

FALL 2015

SMALL FARM QUARTERLY

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



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FARM SAFETY**Safety Regulations and the Small Farm***Look to OSHA for guidance for a safe workplace.*

by Marybeth Vargha

As a small farm operation, you probably already know that farms are mostly under the radar of OSHA safety and health inspections. The U.S. government granted small agricultural enterprises an exemption from OSHA jurisdiction. This exemption is for farms who hire 10 or fewer non-family workers and do not have a temporary labor camp. As OSHA defines it, a temporary labor camp is housing maintained by a farm which is provided as a "required condition of employment and for a discrete, temporary period of time (i.e. for seasonal or temporary employment)".

If you have such a housing arrangement with any number of paid workers, OSHA does have the right to inspect your farm for safety and health compliance violations. Even if you only have one part-time summer worker living on your farm as part of their pay, you would be under OSHA jurisdiction as having a 'labor camp'.

OSHA does not conduct random inspections unless there is a program in place targeting a specific hazard or industry. Since the fall of 2013, you might have heard about the New York Dairy Local Emphasis Program. This is a target program of random, full inspections of dairy farms as an attempt to reduce the relatively high number of fatalities and injuries noted on New York dairies. Again, only farms with 11 or more non-family hired workers are under this program.

OSHA does conduct inspections on farms under their jurisdiction if there is a referral from another agency, complaint or fatality/severe injury. These types of inspections are designed to investigate the area of the farm under the referral/complaint/incident. There are strict whistle blower rules to protect anyone who contacts OSHA with a complaint.

As a general rule, it is very important to become familiar with OSHA regulations and best practices. Even if your farm is not under their jurisdiction, in a court of law, the OSHA



Jim Carrabba (right) of NYCAMH doing an on-farm safety/health walkthrough with a farm manager.
Photo by NYCAMH staff

regulations are used to determine whether or not an employer was negligent in providing a safe and healthy workplace.

It might seem overwhelming at first, but there are some basic steps you can take to start. A full walk-around of your farm using a safety checklist is a great way to begin. Penn State has many great resources at extension.psu.edu/business/ag-safety. One is the AgSafety4u online course which is geared for new and beginning farmers. For a very detailed look around your farm, use "FARM-HAT", the Hazard Analysis Tool, available on a website or as a mobile app. This short document - <http://www.hobbyfarms.com/images/pdfs/farm-safety-checklist.pdf> gives lots of other resources for specific issues on the farm.

If you would like to have a second set of eyes and advice about farm hazards and best practices, you can contact NYCAMH for an on-farm walkthrough. Someone will schedule a time to come out and spend a few hours going through a checklist and answering your questions. This service is available free in New York State as it is supported by the NY Department of Labor. For more information go to <http://www.nycamh.com/programs/farmsafetytrainings/> or for an appointment call 1-800-343-7527 or email info@nycamh.org.

The OSHA website is a great resource when you have very specific questions. Say you want to know more about 'lock-out/tagout' recommended procedures – they have the actual regulations, FAQ responses, and other resources. It does cover all industries, so it may take a little work to find just what you need.

See Safety page 3

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Cornell Small Farms Program Update

Build Your Farming Skills this Fall and Winter

Online courses from the Cornell Small Farms Program can be taken by anyone, anywhere with high-speed internet access.

The Cornell Small Farms Program and Northeast Beginning Farmer Project offer a menu of instructor-led 6-week online courses designed to help aspiring farmers get started and more advanced farmers delve deeper into the skills needed to run a successful farm business. You'll find a diversity of topics from the production-oriented (mushrooms, poultry, berries, vegetables, grains) to the business-oriented (financial planning, business planning, marketing).

Courses incorporate weekly live webinars with farmers, Cornell faculty, and other ag professionals as guest presenters. Between webinars, students participate in discussion forums, read resources shared, and complete homework assignments helping them to apply concepts learned in the course to their own situation.

The complete list of courses can be found at <http://nebeginningfarmers.org/online-courses>. Be sure to check out the target audience and learning objectives for each course before registering, to be sure it's a good fit for you. On the lefthand menu of this page you'll also find Online Course FAQs to answer questions about course structure, expectations, scholarships, academic credit, etc.

Courses are \$200 each. Successful completion of a course makes students better candidates for low- to no-interest loans from the Farm Service Agency and Kiva Zip.

0% Interest Farm Loans of up to \$10,000 Available Through Kiva Zip

Kiva Zip is a crowdfunding platform providing 0% interest loans to entrepreneurs. Note that these are loans, not grants, so they do need to be repaid, but there is no other source of loan money with zero hidden fees and zero percent interest. Lenders on Kiva Zip particularly love to support farmers! So if you've been needing a small amount of capital to purchase equipment, build a small facility, smooth out cash flow, or support your farm in any way, check out Kiva Zip. Kiva operates on social capital, so you don't need to share your credit history or financial statements, or even a business plan, to get funding. Just about anyone can apply. If you want your loan to fundraise more quickly on Kiva Zip, and you have taken one of the Cornell Small Farms Program's online courses, you can request our endorsement after you've applied for the loan. The Cornell Small Farms Program is a Kiva Zip Trustee, and lenders tend to preferentially support loans with the backing of a Trustee. To learn more, visit the Kiva Zip website.

Wholesale Market Watch

The Cornell Small Farms Program is pleased to announce "Wholesale Market Watch", 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 here: <http://smallfarms.cornell.edu/projects/whole-sale/listserve/>. This listserve is part of a larger project called "Sparkling a Wholesale Revolution: Preparing Small and Mid-sized Farmers to Enter Larger Markets". Learn more about the project goals and activities <http://smallfarms.cornell.edu/projects/whole-sale/>. If you have an opportunity to share, please send information to Project Coordinator Violet Stone at vws7@cornell.edu

Cornell Agroforestry

Agroforestry describes a wide range of practices that integrate trees, forests, and agricultural production. These systems can be adapted to almost any site and condition, though considerations like climate, slope, soil characteristics, and grower objectives will ultimately determine the crops that are appropriate for a specific piece of land. Examples of crops include mushrooms, maple and other tree syrups, ginseng, ramps, fruit and nut trees, and more. For farmers with forest on their land, these enterprises are a great way to diversify the land and add some extra income. In response to increasing interest in agroforestry over the years, Cornell has created a number of tools and resources to help woodlot owners start farming their forests. Learn more and view factsheets, videos, and more at <http://smallfarms.cornell.edu/projects/agroforestry/>

Message from the Editor

The growing season has largely come and gone, and now farmers around the region move into a new phase: getting ready for winter. This can mean processing the harvest, rolling up hose and row cover, and shoring up buildings, water, and animal infrastructure for the long cold months ahead.

Alongside this time of bountiful harvest and preparation comes the opportunity to reflect on the season. Some questions we are asking ourselves at our farm are: What did we do well? How were we ready (and not ready) for the weather that came this season? Did we balance our health and well-being with the demands of the farm?

And, as we begin to wrap things up, we feel an overwhelming sense of gratitude for the abundance and beauty that the summer months bring. We say goodbye and give thanks to flowers, greens, and luscious pasture for the animals, all which give us both food and a living off the land. Not everything went perfectly or as planned, but each season is remarkable and wonderful in its own right.

I am grateful to the wonderful writers and articles that appear in this issue of the quarterly. This tradition of sharing knowledge is what makes farming thrive.

Enjoy,
Steve Gabriel

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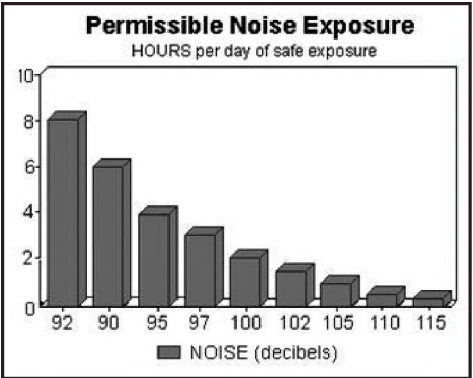
Safety from page 2

One neglected area of farm health is the use of personal protective equipment (PPE). This includes wearing respirators, earmuffs, gloves, safety glasses, steel-toed shoes, and anything that eliminates or reduces exposure to health hazards. You need to evaluate each job to fully understand when you need protection and then make sure you are using equipment that actually does the job of protecting you.

Look at all chemical labels. You may not realize what is actually in the formula. There should always be information about recommended PPE for when you mix and apply these chemicals.

Respiratory illnesses from organic dusts, chemicals, and exhaust are more common in farmers. Farmers' Lung is permanent lung damage due to allergic reactions to molds that affect up to 10% of farmers. Know your respirators – make sure they will do the job and fit you correctly. The National Ag Safety database includes documents and videos on lots of topics including this review of respirator use on farms: <http://nasdonline.org/document/1175/d001011/farm-respiratory-protection.html>.

Check your hearing protection as well. You may not think the tractor is that loud, but if you'll be driving it for a few hours you'll need protection. The "Permissible Noise Exposure" table shows the time limits for levels of noise you can take without hearing protection without much damage. To check decibel levels, you can download an app for your mobile phone to get a pretty decent reading – try 'dB Volume Meter', 'TooLoud?' or 'decibel'. You'll be surprised by the noise



This chart, from the Oklahoma Extension Service, NASOnline.org (National Ag Safety Database) shows the hours of safe exposure compared to various decibels of noise.

you're being exposed to. Choose the best protection by looking at the NRR number on the labels. Earplugs can be the best and the cheapest (NRR 26 to 31).

Knowing that you are providing a safe and healthy workplace is the best reason for putting in the added efforts. You may also find additional benefits if you talk to your insurance agents about what changes you've made on the farm. They like nothing better than to insure a farm business that works towards preventing accidents and illnesses and would likely offer you a lower rate.

Marybeth Vargha works with the Outreach Team at the New York Center for Agricultural Medicine and Health, part of Bassett Healthcare in Cooperstown, NY and on the family farm in Westford, NY. She can be reached at marybeth.vargha@bassett.org, 607-547-6023 X2231.

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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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GRAZING**Nitrogen Cycling in Pastures***Follow Nitrogen as it moves its way around a pasture.*

by Nancy Glazier

I was recently asked about the copious amounts of white clover in a pasture as the farmers were concerned about bloat risk with their sheep. She and her family had done some research and came up with differing opinions regarding management. I was asked to give the definitive answer. We talked through some scenarios and came to a manageable conclusion for their operation. I did some research of my own and provided some suggestions. What intrigued me was around nutrient cycling, particularly nitrogen, and how we take it for granted and make assumptions.



This photo shows an excellent amount of legumes in the pasture.

Photo by Nancy Glazier

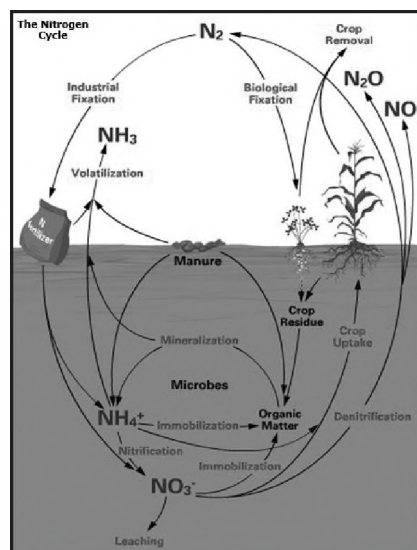
Pasture systems are complex cycles of nutrients. This article will focus on nitrogen (N), the most-limiting nutrient for pasture production. Other macro- and micronutrients are needed for N uptake, but due to space it all can't be addressed in this article. Adequate N supports forage growth or dry matter (DM) production. Nitrogen also affects protein content of the grass. Adequate nitrogen helps provides nice, green, color to pastures and will provide quality forage for milk, meat, and fiber production.

Plants take up N via their root systems in the form of nitrates and ammonia. This can come from nitrogen fertilizers and mineralization (decomposition) of manure and organic matter. Soil bacteria do the work using carbon as energy and nitrogen to facilitate growth and reproduction. Mineralization rate is dependent on soil temperature, moisture and aeration, and also on the amount of microbes present.

Certain plants are included in pasture mixes because, through their symbiotic association with nodule-forming *Rhizobium* bacteria, they fix N from the air. These nitrogen fixing plants common to Northeast pastures are red and white clovers, alfalfa, and birdsfoot trefoil. Nitrogen is present in air at 78%, but only legumes can make use of it. Healthy nodules are either white or pink. These are the little bumps on the roots. For the most part, N fixed by legumes isn't directly available to grasses, though small quantities can be transferred between plants through the hyphae of symbiotic mycorrhizal fungi connecting their root systems. This may provide 20-40% of their fixed N to grasses during the growing season (Brophy, 1986).

In order for legumes to fix N, they need to be planted with inoculum. These bacteria are species-specific and need to be fresh. They can be planted without being inoculated, but will not fix as much or almost no N, especially if legumes have not been grown there for a while. Legumes fix varying amounts of N through the year. Generally, alfalfa is the highest 'fixer', followed by white clover, red clover, and trefoil. This amount varies by the age and health of the legumes.

To become available, organic N in legume plant tissues must first be broken down to plant-available mineral forms by animal



This is a representation of nitrogen cycling. (Agronomy Factsheet 2: Nitrogen Cycle, <http://nmsp.cals.cornell.edu/publications/factsheets/factsheet2.pdf>)



The cattle have grazed this pasture, but there is still adequate residual pasture left to capture returning nutrients and encourage new growth.

