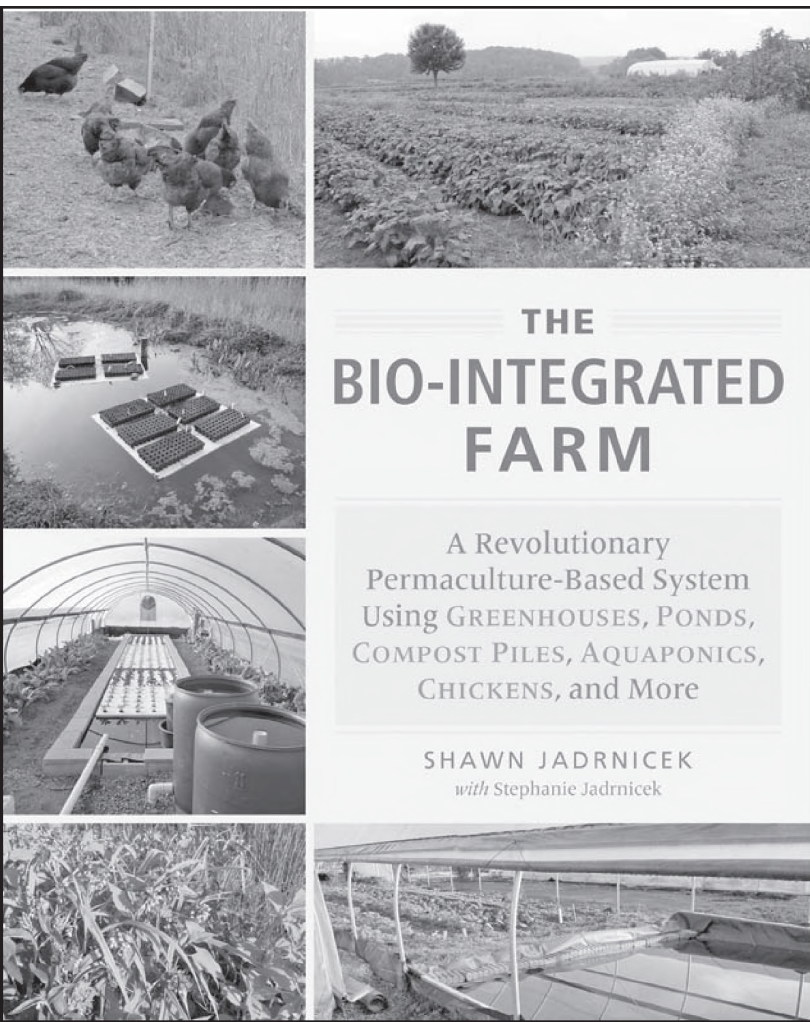
Starting Your Own Soldier Fly Digester
Like any other project, the hardest part of growing soldier fly larvae is just getting started. First, find a good location for your digester, an area protected from the sun and rain. Placing a lid directly on top of a digester prevents airflow and may cause temperatures to reach lethal levels. Situating a digester under an overhanging roof allows better ventilation and temperature control. Because of this, I like to locate digesters under a large roof overhang on the north side of a house or building.

Robert Olivier, founder and CEO of Prota Culture LLC, a company specializing in the bioconversion of waste through insect farming, recommends applying a layer of gravel on the bottom of digesters for drainage and aeration. He then covers the gravel with landscape fabric or a coir mat made from coconut husk. Larvae will eventually degrade fabric material, but the gravel will remain.

Several weeks after the last frost in your area, place a few pounds of waste material inside the digester to attract adults for egg laying. Native ranges for black soldier flies are climate zones 7 and higher, primarily in the southeast of the United States. In these areas adults usually find the waste material and lay eggs, so larvae appear naturally. However, if you live in a dry or cold climate, you may have to import larvae by mail order to get your brood going. Consult your local Extension office to determine if black soldier flies are present in your area. Check with local jurisdictions before importing a nonnative fly.

Once the female adult finds the waste, she lays a clutch of about five hundred eggs in a crevice near the waste. The eggs hatch in about four days in temperatures over 80°F. You should see larval activity within a week or two after placing food waste in your digester. Before larval activity strengthens, the waste material may smell. That's why I recommend using only 2 to 4 pounds of waste during the larval seeding stage. Odors rarely occur once larval activity is dense, unless you overfeed the larvae. Foods such as cooked grains or moist chicken feed tend to be less smelly than other types of waste.

