Erie County Ag News

Cornell Cooperative Extension of Erie County

SPRING 2021

IN THIS ISSUE

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Cornell Cooperative Extension | Erie County

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Ag News design and layout by Jolie Hibit, CCE Erie Agriculture Administrative Assistant

Cover photo from pixaby.com

UPCOMING AGRICULTURAL EVENTS AROUND WNY

Small Ruminant Webinar Series - Weaning, Sorting, and Selling Lambs, Kids, Spent Stock

March 16, 2021 :: 7:00pm
Online Webinar
Members of the OSU Sheep Team will offer strategies for weaning lambs/kids and preparing them for joining the breeding flock or entering the meat processing chain. Also included will be examples of marketing strategies and determining what to do with ewes/does and rams/bucks that are no longer meeting breeding needs of the flock/herd.
Register at https://swnydlfc.cce.cornell.edu/event.php?id=1484

2021 Spring Pasture Management Classes - Rotational Grazing Management

March 18, 2021 :: 6:30 - 7:30pm
Join Amy for tips on how to build a grazing calendar from the bottom up. Learn about stocking densities, rest times, measuring forage availability, and how to keep paddocks healthy and productive
Register at https://swnydlfc.cce.cornell.edu/event.php?id=1526

Advanced Hay and Pasture School

March 18, 2021 :: 7:00 - 9:00 pm
Via Zoom
Join the North Country Regional Ag Team as they share information on forage crop management, specifically hay and pastures.
Register at https://ncrat.cce.cornell.edu/event.php?id=1497

Getting Started with Sheep and Goats

April 8, 2021 :: 6:00 - 8:00pm
Online webinar
This class will cover all the basics to get your small ruminant operation off the ground.
Register at https://swnydlfc.cce.cornell.edu/event.php?id=1530

Dry Beans Meeting

March 19, 2021:: 9:00am - 12:30pm
Via Zoom
Join the us for the annual Dry Bean Meeting! There will be presentations covering the latest research in NY dry beans. Topic areas include market updates, white mold management, Western bean cutworm and soybean cyst nematode management, herbicide resistance management, dry bean variety testing, and incorporating NY dry beans into schools.
Register at https://cvp.cce.cornell.edu/event.php?id=1517

Understanding Eligibility Requirements for NRCS and FSA Programs

March 24, 2021 ::12:00 - 1:00pm
Online webinar
A free, open conversation with USDA Farm Service Agency (FSA) and Natural Resources Conservation Service (NRCS) staff about how to get started with USDA. Including understanding and navigating the eligibility requirements and paperwork involved in applying for FSA and NRCS programs and loans.
Register at https://swnydlfc.cce.cornell.edu/event.php?id=1547

Wash/Pack Hygiene and Sanitation Training

April 1, 2021 :: Time TBD
Via Zoom
This program will be focusing on putting farm food safety into daily production practices. Besides some classroom presentations, there will be demos and hands-on activities with produce wash equipment. Participants will learn the why and how behind designing, cleaning, sanitizing, and drying produce handling equipment and buildings. And much more!
Register at https://cvp.cce.cornell.edu/event.php?id=1515

Produce Journey to Market

by Esther Kibbe, Berry Specialist, Harvest NY

Have you ever stopped in the produce section in a grocery store in winter and wondered where all of the fruits and vegetables come from? Certainly, they aren't being grown locally this time of year! Or are they? Each product has a unique story to tell. Some travel thousands of miles, and some come from just down the road. Here are a few of those stories.

Apples

You probably know that we grow a lot of apples here in New York State. We are second in the country, behind Washington State. You likely also know that apple season is in the fall, so where do apples come from in the winter? Right here! The apple crop harvested each autumn is far larger than what can be sold immediately. The majority of the fruit is stored in special coolers where the temperature, oxygen, and nitrogen levels are maintained at specific levels for each variety to maintain fruit quality for months of storage. These cold storage rooms are then opened through the winter and spring and the fruit is sorted, packed, and sold to stores. Some apples are shipped from other growing regions, like Washington (where they are also stored from the fall harvest) or New Zealand, but you can almost always find local apples in our stores.

Berries

We all know that berries won't last in a refrigerator for months, so where do they come from? This journey gets a little more complicated and is different for the different types of berries. The basic idea is that with such a perishable product, they have to be grown where the climate is agreeable and shipped to market. Consider strawberries. During the summer, there is some local strawberry production in New York State, mostly in June, when you've probably picked berries at a farm or found them at a farmer's market or roadside stand. While most of North America has a local strawberry season at some point during the summer, parts of coastal California have perfect weather all summer, allowing for high yields and good fruit quality. Varieties have been developed that produce berries

Photo RJ Anderson (CCE)

for many months, from May to October, adding to the productivity of this region. Nearly 90% of strawberries in the US are grown there and shipped across the country. What happens in winter, then? Florida has long been the winter strawberry capital of the US, and they still boast a vibrant berry industry. Additionally, in recent years, Mexico has emerged as a huge player in the winter berry market. Within Mexico, there are many microclimates, allowing for the production to be spread across more of the season, and growing in diverse locations helps to avoid weather challenges. Raspberries have a similar story, being produced in California in the summer and Mexico in the winter, but blueberries are much more complicated.

Local blueberries are only available in New York during the late summer, generally July to September. Blueberries ripen earlier in the Southeastern US, with Florida coming in as early as March-April, then moving up the coast to Georgia and North Carolina. Georgia now produces more blueberries than any other state! New Jersey is the historic center of blueberry production, with a peak season in June-July, followed

quickly by Michigan, another state with huge blueberry production. The autumn is then dominated by Oregon, Washington, and British Columbia, where the season is extended by storing berries in coolers. When the Northern Hemisphere season is done, blueberries are imported from the Southern Hemisphere, historically mostly from Chile, but increasingly from Peru and Mexico, as new varieties have allowed those regions to grow blueberries, even with limited cold weather. Previously, blueberry plants required a dormancy period, but cross-breeding with wild Florida blueberry species (which don't go dormant) has allowed the production of blueberries in milder climates.

Tomatoes

Who doesn't love a sweet vine-ripened tomato? Historically, local tomatoes were only available in the summer, and the rest of the year, tomatoes were trucked in from Florida, California, and Mexico. While those locations still produce plenty of field-grown tomatoes, there is a revolution in tomato production in the Northeast. You may have noticed that the lovely, vine-ripened tomatoes available in the store now are mostly greenhouse-grown. These greenhouses are huge, covering many acres, where tomatoes are trained on wires or strings to grow very tall, so the density and production per square foot is much higher than when grown outside. Most use lights and heat to maintain perfect growing conditions even through the winter. Because the greenhouses are close to market, the tomatoes can be allowed to fully ripen, for better quality and flavor. It is labor-intensive to train, prune and harvest these tomatoes, but because production is generally independent of the weather and seasons, workers are employed year-round. Greenhouses have also allowed the production of cherry, grape, and other specialty tomatoes, which are less amenable to field production and long-distance trucking. Even small growers have found that they can produce higher quality tomatoes for farmer's markets and farm stands using hoop houses or small greenhouses. These allow for early crops in spring and protect against rain and wind damage.

Bananas

We're all accustomed to seeing bananas in the store, week after week, with consistent quality and low prices. But bananas are a tropical crop, and aren't grown commercially anywhere in the country, so how are they so cheap and abundant? Most bananas are grown in Central American countries, like Costa Rica and Honduras. They are picked green and shipped on boats to this country. When the shipments reach distribution centers or terminal markets, the boxes of bananas are put in giant rooms that are filled with a gas called ethylene. Ethylene is a natural chemical associated with ripening fruit and it triggers the bananas to ripen from green to yellow. The bananas are then delivered to stores and sold, but once the ripening process has been triggered, they have a limited shelf life. A ripe banana also gives off ethylene, which can ripen other fruits and vegetables, like tomatoes or peaches. Ethylene will also wilt flowers, so avoid putting them near bananas!