Photo by Nancy Glazier

digestion or by decomposition in the soil. When livestock have access to legume-grass pastures, they will eat and trample what's there. They will leave their feces and urine on the pasture. Ideally, livestock are on the paddock for a short duration and uniformly distribute manure. Adequate residual pasture will help capture the urine to reduce volatilization. Plants, including legumes, will readily use the ammonia; this will slow fixation due to the availability of highly-soluble N.

Nitrogen can be lost to the atmosphere. Denitrification occurs when soil conditions are wet or anaerobic (lacking air) bacteria transform nitrate into atmospheric N. This reduces N availability of the plants. Ammonia may be converted to atmospheric N, too. This is called volatilization and occurs when temperatures are high and ammonia is exposed to the air. This can be reduced if manure (urine) or ammonia fertilizers are incorporated.

Nitrates are not held tightly in the soil. Rain or snow melt has the potential to leach or move

the nitrate further down in the soil layer and out of reach of roots. There is a higher risk for leaching with sandy and cold soils. There is more nitrate N uptake when plants are actively growing, which reduces leaching risk.

This article provides a brief overview of cycling processes in pastures. Legumes can provide adequate nitrogen if the soils are active and healthy. The publication, "Nutrient Cycling in Pastures" by Barbara Bellows, is an excellent resource that takes an in-depth look at good pasture practices that foster effective use and recycling of nutrients. It provides basic descriptions of water, carbon, nitrogen, and phosphorous cycles in pastures. It can be downloaded here: <https://attra.ncat.org/attra-pub/summaries/summary.php?pub=240>.

Nancy Glazier is Small Farms Specialist for the NWN Dairy, Livestock & Field Crops Team, Cornell Cooperative Extension. Her office is in Penn Yan and she can be reached at 585-315-7746 or nig3@cornell.edu.

Resource Spotlight: Legal Services Food Hub in Maine

by Ben Tettlebaum

Conservation Law Foundation (CLF) is thrilled to announce the launch of our Legal Services Food Hub in Maine. The Legal Services Food Hub is a free legal services clearinghouse for farmers, food entrepreneurs, and food-related organizations. CLF piloted the Hub in Massachusetts starting in 2014. Thanks to its great success there, we are now running the Hub in Maine, with plans to expand it to every state in New England. Our cases focus primarily on transactional issues, such as land acquisition/transfer, estate issues, taxes, contracts, and entity formation, among others. We are already working with over 20 cases in Maine involving farmers, food entrepreneurs, and non-profit farm and food organizations.

Participants range from refugees working to stake out a new life farming to a couple who has been farming for 30 years and is looking to ensure the next generation can continue their organic farm business; from a farmer growing apples and making hard cider to a hunger-relief organization hoping to let farmers use their kitchen as a shared space; from a family breeding heritage hogs on a biodynamic farm to a young woman scraping by to start a farm on land her great-grandfather farmed. The stories are as rich as the land from which they rise.

The Hub's growing network of attorneys currently includes 28 firms and lawyers, from the largest firm in the state to small partnerships and solo practitioners. The Massachusetts and Maine Hubs combined have already leveraged over \$100,000 in legal assistance.

To ensure that these free services are going to those most in need, participating farmers and food entrepreneurs are subject to an income cap: the annual net income of the business must not exceed \$30,000, and the applicant's household income must not exceed 400% of the Federal Poverty Level. Additionally, the business must have grossed at least \$3,000 in the previous year or just started operating in the last three years.

Please call the Maine Legal Services Food Hub Coordinator with any questions at 207-228-2730, or visit our website to learn more at www.legalservicesfoodhub.org.



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NEW AND BEGINNING FARMERS

So, You Want to Be a Farmer

A veteran shares the challenges of beginning a farm

by John Lemondes

Before making the decision to become a "farmer," "agricultural producer," or "grower," there are many things that should be considered. This is a decision that cannot be taken lightly, because like many vocations, farming is more than a job or career; it's a way of life. If that way of life isn't cherished, you won't be successful, because the lifestyle tradeoffs are too numerous and will result in conflict. For me, after a military career in which the U.S. Army was at war for nearly 25 of my 27 years in service, I needed a more peaceful life.

My journey began four decades ago growing up in Onondaga County. During this

period, I developed a deep love for all things outdoors. My very first job was as a fruit picker; I had just completed fifth grade and learned from a very young age about farm labor. In high school, I briefly worked on a farm and liked it, further solidifying my love for the outdoors. However, I had a dilemma to work through. My father, three uncles, and most of the other male members of my family were veterans. Their sacrifices and positive impact on our country (a pharmacist, doctor, chef, and business owners) weighed heavily on me, so I ultimately decided I had a debt to pay to our country.

For my wife, who grew up as an Army brat, the closest she ever got to a farm was the

grocery store. When I graduated from The Pennsylvania State University (PSU) in 1987 with a BS in Agricultural Science, I became a commissioned Army officer. From PSU I went straight into the Army, putting my dreams of being a landowner on hold for an undetermined period of time. Then, as a senior officer, the decision to leave the service boiled down to:

1. Our children were paying the bill for my career. Upon retiring and moving to NY, our then 4 and 8, and 13 year old had been in 3 schools in 3 states.

2. In the Army, we continued to put on hold any personal lifestyle dreams and goals.

3. I wanted to run for U.S. Congress in my local district (NY 24). The military had given me considerable leadership and business experience that I thought could benefit NY state and our community.

Specific Challenges

After my wife and I decided to buy a farm, it took two years of dedicated searching to actually find one. This is the first major challenge to anyone considering farming. Simple land access is a major impediment. Although some may be lucky and receive land through the estate or gifting processes, most do not. We experienced land acquisition through the school of hard knocks. Although I can only speak of our experiences, I have heard others say the

Holistic Management at Mulligan Creek Acres

Holistic Management provides Beginning Women farmers with a course on whole farm planning.

by Tanya Moyer

There are many tools that a farmer needs when he or she is starting out; seeds, livestock, equipment - the list goes on and on. But those physical tools are only one side of farming. Three years ago, I left "traditional" employment and took on the task of building a small, sustainable farm on land that had not been farmed since the 1990's. My partner, Ancel, worked construction, so we had funds to live on while I worked on developing Mulligan Creek Acres. Like every other beginning farmer, we needed structures, fencing, equipment, livestock, feed, business plan, marketing models, the list was never ending. It is certainly easy to feel defeated when faced with a laundry list of decisions to be made, a large capital investment plus the on-going operating funds and health of your livestock, soil or plants.

While doing research for the farm, I came upon a listing for "Holistic Management's Beginning Women Farmer Program." I didn't feel like a beginning farmer, as growing up my family always had livestock as had Ancel's family. Yet there was a draw for me to reach out and find out more about Holistic Management (HM).

After doing research online, I was even more intrigued and decided to fill out an application. I was accepted to the program and began class one cold November day. It was a class filled with approximately 20 other women of all ages and backgrounds, 4 female mentors, 2 instructors, and a program coordinator. Opening the classroom door that day was the best move I have ever made for my farm.

There wasn't a lot of time spent on perfunctory conversation, we got right down to work. We started to work on a real life farming scenario and began brainstorming opportunities and enterprises. This was our introduction to HM. Our class went from November to May, meeting a couple of Saturdays on month, taking on new topics at each class.

Holistic Management functions on the principle that all of nature functions in wholes. This means that all aspects must be taken into account when making a decision, as you cannot change one thing without impacting something else. A second principle is that you must also understand your environment. The practices of Holistic Management focus on defining what you manage, stating what you want, aiming for healthy soil, considering all tools available to you, and testing your decisions and monitoring your results.

Often in farming, I find that people focus on what they don't have or can't afford. We were tasked to create our resource inventory. This is a mindful compilation of all of our assets and resources - tools, technology, land, people, animals, skills/creativity or money. I found there to be great power in the acknowledgment of all of the resources that you have available to you. A resource inventory is a valuable tool when you are brainstorming potential enterprises and opportuni-



Holistic Management, Land Planning & Infrastructure class held at Mulligan Creek Acres

ties. In addition to the resource inventory, we set out to create our holistic goal; an overarching goal of our farm, which included defining our values and developing quality of life statements.

One of the foundation tools of HM is the decision making process. This process, known as "testing your decisions," focuses on asking yourself a series of seven questions. The testing questions serve as a tool in informed decision making. It continues to be based on the premise that all of nature functions in wholes and it questions if your action is in line with the triple bottom line - environmental, social and financial and is it moving you closer to your Holistic Goal. The triple bottom line is always taken into consideration when making decisions on our farm. How will my decision impact the animals and the land? Is this decision in line with my holistic goal, my vision and values? I am comfortable with the source of money that I am using or borrowing? Through this process you gain the realization that you cannot make a decision without impacting something or someone else. While learning about decision making and testing your decisions, we also learned about time management.

The topics then moved to focus on increasing the overall profitability of the farm, creating a whole farm financial plan and enterprise budgeting. We learned to develop "enterprise



Livestock at Mulligan Creek Acres

budgets," accounting for all aspects of the cost of production for a single enterprise. The course curriculum taught how to plan for profit. This method strategically plans upfront for your profit instead of the traditional model of taking whatever funds remain as profit.

As winter went on, course delved into creating marketing plans, working on the basics of business planning, leadership and communication skills. All lessons were building blocks on session built on the one before it, always keeping in mind, "how to test our decisions" and looking that the "triple bottom line."

Finally, as spring broke, we ventured out to farms and learned about land and infrastructure planning, improving land health with livestock and soil building, soil fertility basics and environmental impacts. These classes offered hands on opportunities which led to a more impressionable experiences.

The ten sessions resulted in a well-rounded whole farm planning educational experience. Yet, this was not the only take away from Holistic Management's Beginning Women Farmer Program. We were assigned mentors from the first session that guided us and supported us through the entire program. Our mentors and the state program coordinator, Sarah Williford, connected to us via email, phone and farm visits to offer every tool to support us on our path to becoming successful farmers. Program instructors are certified through Holistic Management and come from backgrounds in agriculture, Cornell Cooperative Extension and RC&D.

The program offers the opportunity for a solid foundation for all that choose to participate. Program sessions offer a way for new farmers to build confidence, knowledge, skills and commit to their own values and goals. Women work together in sessions and form lasting friendships as a result.

Nearly three years later, as a graduate of the program, I now serve as a program mentor to women. The opportunities afforded to me as a result of the skills and knowledge that I gained during Holistic Management as served to better myself, my family, and Mulligan Creek Acres. The farm has grown every year without incurring any debts, our soils are rich and improving every season, and we move closer to our Holistic Goal with every decision made.

The next session of Holistic Management will be beginning in late 2015 - early 2016. For more course information and to have any questions answered please reach out to Sarah Williford, New York State's Beginning Women Farmer Program Coordinator at sarahwilliford@gmail.com.

Tanya Moyer is the principle farmer of Mulligan Creek Acres, which focuses on purebred Berkshire pigs and pastured poultry in Montgomery County, New York. She can be reached at info@mulligancreekacres.com.

same thing; that this is perhaps the single greatest challenge to farming. After applying the criteria which met our needs, most properties wouldn't work, which further challenged us.

Moreover, buying a farm is not like buying a home; we've bought and sold several homes and it is comparatively easy. Everything you thought you knew doesn't apply. This became our most difficult challenge. We cycled through four agents before finding one that had rural and agricultural land experience. They'll all tell you they do, but it's not easy to find those who really know their stuff. However, once you do, it is time well spent. In fact, the saving grace to our whole experience was our real estate agent. We would have never been able to navigate the process without her knowledge. We are farmers thanks to her. Bottom line, looking for and purchasing a farm is significantly more stressful for first time buyers than "fee simple" residential real estate.

Once we found the farm we wanted, we were introduced to the next major, yet unknown obstacle; financing. In fact, we almost lost it because of the arduous finance process. After several dozen phone calls to banks and equivalent lending institutions, we found one that was willing to help us realize our dream, only to find in the eleventh hour that they were reversing their decision because we had no farming experience. This chicken and egg situation is something we've found replaying itself time and again, especially with attempts to secure cost share grant funding.

Somewhere along the way, we were introduced to Farm Credit East (FCE), which saved the day for us. They were prepared to deal with and accept the exact criteria and situations that sent the other traditional banks running. I knew nothing of FCE prior to our farm acquisition, but am a huge fan. Without them, we would be in a cul-de-sac somewhere. Their business model, product mix and most importantly, flexibility, is unique.

After Occupation Surprises

In our eighteen months on our farm, we are realizing that there are many more unanticipated challenges. One of the greatest, in spite of the generally favorable economic conditions in NYS for agriculture, is the tax burden. After forming an LLC in our first few months, buying our livestock, starting to turn fallow ground back into production, and replacing broken, missing, or otherwise unacceptable fencing, we still can't get an agricultural tax assessment reduction because we didn't meet the income threshold of \$10K. So, when you need extra cash the most, in the beginning phase of a start up in order to grow the business, you are instead taxed until you can generate \$10K per year for two consecutive years.

The money we've paid in extra tax burden could have been used to buy equipment (we have none and have been renting), pay an employee or two (our business is run by sweat equity), and develop a website and marketing materials. Bottom line, access to capital and tax policy are significant barriers to entering agriculture. We, like many others, had to make a hard yes/no decision and accept the realization that if we wanted

to farm, we would have to first acquire land and deal with everything else, over time, as we could.

I can't say enough how important having funding to fuel your start up farm operation is. Although there are many grant and funding opportunities advertised, I would have been essentially better off by not spending the time to apply for them and instead simply using the time for more general labor. The documentation burden is so immense that we simply can't allocate 4-5 days of labor consolidating every tax return and financial statement of our lives up to this point on the "whim" of maybe getting a few thousand in funding. So, if you want to farm and are starting from scratch, be prepared for an uphill battle. Without external jobs, we could not finance an agricultural business startup.