Moisture is another consideration when seeding the digester. Once the digester is active, you will add waste material daily, and the addition of new material maintains high moisture levels. But since you're not adding new material daily during the seeding process, the waste



material may become too dry. You may need to add moisture, similarly to watering a garden. Covering the waste material with a piece of shade cloth or muslin helps retain moisture and provide habitat for egg laying.

Houseflies may take up residence in the waste during the first few weeks until the soldier fly larvae eventually exclude them. Since housefly larvae have a lighter color, move faster, and don't reach the same size as soldier fly larvae, you can identify them easily in the waste material. Research shows that flooding basins with 2.5 centimeters of water before adding chicken manure from caged hens situated over the basin gives nearly 100 percent control of houseflies. Soldier fly larvae tolerated the moist conditions, feeding on manure around the edges of the basin and eventually into the center. Since commercial digesters have drainage holes in the bottom, you would need a separate basin or tub to attract the soldier flies with flooded feed for this technique to work.

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LIVESTOCK AND POULTRY**Get Your Equipment Ready for Spring Calving**

by Rich Taber

Late winter and early springtime are the times to get your beef cattle and your calving equipment ready for spring calving. With our relatively harsh winters, I prefer to have our cows calve no earlier than April, and better to start in May. That way you can avoid the worst of any winter and cold weather issues that might happen. Regardless of when you start calving, you need to have a certain amount of equipment and supplies on hand to get you through this sometimes nerve-wracking period. Nothing is worse than needing an item and making a last minute rush to the farm supply store, only to find they are out of what is you need. "Oh, we can order it, and it will be in, in three weeks", is commonly heard. So prepare well ahead of season. The following list was adapted from the website www.beefmagazine.com. Space limits how much discussion we can add for each item; suffice it to say that if you have most or all of these items on hand you should be in good shape.

Here are the must-haves for a successful calving season:

- Ear tags
- Markers
- Tagger (and a spare)
- Calving book for record-keeping
- A list for when everything is due and what they are bred to
- The veterinarian's number on speed dial
- Milk tuber
- Pitcher to milk the cow with
- Calf boost
- Syringe
- Scour pills
- Bolus gun
- Duct tape or ear muffs of some sort to pin ears down on cold nights



A good squeeze chute makes handling beef cattle much more efficient and safe for both animals and people

- Sled with ropes to pull calves out of the snow and to the barn
- Calf catch
- Scale and sling for weighing the calf
- Calf puller and chains

- Lasso
- Halter
- Plastic gloves
- Milk replacer, frozen colostrum, and/or powdered colostrum replacements
- A sedative of sorts for the occasional surly cow that needs milking out
- A list of potential culls based on poor udders, bad dispositions, tough calving, or old age.
- Sorting sticks or paddles
- Small square bales of hay for bedding and feeding when the cow/calf pairs are in the barn
- Coveralls, gloves, hats, boots, long johns, wool socks, etc.
- A hot box, heater or place in the basement bath tub for cold calves
- Clean towels
- Bander and bands for castration

A good and safe handling system/squeeze chutes to handle cows. Beef cattle are not handled nearly as much as dairy cattle and get quite ornery, and dangerous. Your vet will also be much more amenable to working on your cows if he or she knows they won't be risking life and limb when they come to your place.

Rich Taber is Grazing, Forestry, and Ag Economic Development Specialist for CCE Chenango, and is an active beef, sheep, and poultry producer as well. He can be reached at 607-334-5841 ext. 21, or email rbt44@cornell.edu.

RESOURCE SPOTLIGHT**A Resource to Help Northeast Dairy Farmers Improve the Sustainability of their Dairy Environmental Systems**

by Jason Oliver

Improving dairy environmental systems management can help farms adapt to a changing climate while reducing environmental degradation, maintaining profitability, and strengthening community relations. The PRO-DAIRY program's Dairy Environmental Systems webpage is resource for small and large dairy farms alike interested in improved sustainability.