One theme you may have noticed in many of these products is the role of new varieties. Plant breeding is an important tool for the agriculture industry. Varieties are bred with greater disease resistance, adaptability to new climatic conditions, better eating quality, and many other important traits. This is an important and complicated topic that deserves an article of its own. ■

Photo Lindsay France (UREL)

Preparing for Year Two of the Pandemic Cropping and Harvest Season

John Whitney, Agriculture Educator, CCE Erie

Photo Pixabay.com

While many warned that the COVID-19 pandemic would not be over quickly, most of us held out hope that the Nation and the entire planet would have COVID-19 under control by the end of 2020. That was clearly not to be the case. Even with the accelerating release and deployment of vaccines, we will almost certainly be following strict COVID-19 protocols through the 2021 cropping and harvest season and perhaps even into 2022, as exhausted and frustrated as we all are from the social and economic impacts of the pandemic.

The resiliency of farmers is being stretched to the breaking point. Yet it is that resiliency that continues to provide confidence that the agricultural economy will weather the storm and come out stronger. With this as a preamble, I encourage you to check out a blog by USDA Chief Economist, Robert Johansson, discussing the 2020 impacts of COVID-19 (on top of the already struggling agricultural economy). https://www.usda.gov/media/blog/2020/09/24/americas-farmers-resilient-throughout-covid-pandemic or scan this QR Code:

As Robert Johansson wrote, "Tough Times Have Been Underway for Years." The piling on of tough times leads to the need for some reassessment of plans for the 2021 cropping, harvest, and marketing season. In broad categories, these may include:

- Minimizing debt load and managing credit (even more true during the 2nd year of the pandemic)
- Exploring options for farm labor (including backup plans in case of illness, labor shortages, or significant cost increases)
- Looking at marketing options (that may even include getting around to writing or updating the farm's marketing plan)
- Building in time for family, friends, and self-care (of course, within the constraints of COVID-19 protocols)
- Exploring crop diversity and "value-added" opportunities
- Taking a hard look at soil and herd health and pest and fertility management
- Considering soil and water conservation and other resource management alternatives and opportunities (for example, is 2021 the year to make better use of pastures, tweak the crop rotation, or address some drainage, runoff, or erosion issues?). Taken to another level, it might include learning more about "climate-smart farming" strategies.

Every farm is unique. Every situation is different. Everyone takes slightly different or even drastically different approaches. There's no single prescription for success or response to challenges. That includes responses to the stress and real health and economic hardships. Farm advisors can be of assistance, even if it just to help think through some of the issues and options. It remains to be seen what, if any, additional direct coronavirus assistance will be available in 2021. As a preview, though, you may wish to monitor the USDA Coronavirus Disease (COVID-19) web page: www.usda.gov/cornavirus or scan this QR code:

As a final reminder, in the category of self-care, keep in mind that help and advice is a call or text message away through services and organizations including the always free, always confidential, NY FarmNet (phone 1-800-547-3276, www.nyfarmnet.org). ■

NYProject HOPE
Coping with COVID

Another support option specific to COVID-19 is available through New York Project Hope through the New York Office of Mental Health, phone 1-844-863-9314 or visit: https://nyprojecthope.org/

Spotlight on Bittner Singer Orchards

John Whitney, Agriculture Educator, CCE Erie County

This article is the seventh in a series focusing on vendors who are selling their wares at the Western New York Welcome Center's Taste NY Market. Thank you to Jim Bittner, President and General Manager of Bittner Singer Orchards, for taking the time to share the farm's story along with some marketing tips and strategies.

This article is narrated by Margo Sue Bittner.

Bittner Singer Orchards is located along the southern shoreline of Lake Ontario in the Town of Newfane in northern Niagara County. The orchards are about 30 miles northeast of downtown Niagara Falls and 45 miles northeast of downtown Buffalo. Rochester is approximately 60 miles to the east. On a clear day, you can see Toronto to the northwest from the Lake Ontario shoreline.

The combination of good soils and proximity to Lake Ontario, with its localized weather moderating impacts, has made the Lake Ontario Fruit Belt in New York State one of the finest tree fruit-producing areas in the Northeast. Bittner Singer Orchards takes full advantage of the climate, soils, and markets with its diverse production of a wide variety of apples, pears, quinces, and "stone fruits" including peaches, nectarines, apricots, sweet and tart cherries, plums, and prunes. Jim has recently established a block of seedless grapes he expects to do well in the production and marketing mix.

Bittner Singer Orchards began in 1912 when Roland Singer purchased the first part of the farm to raise dairy and beef cattle and to grow fruit. The cows were phased out over the years in favor of fruit production as the farm passed along to Harold and Grace Singer and then to their son and daughter-in-law, Thomas and Jacqueline Singer. The operation was managed by Peter Betzler from the 1960s until 1990. This history is outlined on the farm's web page: www.bittnersingerorchards.com.

Jim and I are both graduates of Cornell University: Jim from the College of Agriculture and Life Sciences, and my degree is from the New York State School of Industrial and Labor Relations. Forty years ago, Jim and I began dairy farming under the name, Marjim Dairy – "Marjim" being a blending of our first names. Jim and Frederick H. Atwater operated Retawta Farms, an 80 cow award-winning dairy. In 1991, Jim changed paths to become the managing partner of Singer Farms. Since that time the Singer and Bittner families have owned and operated the 400-acre farm with the business name changing to Bittner Singer Orchards. Our sons, Kevin and David, are now part of Bittner Singer Orchards while our daughter, Janet, assists me with our associated enterprise, The Winery at Marjim Manor (www.marjimmanor.com).

Along with family members, Bittner Singer Orchards has a highly trained and motivated team of approximately 10 year-round associates. Additional labor is brought in during peak periods. This includes some migrant labor using H-2A Temporary Agricultural Worker visas. The COVID-19 pandemic is creating some complications and the farm has added many precautions following all available guidelines. This includes a 14-day separation and quarantine of newly arriving workers before they can interact with other farm personnel or customers. Jim thinks additional local labor will also be available this season because of the current unemployment rates in the region.

While it's the production side of the business that motivates Jim, marketing considerations still drive most of the management decisions. Jim said, "We're able to grow far more fruit than we can sell." Long ago, the Singers phased out the livestock portion of their enterprise when it didn't make economic sense to continue with the dairy and beef. Brining cherries orchards have been removed and replanted with processing peaches and sweet cherries. Tart cherries raised for preserves and cooking purposes are now

largely being processed for tart cherry juice concentrate, much of which is sold through a strategic alliance with Singer Farm Naturals, operated by Tom Szulist and his wife Vivian (Singer) Szulist, one of Tom and Jacqueline Singer's daughters.

Jim explained that he and his team nearly ripped out a brand new peach tree block because he's not sure he'll have a market for the crop. But he's going to give it another try for a year or two, investing labor and resources into pruning and shaping the trees and bringing the stand into production. Along the way, market forces, including the loss of processing facilities, adjustments to the distribution system, and changing consumer tastes, preferences, and shopping habits resulted in a shift from processing apples to fresh market apples. Customers have requested more variety of fresh fruits leading to the planting of apricots, Japanese plums, and other specialty tree fruits and cultivars. The U-Pick cherry orchard opened in 1999 and remains a popular part of the business with 100 different varieties of cherries, both to provide options for customers and to spread out the harvest with different varieties ripening over the length of the short U-Pick season.

In 1992, the only tart cherry pitting facility in Niagara County opened. Bittner Singer Orchards was one of the founding members of the "Western New York Cherry Producers." This cooperative pitted tart cherries from six Niagara County growers. Most of the cherries were sold to pie companies. However, people don't make cherry pies much anymore. With the changing market, the grower members have decided to close the coop, so new markets must be found for the fruit. Some may be diverted to fresh market sales, to juice concentrates, to distilleries, breweries, wineries, or other outlets, but that has its limitations, Jim explained. With changes in consumer preferences (people don't make cherry pies much anymore), with the loss of local processors, and with just a few tart cherry growers left, Jim is thinking of shutting down the Western New York Cherry Growers Association. He said it's not practical for growers to ship produce to Michigan, let alone farther west, for processing. The market doesn't support the higher prices needed to cover the extra transportation and processing costs, particularly considering the competition from other parts of the United States and from around the world. That could mean pulling out highly productive orchard blocks to switch in fruits that would have a better chance of making a profit.

Photo: Margo Sue and Jim Bittner, by John Whitney

Jim said "I'm always looking for those markets; those niches," like the growing use of tart cherry juice concentrates in distilleries, breweries, and wineries. Still, the sales have to involve enough volume to make it worthwhile. Several area brewers, including New York Beer Project and Southern Tier Brewing, are making versions of cherry blonde, cherry wheat, cherry sour, and other ales, stouts, weisse, and kriek beers.