Additionally, simple business risk is a huge potential impediment for new agricultural operations. Recent legislation attempting to require farmers to pay overtime to farm workers, house them in homes with exorbitant standards (unsure if the home we live in would qualify) in addition to significant wage increase requirements have solidified our decision to grow more slowly and not hire anyone until we absolutely cannot handle the workload anymore. Although this legislation was defeated, I am sure it will be back and if passed, will result in significantly higher food prices; thus exacerbating entry barriers.

Legislative attempts to regulate farming like manufacturing will never work. Livestock, crops and other agricultural endeavors require what they need, when they need it, as determined by the weather, seasons and market forces, not an eight hour industrial time clock. Therefore, with respect to farming, it is critical to be "plugged in" so that you know what is going on politically. We accomplished this by becoming NY Farm Bureau members.

Next, I enrolled in a Cornell Farm Risk Mitigation course, which was invaluable. As a result, I was able to immediately identify and fix several risk factors which we had not recognized as such. Although at the time I went to the course, I didn't realize it, in a few short months, the knowledge gained would become critical.

As with any agricultural endeavor, weather itself is a significant risk factor, which we experienced first-hand in December 2014 after losing a barn to snow load. In the wake of the epic storm, we received just under 36" of heavy wet snow in about 24 hours. This paralyzed everything, and we were the first of many in our area to lose infrastructure... welcome to farming! However, thanks to the Cornell course, we had two degree and tertiary emergency action plans that we had developed and implemented. This was unpleasant; however, the preparation made it tolerable.

Recommendations

Often overlooked are the fringe benefits of living on a farm. Things as simple as fresh air, limited noise, few if any "neighbor" problems and issues to contend with, and the freedom of space. Additionally, the simple pleasure of knowing you're feeding other people, growing your own food to the extent you desire, and having a happy dog that has space to run are all aspects that can be forgotten amidst the pressure of harvest

and maintenance cycles; but shouldn't be! We make it a point to remind ourselves how lucky we are to live where we do and to be responsible caretakers of land in our local community.

Moreover, as we look back and think from a lessons learned perspective about what we did that really enabled us to get underway quickly, it boils down to:

1. Get involved in every professional training and educational aspect of your farm's products. For me, that meant attending many Cornell Small Farm lectures and symposium's, attending the Howard Wyman Sheep Industry Leadership School (Sponsored by the National Lamb Feeder Association), attending an American Sheep Industry Association professional wool classing school and finding people and opportunities where you could work in your intended field to gain fast, relevant experience in order to decrease "learning curve" trial and error. For my family, we spent almost a week on a commercial ranch in Montana where we worked under supervision to learn necessary husbandry skills;

2. Establish networking opportunities by joining the pertinent organizations in your area related to your operation (like the Farm Bureau). We did this as a means to meet people, who then helped us reduce our learning curve challenges.

3. Be flexible. You'll experience many, many "gray area" decision points where you'll have to make critical decisions with out all the information. As a veteran, I am comfortable in that realm because I've spent nearly my entire adult life operating in that space.

4. For other veteran families like ours, I think doing all of the above over a period of 3 years prior to retirement or separation would significantly decrease start up time. In our case, we had to wait because we weren't exactly sure where we were going to live; however, the sooner you can start connecting to the people and organizations that you'll be working with for the rest of your lives, the better!

Summary

Although it takes time and money to start an agricultural operation, it is well worth it. From our perspective as a family it has been great, despite the challenges and in light of the macroeconomic issues facing NYS. Nonetheless, agriculture in NY is a great industry and probably has its brightest days ahead thanks to proactive policies from the governor. We experienced several major obstacles that would have undoubtedly caused many people to quit, but with understanding and preparation have made us more resilient. In the end, the last and perhaps most important point I want to make is that in all things worth pursuing, there will be obstacles which in order to be successful, must be dealt with. In order to deal with setbacks, you have to be persistent. Persistence in and of itself is probably the most discriminating attribute for success in any agricultural endeavor.

COL(Ret) John Lemondes served all over the U.S. and world in his military career from 1987 to 2014. He and his wife, Martha and their 3 children live on their farm in Lafayette, NY (Elly's Acres Farm) named in honor of their oldest child who is severely disabled.



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LIVESTOCK AND POULTRY

Sheep Management: The Deadly Barber Pole Worm

by Ulf Kintzel

When I sell breeding livestock – ewe and ram lambs alike – I now add the following sentence to the sale's agreement: Seller advises **STRONGLY** against using Ivomec as a dewormer and recommends Cydectin or Prohibit against barber pole worms and Valbazen against tapeworms.

On occasion I receive a phone call, an e-mail, or a Facebook message that a ram lamb or a ewe lamb that I sold has died "all in a sudden". In all likelihood, the owner missed in many cases all the signs of a heavy infestation with the deadly barber pole worm. Granted, it isn't easy to spot for the inexperienced eye until it is too late.

What is the barber pole worm and why is it so deadly? The scientific name for the barber pole worm is *Haemonchus contortus*. This particular worm lives in the sheep's true stomach, the abomasum. It thrives there by the thousands by piercing the stomach and sucking blood. That leads to anemia and often death. Anemia as a sign of an infestation can be detected by looking at the sheep's lower eyelid which will be white or pale instead of pink or red. Another sign of infestation with this parasite is the so-called bottle jaw, an accumulation of liquid under the sheep's jaw. However, that does not always occur when a sheep is affected. Scours, which are many times a tell-tale that something is wrong with the animal, are most notably absent. Needless to say, it isn't all that easy to detect anything when the sheep is infested until it is too late. Hence the remark I hear that the sheep died "all in a sudden."

Some individual sheep are more resistant than other to this worm. Young sheep or lambs are more susceptible to it than old sheep because resistance or even immunity is often obtained over time. Some breeds of sheep are more resistant than others, most notably sheep of tropical origin. Careful though when you hear the sales talk of some folks who elevate one sheep breed over any other. Their claim that their breed is more parasite resistant may turn out to be wishful thinking at best.

Here are some ideas how to manage this parasite to reduce or even avoid losses. Conventional wisdom used to be that rotational grazing will break the worm life cycle when there are at least three weeks in between grazing any given pasture. Field trials have shown that under favorable weather (favorable for the larvae that is) like moist and warm seasons the infective larvae survives far longer – in some cases months – which makes this practice a matter of the past. Still, rotational grazing can help with managing this parasite for a different reason. Most of the larvae of the worm can be found on the first four inches of any grass blade or any other forage plant. Few larvae climb higher than that. So if residual of at least four inches is left after grazing the intake of infective larvae is limited. Leaving that much residual is desirable for other reasons anyway in a rotational grazing system.

There are many dewormers (anthelmintics) on the market that used to be effective against internal parasites. Use and overuse has led to parasite resistance in many flocks against these dewormers. However, it has not done so equally among the available anthelmintics. Here is some noteworthy difference: When a barber pole worm has developed resistance against Ivomec (ivermectin) and it mates with a susceptible worm, all resulting worms are resistant against Ivomec. This is why resistance against this drug builds so quickly. Levamisole under the brand name Prohibit on the other hand is effective much longer. Here is why: When a barber pole worm has developed resistance against Prohibit and it mates with a susceptible worm, all resulting worms are susceptible again. Cornell University estimated that resistance against this dewormer takes 20 some years to build. After many years of use, I still use Prohibit quite effectively. (Cydectin is another dewormer I still use effectively. While there has been cases of drug resistance documented as well, they don't seem to be as wide spread. Cydectin has not been on the market that long yet and it also doesn't seem to be as widely known).



Deworming sheep in the chute with the help of my children.

If you are a small flock owner and you seek advice from a veterinarian about what dewormer to use, chances are your vet will recommend Ivomec. While my experience is anecdotal I know that in ALL cases where my advice was sought after a sheep had died the vet had indeed recommended Ivomec or the flock owner had used it on his or her own account. The question occurs why Ivomec is still recommended so often. I contribute this to two facts: First, veterinarians are often amazingly uneducated when it comes to internal parasites in sheep. Secondly, Ivomec is readily available as a drench or as an injection. On the other hand, Prohibit is far more inconvenient to use. The drench does not come as a ready-to-use solution and must be prepared by yourself by mixing the packaged powder with water. It is not available for just a few animals – depending on the weight the package is good for dozens or hundreds of sheep. (The bolus that used to be the convenient choice for flock owners with just a few sheep is no longer available). Lastly, once mixed with water it expires after three months of storage unlike Ivomec, which can be stored for a much longer time.

When it comes to deworming, a regular deworming schedule should be avoided. Unfortunately, some vets still do recommend exactly that. While I still routinely deworm lambs at the age of about six to eight weeks and my ewes around lambing when the immunity against worms is most compromised, I don't have much of a deworming schedule beyond that. I do have a deworming plan, though. In a dry year, I can postpone deworming again until the lambs have almost reached market weight. In a wet year I need to deworm earlier. Most times I don't deworm all of the sheep. I only deworm those that need it, especially young sheep with lambs and lambs themselves. Older sheep and heavy lambs often don't get dewormed. Some of you may say that not deworming some sheep will lead to immediate infection of the pasture with worm eggs. Exactly. Just that these worms are likely to be susceptible to the dewormer I am using. This means my dewormer will remain effective longer.

Sheep that continuously show sign of infestation right after being dewormed get a different treatment. They end up as either sausage, stew meat, or burgers. The scientific term for it is: selecting for parasite resistance. And yes, selecting for parasite resistance as a management tool can be and should be used in any given flock of any given breed on any

given farm. No matter how nice the ewe is otherwise, culling her is the best course of action in the long run.

How do I determine which are the ones that need to be dewormed? 30 years of experience tell me which ones to deworm and which I won't. I reckon my experience won't do you, the reader, any good. So here is an alternative: There is a FAMACHA® eye color chart available which was developed by South African researchers. The chart tells you what the desirable eye lid color is and what color suggests anemia. I am often asked if I use it and the answer is that, in a technical sense, I don't. I find it impractical when you have several hundred sheep. It is more practical if you have a few dozen sheep or less. On the other hand, I do indeed check the occasional eye lid if I suspect infestation and I need verification.

I do want to give some words of caution here: I don't consider this chart as bullet-prove science like the law of gravity. I have seen sheep that clearly were infested by the barber pole worm that still had a somewhat healthy eye-lid color. Likewise, I have people telling me that they used this chart and thought the sheep was healthy and then it wasn't and died. I suspect there are also individual differences in animals. You can be certain, however, when you suspect the barber pole worm and the eye lid color is pale or even white that it indeed is that parasite.

Last but not least, here is the greater picture in all of this. Dealing with the barber pole worm is a question of managing it and living with it in your flock with little or without economic losses. There is no silver bullet that can do it all. You want to use all tools in the box to do so. Trying to eliminate this parasite is like wanting your home never getting dusty in any way or your boots never getting dirty when you go outside. It is not going to happen.


Ulf owns and operates White Clover Sheep Farm and breeds and raises grass-fed White Dorper Sheep without any grain feeding and offers breeding stock suitable for grazing. He is a native of 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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Dan and Marcy Brown with their daughters.

How do you build a dairy farm from the ground up in just a few months? That ambition might seem improbable, unless you're Dan Brown. Dan grew up on the family farm, tending and milking cows alongside his father. In fact, he might tell you milk runs through his veins.

However, when the dairy was sold, Dan left the farm in search of other pursuits. Only to be lured back by his love for the dairy business a short time later. But with the barn in severe disrepair and no cattle, he had much work to do.

When the time came to rebuild, Dan called the lender he knew would understand the potential — along with the challenges. "We were really starting from scratch," said Dan. With the help of Farm Credit East, Dan and his wife Marcy were able to build a new barn and acquire a new herd. And just three months later, they shipped their first load of milk.

With help from Farm Credit East, the Browns have been able to expand their facilities and have gone from a flat milking parlor to a robotic and organic operation. "Everyone we work with at Farm Credit East is knowledgeable enough to understand our creative vision," explained Brown. "Our partnership with them makes our business possible now and into the future."

The family farm is now a 52-cow organic dairy operation ready to enter the local foods movement. "Farm Credit East is allowing us to build something our children can grow into someday. Thanks to their efforts, we are realizing our dreams."



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FARM MEMOIR

An Inspiring Story of How a Therapeutic Endeavor Became a Farming Project that Just Won't Quit

by Edward Duquette

Several Utah winters ago, my wife and I received a phone call that two of our dearest friends were involved in car accident. This accident was more than your average fender bender. Chet and Christine Bailey ran off a mountain road in their pick-up truck because of a small patch of ice. Their truck then rolled several times down the mountain before stopping with the help of a tree. The roof of the truck's cabin collapsed during the roll, crushing Chet's spine. Christine was also hurt but was able to walk away with serious injuries, none life threatening. Chet's prognosis wasn't as promising. He was probably going to lose most of his motor functions from his neck down, pretty much paralyzed. There was even a question if he would survive. His throat was also crushed, making it hard for him to eat, drink or talk.

This story would probably not have had a happy ending. But you see Chet wouldn't give up, he has a family to support and a family business to operate. His rehabilitation was no less than a miracle. He totally surprised all his doctors and everybody that knows him. He was determined to walk and be productive again.

Finding a Hobby

Chet needed something to keep him busy, not too strenuous or excreting, slightly challenging, and maybe just for an hour or two a day. Maybe stamp collecting, or how about bird watching? Chet made the only logical possible choice for him: farming. You know, something easy to do. I'm saying this with a smile; we know how physically demanding farming is. But this did not stop him; he built all of his micro farm from recycled building materials he collected and organically rich composted soil from the city recycling plant center. His raised beds were built tall because of his problems bending over that he has developed from the accident.