PRO-DAIRY is a NYS dairy industry applied research/educational program focused on the viability Northeast dairy farms offering business, production, and environmental management support. The Dairy Environmental Systems team is a engineering, applied research, science, and outreach program under the PRO-DAIRY umbrella, dedicated to improved dairy sustainability. The Dairy Environmental Systems webpage includes over 35 case studies on progressive farm manure management systems, several eco-

nomics assessment tools, resources for improved nutrient management, and many Fact Sheets on topics such as:

- Manure handling systems
- Composting
- Manure storages
- Anaerobic digestion
- Greenhouse gases and C-credits
- Nutrient management
- Environmental regulations
- Farm Safety

These resources are regularly updated with Fact Sheets on biofiltration, hydrogen sulfide scrubbers, and biogas combustion emissions currently in development.

Several ongoing and exciting new projects include:

- A national collaborative effort looking at animal agriculture in a changing climate to study and develop adaptation strategies for dairy and other livestock production systems.
- Projects investigating the use of waste heat from biogas combustion for conductive cooling of dairy animals and for the heating of commercial greenhouse systems.
- A regional, northeastern collaborative effort studying the environmental transport of antibiotics and antibiotic resistant bacteria from dairy manure into the environment/food system and the efficacy of manure management system at mitigating these pollutants.

To learn more about these upcoming projects, the research team and to access the web-based resources, go to: www.manuremanagement.cornell.edu

For more information on PRO-DAIRY programs, go to: www.prodairy.cals.cornell.edu

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FOREST AND WOODLOT**Forest succession and management**

by Peter Smallidge, Ph.D., NYS Extension Forester and Director, Arnot Teaching and Research Forest, Department of Natural Resources, Cornell University Cooperative Extension, Ithaca, NY 14853.

Support for ForestConnect is provided by USDA NIFA and the Cornell University College of Agriculture and Life Sciences.

The succession of plant communities is a process that has drawn attention from woodlot owners, ecologists and foresters for decades. Succession deals with communities or groupings of various plant species in the same vicinity. Succession was one of the earliest ecological processes studied. The simple definition is the predictably and orderly progression of change in the plant species that dominate an area. The classic image is of grassy fields, followed by brush, then small trees, and finally forest. The details though are more involved and more interesting.

The cycle of succession starts with the response of a plant community to a disturbance of previously vegetated lands. Because plants occupied the site before the disturbance, this type of succession is known as secondary succession. Succession on land that did not previously have plants, such as soil exposed as a glacier retreats or a new sand bar in a river is called primary succession.

Forest succession is simply the succession or the orderly and predictable change in the dominant species of forest plants. The change in dominance occurs because the plants that dominate early often die early, allowing longer-lived plants dominance. In the Northeast, most lands have gone through, and continue with, succession since agricultural lands were abandoned. Most agricultural abandonment happened between 1880 and 1950s, and our forests are thus 70 to 120 years old. In addition to agriculture, the forest might have been extensively cut-over, or disturbed by hurricanes or fire, and plants regrew. All owners are observing forest succession on their property as the forest changes through time.

Forest ecologists recognize four phases of forest succession, or what is sometimes called forest development. These phases are: (i) stand initiation, (ii) stem exclusion, (iii) understory reinitiation, and (iv) steady state. Each phase has specific characteristics that are typical regardless of the type of forest that is succeeding. The timing of each phase is variable and difficult to anticipate. Each phase also has a variety of management practices that, depending on ownership objective, are relevant and timely. In all phases, assistance from a forester will help focus effort on those activities most likely to support ownership objectives.

Stand Initiation – The stand, or plant community of a location, initiates following the cessation of the disturbance. Stand initiating disturbances are sufficiently intense and wide spread that large amounts of sunlight are available at or near the soil of the forest floor. The increase of sunlight provides the essential and often limiting resource to allow new plants to establish or existing plants to begin growing and dominate. During this phase, most plants that will occur in the



A clearcut is an example of a stand replacing disturbance that resets the successional process to the beginning. Many different tree and other plants species will occupy the site, but the early successional dominants, such as pin cherry, birch and aspen will form the early canopy.

developing forest will establish. Although different plant species will become more dominant or apparent through time, they all become established during the first phase. The duration of this phase is shortest, perhaps 15 to 25 years when there is abundant seed and soil resources are plentiful to the plants.

Management during the stand initiation phase might include those activities that relate to the successful establishment and growth of species of interest. Owners might need to learn to identify some new plants. An inspection of what's growing will allow the owner to assess the relative abundance of invasive plants, and the appropriate manner of control. The invasive plants have significant reproductive output and one or two per acre can likely result in a long lasting presence. If there are a couple species of particular interest but occurring in low numbers, the potential for deer browsing might encourage the owner to invest in some tree tubes and black locust stakes for use in preventing browse damage.