Bittner Singer Orchards' organic production is in direct response to consumer demands. While the farm has always made every effort to limit pesticide applications and to use integrated pest management techniques and other best management strategies, it has also been important to demonstrate that well-tuned organic production techniques can produce a crop that consumers will appreciate, especially with expectations for blemish and defect-free fruit.

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GAP is an acronym for good agricultural practices. North American, European and Globalcertification standards have been developed and many distributors, processors, wholesale and retail markets expect certification and compliance, whether farms are following organic production practices or not. New York State has its own New York Grown and Certified Program. While these best management practice initiatives and others including Organic Certification are all compatible with Bittner Singer Orchards' production and sustainability goals, they all take planning, documentation and reporting time. They greatly impact our marketing plans. Best management practices and environmental stewardship have recently been enhanced with the addition of controlled access agricultural chemical mixing facilities and covered fuel storage with spill containment to further reduce the risk of environmental contamination. USDA Natural Resources Conservation Service Environmental Quality Incentives Program (EQIP) funding helped with the construction of the newest agricultural chemical mixing facility. The covered, fuel containment facility had funding assistance through the New York Grown and Certified Program.

These certification and marketing standards also influence everything from cultivar selection to planting densities and pruning techniques. Higher density plantings require irrigation, especially to get plantings established. That is something that wasn't typically necessary for more widely spaced, older style plantings with larger trees and more robust rootstock. The newer orchards, over 100 acres, all have drip irrigation tubing in the rows to supplement rainfall. Some cultivars are fragile enough that they will not even produce a marketable crop without good rain at least once a week. Reasonably priced municipal water has proven to be a cost-effective source of irrigation water, eliminating the need for expensive pumping and filtration plants, water storage ponds, and permitting for direct withdrawals from streams or directly from Lake Ontario.

To reduce disease problems and meadow vole (field mouse) damage, the tree rows are all kept clear of vegetation, trimmings, and drops. Sod in the aisle is mowed regularly, again to reduce the vole habitat. Shorter grass allows hawks, foxes, and other predators

Photo: Cherry blossoms at Bittner Singer Orchards, by John Whitney

to help manage the vole population. Herbicides are not an option in organic plantings so various mulching and light cultivation strategies are used. This all is factored into the pricing of both conventional and organic crops. Where mulch is used, tree guards are required to minimize meadow vole damage.

Pruning and thinning are critical to profitable, high-quality fruit production. Pruning establishes the optimal tree architecture for peak production, ease of harvest for the cultivar, and stand style, generally as east-west Vs. In most blocks, branches that would be beyond the reach of the pickers or which would break under the weight of a fruit crop are trimmed out. Many fruiting branches are also removed seasonally so that the remaining branches will produce good-sized fruit. Trimmings are generally chopped into the aisles. In most stands, blossoms are thinned and embryonic fruit is removed shortly after the fruit set. Otherwise, the trees will produce far too many, smaller, low-quality fruit. A German-manufactured implement, the "Darwin string thinner," is used to mechanically remove excess blossoms in some of our stone-fruit plantings. This has helped reduce how much time is spent thinning young

Photo: Bittner Singer cherries, by Esther Kibbe

fruit after fruit-set. Jim said, "You have to figure I only want 20% of those flowers to produce fruit to harvest."

In addition to the human workforce, Bittner Singer Orchards "employs" several million bees. For pollination purposes, the orchard supplements native pollinators and local honey bees with purchased and rented bumblebee and honeybee colonies. Jim explained the honeybees are not active enough early in the fruit pollination season when the temperatures are cool and the skies are often overcast. That's where the bumblebees come in. Bittner Singer Orchards buys containers of commercially-raised worker bumblebees and moves them around through the orchards as the trees begin to blossom. The bumblebees are a native species, Bombus impatiens, the common Eastern bumblebee. The current commercial rearing technology comes from Holland, to raise worker bumblebees primarily for use in greenhouses. They have more recently become popular for use in orchards, especially in cooler climates.

Honeybee hives arrived by tractor-trailer from Florida on May 3rd. Hives are deployed throughout the orchards for pollination purposes before these migrant insect workers are collected once again and trucked to Maine to pollinate blueberries. That is a story in itself.

Jim said as older, more traditional style orchard plantings are removed and replanted, close attention is paid to species and cultivar characteristics for the new plantings. This includes the quality and marketability of the crop along with the species and varieties' innate blossoming, fruit-set, and crop maturation timelines. One goal is to be able to move equipment and crews sequentially through the blocks from one side to the other as the production and harvest cycle plays out over the growing and harvest season.

Except for tart cherries, all fruit is harvested by hand. While it complicates the marketing, the many fruit varieties and cultivars ripening at different times allow the harvest season to be spread out. That may not be as efficient as having just a couple of fruit species that can be harvested by a large crew over a short period, but, especially for the tender stone fruit, this gives the crews time to harvest at peak flavor and quality for our fresh market sales. Unlike apples, the fresh, tender stone fruit cannot be stored for long periods. The diversity helps distribute the workload and meet consumer quantity and quality demands.

Tart cherries are harvested at peak ripeness using a commercial tree shaker/conveyor that gently but firmly shakes each tree, causing cherries to drop onto a canvas mat that catches the fruit, sends it to conveyor belts and into the collection and transport crates. With the loss of the only remaining regional pitting plant, nearly all of the 2020 tart cherry crop will be trucked to the Growers' Co-op, Inc. processing facility in Westfield, New York to produce tart cherry juice concentrate. While wineries, breweries, and distilleries in the area can use some of the tart cherry juice, that's still a relatively small market channel. The future of tart cherry production in the Lake Ontario Fruit Belt at the current scale is uncertain.

Bittner Singer Orchard's U-Pick dwarf cherry orchard is one of the largest in the region. Throughout July sweet and tart cherries can be picked from the ground, without ladders (which isn't allowed for insurance and liability reasons). If you are interested in U-Pick cherries, Bittner Singer Orchards suggests you "like" the business

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on Facebook and/or sign up on the web page to receive a newsletter through your e-mail. As with the rest of the operation, Bittner Singer Orchards will be operating the U-Pick business following COVID-19 physical distancing and other established risk-minimizing protocols.

Fruit is not the only "crop" from Bittner Singer Orchards. Larger branch trimmings and culled trees are collected and sold for firewood or for processing into chips for smoking meats and adding flavoring to barbeque. Jim has found that specialty chefs are often looking for the unique smoke flavor profiles that can be added through fruit chips, both green and dried. Jim said, "In the year we pull out a stand, we can make more off of an older fruit tree stand from the wood than from the fruit crop itself."

In addition to the Taste NY Markets, Bittner Singer Orchard products can be found at the farm's market, at the Clinton Bailey Farmers Market, and Singer Farm Natural's "Legacy BarnMarket" just to the east on Lake Road. Bittner Singer Orchards exclusively supplies the peaches for peach shortcake at the annual Kiwanis Niagara County Peach Festival in Lewiston. We're hopeful that the 63rd annual festival will be able to take place this year with the festival scheduled for September 10th to 13th, 2020. Bittner Singer Orchards is working to get more fresh fruit into schools through local farm-to-school initiatives. Dash's Market is the only large, local supermarket that switches exclusively to local peaches in season. Otherwise, local peaches are still competing with produce from California and other areas. Joe's Farm Market on Main Street in Clarence and Braymiller Market in Hamburg are other important local wholesale markets for Bittner Singer Orchards fresh fruit.

Bittner Singer Orchards fruit is used in DiCamillo Bakery's canned peaches and a number of the fruit wines produced and sold through the Winery at Marjim Manor and other regional wineries. Wholesale products are also available directly through Bittner Singer Orchards cold storage facility at 5306 West Lake Road in Burt, New York, or seasonally out of temporary storage at the orchard's base facilities at 6620 Lake Road in Appleton. Tart cherry juice concentrate is sold in 16 oz. and 32 oz. containers by Singer Farm Naturals. Wholesale, 50-gallon drums of tart cherry juice are available directly through Bittner Singer Orchard.