These raised beds are extra tall for ease off operation, thermal mass storage and the heavy grounding to hold the green house down during our high prairie winds.

The greenhouse, built completely out of recycled plastic pipe and reclaimed wood, supports a 10-month growing season and is only heated in our cold Utah winter nights with only 3-small kerosene lanterns. During the day, inside temperatures reach 100 degrees + in the summer. The green house is built to be very thermal efficient. His 2 extra tall raised beds in the green house also act as thermal mass storage and the counter weight that holds it down when we get occasional 50-70+ mile per hour wind gust.

January and February are the only two months of the year he not producing some kind of crops. Each day, he hand waters his plants in the green house and on his micro farm. The small farm is 100% back to basics with only 2-6 hours of therapeutic work needed per day.

A Very Special Design

When Chet told me how he made his Green House with plastic PVC pipe he said it with a laugh. It was plastic pipe he had sitting around this shop. Now we all have seen greenhouses made with white PVC, they are

See Inspiring [page11](#)



These ground level beds serve as the final growing beds for the green house transplants. Intense gardening technique is used here with obvious success.

FOREST AND WOODLOT

Strategies to Control American Beech and other forest species

by Peter Smallidge

American beech and many other native and non-native woody plants can dominate a woodland, exclude or limit the regeneration of desired plant species, and limit the biodiversity of the site. In high abundance, these species can complicate access for maple producers. Often, these interfering species gain dominance because of selective deer browsing of desired plant species, and prolonged deer pressure can create a legacy effect that persists even if deer impacts are controlled.

In all forest vegetation management situations, not exclusive to beech, you should start with a plan that details the interfering species, the desired plant species, the costs, how the interfering vegetation will be treated, and how the site will be re-vegetated. Webinar archives detailing the vegetation management planning process are available at www.youtube.com/ForestConnect.

The word "treatment" is used here to describe the manner in which the vegetation is manipulated, often with the goal of killing the stems causing the interference. The treatment has two attributes – the method and the mode. Method is typically mechanical or chemical and mode is either broadcast or selective. Biocontrol methods are not described here. Each treatment can be described by a method and a mode. First we will review some principles, then consider some examples.

Which Method and Which Mode?

Both mechanical and chemical methods have useful applications. Often the choice depends on the attitude of the owner, the time of year, the terrain, or the equipment. For some circumstances, a mechanical method is followed by a chemical method. Mechanical methods might include hand-pulling, brush saws and chain saws, timber ax and Fecon mowers, or livestock. Chemical treatments are herbicides, a type of pesticide that targets plants.

The decision about whether to use chemical methods may be decided by the owner's attitudes and comfort with the use of herbicides. Some owners, such as maple producers who are certified organic, are restricted from using most conventional herbicides.

Herbicides are regulated by the EPA through authority given to the NYS DEC. The regulatory process helps inform users about the known ways that the active ingredients will behave in the environment. If an owner uses an herbicide, they should carefully follow the label. Home recipes of chemical concoctions should never be used. (see article on reading pesticide labels in this issue of the Quarterly)

Mode is selected depending on the desired specificity of the treatment to individual or groups of stems. A selective treatment affects individual stems and a broadcast treatment affects all stems in an area. If an interfering species is mixed with a high percentage of a desired species, a selective treatment may be used to reduce injury to the desired species. Selectivity is possible through physically isolating one stem from others, by using a treatment that only affects a certain species, or by applying a treatment at a time of year when desirable species are not susceptible. If the interfering species predominates, or financial or logistical constraints preclude a selective treatment then a broadcast treatment would be applied.

The abundance of undesired stems is often a good place to start when considering whether to use a selective or broadcast mode. The principle to consider here is the fixed cost to visit each stem in a selective treatment. If there are too many stems per acre that means (1) the cost per acre will become prohibitive and (2) because there are a fixed number of stems per acre the interfering stems have likely displaced the desirable stems and a broadcast treatment would have limited relative collateral damage. Although not widely studied, the threshold between selective and broadcast is about 400 stems per acre. Each owner's situation is a bit different, so this threshold should only be used as a guide.

Selective Manual

- Types of treatments would include pulling, girdling or cutting.
- Pulling treatments are best applied in circumstances of small plants, where the interfering plant has only recently been established and there is little potential for subsequent seed input from that plant. Pulling has the potential negative consequence that the soil is disturbed and the exposed mineral



Girdling, such as the flame treatment being used on this buckthorn, kills the phloem and vascular cambium and starves the roots. Girdling at the base of the tree may result in suckers emerging at ground level.

soil may provide a suitable seedbed for some other undesirable species.

- Girdling severs the phloem and vascular cambium just inside the bark. Girdling can be accomplished with an ax, saw, or flame torch; chemical girdling is called basal bark and described below. Girdling has the advantage of more quickly treating the stems as compared to cutting and not need-

ing to immediately address the downed stem. Stem size matters because a large dead tree may become a hazard in the future. This treatment can be combined with a frill herbicide application (see "hack-n-squirt" below) as an integrated strategy.

- Cutting uses a saw to sever the stem and fully disconnect the foliage from the roots. Traditional timber stand improvement with



Management intensive grazing (MIG) or mob grazing, if done carefully, can reduce the height and density of the understory. MIG treatments that eliminate the understory would likely damage the overstory trees.

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Foliar spray treatment of large plants has the potential for overspray onto nearby plants. Be alert to the proximity of desired plants. The treatment pictured is of glyphosate; the personal protective equipment (PPE) exceeds label recommendations, but can use additional PPE.

Photo by L. Merle

firewood as a product is an example of this treatment. Special safety concern is warranted for those who use a chainsaw. Also, in most hardwoods and shrubs, cutting will stimulate stump sprouting, and also root sucker sprouts from beech and tree-of-heaven. Shade intolerant species such as black locust and aspen may develop root sucker thickets after cutting if enough light is available. This treatment can be combined with an herbicide application to the cut surface (see "cut-stump" below) as an integrated strategy to prevent sprouting.

Selective Chemical

Types of treatments include foliar, hack-n-squirt (AKA injection), cut-stump, and basal bark.

- Treatments can be quick, cost-effective and reduce or typically eliminate the potential for post-treatment sprouting from stumps or roots.

- Treatments require the use of a chemical, but the chemical is used on individual stems to reduce the potential for collateral damage.
- Information about all herbicides that are legal for use in NY is available at www.pims.psur.cornell.edu

- Foliar treatments are applied to individual plants. Applications of foliar sprays on tall or broad plants may result in overspray and a heightened potential for drift onto adjacent plants. Foliar treatments are commonly a low concentration of glyphosate (e.g., Roundup) or triclopyr (e.g., Garlon 4 ultra) perhaps mixed with imazapyr (e.g., Arsenal, Polaris AC) or sulfometuron methyl (e.g., Oust). The herbicide labels will describe mixing ratios. Foliar treatments can be applied following a mechanical cutting, after stems

sprout new foliage, thus allowing for the use of less chemical and greater control.

- Hack-n-squirt treatments use a hatchet or similar tool to expose the phloem, vascular cambium and outer most xylem tissues, the wood, to a fairly concentrated (25% to 50% active ingredient) application of glyphosate. Imazapyr might also be used to control some species. The role of the hatchet is to expose the inner wood; other tools might include a portable drill or divots made by a chainsaw. The objective is to make multiple relatively small wounds that receive an application of the herbicide.

- Cut-stump treatments are appropriate when the stem is severed, but without additional treatment the stump or roots will sprout. Herbicides might include glyphosate or triclopyr. Glyphosate is mobile in the root system and will be translocated from the stump to root sprouts that are controlled. Triclopyr is less mobile than glyphosate. Follow label details, but herbicides are typically applied to the outer 2 inches of the freshly cut stump surface or to the entire surface and sides of the stump. Recent research on glyphosate (J. Kochenderfer, USFS) found that glyphosate could be applied up to 72 hours after the beech tree was cut with minimal reduction in control of root sprouting.

- Basal bark treatments use an herbicide, typically triclopyr, in an oil-based carrier to chemically girdle a stem. As with mechanical girdling, the full circumference must be treated. Treated stems seldom if ever sprout. Details are provided in the link below, but lower doses and broader seasonal opportunities exist than were previously considered.



All types of girdle treatments need to fully disconnect the foliage from the roots. Even a narrow missed section, as illustrated, can allow a tree to survive.

Broadcast Manual

- In woodland settings, there are few options for broadcast manual treatments. These include rotary brush heads on small tracked machines and management intensive grazing.
- Small tracked machines (e.g., Fecon, Timber Ax) can maneuver in many wooded settings and clear vegetation in the lower strata. Depending on the operator, these have some ability for selectively avoiding some desired stems. As with selective manual, this treatment may stimulate root and stump sprouting.

- Management intensive grazing is grazing

strategy often used in silvopasture systems. It requires a high level of grazer awareness and understanding. Management intensive grazing might be preceded by a rotary mower as described above.

Broadcast Chemical

- Broadcast chemical treatments are only used when interfering stems fully and almost exclusively dominate the site, and the foliage is at a height where it is accessible to spray equipment.

- Because broadcast chemical treatments opens the entire understory, care must be taken to monitor the species that re-occupy the site to assure other interfering species don't assume dominance.

- A few isolated desired species can often be protected by clipping them at ground level just before spraying. The lack of foliage protects the clipped stems and most will resprout.

- Broadcast chemical treatments are essentially foliar treatments, but done with equipment that sprays broad areas rather than selective targets. In some situations, this treatment is the most efficient and provides the best control of interfering species.

Both backpack and tractor/skidder mounted sprayers are available.

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

This article first appeared in the Maple News.

Online support to further understand and visualize treatments include the following:

- A good internet source to understand forest vegetation management is provided by Penn State Cooperative Extension at www.extension.psu.edu/fvm.
- Chemical selective treatments www.youtube.com/ForestConnect
- Manual herbicide application methods http://www.nrs.fs.fed.us/pubs/gtr/gtr_nrs96.pdf
- Silvopasture (i.e., sustainable woodland grazing) <http://www2.dnr.cornell.edu/ext/info/pubs/MapleAgrofor/Silvopasturing3-3-2011.pdf>

Inspiring page 9

nothing new. But this was something different. The green house was constructed from 6 inch diameter black drain pipe cut into quarters. The plastic drain pipe was heat bent and attached to the two very tall and very heavy raised beds. Everything else was constructed from scrap lumber; the plastic covering was purchased from a greenhouse supplier. This is one of the most stable DIY greenhouses I ever seen. Also notice 2 doors for easy access and ventilation. The greenhouse is simple in construction but very efficient in design.

What the Future Holds

There are definitely applications for solar and wind to power for his micro farm. Passive solar could heat the greenhouse very nicely. Solar panels could easily power watering pumps, lighting and circulation fan in the green house. Soon if I can convince him I would like to introduce Aquaponics to his farm. The farm is now a perfect model for growth with some limited automation. His farm is definitely designed for self-reliance and model for the true non-stop pioneering spirit that is the backbone of the American Farm. His farm might be small but his endeavor and his success is certainly large.

Saving for a Rainy Day

Chet's farm is constantly growing and expanding, adding fruit trees, grapes, veg-

etables and more grow beds or some growing buckets. Everything is grown from seed, and Chet and Christine process their vegetables and fruits by canning, dehydrating and seed saving. There's no waste: what doesn't get used by this family, Chet shares with his neighbors and friends. Any remaining waste is fed to chickens and his compost pile, so that everything gets used is some form or another.

Chet said it took about 2-years for his organic soil to kick into high gear with no additives just his own organic mix. Now it produces vegetables with super results. His veggies fresh out of the ground are the best I've ever tasted they are "true organic produce." Chet, Cristine, and family live in Eagle Mountain, Utah. Good friends and good neighbors.

Edward DuQuette teaches several classes on Aquaponics, organic farming, hydroponics, and solar and wind power as off the grid options at 2- Utah Colleges and a Trade School Program. He freelance writes for several publications (his favorite is Cornell SFQ). He has a background in electronics engineering and mechanical design, with military and commercial applications. Ed is semi-retired and lives in Eagle Mountain, Utah. He can be reached at eduquetteut@gmail.com.




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STEWARDSHIP AND NATURE

Waterway Sidewalks: Native Trees and Shrubs

Riparian buffers prevent erosion, improve water quality, and build the resiliency of native habitats

by Rachel Carter

Native trees and shrubs intertwine with one another, keeping 350-acres of flood plain intact along the banks of the Winooski River, best known as the Intervale. Located within the city limits of Vermont's urban metropolis (42,000), Burlington boasts a solid urban farming culture, much due to its relationship with the Intervale Center, the non-profit responsible for stewarding the 350-acres of Winooski River bottomland.

The Intervale's deep roots draw from a classic historical friction between agricultural and industrial growth. Abenaki farming evidence dates back to 1450, followed by controversial Vermont state founder, Ethan Allen, building a homestead and then selling some of the land. Railway tracks were laid in the 1860s and dairy farming took over in the 1900s. A municipal dump opened in 1944 and operated through the 1970s. Illegal dumping continued into the 1980s until Burlington was rezoned to exclude industrial and residential growth in 1987. A few years prior, Gardener's Supply Company was founded on the adjacent property and by the time the new zoning laws went into effect, farming was back at the Intervale and began Vermont's first CSA in 1989.

The Intervale Center leases affordable farmland to local farmers, operates a food hub, provides educational, community, and farm viability programming, and promotes healthier lands and water with the Intervale Conservation Nursery.