The stem exclusion stage is illustrated in this 70 year old red pine plantation. Note the tight crowding of crowns and the absence of an understory. Some of the pines are starting to die (some from Sirex wood wasp) allowing sunlight and eventually an understory to develop. In some stands, partial harvests of long-stagnant stems might trigger windthrow especially if soils are shallow.

Stem exclusion – Within the stand or plant community, as plants continue to establish and grow, a point is reached where sunlight and soil resources become limiting and additional plants are excluded. As the existing plant then continue to grow, their competition for sunlight results in some plants gaining an advantage over plants adjacent to them, resulting in winners that live and losers that die. Often the trees with the competitive advantage have forked stems and thus bigger crowns that occupy more space. The duration of this phase depends on the mixture of species and their growth rate. For fast growing and shade intolerant species, the phase may last 20 to 30 years. This phase would be protracted with shade tolerant species and poor soil conditions.

Management during stem exclusion is an economically tenuous activity, especially for timber objectives. The concern is that the

management costs are carried for many decades before revenue is generated. However, for owners who don't expect financial returns in that time span, the investment is less of a concern. Further, they often view work in the woods as a pleasure and a pastime. Other ownership objectives, such as maple syrup production, can expect revenue in a shorter time span. In these cases, management activities such as thinning to promote full and deep crowns are advantageous to future production. If work is conducted, it might focus on helping stems with good structural integrity, those stems with strong wood and without weak joints, maintain their crown in the upper canopy and access full sunlight. Stems with forks may be stressed, the fork forms a ridge of "callus" tissue (a tree's version of a scab). The bigger the callus ridge, the more stressed is the fork and the more likely the fork to fail. Crop tree management is a strategy to make sure that the trees selected by the owner as priority trees for long life and productivity are without competition on at least two if not all four sides.

Understory reinitiation – During the stem exclusion phase, the depth of the canopy elongates as fast growing trees get taller and those more tolerant of shade or in the process of dying grow more slowly. Some trees are now approaching sexual maturity and starting to produce seed. As the depth of the canopy elongates, as seeds are produced, and as some trees die, the potential for a new understory to initiate begins. The duration of this phase depends in large part on the longevity of the dominant species. If long-lived species were early dominants, their natural life span will slow the rate of their death and thus extend the duration of this phase. For example, early dominants by poplar might have a life span of 60 to 80 years, whereas if white pine and red oak, or sugar maple, are the early dominants then the life span might be well over 100 years.

Management within the understory reinitiation phase is potentially productive, and in



some cases may have a minimal positive revenue. Trees are of a sufficient size that the labor to harvest the poor quality stems might be offset by the value of the stem for firewood or for other low value products. Be cautious to avoid the temptation to harvest the fast growing high value trees using a selective or diameter limit strategy. This removes the majority of value, degrades the forest, and redirects the successional pathway. Many of the early successional dominants, such as the poplars and paper birch are approaching their natural life span. If markets or desired products can be obtained from these species, harvesting now will allow owners to utilize the wood before the stems die. Further, other species have demonstrated what they will have as a form, and owners wishing to select for particular forms of stems can continue to practice crop tree management. This is also a time when invasive plant species or native interfering plants can establish and begin to form a pervasive understory. Many tree harvesting activities will further open the canopy, which infuses sunlight and disturb the soil surface. Sunlight and disturbed soil promote the establishment of most plants, and thus owners need to have a heightened sense of awareness to interfering plants.



These ferns developed following partial harvests in the understory reinitiation stage, and are enhanced by high deer pressure. Additional harvests will not successfully establish tree regeneration, but rather will push the plant community to a stable fern field. Caution is warranted to avoid activities that result in dominance by interfering plants that interact with high deer pressure to arrest succession.

Steady state – The final phase is the mature forest. Early successional dominants have died. The majority of the upper canopy are those species able to reproduce with limited amounts of light or that depend on a large disturbance for re-establishment of the dominant species. In the absence of external disturbances the forest reproduces itself among those species that can survive in sunlight available through small openings in the canopy as single trees die. The absence of external disturbances is infrequent, and thus the forest that is maintained is more heterogenous and reflects trees species that grow in small to mid- to large-sized canopy gaps. Human and natural events create canopy openings of various sizes and these favor tree species with different requirements of sunlight.