The orchard maintains a fleet of straight trucks (also known as box vans or box trucks) for moving products to and from cold storage and to processors and markets. Grocery stores expect trucks to be able to pull up to loading docks so pickup truck delivery is not usually an option, even for smaller orders. Many regional Community Supported Agriculture (CSA) operations, including Root Down CSA and Native Offerings CSA, supplement their vegetable and fruit production with fruit from Bittner Singer Orchards. Three CSAs in Ithaca receive weekly shipments during harvest season.

Wholesale fruit is sold through three area packers: Sun Orchards, Niagara Fresh, and H.H. Dobbins. Jim said, "It's fortunate to have the option of several local packers since fruit can be transported without the need for tractor-trailers." Bulk organic apples are marketed primarily through Mott's. While much of Mott's organic fruit comes from other areas including the West Coast, the high acid organic apples grown in Western New York are needed to blend in for the organic apple sauce production line. Organic apples even ship in specially labeled bins. Bittner Singer Orchards harvests approximately 120,000 bushels of apples and needs to be able to move that volume directly through packers and larger wholesalers. Most of the stone fruits are also sold wholesale.

The Bittner Singer cold storage facility is used both for Bittner Singer products and by other area growers. As the web page says, "Bittner Singer Orchards would like to be your reliable, season-long supplier of fruits including sweet cherries, peaches, apricots, and plums. In addition to the seasonal fresh fruit, we sell a variety of frozen products year-round. We guarantee customer satisfaction!"

The Bittner Singer Orchard web page includes handy charts showing fruit varieties, harvest dates, and how products are sold (in bins, lugs, crates, baskets, boxes, etc.). Of course, Mother Nature has a say in harvest dates. It's best to call ahead, especially if you are after specific varieties or fruits like quince and apricots.

Photo: Jim Bittner, by John Whitney

Another unique part of the Bittner Singer Orchards story is that the property includes the first voluntarily established and donated, permanent conservation easement in Western New York covering a part of a working orchard. The easement also includes a block of unmanaged woods and a long stretch of undeveloped Lake Ontario shoreline. The easement was established by Tom and Jacqueline Singer and is held and monitored by the Western New York Land Conservancy.

While the orchard certainly keeps him busy, Jim is involved in many organizations (see the farm's web page for details). This is all while helping to raise a family and manage one of the region's largest, most diverse fruit farms and making locally raised fruit and fruit products available to consumers throughout Western New York.

TASTE NY™

USDA Forest Service

Beech Leaf Disease Workshop

2021 Beech Leaf Disease Workshop

Thursday, April 15, 2021

8:30:00 AM EDT - 5:00:00 PM EDT

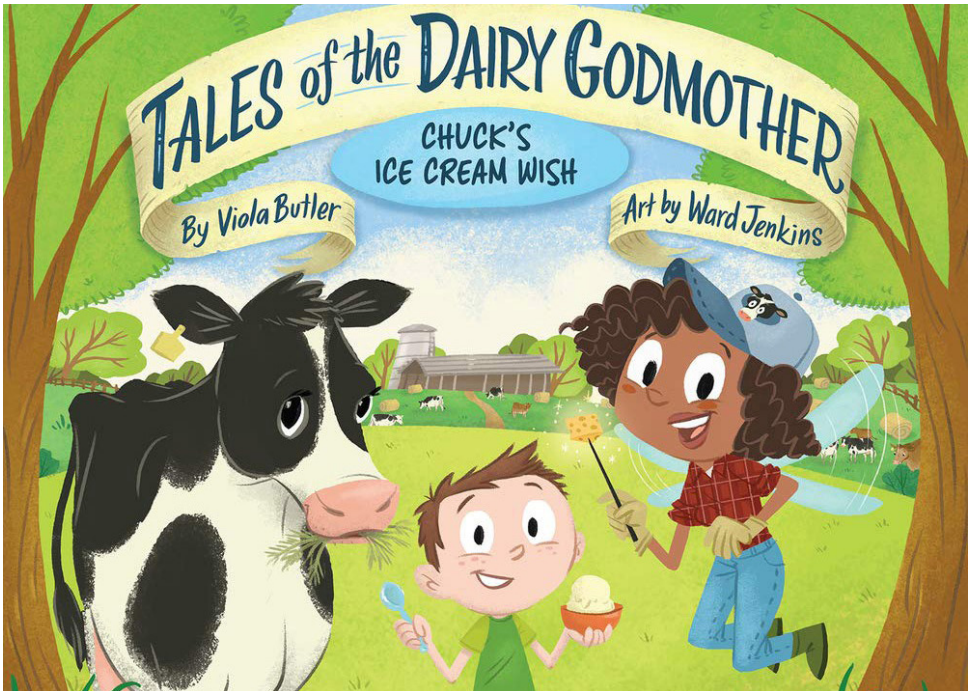
This workshop gathers forest health experts from the United States and Canada to share information regarding Beech Leaf Disease (BLD), an emerging pest of American beech. Throughout the day, a variety of presentations will be shared on topics of BLD epidemiology, distribution, control, and research efforts. Registered attendees can earn continuing educations credits for the Society of American Foresters (SAF) and the International Society of Arboriculture (ISA) for participating in the workshop.

REGISTER AT:

https://events-na11.adobeconnect.com/content/connect/c1/1103645199/en/events/event/shared/default_template_simple/event_registration.html?sco-id=3089768525

Agriculture Literacy Week

Tammi Kron, Livestock Educator, CCE Erie 4-H



Chuck's Ice Cream Wish (Tales of the Dairy Godmother) will highlight the dairy industry

Ice cream is a treat we enjoy in many forms and flavors. But how often do we stop and think about how the ice cream we're eating made its way to the cone or dish we are enjoying it from? Chuck's Ice Cream Wish (Tales of the Dairy Godmother) connects the delicious treat to the work farmers are doing every day to grow, raise and produce our food. This book will take students on an explorative journey to learn about dairy and to trace the food on their plate back to its source- the farmer.

With over 4,000 dairy farms and ranking fourth nationally as the largest producer of milk, dairy is vital to New York State. New York State is also the largest producer of yogurt, cottage cheese, and sour cream in the nation. The dairy community in New York includes both large dairy operations and small, family-run farms. It also boasts processing facilities of various types and sizes, from major global processing companies to small artisanal dairy product makers. We are excited to feature a book that displays the unique markets and diversity that encompasses many aspects of New York's dairy industry while also focusing on processing and how consumers contribute to agriculture.

Chuck's Ice Cream Wish (Tales of the Dairy Godmother) highlights the dairy industry with vivid illustrations and a humorous storyline. Students will understand the importance of agriculture as an economic driver in communities across New York and develop an awareness of where their food comes from and its journey.

If you are interested in a virtual visit for your classroom to participate in the Agricultural Literacy program please contact 4-H Educator, Tammi Kron at tlk6@cornell.edu Schools that are visited will receive a copy of the book to be placed in the school library and supplies for the students to make their own individual serving of fresh ice cream. ■

Assess and Prevent Food Safety Risks in Leafy Greens Production

Thursday, March 18, 2021 6:30 - 9:00pm via Zoom

Join the CCE Cornell Vegetable Program, Cornell Cooperative Extension of Broome County, and Cornell Cooperative Extension of Yates County on Thursday, March 16th, 2021 for a virtual training on how to Assess and Prevent Food Safety Risks in Leafy Greens Production.

E. coli outbreaks in lettuce grown in the Southwest have made headlines numerous times over the last several growing seasons. In many instances, these outbreaks have led to recalls from coast to coast. Ultimately, the health and financial impacts of these outbreaks have resulted in more attention being paid by buyers and regulators on the leafy greens industry.

What do the problems in the Southwest have to do with growers in NY? As leafy greens are a highly susceptible crop to contamination, precautionary lessons can be learned. This training will provide an overview of possible sources of contamination related to soil amendments, wildlife, water, post-harvest handling, transportation, and more. This training will emphasize specific risks that leafy greens growers may experience, identify tangible corrective actions that can be taken, and provide participants the opportunity to work through example scenarios as a group.

Leafy greens growers, with the exclusion of those growing sprouts and microgreens, who sell through any of the following market channels: farmers market, CSA, produce auction, or wholesale, will find this workshop informative in offering real-world examples and solutions to all aspects of growing, harvesting and storage of leafy greens grown in NYS.