Along the Riverbanks

A canopy of native trees and thick layers of shrubs embrace the buffer between the river and urban farmland, giving a dark and dewy jungle-like feel as you walk through the trails along the Winooski River. The damp atmosphere not only encourages healthy walking habits to keep pace ahead of the mosquitos, but the intensive root system created by the trees and shrubs protects the river from environmental impacts by creating a stable bank that is resistant to erosion and capable of filtering sediments and pollutants before they reach the water.

It's no accident the Intervale's flood plain has been restored with native species like silver maples and ostrich ferns, compared to the debris that littered the bottomland 20 years ago. Officially known as riparian buffers, the restoration of river banks with native species places the Intervale Center's Conservation Nursery in the limelight.

"We plant native trees and shrubs to help stabilize riverbanks. These plants also enhance fish and wildlife habitat, improve water quality, reduce flood damage and erosion, and offer privacy, shade and improved recreational opportunities," says Mike Ingalls, Intervale Conservation Nursery Manager. "By using native plant and tree species to create riparian buffers, we are improving the resilience of our native ecosystems."

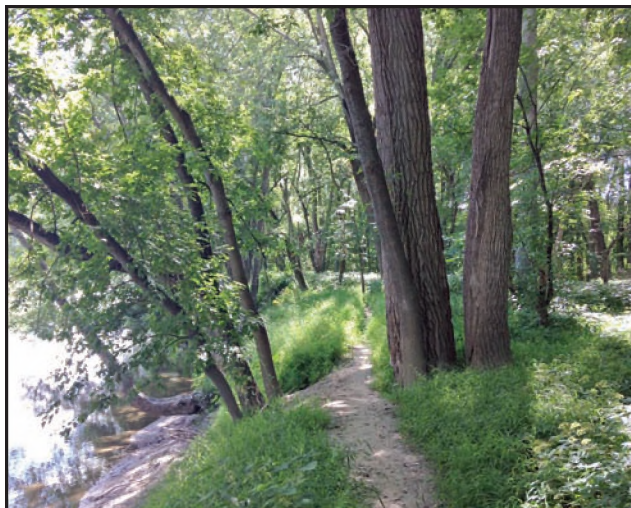


Mike Ingalls reaches for one of the Intervale Conservation Nursery's popular trees, the alder can take higher levels of pollution than other species and is good nitrogen fixer.

Operating as a social enterprise within the Intervale Center, the Conservation Nursery grew and planted 95 acres of native trees and shrubs in 2015 for riparian buffer zones and storm water management projects for landowners, farmers, watershed organizations, conservation districts, and government agencies. The nursery also participates in the Conservation Reserve Enhancement Program – a USDA and Farm Service Agency initiative to take farmland in high-priority areas out of production and put into conservation in exchange for annual rental payments.



On the endangered species list, butternut used to be a valuable food source. The Intervale Conservation Nursery is working to grow butternuts that might be cankor resistant.



Riparian buffers protect the ecosystem along the Winooski River at the Intervale in Burlington, Vermont.

Photos by Rachel Carter

Recent Intervale Conservation Nursery projects include creating a buffer of 350 trees and shrubs along a small creek flanked by corn fields adjacent to the Quiet Path in Stowe, Vermont. The creek runs about 500 yards before it empties into West Branch of the Little River. The Quiet Path is part of the Mayo Farm, a 235-acre property conserved by the Stowe Land Trust.

Hurricane Irene led to a series of projects around the state including plantings along the Mad River in downtown Waitsfield in partnership with 350.org and Friends of the Mad River. Financial support for many of these projects comes from Vermont-based coffee company, Keurig Green Mountain.

In the Tree Nursery

"We grow 30 different species of trees and shrubs. Of these 30 species, 8 are our 'bread and butter' that make up roughly 50% of total plantings (shrub willow, black willow, red-o-dogwood, silky dogwood, box elder, silver maple, cottonwood and speckled alder)," shares Seth Gillim, Ingalls' partner at the nursery. "The remaining 50% of what we grow consists of smaller numbers of the remaining 22 species."



Seth Gillim and Mike Ingalls are managers of the Intervale Conservation Nursery, founded in 2002 and dedicated to growing native, locally sourced trees and shrubs for riparian restoration projects throughout Vermont.

Everything grown at the Intervale Conservation Nursery is started from seeds collected directly from nature and cuttings at the nursery. Ingalls emphasizes this is the most viable method to source seeds.

"Native Vermont trees and shrubs fit the Vermont genotype and therefore last longer and are stronger plants than those ordered from nurseries out-of-state," says Ingalls. "Our plants have a 78% survivorship – typically anything above 50% is considered a success."

The Conservation Nursery operates in a niche market with bear root, soilless trees which are much more affordable compared to container trees for landscaping. All plants are grown ecologically, using no fertilizers, pesticides, or herbicides. Cover cropping and organic mulch from leaf litter prime the soil with nutrients. "We live with the weeds rather than spraying or sterilizing our soils," shares Ingalls.

Vermont's Working Landscape Commitment

Vermont is in the hot seat when it comes to water quality issues. The Intervale Conservation Nursery plays a critical role in helping to restore Vermont waterways. Native trees prevent erosion and help filter sediment and nutrients from entering lakes and streams. Additionally, the community education that accompanies all of the Intervale's work is instrumental for the collaborative work taking place in Vermont to build the resiliency of the working landscape.

Vermont's statewide Farm to Plate food system plan to strengthen the farm and food economy, improve environmental quality, and increase local food access for all Vermonters is in its fourth year (out of ten) of implementation. Vermont's Farm to Plate work draws connections between diverse stakeholders and provides space for difficult conversations to take place so larger scale, system change work can be accomplished over time. Several goals of Vermont's Farm to Plate Strategic Plan call for farm viability and profitability, environmental stewardship, and land conservation balanced with availability to grow more food for Vermont's entire population.

Organizations like the Intervale and enterprises such as the Conservation Nursery play one very distinct role in Vermont's commitment to work together to strengthen the working landscape.

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.

Learn more about The Intervale at www.intervale.org and Vermont Farm to Plate at www.vtfarmtoplate.com.

LIVESTOCK AND POULTRY

A Quick Primer on Marketing Your Livestock for Meat

by Rich Taber

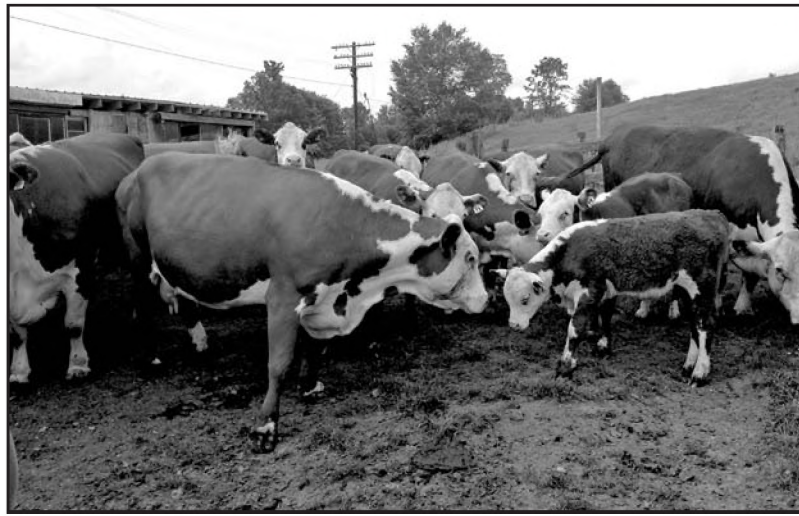
"I believe in leadership from ourselves and respect from others. I believe in my own ability to work efficiently and think clearly, with such knowledge and skill as I can secure, and in the ability of progressive agriculturists to serve our own and the public interest in producing and marketing the product of our toil."

This quote is from the FFA Creed, an inspirational document that has been guiding FFA members and high school Agriculture teachers for decades. I refer to it as it has been around for many years, and has served as a guiding philosophy that can apply to agricultural producers everywhere. Growing animals is what many farmers and producers love to do, and do so well; we raise them, nurture them, feed them, and care for them in blistering hot weather and during the frigid days of our northeastern winters. Many of us are good at this, but sometimes fall short in selling these animals for a profit. Sooner or later we have to sell, or market these animals to keep cash flow going, to pay our bills, and to finance our lives and our businesses' next trip around the sun.

Frequently I get phone calls from people who desire to grow any number of animal or poultry oriented enterprises, and the majority of questions are production oriented, with little or no thought given to marketing. There seems to be this "mythical they" such as some government agency which will swoop in and assist in helping producers make huge profits when the time comes to sell their products. Sadly, no such "they" exists; we need to start small and develop our own markets as we gain skills and then increase our animal and bird populations to fit those markets.

There are several different ways to sell your meat products, and all require a good bit of effort, time, expense, and sometimes, aggravation, to succeed.

My first piece of advice to aspiring producers is to start small, and to make your mistakes while you have fewer animals to contend with. Nothing can be more costly and demoralizing than to have a whole bunch of animals ready to be sold, and you have no viable market, and you end of having to sell them for low and unprofitable prices. As you build your marketing skills and client base, you can grow your animal populations to fit those markets.



There are a lot of steps, effort, rules, and regulations between these farm raised animals and a marketable product. Farmers markets, CSAs, wholesale markets, and direct farm sales are all viable methods of getting products to the consumer.

I will also mention at the outset, that if you wish to sell meat products (lamb, pork, beef, veal, goat) to consumers in New York State, then the animals have to be slaughtered at USDA inspected meat processing facilities. This is non-negotiable. If you wish to have animals processed only for your own consumption, they can be processed at non-USDA facilities, but they will be stamped "not for resale". Hefty fines can occur if you violate this law.

Poultry, on the other hand, in New York State can be processed at home for resale to consumers. For more information on processing meats and poultry, go to the Cornell Small Farms website, www.smallfarms.cornell.edu and go to the "Resources" section. There is an excellent publication that can be downloaded, and which explain all of the rules and regulations applicable to these topics, and is titled "A Resource Guide to Direct Marketing Livestock and Poultry". Different states have completely different rules and regulations and so for those readers from states other than New York you will need to contact your respective state agencies for applicable rules.

Livestock products can be marketed at Farmers Markets but take large amounts of work and attention needs to be paid to keeping products at the correct temperatures.



So then what are some of our existing and viable channels by which we can market our products?

Before mentioning any specific methods of marketing, we need to keep one paramount thought in mind, and that is that animal products are perishable products, and must be strictly held to certain temperatures, anywhere from zero degrees for frozen products, to forty degrees for products that will be readily consumed. This can be a daunting task at times.

Direct Marketing is a very popular way of selling to the public, and can be manifested in several different ways. The first is the ever-popular Farmers Market. This is an excellent way to meet with your customers and to build a client base. However, farmers markets can take an inordinate amount of time to prepare for, work at, and then pack up and return home. Many small-scale farmers have outside employment, and can find it burdensome to work, raise animals, and then be involved in a farmers market, which can be grueling in time commitments.

A producer can develop an online presence, and have customers come to your location to pick up products. However, you have to have a strict protocol as to when they can come to your farm to pick up things. You may be wanting to only sell a few products to any given customer; they may be looking for "the whole farm experience" and expect you to drop whatever it is you are doing and give them a grand tour of your farm.

Selling for **wholesale markets** is a developing and emerging way to market your products. As we speak, the Cornell Small Farms Program has assembled a team of Extension Educators who are developing a curriculum to teach producers how to wholesale market their commodities. Wholesale marketing will allow for those who have neither the desire nor the wherewithal for farmers markets to expeditiously sell their products. One example that is occurring right now is the Cornell Beef Calf Pooling Program, led by Beef Specialist Mike Baker. Uniform groups of beef calves will be assembled around the state and then marketed to buyers online, ensuring producers a better price and a ready market.

Community Supported Agriculture (CSAs) are another method to market products, and which seems to be more popular with vegetable growers but several successful livestock CSAs have occurred. People in the community pay fees upfront, such as in the beginning of the season, and at specified times throughout the year receive a designated amount of products.

Restaurants and institutions offer another way to market animal products, but take a good amount of effort to develop these contacts. Supplying a specified amount of products to those outlets can be a formidable task for small-scale producers.

Another outlet that can be productive is the **auction barn**, where meat buyers congregate. In recent years beef prices have been fairly high, and animals have brought a good price at these outlets. Over the years, though, when prices are depressed, you can receive very disappointing prices at the auction barn.

These are just a few of the methods available that can be used to market your birds and animals. Again, start small, go slowly, and develop your markets as your skills develop. Don't wait until its time to sell your products without a marketing plan in place; by then it may well be too late.

Rich Taber is Grazing and Ag Economic Development Specialist with Cornell Cooperative Extension of Chenango County. He is also a farm owner and partner with his wife Wendy, in Great Northern Farm in Madison County, raising beef cattle, sheep, and a variety of poultry. He can be contacted at 607-334-5841 ext. 21 or email: rbt44@cornell.edu



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FOREST AND WOODLOT

Understanding the Pesticide Label

by Peter Smallidge

Pesticides refer to a chemical, regulated by the US Environmental Protection Agency, that will prevent, destroy, or otherwise damage pests such as insects, plants, fungi, rodents, etc. Used correctly and judiciously, pesticides are an effective and safe tool. Specific types of pesticides include, for example, herbicides that control plants, insecticides that control insects, or fungicides that control fungi.

Depending on the chemicals in the pesticide, the product might be selective to specific types of pests, such as grasses vs. broad leaf plants. The product might also be general or broad-spectrum and control most species of its category. Woodlot owners can learn more about pesticides through tutorials available on the Cornell Cooperative Extension website <http://psep.cce.cornell.edu/>.