Management during the steady state will depend on the previous management and how the forest has developed. Trees are larger and have greater value, and the participation of your forester is especially important to protect your investment. Previous management may have created a forest where the owner can have sustainable partial harvests, thinnings, that allow additional growth on the best trees without reducing stand production or potential. Now, as before, careful attention is warranted to the presence of interfering plants and to avoid high-grading. Some owners will decide to restart the successional process with a regeneration harvest. This harvest should be guided by a forester, with a carefully selected logger, and with attention to the potential pitfalls of deer, interfering vegetation, and avoiding exploitive harvests. More information on these pitfalls is available on the NYFOA website through the Restore New York Woodlands (RNYW) Initiative.

In some cases succession can be arrested and the plant community stalled in its orderly and predictable progression. Succession stalls when something prevents trees from establishing and dominating a site. In some cases arrested succession is desirable, for example your lawn or hay field that you mow regularly during the summer, or the power line rights-of-way where shrubs are encouraged to dominate and trees are removed. Often, however, on rights-of-way, the dominant shrubs are invasive and create corridors where they can spread across the landscape. In other cases, over abundant deer or interfering plants can prevent the establishment and development of the forest.



Multiple stemmed trees often dominate early in succession because they have large crowns. However, the forks may be weak as illustrated by the callus ridge (right and left side) that bracket the main stems (top and bottom). The ridge forms as the forks is strained by wind and snow, and the straining is damage that allows decay organisms to enter. These types of stems can be removed during crop tree release to favor stems with structural integrity.



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RESOURCE SPOTLIGHT

MyWoodlot Website Offers Practical Activities to Boost Landowners’ Enjoyment of their Woods

by Joshua VanBrakle

Most New York farms have at least some wooded acreage. Often those woods “came with the land” when the farmer bought, rented, or inherited the property. But those woods can also be a source of fun, beauty, nature, and income if well tended, and a new website by the Catskills-based nonprofit Watershed Agricultural Council aims to help farmers and other landowners do just that.

“MyWoodlot is all about helping landowners find woods-related projects they can do either on their own or with the help of a professional,” says Tom Pavlesich, the Council’s Forestry Program Manager.

MyWoodlot starts with broad interests like Nature, Recreation, and Timber Production. Each interest is divided into goals landowners can work toward, with each goal made up of several specific, on-the-ground activities.

“We didn’t want to be just another information source,” explains Pavlesich. “We wanted everything to be actionable.”

Every activity includes links to how-to information to help landowners complete it. That information can take a variety of forms from traditional factsheets to videos, field demonstrations, and even smartphone apps.

Once landowners find activities they want to do, they can save them to a free profile for easy access and to track their progress. They can also ask and answer each other questions through the site’s forum.

To get started exploring MyWoodlot, visit www.mywoodlot.com.

GRAZING**Sheep Pasture: White Clover**

by Ulf Kintzel

As announced in my last column about orchard grass as my preferred grass species in my sheep pasture, this issue I will talk about my preference for legumes.

In my view, having legumes in your pasture is essential for a sustainable pasture-based sheep operation. It reduces the need for nitrogen fertilizer greatly due to their ability to utilize air nitrogen with their bacteria (Rhizobia) attached to their roots. In fact, I do not apply any commercial nitrogen. In addition, many legumes are often highly nutritious and digestible. The percentage of legumes in the pasture should be no less than thirty percent. Much of my pasture exceeds this mark. Fifty percent of clovers is quite common at White Clover Sheep Farm.

Legumes like alfalfa, white clover, and red clover bring a different set of challenges with them because they can cause ruminants to bloat and die. Birdsfoot trefoil is the exception to it since it is none-bloating. However, the answer to dealing with bloat is not avoiding or getting rid of legumes.

If you have been successful in growing a strong stand of birdsfoot trefoil in your pasture and grazing it has not reduced it, I have only one word to say to you: Congratulations. I have no further advice for you. Personally, I have not been successful in keeping it around, although I started out with strong stands in some of my reseeded sheep pastures. With the exceptions of those fields that get mostly hayed and rarely pastured, my stands of birdsfoot trefoil have always been fading. Because of that and because of the high price of the seed, I have basically given up on it.