A basic knowledge of food safety is recommended, but not required, for participation in this remote training opportunity. The cost to attend this virtual training is $10/farm and payment is required at the time of registration. The zoom link will be sent the morning of March 18th to the email used in the registration.

Registration is required by March 16th. Any questions can be directly to Laura Biasillo at lw257@cornell.edu. Please click here to register for the "Assess & Prevent Food Safety Risks in Leafy Greens Production" webinar: https://reg.cce.cornell.edu/leafygreensfoodsafetyrisks_203.

Photo by John Whitney

Rick Darke

Dynamic Design and Stewardship of Living Landscapes

The Art of Observation

Paul Zammit

Planning and Planting for all Season Interest

Register at erie.cce.cornell.edu/events

Rick Darke heads RICK DARKE LLC, a Pennsylvania-based consulting firm focused on the conservation, design and management of living landscapes. Darke's work is grounded in an observational ethic that blends art, ecology, and cultural geography. Projects include parks, scenic byways, corporate and collegiate campuses, conservation developments, botanic gardens and residential landscapes.

Darke is a broadly knowledgeable field botanist and horticulturist who has studied and photographed North American plants in diverse habitats for over 40 years. This experience is reflected in his articles and books including The American Woodland Garden: Capturing the Spirit of the Deciduous Forest and The Living Landscape: Desigining for Beauty and Biodiversity in the Home Garden (co-authored with Doug Tallamy).

Paul Zammit, a graduate of the University of Guelph, is the Director of Horticulture at the Toronto Botanical Garden. He is an energetic and passionate speaker who is much in demand and has presented across Canada and in the United States. He has appeared both on television and in print. For the summer of 2016 and 2017, Paul has had a weekly gardening column on the CBC Here and Now radio program.

Paul's container designs have also been showcased several times in assorted gardening magazines. He also won first place in the Scott's Miracle-Gro, Do Up the Doorstep competition, for his container entry at Canada Blooms. Paul has been awarded the Young Professionals award by the Perennial Plant Association. He was the recipient of an Industry Service Award.

Managing Soil Nitrogen in Winter High Tunnels Webinar

Caitlin Tucker, Vegetable Technician, Cornell Vegetable Program

Photo by Justin James Muir

To meet the year-round demand for locally produced food, vegetable farmers have embraced protected agriculture to extend their growing season, improve yields, and enhance crop quality. However, a statewide survey found that after several growing seasons, farmers struggle to maintain productivity due to challenges in long-term soil health and fertility management. Cornell Cooperative Extension is exploring practices that high tunnel growers can adopt to better manage soil fertility and improve soil health:

1) Including winter cover crops in high tunnel tomato rotations as a way to scavenge leftover nitrogen and/or fix nitrogen. In turn, this could lead to less fertilizer use and result in higher crop health, yield, quality, and profitability. As part of this work, we are investigating suitable cover crop species, seeding dates, and seeding rates.

2) Optimizing winter nitrogen management for spinach production. High tunnel spinach can survive Northern New York winters without supplemental heat, but the nitrogen needs of this leafy crop during the short days of winter are not well understood. Given that organic fertilizers require warm soils to mineralize the nitrogen into a form plants readily use, farmers apply high levels of nitrogen to ensure crop growth. By establishing appropriate nitrogen rates and sources, this project could increase profitability by reducing inputs while also improving soil sustainability.

This webinar took place on Friday, March 5th, 2021. There will be a recording made available. If you would like to receive a link to the recording, please contact Caitlin Tucker at cv275@cornell.edu

The Cornell Cooperative Extension of Erie County Master Gardener Program volunteers are pleased to announce the 2021 Cornell Cooperative Extension Erie County Master Gardener College Scholarship. All college-bound seniors who reside and attend school in Erie County are encouraged to apply. Ror more information, and to fill out an aplication, visit

erie.cce.cornell.edu/gardening/2021-master-gardener-college-scholarship

Utility Scale Solar - What You Should Know

Timothy X. Terry, Farm Strategic Planning Specialist – Pro-Dairy

In March of 2020, Gov. Cuomo announced in his State of the State address an ambitious goal of 70% of the state's electricity needs would be generated via renewable means by 2030. Under this Green New Deal the mandate increases to 100% by 2040. As a result coal-fired plants will be idled while more wind and solar projects will be initiated. For you, as a holder of large tracts of open land, that may mean that you will be visited by landmen seeking to lease all or a portion of that land to use for constructing a solar array. Understand, this is not a couple dozen panels up on the barn roof generating a few kilowatts, but acres of panels on the ground generating several megawatts of electricity. This is not necessarily a bad thing as it reduces carbon emissions and may provide a secondary income stream for you, especially if it is placed on marginal land or land not currently in productive use. That said, in order for this to be a benefit and not a detriment you need to go into it with your head up and your eyes open.

Therefore, Basic Information

Understand that this is an industry in its infancy, and lease documents are not battle tested so don't sign any landman's forms as is. There is potential for many unrealistic provisions and expectations, and almost everything is fair game for negotiation with few, if any, "deal breakers". You will need professional legal counsel. You may be able to educate yourself on understanding the broad strokes of a commercial lease, but here the devil is in the details and is why you need an attorney.

This transaction is a commercial lease, but it's a lease on steroids and may be 50 – 70 pages long. It is at a higher level of sophistication than any ag tenant lease, utility easement, or right of way (ROW). There will be permanent structures built that do not become fixtures owned by you the landlord. Part and parcel of the lease is a solar easement on the surrounding acreage which means you can't do anything that might interrupt the flow of sunlight. So that means no tower silos, large grain bins, tree plantings, etc. upstream of the incoming sunlight. Unlike the gas lease there are no royalties or subsurface rights.

The tenant (solar company) has some unique needs to understand. The structures have greater requirements for access, maintenance, and transmission than other utility operations. The income stream from the structures is used as collateral to obtain financing, and the tenant's ability to continue operations on your land cannot be interfered with by anyone holding a superior interest in the land (i.e. -mortgage). You may need to subordinate superior liens. All lease documents will be recorded with your deed.

Go into this with the understanding that this is a long-term (>40 years) business relationship. The structures mentioned above may be sold multiple times. The tenant has the ability to assign (transfer) the lease without your approval, and this is non-negotiable. Given this, there is likely to be several tenant changes over the life of the lease. (Likewise, there could be landowner changes, too.) The presence of a solar array may also affect the marketability of your property which could impact your heirs.

The property tax liability should be a shared responsibility with the tenant paying for the increase in the assessment. You will need to make sure the tenant maintains liability insurance and names you as a co-insured. This is for your protection. They should also furnish you with a Certificate of Insurance (COI) each year, as well as indemnify you for any costs, losses, liabilities, etc. that arise from their activities. This must be all encompassing.

At some point in time the agreement and the array will reach its end of life. The structures age, are superseded by a new technology, you or your heirs do not wish to renew, whatever. The decommissioning, or removal and restoration, of the site is important and must be negotiated and established in detail upfront even though it may not occur for decades. You may not even be dealing with the same people

Photo by Tim Terry

that originally signed the lease. A Decommissioning or Performance Bond is one way of making sure there is funding available to get the job done to the satisfaction of the specifications originally negotiated. The exact nature of the bond is hard to determine, but this is where it makes sense to consult an attorney.

The Agreement

The agreement comes in two parts: the Option Agreement and the Lease agreement, but even before that you may be presented with a Preliminary Letter of Intent. This one page document is basically a non-disclosure agreement or confidentiality clause so that future terms, especially the financial compensation, are not disclosed to others. Sometimes these letters omit that disclosure is allowed to attorneys, accountants, financial advisors, family etc. -- so make sure that is in there.

The Option Agreement (10-12 pages) locks in the land for a due diligence period of 1-5 years while the solar company decides if they want to develop the site. You will receive some payments during the period to secure their development rights, access to the site, and your confidentiality. This gives them time to do a more thorough feasibility study including a title search, legal survey, distance to grid connection, and neighboring land availability. They are trying to determine the viability of development – financial and otherwise. No ground will be broken at this time, except for some soil borings, and they will bear all the costs. You may still farm the land during this period, but no development. In other words, no new home site, heifer barn, satellite manure storage, etc. on the optioned property

The Lease Agreement – a.k.a. Ground Lease (50-70 pages) – shows up when the solar company decides to develop the site. You will be sent a copy of the agreement to sign within a specified period. You have no chance to renegotiate at this time so don't sign the option agreement without also negotiating the entire lease agreement.