Every pesticide has a "label", which is a written or graphic instruction attached to the

container. "The label is the law," and the label has essential information for the user of the pesticide. For example, the label will indicate the types of pests – often the individual species – for which the product is intended to control. Federal law requires that the manufacturer test each active ingredient and submit the findings to the EPA who assesses whether the product is safe for use. The conditions of use are then part of the label. The process of labeling a pesticide so that it is registered for use can take 8 to 10 years and cost \$35 to \$50 million.

The U.S. EPA initially registers a pesticide when they approve a label. A state will subsequently register a pesticide before it can be sold, distributed or used in that state. The conditions of use in a state may be more restrictive than the conditions of use stipulated by the EPA. The label of every pesticide registered for use in New York can be viewed at <http://pims.psur.cornell.edu/> (Figure 1).

This site, known as the PIMS website, helps users evaluate different pesticides, obtain free copies of the label, and understand if a pesticide is appropriate for their needs before the pesticide is purchased or used. New York

Figure 2: Although the U.S. EPA may classify a pesticide as "general use" and available to everyone, NYS DEC can be more restrictive and re-classify a pesticide as "restricted use." Restricted use pesticides can only be used by a certified applicator. For example, Garlon 4 is general use in Pennsylvania, but is restricted use in New York.

woodlot owners should refer to labels on the PIMS site, not those obtain by a general search of the Internet or a manufacturer's website.

Most labels, and those described below, are considered primary labels. However, a special type of label is the 2(ee) label for "emergency exemption." These labels are provided in response to special needs, often to allow the use of a specific pesticide on a new or invasive species. The PIMS website has a searchable list of 2(ee) labels.

By federal law, pesticide labels have a standardized format and information to allow users to easily find the information needed for use. Below are several of the types of information that a woodlot owner should review on a pesticide, often a herbicide, before buying or using the product.

1. Pesticides are classified as "restricted" or "general use". "Restricted use" products can only be used by a private or commercial certified applicator, whereas general use products can be used by anyone. NYSDEC designates some products as restricted if they deem there are special needs related to the safe application of the product. (Figure 2). This classification will only be visible on

**CLASSIFIED FOR
'RESTRICTED USE'
IN NEW YORK STATE
UNDER 6NYCRR PART 326**

labels sold or distributed in NY. Therefore, a product such as Garlon 4 might be "General Use" in Pennsylvania, but is "Restricted Use" in New York. By viewing labels on the PIMS website, users can determine the classification of a product.

2. The label will indicate the type of pesticide (e.g., herbicide, fungicide, etc.) and the brand name or trademark label. This information is used to communicate with others the product that is being used, and can be searched for via the PIMS website.

3. All pesticides have a product registration number issued by the EPA. This is a unique number, similar to the Latin name of a plant, used to identify the product. The product registration number can be searched for on the PIMS website.

4. The label lists the active ingredients and their percentage in the product. (Figure 3). The concentration of the active ingredient is important to know because it determines if the product is ready to use from the container or if it needs to be diluted. Glyphosate, an example of a common active ingredient in some herbicides, might be 2% in one product and suitable for use as a foliar spray, or

See Pesticides see page 15



Figure 1: The Product, Ingredient, and Manufacturer System (PIMS) is a website that includes the label for every pesticide registered for use in NY. The labels include essential information. PIMS allows users to learn about a specific product before purchasing.

STEWARDSHIP AND NATURE

The New York State Workgroup for Improved Soil Health

by Paul Salon

One definition of soil health is the continued capacity of soil to function as a vital living ecosystem that sustains plants, animals, and humans. This definition speaks to the importance of managing soils so they are sustainable for future generations. To do this, we need to remember that soil isn't an inert growing medium, but rather is a living ecosystem. Physically and biologically degraded or unhealthy soils are typically found in systems with continuous tillage, low crop residues, and low diversity. Soils with poor soil health have a breakdown in aggregate structure, loss of organic matter, and decreased diversity of above and below ground biology. Degraded soil is challenged to achieve the soils true production potential and is also limited in its ability to respond to extreme weather events. Degraded soil becomes vulnerable to excessive runoff leading to erosion and flooding, and encourages increasing agricultural inputs.

To maintain or build a healthy soil, agriculture systems need to reduce tillage to an extent which maintains maximum crop residue cover. The system should increase diversity and maintain living roots throughout the growing season through diverse crop rotations including winter annuals, perennials and cover crops. The system should integrate properly managed livestock systems and the use of organic amendments where feasible.

Following these principles will improve soil structure and increase organic matter, improving soil health and function over time. Increasing both active and stable organic matter, improves water holding capacity, increases aeration capacity and increases nutrient holding capacity and cycling.



Cover crop research at the USDA Plant Materials center in Big Flats, NY

Additional related benefits include: reduce weather-related risks, improved water quality, minimizing runoff and flooding, improved tractability on crop fields, reduced compaction and the potential to improve profitability over time.

In an effort to raise awareness and provide scientific and technical support, the Natural Resources Conservation Service (NRCS) assembled a New York State Soil Health Interagency Workgroup. The Soil Health Workgroup's objective is to advance soil and water conservation through the promotion of soil health practices state-wide. The Soil Health Workgroup includes: farmers, the NRCS, the Cornell Soil Health Program, conservation districts, NYS Ag. & Markets, educational institutions, cooperative extension, non-govern-

mental organizations, private consultants and agribusinesses who are working towards developing innovative solutions to improve soil health.

The Workgroup is actively supporting soil health workshops and tools at the local level to promote conservation tillage, cover cropping, grazing and nutrient management strategies. The Workgroup spearheaded a major soil health program during this year's Empire Farm Days in Seneca County, including three days of demonstrations, presentations, and farmer panels housed in the newly created soil health seminar building. Members of the workgroup also organized a series of three on farm soil health workshops in Wyoming, Schoharie and Cayuga counties on September 2nd through the 4th featuring nationally renowned advocate for soil health Ray Archuleta of the National USDA-NRCS Soil Health Team.

Upcoming events include two workshops at the USDA-NRCS Big Flats Plant Materials Center in Big Flats, NY on October 16th for small scale vegetable producers featuring speakers from Cornell University on cover crops and reduced tillage for more information go to: <http://tinyurl.com/SoilHealthOct16> and a workshop on cover crops and reduced tillage for field crop and large scale vegetable producers on November 6th featuring speakers from Cornell, Penn State and the University of Vermont, for more information go to: <http://tinyurl.com/SoilHealthNov6>.

For more information about the Soil Health Workgroup and the upcoming events contact Paul Salon USDA-NRCS 607-562-8404, paul.salon@ny.usda.gov. For complete soil health testing information go to: Cornell Soil Health Program <http://soilhealth.cals.cornell.edu/>.

FARM BUSINESS

Insuring Your Agritainment Operation

The continuing evolution of farm insurance in the 21st Century

by Reuben Dourte

Agritainment activities are becoming an increasingly popular pastime for rural, suburban and urban families alike. Farmers, looking to increase revenue streams, meet families searching for wholesome and down to earth entertainment for their children and thus, Agritainment is born. Because of the novelty of the family farm and the growing scarcity of them in high population density areas, some of the largest Agritainment risks operate their businesses in suburban-urban areas where high profile injury lawyers happen to be readily available. Proper liability insurance is no longer optional.

Petting zoos, bounce pillows, hay rides, pumpkin cannons, corn mazes, horse drawn carriage and pony rides all provide a unique challenge to insurance companies because of the inherent liability risks they pose. While each of the aforementioned exposures could warrant their own blog posts, we are going to focus on some general insurance considerations to be made when contemplating whether or not adding Agritainment activities makes sense for your operations.

Insurability

The addition of many Agritainment activities can create several problems for insurance companies, one of which is an increase in Medical Payment claims. Medical Payments

are written as part of the liability portion of a farm or business insurance policy, although they are not a "true" liability coverage.

The reason for this is that you, the premises owner, do not have to be negligent in order for the Medical Payments portion of your policy to cover a visitor's emergency room bill for an injury. Uneven ground, playground activities, cut stalks in corn mazes, and even horse play can cause injuries which will be covered by Medical Payments on what is, for the most part, a no-questions-asked basis.

Because of these risks, and the fact that it is difficult to regulate and control many of the "at-your-leisure" activities at Agritainment farms, many insurance companies will not write a policy for a property that has a large Agritainment exposure. Because many Agritainment businesses are located on a farm property, you may have already been limited to just a few farm insurance companies who would write your policy to begin with.

The presence of a corn maze, bounce pad, or wagon rides on your premises could further reduce your options and create the need for you to look outside of the standard market into more expensive excess and surplus lines coverages.

Stringent Underwriting Requirements

Even the insurance companies who will

insure Agritainment exposures may require certain risk management criteria to be put in place. Observation decks that oversee corn mazes, for example, may need to be put in place to make your operation eligible for a specific carrier's program. Manning the station may increase your employee payroll in addition to the cost of constructing of the observation deck.

Most companies will require a risk control inspection prior to writing coverage for accounts with a large amount of Agritainment activities. Any time an inspection occurs, there is a good chance that additional loss control measures will be required to be put in place to protect against both property and liability losses. These loss control requirements are ultimately for the good of both the insured and the insurance company, as they help to protect against claims; however, they can and do create additional expenditures for the business owner and these need to be taken into account when determining the profitability of certain activities within the Agritainment operation.

Similarly, the implementation of first aid stations, while always a good idea when dealing with the public, may become a requirement once certain Agritainment activities become a part of your operations. These requirements are not universal, and they may not be deal breakers, but it is important to note that

they could create extra expenses for your business. Going into the process with the expectation that certain things will be asked of you can help to curb some of the frustration ahead of time.

Challenges of dealing with multiple companies

Some agritainment operations are too far outside of the proverbial "box" that they are just not insurable through standard markets. Others have property that is best insured under a farm policy, while the liability exposures presented by the Agritainment exposures are too much for standard carriers to assume.

In this scenario, it may become necessary to place the liability coverage for the Agritainment operations elsewhere, while still providing farm property and farm/personal liability coverage through a standard Farmowners Insurance product. Specialty markets outside of the excess and surplus lines market may be able to affordably provide your business with the liability coverage it needs by grouping your operations with other risks in order to keep costs lower.

While this can be a great option when placing the business with a standard carrier fails,

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Pesticides from page 14

might be 50% in a different product and diluted 1 to 1 in water for use in cut-stump treatments.

5. The label will list a signal word to indicate the relative toxicity. The signal words are "Danger/Poison", "Warning", or "Caution."

6. Precautionary statements will indicate actions the applicator should take to protect themselves, fish and wildlife, or the environment. The relative toxicity will correspond to the types of personal protective equipment (PPE) necessary to protect the applicator. The label will list the minimum required PPE, but applicators can always wear extra PPE. For example, it is always a good practice to wear eye protection and protective gloves even if not required by the label. The statement will indicate whether the product has toxicity by way of inhalation, ingestion, or to the eyes or skin.

7. A first aid statement indicates how to treat a person exposed to the pesticide.

8. Agricultural use requirements indicate actions necessary to protect agricultural workers. Agricultural workers, those

paid to work on the property, are considered at greater risk than the general public because of the potential for frequent exposure. The protections are delineated on the label and include the "Restricted Entry Interval" (REI) which is the number of hours before an agricultural worker can enter the site without specific protective clothing. The label specifies the protective clothing required for entry during the REI.

9. At some place on the label, there will be statements that should be common sense to applicators. These include statement such as: avoid contamination of food or feed, wash contaminated clothing before reuse, wash hands before eating or smoking, etc. These generally recognize the need to reduce exposure, and especially to protect vulnerable individuals, such as children, from exposure.

10. The final section, often several pages long, includes directions for use of the product. This information will specify the appropriate target species; in NY a pesticide is considered appropriate only if the target species is listed by name on the label, or the label describes target species and uses a general term such as "and other woody species." The directions for use will indicate the mode of treatment, for example foliar spray, cut stump, basal bark, or injection. This section will also provide dilution formulas to allow mixing of the product to achieve a specific concentration. If a pesticide can be mixed with other pesticides or fertilizers, those will be listed. Finally, the dose that is permissible will be listed as a quantity per acre that should not be exceeded. In agricultural applications, which include woodlots, the applicator can legally apply less than the specified dose rate to reduce the costs and reduce the amount of the pesticide released into the environment.

The label on a pesticide is carefully prepared. It contains information that will aid the applicator in a safe and effective application. The label is considered a legal document, and failure to follow the label may put the applicator in jeopardy. Before purchasing, and certainly before applying a pesticide, the user should read and understand all parts of the label. Personally, I use a limited number of pesticides, yet I read the label every time I make an application.

Some people will suggest you use an unlabeled product to control pests. This is illegal in New York and many other states. The conversation will often go something like... "my cousin told me that if you take yesterday's coffee, mix in the ears of your neighbor's cat, add a tablespoon of spicy mustard, a quart of diesel fuel, and let this steep in your closet until the next full moon, it will 'work on' such and such a plant." People often encourage these home remedies to (1) avoid costs or (2) avoid putting chemicals into the environment. Because home remedies are not tested their efficacy is unknown and direct or opportunity costs can escalate. Also, the home remedy is a mixture of chemical, but unlike a registered pesticide the chemical and their action in the environment is unknown.

Woodlot owners and foresters should be informed about all aspects of pesticides if they intend to use these products. Specific strategies for the safe use of herbicides are presented in one or more webinars available at www.youtube.com/ForestConnect. Also, a handbook about forest vegetation control and multiple methods is provided at www.extension.psu.edu/fvm. Information used in this article was obtained from the Cornell Cooperative Extension Pesticide Management Education Program.