Alfalfa is, in my view, not a suitable legume for grazing. Most varieties do not withstand close grazing. Alfalfa loses its leaves the moment some killing frost hits and therefore does not stockpile well. In addition, the seedbed preparation for alfalfa is rather cumbersome.

There are some rather exotic legumes like Kura Clover but I would stay away from the likes of it. I tried but would rather go with what is promising easier success and is proven. That leaves us with red and white clover. Red Clover is said to cause infertility in sheep when grazed during breeding season. I have not found that to be true. Red clover has many favorable attributes, among them its high yield, its ability in growing at a lower pH, its drought tolerance, and its high digestibility. There is one big downside to red clover: it is a bi-annual and needs to be re-seeded frequently. Longer lasting varieties seem to promise more than they actually keep. That is at least my experience.

That leaves us with white clover. It is by far my most favorite legume. The name of my farm must have given that away. White Clover is both high in protein and energy. It

is highly digestible. It is very well liked by sheep. It is very persistent. When hearing about white clover, some of you may think of the Dutch white clover that grows in lawns, which is low growing with small leaves and a low yield. That is not the white clover I am referring to. There are several varieties of New Zealand grazing white clovers, which are much more erect, have larger leaves, and yield considerably more than Dutch white clover.

What varieties do I recommend? What has worked for me? The short answer is almost any New Zealand grazing white clover has worked for me. Here is the long answer: I tried five different white clover varieties, all with great success with one exception. The first variety I spring-seeded in a former 14-acre pumpkin field was Alice, a Barenbrug variety. Although the company is US American, the clover was developed using white clover from New Zealand. Alice is very aggressive in my pasture. I am very pleased with this variety.

The second variety I tried by means of frost seeding was Kopu II, a grazing white clover from New Zealand. It is on my farm the variety with the largest leaves and it is my favorite. Of course, my opinion is highly subjective since it is solely based on observation and compared to other white clover varieties that grow at other parts of my farm. Nevertheless, I liked it so much that I used it years later when I re-seeded a 15-acre field in the fall. Here I broadcasted the seed with my spreader after spreading orchard grass seed, then established soil contact with a cultipacker.

My buddy Douglas from down under recommended once I try Huia. He said it is widely used there. I thought 'Why not?'. My seed dealer was able to locate a 50-pound bag and I frost seeded this variety. I found

the leaves to be a little smaller than Kopu II. Again, my observation is highly subjective. However, I found Huia also to be a very aggressive variety. In some spots I had some frost damage due to the fact that the snow is being blown away from the flat field where it was grown, leaving it with now snow cover. In the spring these damaged spots filled in with white clover in record time and no damage was seen afterwards.

A neighbor of mine decided once to grow white clover for people who want seed for deer plots. He seeded New Zealand white clover, the kind with an asterisk behind it when you find it in a seed catalogue, followed with the explanation: * = Variety Not Stated. So I purchased 100 pounds of it and frost-seeded it together with Ladino

white clover in a 20-acre field. I had experienced and had heard that Ladino white clover is not as hardy as other New Zealand white clovers. In fact, I once had a total crop failure of Ladino white clover back in New Jersey where, after the stand was well established, very little Ladino clover survived after a hard winter without any snow. So I hedged my bet when I seeded both the neighbor's New Zealand white clover and the Ladino together. Besides, I wanted to see the difference in leaf size side by side. Well, I was never able to discern which is which. All I can say I have a beautiful stand of white clover in this 20-acre field and it has been that way now for a few years.

I haven't purchased any white clovers seed lately because I have found no need, since White Clover re-seeds itself well in a pasture. However, in the event I will have to buy seed again, I would compare prices between Alice and Kopu II and would go with the cheaper one.

A few more thoughts about seeding white clover: In some cases, I mixed the white with red clover, simply because white clover does not establish itself well in some areas that stay wet longer in the spring with a lower pH. White Clover likes the pH to be around neutral (7). Red clover still grows well below the pH level of 6. In other case, where I expected good establishment, I have spread white clover separately. Whether I frost-seeded, seeded in the spring, or seeded in the fall – I have always used my simple Herd seeder, model S-3B. When I have re-seeded an entire field, spring or fall, I have first spread the grass seed and then spread the white clover separately and perpendicular to the tracks where I spread the grass seed. I did this because I had been advised by a friend and experienced fellow grass farmer that grass and clover seed don't stay mixed well in a seeder. Grass and legumes also have a significantly different broad width when spreading. Afterwards I followed with a cultipacker to establish soil contact