Negotiating

Some of us are good at animal husbandry, others are good at crop production, and still others excel at ag engineering. It's a rarity, however, that any have successfully negotiated a commercial agreement as intricate as a solar lease. This is why you need to secure professional legal help. Start with your own attorney. If they're not comfortable with it ask them who'd they least like to go up against in court. Look for someone experienced with real estate contracts, land acquisition, or better yet, oil and gas leases.

Even though your attorney may do all the talking there are some things you need to know or at least consider:

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Sustainability Management Specialist Sarah Zemanick (SUST) leads a tour at the 2014 opening of the Cornell Solar Farm on Snyder Road. Credit: Jason Koski (UREL)

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1. Understand your bargaining position - They have to have the land, and until you sign an agreement you have all the leverage. Unfortunately, you have little or none after signing so get it up front. It's best to think about this in the long term – not just the immediate benefit.

The lease will often be presented with a sense of urgency, perhaps even as a crisis. This is nothing more than a marketing technique. Landmen / leasing agents want to make the sale. The first offer is not their best offer. (Negotiation 101 – Never begin a negotiation from a point you can't immediately abandon.) Ask yourself, "Is this the only offer I will get?" "If one developer is interested will there be others?" "Can I walk away?" "Which terms are flexible, which are not?" Offers may range from X to 10X and is likely due to the number of middle men the lease may have to go through. Proximity to existing infrastructure – high voltage power lines, substations, facilities to be built – may also be a factor. Cost to construct a substation is considerable, so if you're located less than two miles from one your site may garner a premium.

You may be thinking, "Why don't I just develop this myself?" According to the Pennsylvania Dept. of Environmental Protection a solar array requires an average investment of $1.13M per megawatt for utility scale solar. Think about that for a minute.

There is a deadline and offers due get retracted, so be deliberate but don't dawdle.

2. Determine what you want and/or what you want to prevent. Do this before seeing your attorney as it will help them help you. Think: What will this look like when it's operational and over the next 40 years? What's important to me? Think through the finances. What will and won't you allow? Do you want to protect natural structures – pond, lakes, creeks, etc.? Are there places you don't want solar panels and /or ROW's? Do you want to grow or do something under or between the rows of panels? Every property is unique. Describe specifically what you want to go into the option.

Many leases don't specifically state 40 - 50 years, instead they are written for 10 or 20 years plus a series of 5 year options.

Option period payments tend to be small because it's a period of highest risk for the developer. Can you get more money? Try bargaining for more money or less time to develop – real money is when it's operational. Critical in any long term leasing agreement is to build

in an escalator – dollars have to keep pace with inflation. What initially looked like the gravy train could, over time, only buy you a cup of coffee. Use the government inflation statistics as the escalator. This is typical of commercial rental agreements so you shouldn't get any push-back from the developer.

3. Don't assume you can do things that are not written in the lease agreement. Include in the initial negotiation or via addendum. The guy who sits down on the back deck and tells you all the nice money you're going to make and what a wonderful person you are and how this is going to be a great thing -- once you sign the lease you may never see him again. Instead, you'll be dealing with someone who has the company's best interest in mind. It doesn't matter if it wasn't written down. It is a bitter pill to swallow, but realize that while you still own the land you won't be able to use the land. The chain link fence and barbed wire sends the message that no one, not even the landowner, is welcome in there. Grazing cattle, growing crops, setbacks, even placement of panels and control units need to be delineated up front. You will need to specify continued access to the back 40, pastures, water sources, or the secret fishing hole.

4. Understand the duration of the lease. Basic math here: Option + Construction + Operations + Renewals = Duration of the Lease. The option period may be as long as 4-5 years with very little money coming in. There is usually little or no breakdown of the various categories in the lease except maybe renewals. Options periods range from 30 – 60 months, and it may be in your best interest to push for lower – the sooner they start paying you the real money the better. A Memorandum of Lease document will be recorded on your deed in courthouse.

5. The option agreement is their option not your option. They can pull out at any time so don't spend the lease money before you have it. However, don't think you're going to get out of it if you change your mind. Depending on how it's written, by signing the option agreement you are also signing the lease agreement – this is where your attorney earns his/her keep. You may not have your land developed after you sign a lease. You can't get out of it or amend it after you sign. They may option all of your land, but only use a portion of it. You may be able to push this with the solar company, i.e. – they have to use a minimum percentage or release the remaining acreage.

6. Know how to modify your lease. Step 1 – find an attorney (see #1) Legal contracts require legal help. Answer the long term questions upfront. Get what you want in writing before signing the lease as changes are not possible afterward. Shorten the option period and/or increase the option money. You may unknowingly be agreeing to a Warranty of Title thereby indemnifying the solar company. As landowner you are guaranteeing that you have perfect, blemish free ownership of the property, but that is not usually the case as there may be other leases, originated generations ago, that are still in effect today, such as utility ROW's, conservation easements, FSA/NRCS administered programs, subsurface rights (oil, gas), etc. There may be some long hidden environmental hazards that come to light during installation. If you indemnify the solar company you are essentially giving them a blank check. Curtail this as much as possible. Lease offers usually have some flexibility.

7. Be clear on when, where, and how you will be paid. After you've done your due diligence and have settled on an offer be clear that you are not giving them anything for free. Even water used for cleaning and maintaining the panels. Get paid for any access they will be restricting. Getting paid for ALL acres used including access and ROW's not just the solar field itself. Be sure that they will maintain any ROW's – keeping brush and noxious weeds trimmed. You'll want the payment terms to be clear and concise. There are many different arrangements on the options. Sometimes payment is upfront, sometimes there is a modest upfront plus annual payments. You need to specify defined dates, i.e. - "Need to have a check for this amount on this date or solar company is in default." Define what happens if payment(s) are missed – are you free and clear from the lease, how will back payments be recouped?

8. Things that are written count, things that are spoken don't. Once you sign the option you may never see the landman that originated the lease option again. You will likely be dealing with an entirely different person and/or entity, or even their attorneys. Avoid falling for "that doesn't need to be in there", or "Everybody knows that's ok" statements. Get all the

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Photovoltaic solar panels at the Solar Farm on Snyder Road. Credit: Jason Koski (UREL)

>> Continued from page 20

promises in writing. If it's important to you it has to be in the agreement. Even down to minute details – such as herbicide use especially on an organic operation. These leases are so new there is no track record and procedures have not been standardized. Define who, when, and how the site will be maintained. What happens if a water line or drain tile is cut during construction – who pays? How will it be repaired? There may be shared farm lanes, but who will maintain them? Get it in writing!

9. Things your neighbors may not like. Fences limit hunting. Arrays may detract from their views. Local zoning may exercise some limitations. You may have already leased out part of that land for another ag enterprise, this should be recorded on the lease. What will happen to these things following construction? For instance, will the array interfere with maple sap harvesting? Will part of the sugarbush be removed to accommodate the array? Will there be light intrusions from security lights? How will the grounds around the facility be maintained vis-à-vis weeds, grass, litter caught in the security fence, etc? What visual screening will be provided around the site?