Peter Smallidge is NYS Extension Forester and Director, Arnot Teaching and Research Forest, Dept. of Natural Resources, Cornell University Cooperative Extension, Ithaca, NY 14853.

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Active Ingredients:
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isopropylamine salt 46.2%
Other Ingredients 0.0%
Total Ingredients 100.0%
¹Contains 5.4 pounds per gallon glyphosate, isopropylamine salt (4 pounds per gallon glyphosate acid).
Keep Out of Reach of Children
CAUTION

Figure 3: The label lists the active ingredients and their concentration. The concentration is important to know because some formulations can be used directly from the container, but other formulations need to be diluted. The label will give guidance on how to make dilutions. Pesticide labels will indicate the relative toxicity, known as the "signal word", which include Danger, Warning, and Caution.

COMMUNITY AND WORLD**Farmers, Farmworkers and Students Unite*****An Open Meeting on Domestic Fair Trade for the Northeast***

by Elizabeth Henderson

Responding to the call to a gathering on domestic fair trade in the Northeast, two dozen farmers and farmer organizers, farmworker organizers, student and union activists, and service providers for low-income workers came together for an intense 3 hours on August 14, 2015. Louis Battalen, teacher and farmer, Rose Bookbinder of the Pioneer Valley Workers Center, and Elizabeth Henderson, organic farmer and NOFA representative to the Agricultural Justice Project Board, organized the meeting and delivered introductory remarks to get the ball rolling.

The core of the morning was the go-around when participants talked about why they came and the work they are doing that relates to fairer prices and wages, safer work, and ethical trading. The final hour was devoted to brainstorming next steps in cooperating, exchanging and coordinating with one another. Images of the Domestic Fair Trade Association (DFTA), its members, vision and principles, of farm worker conditions, and farmers organizing for justice flashed on the screen as participants assembled. Louis Battalen welcomed the participants, explaining that the purpose of the meeting was to provide a chance to get to know one another, share our projects and seek ways to collaborate.

Introducing domestic fair trade in the northeast, I pointed out that this history has yet to be written and it is up to us to define our terms. I am an organic farmer and our farm is one of the oldest CSAs. There has been a long history of struggles to bring fair rewards to the people who produce our food – going back to the Populists. From my perspective as an organic farmer, farmers and farmworkers in the US are as much in need of fair trade as the small farmers in the global south. The reality we face is that many of the workers in the US food chain suffer from low pay, all kinds of abuses – wage theft, sexual harassment and general insecurity. Structural racism is the enforcement mechanism that keeps people of color and recent immigrants at the bottom.

I gave a quick summary of the story of the DFTA, and explained that its main projects are to promote fair trade and to evaluate fair trade claims in the U.S. market, and gave an introduction to the Agricultural Justice Project, which offers high bar standards for Food Justice Certification, a path to keeping fairness in organic and sustainable agriculture. Faced with the challenges of food safety and the urgent need to reduce climate change, I concluded, we must build solidarity among all food workers including farmers.

Rose Bookbinder talked about founding the Pioneer Valley Workers Center a little over a year ago. She presented a project by Clare Hammonds and Niko Bazurto, of the U Mass Amherst Labor Center, on understanding and improving wages and working conditions for farm laborers in Massachusetts. They conducted detailed interviews with 18 Latino workers and found that even in the “Happy Valley,” wages average no more than \$9.60 an hour, with no raises or upward mobility, few benefits and poor safety conditions. The workers expressed a pervasive sense of discrimination. Rose concluded “We can’t have true food justice without food workers having a voice.” Her center is currently working on a restaurant workers bill of rights.

For the next hour, we went around the circle, each person sharing information about the projects they are engaged in. The farmworker organizers provide trainings in workers’ rights, immigration, and health/safety, and raise awareness of healthy food and food justice. CATA facilitates the development of community gardens, and is a founding member of AJP. The Workers Centers provide places for training and organizing workers and are engaged in research to better understand the food system and how to leverage change.

From the farming sector, there was a representative of Red Tomato, which coordinates distribution of local farm products and advocates for fair trading, as well as people who provide education for farmers on best labor practices and do outreach for Food Justice Certification. Patrick from United Food and Commercial Workers (UFCW) supports organiz-



Louis Battalen and Elizabeth Henderson, Aug 14

ing drives among food workers. Anthony, Jeremy and Billy work for state agencies that provide legal, training and employment services to low income workers and monitor violations. Becca and Dan research farm labor and environmental justice. Martin campaigns for GMO labeling, and connects the dots for a global perspective on food sovereignty. Three college students work on the Real Food Challenge (RFC), shifting institutional money into the local food economy, and supporting student solidarity with farm workers and fisher folks. They have persuaded U Mass to sign onto the RFC goal of 20% real food by 2020 and they are honing their definition of what “real” means. Haley wants to document the oral history of this movement. Dorian works for the Cooperative Fund of New England, providing flexible funding



Participants of the meeting

for coops, and volunteers as a member of the River Valley Market board. Liana organizes to maintain the integrity of the national organic standards and to raise awareness that the success of the organic market is not translating into financial success for U.S. organic farmers.

For the final hour, we divided into three groups to discuss these questions:

- How do we best collaborate?
- How do we achieve unity and accountability within our movement?
- What are possible options for our group moving forward?

Here is summary of our answers:

All three groups expressed a commitment to continue the dialogue we began that day to identify common goals, while acknowledging differences and tensions. Communication across sectors is essential to building a movement.

Suggestions include setting up a group list serv, creating a calendar of regional events, a map of groups and resources, a list of projects and help needed, and sharing specific workers/farmers stories. Group two emphasized the importance of organizing at the cultural level - not focusing on issues but the values that connect us.

The upcoming conferences this fall and winter will provide occasions to continue getting together. And there were many other ideas for town meetings, flash mob events, and community garden talks. Group one focused on making sure there is worker representation when standards and policies are discussed and on the need for more research on how to judge what technologies are best for workers.

In designing conferences – e.g. NESAWG - we need to make sure each topic area (food hubs, local economic development projects) also addresses issues of importance to workers and to farmer economics. Does this food hub guarantee living wage jobs? Prices to farmers that cover full costs of production? In conclusion, we agreed to collect value statements from participants and to share our priority values.

All 3 Power points are available — please send request to elizabethhenderson13@gmail.com

Upcoming conferences:

- Field to Fork - Oct 22 - Western Mass Labor Center, Amherst, MA
- NESAWG Conference Nov 12 – 14, Saratoga Springs, NY
- NOFA winter conferences in MA, NY, VT, and CT. (Jan, Feb, Mar 2016)

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it should be considered as a last resort. Providing coverage on the same premises, to the same named insured, with multiple policies can prove problematic at claim time. Almost all insurance companies will have “Other Insurance” clauses within their policy language, which states that their coverage is secondary to other applicable coverage in the event of a loss. The last thing you want to have happen in the event of a liability loss is your two insurance companies trying to decide which one is obligated to pay the claim.

A prudent exercise is to consult a lawyer about separating your real property assets from your business operations by setting up an LLC. Having a separate business entity that conducts the Agritainment portion of the operations can provide some clarity at claim time. For example, if Joe Smith owns Farm A, Joe may purchase a Farmowners Insurance policy, which provides him property coverage for his house, barns and both farm and personal liability. Joe may create a company, ABC Agritainment LLC for which he purchases a stand-alone Liability Insurance policy through a specialty market. ABC’s Liability policy can list Joe Smith as an addi-

tional insured, thus providing Joe with coverage in the event he is named as a co-defendant in a lawsuit against ABC, which alleges ABC’s negligence in their Agritainment operations. An experienced lawyer should always be consulted when you are looking at setting up your business under different names and multiple entities to ensure you are appropriately protecting your personal assets from any business related liability claims.

Agritainment exposures continue to both challenge and test the insurance industry. Because of their complexities, the amount of public interaction that is present, and the current legal climate, they can prove to be difficult exposures to insure. It is important to consult with an insurance agency that has experience with providing complete coverage for Agritainment risks so that every aspect of your growing and changing business remains properly insured.

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

HORTICULTURE

Reducing Tillage at Goranson Farm

Case study of a farm reducing tillage to improve soils

by Brian Caldwell and Ryan Maher

From the beginning

Rob Johanson and Jan Goranson had a good-sized tractor, a 100" rototiller, and a potato farm with 35 acres of sandy soil in coastal Maine. It was the mid 1980's and they had just purchased the farm from Jan's mother. The logical thing to do was to use that tiller to produce a perfect seedbed and plant potatoes. They did just that, following the University of Maine recommendations all the way.

Fast forward to 2015. Goranson Farm still produces potatoes, but also a wide variety of other vegetables on over 60 acres, all certified organic. They offer chicken, pork, and maple syrup at their farm, through several farmers' markets, and summer and winter CSA's. Rob and Jan are respected by farmers throughout the Northeast for their knowledge and willingness to share it.

But another, less visible change has to do with the farm's soil. Rob realized that for the farm to thrive, he needed to change things. He cut down, then eliminated his use of chemicals. The crop mix was expanded. But he was also pushing the envelope beyond standard organic soil management.

Tilling the soil is a big part of organic vegetable farming. It incorporates manure or fertilizer and creates a warmed and aerated seedbed for planting, but most of all, tillage is used to control weeds.



Goranson Farm strip tills beds ahead of planting small seeded crops.

Photo courtesy of Rob Johanson

The downside to tillage is that it degrades the soil as it performs all of these valuable services. Soil organic matter (SOM), the living soil community and dead remains of crops and weeds, is critical to soil function. SOM holds water and nutrients, releasing them slowly as plants need them. It glues soil particles into aggregates, allowing pores to form, which drain rainwater and hold air for plant roots to breathe. Well-aggregated soils resist erosion and provide an easy environment for roots to explore.

The big rototiller that Rob used to create that clean seedbed to plant potatoes was responsible, over the years, for shattering aggregates and depleting SOM. Rob's fields are mostly flat, but the soil is also erodible. He felt that SOM and soil cation exchange capacity (reflecting the ability of the soil to hold nutrients) needed significant improvement. Improving water holding capacity, infiltration, and drainage were all on his mind.

Soon Rob was reading about conventional grain farmers in the Midwest who were adopting no-till methods to improve their soil. The catch was that they also used herbicides to control the weeds. As a recently-transitioned organic farmer, this approach was off limits.

How to reduce tillage?

First, Rob dropped the rototiller and started using the old moldboard plow, which was, at best, a slight improvement. Several additional soil-churning passes with the disc and cultimulcher were still needed to work the soil fully into the desired seedbed.

Rob was also learning that straight no-till methods often didn't work well in cool northern soils. Some northeastern farm-

ers were turning to "strip tillage", in which tillage was targeted just to the planting row, and crops were planted into 10-12" wide tilled strips. Often a deep-running shank was used to break compacted soil layers, which form below the plowed or rototilled depth. This lifted and mixed the soil, creating a good seedbed. However, in the untilled area between the strips, SOM, plant residues, and the soil microbial communities were not disturbed.

Rob tried strip tillage first in strawberries. He used a C-shank to rip a strip every 6' and break up the compacted layer. Then he removed some tines from the rototiller to till strips and work in organic fertilizer. He planted in the strips, and used his normal cultivation equipment in between. With a 12" strip every 72", only 1/6 of the soil area had been subjected to full tillage. It worked well and Rob was hooked. From there, it was a question of getting all the necessary equipment and fine-tuning the system. Rob is an admitted gearhead, so he started assembling the needed tools and equipment (Fig 1).

In 2008, he borrowed a heavy-duty deep zone till rig, but found it too unwieldy for his scale and fields. The right equipment turned out to be a toolbar fitted with Yeomans plows to till the strips (Fig 2), followed by wavy coulters (8 wave) to churn the strip's surface soil into a good seedbed.

The Yeomans plow is a subsoiler shank that can penetrate down to 20" or more (Fig 3). The versatile units can be mounted on a toolbar and set for various row spacings. They require about 30 HP per shank. The idea is to rip through any compacted plow pan layer in the area under each row, allowing crop roots free access to deep soil layers. The shanks are best run at 2" below the pan depth, which can be

See Tillage page 18

Cost of Reduced Tillage Tools	
Heavy duty toolbar	\$1500
Gauge wheels (not used at Goranson Farm)	\$1500
3 Yeomans plows	\$2500
6 Wavy coulters	\$2400
Front 3-pt hitch	\$2000
Drop fertilizer spreader	\$3000

Figure 1



A Yeomans shank can be used for strip tillage and breaking up compacted soil layers

Photo courtesy of Ryan Maher



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FARM TECH**Making Hay When the Sun Seldom Shines**

by Rich Taber, Grazing/Ag Economic Development Specialist, CCE Chenango

How ironic this summer of 2015 has been! When I wrote my article "Making Hay While the Sun Shines" for the last edition of SFQ, it had been a fairly dry spring. It looked like the summer of 2015 would be short of rain. Not too long after that article was written, it began to rain, rain, and rain, throughout the entire month of June. I have been making hay for 35 years in the Central New York region, and this has been by far the wettest season that I have ever encountered.

In June and early July, it was all but impossible to make dry hay in a timely fashion. Even making haylage and baleage (high moisture hay) was challenging. Not only that, but there was so much rain that the soil was saturated with water, so that when a few brief periods of sunshine appeared, you would go out into the fields attempting to mow hay, and sink into the ground causing permanent rutting damage to the fields. The three photos show some of the typical damage to fields that has been all too common this year.

As small, beginning, and seasoned farmers, we stoically march on; but what are some strategies that we can employ to deal with this type of season? We have some field damage, and late, oftentimes rained on hay crops, and with the subsequent lower quality of forages to sell or feed to animals.