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White Clover variety "Huia", recommended from my friend Douglas from down under



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SOIL HEALTH AND VEGETABLES

Creating a permanent bed system for diversified, organic vegetables

Laughing Stock Farm designs farm and equipment to improve soil drainage, reduce labor

by Brian Caldwell and Ryan Maher

Lisa and Ralph Turner started growing vegetables for sale in 1997 near Freeport, Maine on 1/5 acre. The farm is now up to 15 certified organic acres. They have summer and winter CSAs and deliver to over a dozen restaurants. Over the past 19 years, the operation has gone through many changes, as they “strive to continuously improve our farm infrastructure, equipment, and practices”. Lisa and Ralph are constantly re-evaluating their methods and equipment. Their path to a permanent bed growing system illustrates their very creative and responsive management style.

The summer of 2009 was very wet in coastal Maine. Rainfall in June and July was more than two and a half times the average. For Laughing Stock Farm, this was a major problem. Their fields were fairly flat and the moderately well-drained silt loam soils could not handle the excessive rains. Water pooled, workers could not even walk into the fields without sinking up to their knees in places, and yields and quality of their organic vegetables suffered.

Over the following seasons, they redesigned their farm so this would not happen again. Ralph has degrees in mechanical engineering and business; Lisa's degrees are in soil science and civil engineering. Their first improvements were to make raised beds and do deep subsoiling to improve drainage. But there was still ponding in some areas. They had an “aha!” moment when they realized that they could orient their raised beds to funnel excess water off of their beds and fields. Lisa's engineering knowledge told her that if the slope of land is less than 2%, soil erosion is minimal. They thought that if they arranged their beds so that they sloped a little bit, generally 1 to



Laughing Stock Farm fields. Permanent beds have been re-oriented to shed water. Photo source: Google



Fertilizing and re-forming beds in one pass

Photo credit: Turner

2%, they could solve their water problem. This was in conflict with the common notion that tillage (and therefore beds) must be oriented closely to elevation contours.

Forming their beds to follow a shallow slope solved their water problem while preserving precious soil. The excess rainwater flowed slowly down the packed wheel-tracks and off the field. Over the next few years, they changed the direction of all their beds, re-orienting them to shed water. This has helped them through heavy rain events every year since. They made the bed locations permanent, so compaction from tractor wheels would always be limited to pathways and previously compacted ground would not creep into the growing area. About bed directions, contours, and erosion, Lisa says, “the dust bowl mindset of needing to conserve rainfall does not apply here.”

The raised beds are 5 feet on center and mostly 300 feet long. The bed tops are 42” wide. They alternate between two beds of spring-planted crops and two beds of summer-planted crops. A cover crop of oats and peas (which die over the winter) is planted in early fall on beds that will be spring-planted the following year; rye and vetch are planted, if the season allows, on beds to be planted later the next season.

The permanent bed layout has some extra advantages. As long as they have not gone to seed, weeds can just be thrown onto a neighboring cover crop bed. People have more space to work, and it is easier on their backs. Also, overhead irrigation pipes can be run down the cover crop beds without interfering with the cash crops. Having numbered permanent beds makes planning and crop rotation easy.

However, having roughly 400 beds means that prepping them takes a lot of time. Their bed shaper unit took an extra pass and didn't form the beds properly until several feet into the pass. Ralph put his expertise to work and modified their rototiller so that it forms beds and tills in one pass. This also tends to raise the tiller unit, so that the tilling action is shallower. At this same time, they realized that in order to do a precise job with the beds, they needed to upgrade from their 35 HP 4WD tractor to a 50 HP 4WD. This allows for better control and driving in very straight lines. Ralph put a fertilizer spreader unit on the front of the tractor so that in one pass, the beds could be fertilized, re-tilled, and shaped for the season.

In spring, for early crops, a residue of dead oats and peas is on the surface of the beds. This can be fertilized and prepared in one pass,

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My favorite way of seeding white clover into existing sod is frost seeding. Since white clover has very small seeds (there are well over 700,000 seeds per pound of white clover) one can go quite low with the pounds per acre. My preference is about two to three pounds per acre. My plain Herd seeder does not allow to adjust the setting accurately enough that you know exactly how many pounds come out. That caused once an accident that led to spreading about seven pounds to the acre. After the white clover established itself I could see now discernable difference between the field with seven pound of seed to the acre versus the field where I spread two to three pounds to the acre. Why do I find that worth mentioning? Because I have read articles that suggested a far higher rate of pounds than two to three pounds per acre, followed up by the advice to not be skimpy or cheap! I found the opposite to be true. You can be real thrifty when you frost-seed white clover.