10. Not all info on the internet is good info. Some is very good, some is conspiratorial, most is somewhere in between.

Parting Thoughts

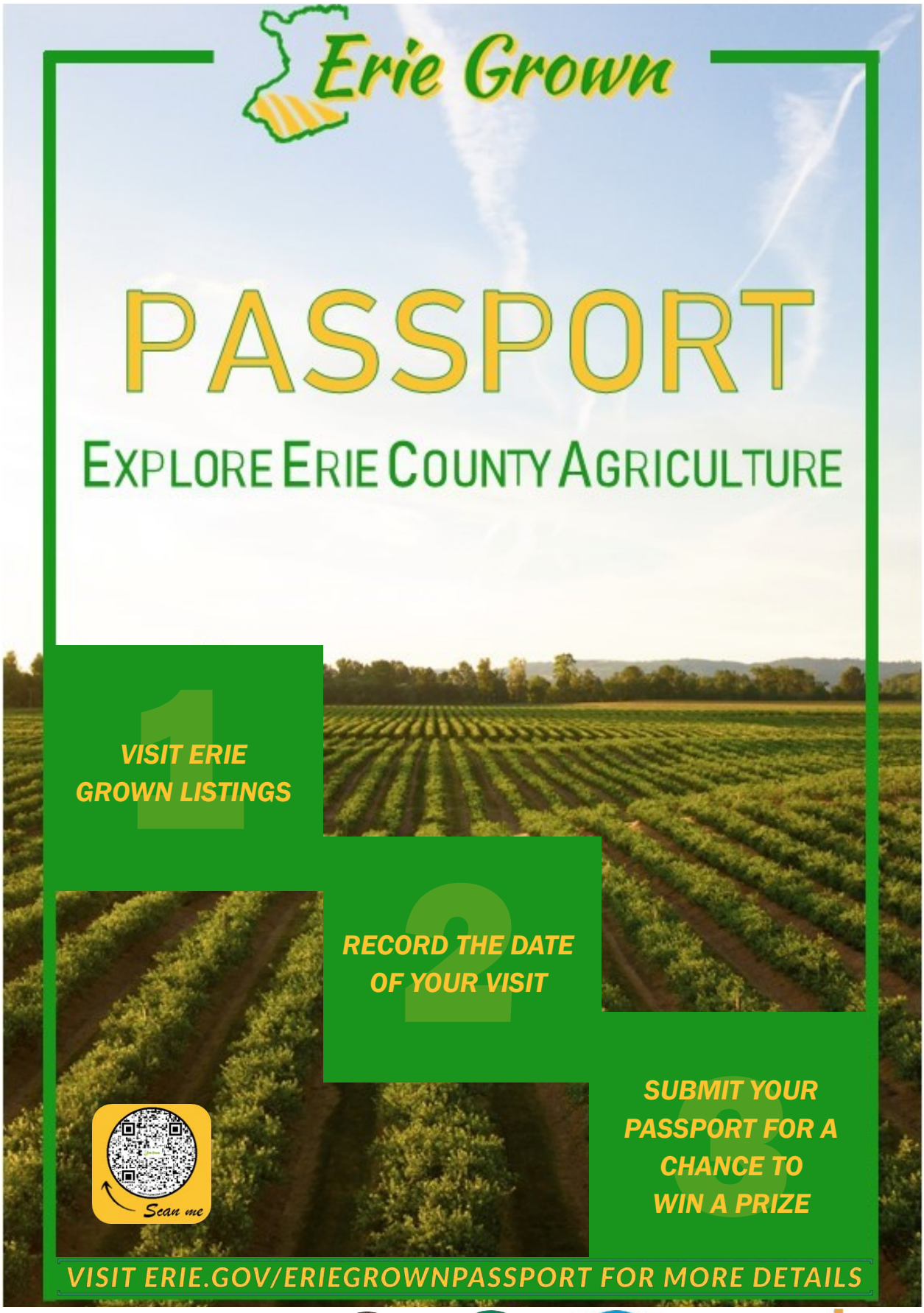
Site plans may/ may not be required. These are usually not a condition of the option but may be required for the lease.

Decommissioning and land recovery – bargain for the maximum amount of clean-up and removal, and remedies if they don't. This is often addressed by a performance bond secured at, or prior to, signing of the agreement.

Determine the remedies and disposition of the lease if the solar company is liquidated. You don't want or need the responsibility of remediating the site. Sure, much of the galvanized steel structure may look pretty appealing, but the panels may be considered hazardous waste requiring special disposal and a hefty tipping fee. Plus it needs to be properly disconnected from the grid.

This may affect Land Trust easements and or any "clean and green" status. Often if 50% or more of the power generated is used internally it is not a problem, however, this is not likely for an industrial sized project. Any roll back taxes should fall to developer.

As stated earlier, securing legal services is a must not an option. Figure on 10 – 12 billable hours, or more, depending on how complex the lease may be. ■


Erie Grown
PASSPORT
EXPLORE ERIE COUNTY AGRICULTURE
1
VISIT ERIE GROWN LISTINGS
2
RECORD THE DATE OF YOUR VISIT
3
SUBMIT YOUR PASSPORT FOR A CHANCE TO WIN A PRIZE
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Erie County Dairy Princess, Holly Niefergold, Crowned New York State Alternate Dairy Princess

Congratulations to Holly Niefergold, Erie County Dairy Princess from Lawtons, NY on her many dairy promotion accomplishments and for recently being crowned the NYS Alternate Dairy Princess. Holly shares her exciting experiences of the NYS Dairy Princess Pageant below:

The 58th Annual New York State Dairy Princess Coronation was held February 15th and 16th, 2021 in Syracuse, New York. Representing Erie County was Holly Niefergold, daughter of David & Emily Niefergold of Lawtons, NY. There were 11 county princesses from across NYS competing for the 2021-2022 New York State Dairy Princess title. Along with many other events this year, the number of family members was limited, social distancing and masks were required. This was the first time the girls had a chance to meet each other because events prior to this were canceled. We were able to make friends with each other and enjoyed an evening of playing a socially distanced game.

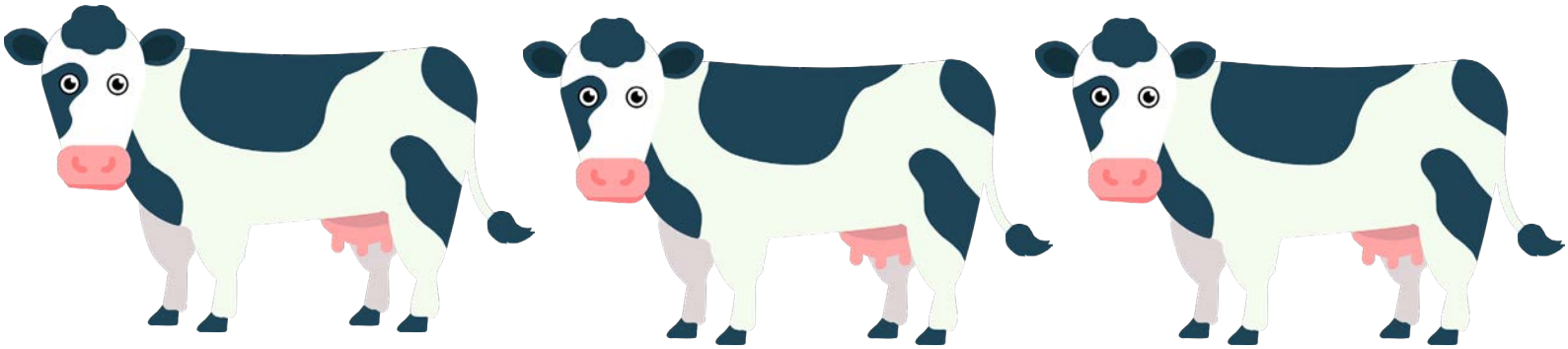
During the 2-day competition, the county princesses were required to complete an interview, product knowledge test, a written communication essay and an adult speech. During the interview, the two judges who represented Lutz Feed Company and a Wegmans Human Resource Specialist, learned more about each girl. They asked questions about their farm, how they were able to promote the dairy industry as county princess with coronavirus being a big challenge, why they wanted to be selected state princess and what their best and worst qualities were.

The product knowledge test required the girls to answer multiple choice and short answer questions about the 9 essential nutrients in milk, cow comfort, environmental stewardship, lactose intolerance, and the process of milks journey, from farm to table. For the written communications contest each contestant was given an American Dairy Association North East update that they needed to write an interesting and informative speech to give at a farmers meeting. Prior to arriving in Syracuse, the girls needed to prepare a 3-to-5-minute dairy promotion speech for adults. Each candidate presented their speech in front of the chaperones, other county princesses and the judges.

The coronation was live streamed so that family, friends, and supporters were able to watch it live in the comfort of their homes. Throughout the evening, the 2020-2021 New York State Dairy Princess, Natalie Vernon and her court Rachel Rouland and Erin Armitage, did a milk toast and said a final farewell. Scholarships were awarded to the top 3 in each contest and the speech winners presented their speech. The top 7 semi-finalist county princesses were announced and asked to leave the room. They came back one at a time to answer an impromptu question. The question was, “If you were to give an on-farm tour virtually to elementary students, what would you say?” The girls then answered the question on stage and were judged on their response. The judges had the difficult task of selecting the top 3 princesses. The judges made their selection based on speaking ability, knowledge of the dairy industry, poise, personality and who they felt could best represent the dairy industry through promotion and advocacy.