1. Knowing that we may be short of forages,

maybe this year might be a good time to sell a few animals that we had been planning on keeping, if we can't buy or make enough decent quality feed.

2. Maybe we can extend our grazing season; it has been a fairly good year for grazing with no shortage of rain. With pastures growing well this year, by extending our grazing further into the fall, we can cut down on the amount of stored forages we need. Try stockpiling some grazing; instead of trying to make second or third cutting hay, hold onto some of those cuttings and instead graze them later in the fall.

3. Look around and try to locate some decent hay for sale. Dairy quality forages will be in short supply, and expensive, but other classes of livestock can get by with somewhat lower nutritional value feeds. Much of the feed this year will be lower in quality than we would like. The old saying is true, "the early bird gets the worm," so don't procrastinate and wait until the snow flies before you try to locate some more feed, only to find out that it has all been bought up.

4. If you do buy hay, inspect it zealously to make sure that it hasn't been spoiled. I have found that even making hay in the required three day window this summer has still resulted in the crops still being a little too moist for long term storage. Hay put up at too high of a moisture can spoil, be bad for animals, it can be a fire hazard, and it can contribute to respiratory diseases in both animals and humans.

5. If you are not feeding animals strictly for a grass fed market, maybe you could locate some alternative grain by product feeds to help extend your forages, such as beet pulp.

6. Become knowledgeable about growing and grazing summer annual forages, of which there are many, and which can give you some alternative sources of feed for your animals. These crops could be grazed or put up as dry hay or high moisture forages, but do require that you have machinery to fit and till the soil. Information abounds from vendors and service providers such as Cornell Cooperative Extension.

7. With all the rutting damage out there, you may need to refit fields or plan for some new seedings next year; nothing is more aggravating than trying to drive machinery over deep ruts, causing damage to your machinery. Inspect your tractors and hay making machinery for damage from having dragged them through wet spots. Washing all of the mud off of your machinery with a high-pressure washer would be time well spent.

Rich Taber is Grazing and Ag Economic Development Specialist with Cornell Cooperative Extension of Chenango County. He is also a farm owner and partner with his wife Wendy, in Great Northern Farm in Madison County, raising beef cattle, sheep, and a variety of poultry. He can be contacted at 607-334-5841 ext. 21 or email: rbt44@cornell.edu



Examples of some of the perils of haying in wet conditions.

Tillage from page 17

determined by pushing a stiff wire into the ground until strong resistance is encountered. One can also often borrow a penetrometer from the local NRCS office for this purpose.

The whole picture

Currently Rob's farm system includes 2 years of soil-building, weed-reducing cover crop + fallow between 2 years of vegetable crops. The cover crop + fallow period, years 3 and 4 (Fig 4), produces heavy biomass, and has summer bare fallow windows for tillage to kill weeds. Currently he has 30 acres in cash crops and 30 in fallow/cover crops. Rob uses the same general approach on all his crops, but tweaks aspects depending on crop spacing, timing, etc.

On widely-spaced crops like winter squash, hairy vetch from the fallow sequence is first flail mowed. Then come one or two light disking's and a pass with the Perfecta field cultivator. Without this shallow tillage, weed pressure is too high. After this comes a single Yeomans shank, where the crop row will go. Rows are 6' apart. A custom-mixed granular organic fertilizer is placed over the strip tilled area at this point with a front-mounted spreader unit. The rest of the area receives no added fertility. A gang of 3 wavy coulters over the strip then performs the final seedbed prep. Transplants are placed with a Mechanical 1000 transplanter, which is able to handle big overgrown plants if needed. The transplanter waters them in with an organic-approved liquid seaweed + nitrogen mix.

The crop is cultivated normally (although "normal" for Rob includes advanced equip-



Figure 4: Goranson Farm has a 4-year rotation with a cover crop-fallow period.

ment such as a flame weeder, Williams tine weeder, Reigi weeder, and new Steketee finger weeders from Holland) and hand hoed once or twice. A soil pre-side dress nitrate test is taken 2-3 weeks after planting, and about 25 #/A of Chilean nitrate applied if indicated, to the 12" tilled strip.

Closer spaced, small seeded crops like carrots are handled a bit differently. They are grown in 3-row beds, roughly 44" wide, with wheel tracks spaced at 6'. Three Yeomans shanks, without coulters, one for each row, are used for deep subsoiling. A mixed organic fertilizer with about 45 #/A of N is applied to the whole bed but not the wheeltracks. The beds are then shallowly rototilled, about 3-4" deep. Crops are planted with a Yang seeder, usually with pelletized seed. Multiple

plantings are made throughout the season totaling an acre of carrots. They are cultivated with standard tools and usually hand hoed twice. No additional fertility is applied.

After harvest, a small-seeded crop field goes into the 2-year cover crop + fallow phase of the rotation. If there is still time to plant cover crops for good fall growth, the crop residue gets disked and the cover crop is planted, typically rye and vetch. If it is too late in the season, crop residues are untouched until the following spring, allowing for weed seeds to be eaten by birds and ground beetles.

Evaluating the results

Improving soil is the ultimate goal. Cover crops and reducing tillage are major means toward that end. Rob gets good yields with this system, similar to what he got in the past. Soil organic matter has not improved dramatically, but soil tests don't show everything. He now finds worms even in his driest fields. This never happened before.

Over the years, Rob has seen weed pressure go down on his farm. Squash, sweet corn, and potatoes used to be the weediest crops. Now they are the cleanest. Part of this is due to better equipment including the flame weeder, but he also thinks it is key to keep the fertilizer concentrated where the crop gets it — not the weeds.

Another big improvement is labor during the spring tillage season. For some crops, he feels this has been reduced by 75%, with a corresponding reduction of machinery wear and tear and fuel consumption.

Rob continually refines his equipment and methods. His future plans involve purchasing a no-till drill so he can make fewer trips across the fields when planting cover crops; and working with richer cover crop mixtures which can improve the soil even more. He continues to read about research on reduced tillage with organic methods, goes to conferences and grower meetings, and participates with university and Extension research. Those interested in reduced tillage would be wise to begin on a small part of their acreage and work out any kinks before going whole hog. That said, Rob's advice to farmers young and old, who are thinking of trying reduced tillage is: "Proceed post haste! Get on with it!"

Brian Caldwell and Ryan Maher are Research/Extension Support Specialists with Cornell University in Ithaca, NY. They can be reached at bac11@cornell.edu and rmm325@cornell.edu respectively. To learn more about Rob and Jan's Farm, visit <http://goransonfarm.me/>

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

Getting Started Right for Successful Ginseng Production

by Bob Beyfuss

Commercial ginseng production has a long history and affiliation with Cornell University. I have a collection of Cornell publications dating from as early as 1904 on topics as specific as "Phytophthora Root Rot of Ginseng" and as general as "Diseases of Ginseng". At one time, circa 1910, there were as many as 5,000 ginseng farms in upstate NY and Cornell conducted a great deal of research on what was a new crop for many NY farmers. Almost all the commercial ginseng grown in NY in those days utilized wooden lathe houses to grow this shade requiring herbaceous perennial.

One might wonder why natural forest shade was not utilized, since ginseng has always grown wild in some NY forests. Many people are unaware of the fact that there were virtually no forests at the turn of the last century in upstate NY.



A six year old ginseng root from wild simulated patch.

Almost the entire state was devoid of forest cover then, (less than 15% forested) whereas today, over 60% of NY state is forested.

Modern ginseng cultivation today ranges from extremely intensive, high input, high risk, field production utilizing polypropylene shade cloth, with production costs alone of at least \$65,000 per acre to establish and grow a three year crop, to less than a \$100 investment in seed that may be grown in a "wild simulated" manner in a woodlot.

Whenever a "wannabe" farmer visited me in my office with his or her idea on how they were going to become rich growing something or raising something, my first question to them always was "Who are you going to sell it to and how do you plan to market it?" This query was often met with blank stares since the assumption was that if one was really good at growing something, the world would beat down the door to purchase it. Sadly, for almost every agricultural commodity I know of, that is not the case.

Ginseng is the only crop that has a list of more than 300 registered buyers, on file, by the NYSDEC. Of course, most of these buyers are primarily interested in buying wild ginseng, but the fact is that ginseng is indeed easy to sell. Growing it successfully is a different story, however! If it were easy to grow or if it grew in any forest, it would not be as expensive as it is to buy. Wild simulated woodland ginseng growing requires a specific type of forest habitat and there are certainly challenges to doing it successfully. The first and by far most important step, is to assess the available forest resource to see if it is suitable for ginseng production. Many years ago I developed and I still continue to "tweak", a tool called "Visual Site Assessment and Grading Criteria for a Potential Woodland Ginseng Growing Operation". This is available as a free PDF download at the Small Farms Website (<http://smallfarms.cornell.edu/projects/agro-forestry/>). It does require knowledge of the herbaceous



Bob and his ginseng

plants in your forest, as well as the tree and shrub species, to use it accurately.

If you think you have a suitable forest, the next step is to purchase stratified seed from a reputable dealer and try some test plots. One such reputable dealer is Scott Persons, author of "Green Gold" and his most recent book, co-authored with Dr. Jeanine Davis from NC State "Growing and Marketing Ginseng, Goldenseal and other Woodland Botanicals". I highly recommend this book for anyone who is interested in growing ginseng, goldenseal, black cohosh, ramps, bloodroot, or any other woodland crop. Scott's email is wasp3@frontier.com. Although it's now October, ginseng

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is always planted in the fall and may be sown right until the ground freezes. If Scott has sold all his seed, you may contact me rlb14@cornell.edu and I may be able to suggest other reputable seed sellers. Expect to pay about \$25 per ounce of seed, less if ordered in bulk, but be sure to buy only stratified seed. Stratified seed was harvested last summer and will germinate next spring. Ginseng seed cannot be held over for spring planting in 2016. It will perish even if refrigerated or frozen.

I suggest you begin with some test plots. Here is a protocol that I use myself after I determine that a particular site looks promising. Measure and mark 3-foot-wide by 3-foot-long test plots using survey flags. Survey flags are available from farm and home stores, forestry suppliers, or many County Soil and Water Conservation districts. Set up as many 3 foot square plots as you desire. I suggest at least 10 plots per acre or one each per 4,000 square feet. Two ounces of seed will be enough to create about 16 test plots.

Count out seeds into batches of 50 seeds. Package each individual 50 seed batch in small plastic baggies. Rake back the leaves from each plot and scratch the surface of the soil with a 3 tined tool or a grub axe or some similar tillage implement. Remove big rocks or roots that would prevent the seeds from making direct contact with the soil.

Scatter 50 seeds evenly over each 3 foot by 3 foot test plot and walk on them to ensure good soil contact. The best time to plant in upstate NY is September through mid-October but you can plant right up until the ground freezes. Rake leaves back over each plot. Leave survey flags in place over the winter! Number or code each test plot by writing a number or code letter on the survey flag. Record all data in a permanent notebook. If you don't do this you will surely forget! Take pictures too!

Begin inspecting plots as soon as the snow melts the following spring and check for slugs. Imported (exotic) garden



An established patch of intensive woods cultivated ginseng.

slugs are perhaps the main reason why ginseng seedlings fail in year one. Position slug traps, one at each plot, to survey slug populations. An inexpensive slug trap is made using a few ounces of beer as bait. Cut off two or three inches of the top of a one liter soda pop bottle. Reverse the cut off top so that the cap opening is inside the bottle and staple it in place. This allows the slugs to easily crawl into the bottle and then they fall into the beer and cannot crawl out. Position the bottle at ground level within the test plot.

If you trap more than one or two slugs per plot in the early spring (late March to April), prior to seed germination in May, you will need to provide slug control by using poison baits. Beer traps are not effective as control agents but work well for survey purposes. Organic growers have several pesticide options available such as "Escargro" or "Sluggo" products. Conventional growers have even more options including poison baits made from metaldehyde (i.e. Deadline slug pellets). Read and follow all label directions when using any sort of pesticide, organic or conventional.

Count the number of emerged seedlings in May, (the number you count times 2 will be your approximate germination percentage) and continue to count them every week or so until fall (this number times 2 will be your seedling survivability percentage). Record all data in the permanent notebook. A record keeping sheet should have columns with the following headings. Test plot number, date planted, today's date, # of emerged seedlings, # of slugs trapped, soil conditions (i.e. dry, moist soggy etc), other observations. This information will be extremely important for any serious grower to provide complete documentation of the endeavor as well as to allow future information for pest management thresholds etc.

By Fall, you can determine which of the plots performed best and expand the plots in that immediate area to 10 foot wide by 10 feet long. These may be seeded next fall at one ounce per plot. Abandon areas that have poor germination and or survivability. Within a few years you will have located the very best locations for serious expansion. Thin successful test plots after three years of growth to a density of one plant per square foot, transplanting surplus roots in September.

Of course, the bottom line when growing any crop is, the bottom line! Currently, good quality 8 to 10 year old wild simulated ginseng is being sold for upwards of \$800 per dry pound, or \$200 per fresh weight pound. A good wild simulated yield could be as much as 300 pounds fresh weight per acre. In the right location, this can be a very profitable crop that requires very little maintenance once established.

Bob Beyfuss, rlb14@cornell.edu, retired in 2009 from Cornell University Cooperative Extension, after 31 years as an Agriculture agent in Greene County. He is the author of "The Practical Guide to Growing Ginseng" (a 65 page grower's guide), "Ginseng Production in Woodlots" and "The Economics of Woodland Ginseng Production". Currently, Bob is Vice President of American Ginseng Pharm, a large scale woodland ginseng/herb/mushroom growing business in Greene and Delaware Counties, NY.

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