If you don't get a good stand it is not because of your lower seeding rate. It may be the pH is too low, or a grass sod to dense (i.e. fescue), or unfavorable conditions that year (early germination followed by frost). Besides, once a stand of white clover is established and you practice proper grazing management, leaving enough residual and rest periods after grazing, you will have white clover re-seeding itself over a period of several months each year. Your stand will get thicker and will spread due to the animals. One word of caution, though. Unlike red clover, which establishes itself quite vigorously the same

year it was frost-seeded, white clover needs an additional year to establish a good stand. So if you don't see much white clover the first year – don't worry just yet and look again the year thereafter.

One last comment, I have read articles in which the claim was made that in highly fertilized pasture the grass eventually crowds out the white clover. I have found that to be not true in my pasture. I have areas around the barn where I feed my sheep after winter lambing with round bales in feeders for several months of the year. The area is highly fertilized because of it. Yet, nine years in, the white clover (Alice) keeps thriving there.

So now you have my suggestion for a pasture mix a la White Clover Sheep Farm: a late-maturing orchard grass and a New Zealand Grazing White Clover. Mix in some blue grass if you want, add some red clover to your liking and that is in my view all you need. Happy grazing.

Ulf owns and operates White Clover Sheep Farm and breeds and raises grass-fed White Dorper sheep and Kiko goats without any grain feeding and offers breeding stock suitable for grazing. He is a native of Germany and lives in the US since 1995. He farms in the Finger Lakes area in upstate New York. His website address is www.whitecloversheepfarm.com. He can be reached by e-mail at ulf@whitecloversheepfarm.com or by phone at 585-554-3313.

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then planted. For later-season crops, the rye and hairy vetch cover crop is mowed, then tilled. After a week or so, the final prep pass is made with fertilizer. Then these beds are ready to plant. Fertilizer is applied only to the bed surface. By doing this rather than broadcasting, they use roughly 30% less fertilizer. They apply only dry mixes, not compost, because a compost spreader would waste valuable material on the wheel-tracks. They also use a considerable amount of 66" wide black plastic as mulch on the beds, especially for melons, eggplant, etc. Last year Ralph put his latest touches on the tiller, and now it can lay plastic as well as fertilize and prep the beds. A cover crop seeder was added, so they can also till, bed shape, and seed a cover crop in one pass. They sometimes overlap a 3' wide strip of woven greenhouse mat over the edges of black plastic, covering the wheel-tracks, to prevent weeds there as well. Otherwise the wheel-tracks are cultivated.

After harvest, the beds are mowed, tilled, left for a week, and then tilled one more time and planted to cover crops. Leaving residue for a week and then tilling a second time before seeding seems to improve the cover crop stand. Subsoiling is done every 2 or 3 years. By combining many practices, their new system improves soil via shallower rototilling, plus subsoiling and no compaction in the beds. Rainwater infiltrates well, and excess moves off the fields. Fields are trafficable 1 or 2 days

after a significant rainfall, rather than 4 days with the previous system. Passes through the fields are minimized. It all adds up to resilience in the face of more extreme weather events, as well as increasing profitability by greatly decreasing the number of hours spent on the tractor.

This system requires more skill to implement than what they did 10 years ago. Precision is important. The tractor driver is doing several operations at once. It is more difficult but faster. In the path to this approach, Ralph's equipment designing and fabrication skills cannot be overemphasized.

Developing Lisa and Ralph's production system took a lot of original thinking and persistence. Lisa says, "Everything we did was because something failed." She adds that a farmer needs to avoid getting stuck in preconceived notions. "Look at the situation you're in now and evaluate."

Her advice to other farmers: "There are a lot of right ways to do things. In different situations, some are better. Don't change everything at once — try a little bit first. What works for others may not work for you."



Cultivating lettuce on permanent beds. Note two beds on right prepped for cover crops. Photo credit: Turner

Resource spotlight

Reduced tillage takes many forms. This story is the 3rd 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

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