The highlight of the evening concluded with the crowning of the 2021-2022 New York State Dairy Princess court. Second alternate from Jefferson County is Elizabeth Hyman. First alternate from Erie County is Holly Niefergold. The 2021-2022 New York State Dairy Princess from Chenango County is Shelby Benjamin. These three girls will spend the next year traveling throughout NYS promoting the dairy industry. The NYS Dairy Princess Program is sponsored by the American Dairy Association North East.

I encourage you and your family to enjoy this delicious dairy recipe, which provides the 9 essential nutrients from m



RECIPE

Million Dollar Dip

16 ounces sour cream
¼ cup mayonnaise
1 package dry ranch dressing mix
1 cup shredded cheddar cheese
1 package bacon bits
¼ cup green onions (optional)
Sprinkle of black pepper
Serve with crackers or chips.

The Erie County Dairy Princess and her Court are spokespersons for the dairy industry, helping support our local dairy farmers by promoting the nutritional value of milk and dairy products. The Erie County Dairy Princess program is made possible through the support of the American Dairy Association North East, the local planning and management organization funded by dairy farmer checkoff dollars and local dairy farms and agribusinesses.

If you would like to communicate with the dairy princess and her court regarding an event or to receive information, please contact Anita Richmond, Erie County Dairy Promotion Committee Chair at 716-725-9919.

Erie County Dairy Princess, Holly Niefergold, crowned NY State Alternate Dairy Princess

The Climate Smart Farming Water Deficit Calculator: A Tool for Making More Informed Irrigation Decisions

Elizabeth Buck, Vegetable Specialist, Cornell Vegetable Program

It's no secret that we're running into more frequent and intense drought-related issues throughout NY's vegetable producing regions. Dry conditions around planting disrupts uniform seed emergence, diminishes final stand, inhibits herbicide activity, and delays weed germination. Of course, all four of these conditions compound upon each other to favor weed dominance and leave you stuck in a game of catch up in an uneven, economically hamstrung planting. Yes, there's an integrated weed management concept worked into this irrigation article…surprise!

None of that information is exactly earth shattering, right? You're all good farmers, you know that irrigation is important. But the reality is, most of the farms I visit just don't have access to enough irrigation water, infrastructure, and labor to comfortably keep up with watering crops during droughts. And of those three limitations, the water source is often the largest challenge, the hardest and most costly to change.

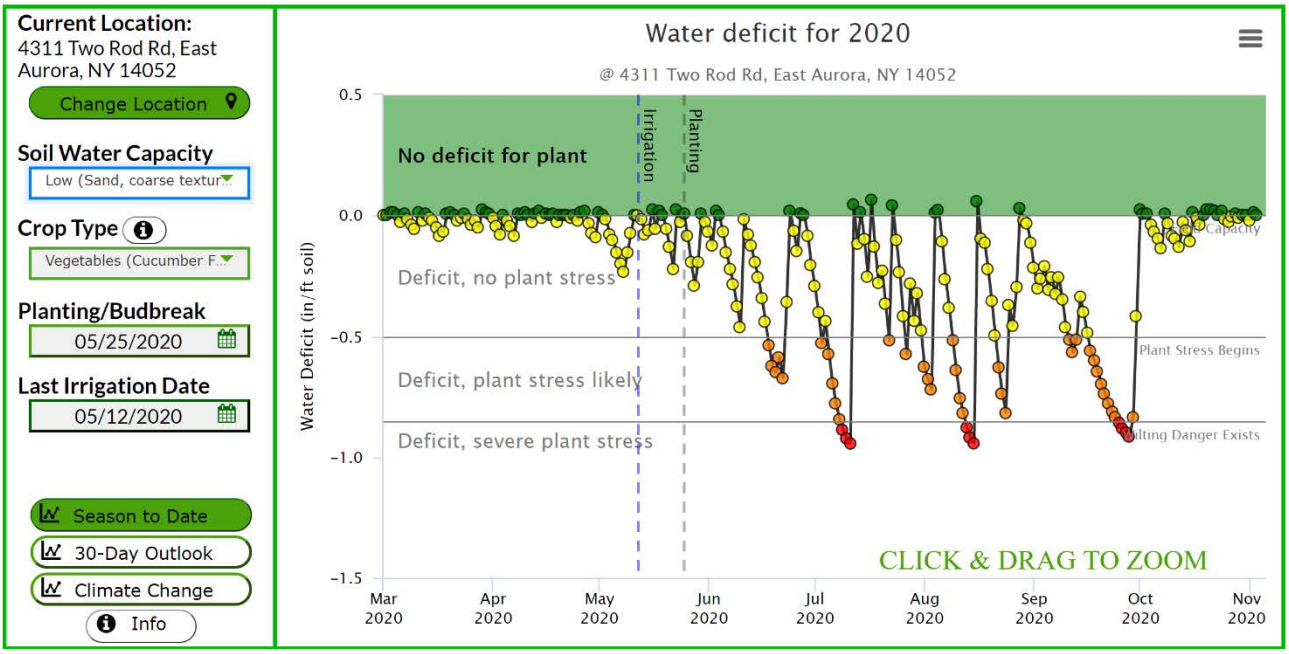
We have a long history of getting by with surface water, with having enough flow in streams and frequent enough rain to carry crops through most of the growing season or at least to reliably refill farm ponds during the growing season. But things are changing and it is common now for segments of WNY to experience several weeks of abnormally dry or drought conditions during the summer. Too often ponds aren't recharging, streams are flowing low, and the rain comes too fast to soak in. You all know irrigation is important during this period. The tricky part is figuring out how best to allocate the water you do have.

The Cornell Climate Smart Farming Water Deficit Calculator is a user-friendly tool that can help you better select which crops to water first by understanding the pattern of past and predicted water depletion in your field, and it only takes 3-5 minutes. The model then uses your description of general soil type to determine how much water your soil can hold, how quickly water moves into and drains out of your soil, and the water deficit at which plants begin experiencing physiological (non-wilting) stress or severe (wilting) stress. Weather station observations combined with high-resolution radar allow the tool to detect rainfall and appropriately increase the amount of water available in the root zone at that location. Growers can also add the date of their last irrigation.

Most importantly, the CSF Water Deficit Calculator takes the different evapotranspiration rates of different types of crops into account. Evapotranspiration is the combined loss of soil water to the air from regular evaporation and from plant transpiration and determines how fast your soil loses water. Evapotranspiration varies greatly based on crop height and total size, leaf characteristics, temperature, humidity, wind speed, amount of sunshine, and crop drought status. The tool allows you to pick from 10 different crop type groupings (developed to model 24 different vegetables & 4 field crops) so you can have an accurate representation of water draw-down.

To use the tool set your location, your broad soil type (sand, loam/silt, or clay), your crop grouping, your planting date. The tool will populate with the observed soil water availability from March 1st to today's date of the current year, or you can look at past years. I am using 2020 data in this illustration. The inches of water deficit are tracked on the vertical axis and the date along the horizontal axis. The planting date will show up as a dashed, vertical gray line. Every time it rains the tool calculates if the rainfall was enough to bring the soil completely or only partially back to full water status.

The water deficit of the field is plotted out in a graph. There are set lines running horizontally across the chart



A screen shot of the CSF Water deficit calculator set to show the observed soil water availability and plant stress for a sandy field of cucumbers located in East Aurora, NY planted on May 25, 2020. Note the dashed vertical gray planting date line and vertical dashed blue line for date of last irrigation.

marking separate stress zones. The inches of water deficit that define the top and bottom of each stress zone are a function of the type of soil you have, and are well-accepted values backed by soil science. Green dots represent days when the field is fully or over saturated. Yellow dots represent days when the field is below full water capacity and above the point when plants begin to experience physiological drought stress. The yellow zone is the normal, productive growing condition for crops. Orange dots fall in the physiological stress zone and represent undesirable conditions that may not be entirely obvious upon a casual observation of the field.Red dots indicate severe water deficit, wilting, snd sever plant stress.

You want to irrigate your field in the orange zone to minimize plant stress. Under water limited scenarios, you want to irrigate your field frequently and heavily enough to prevent it from entering the red zone. If you enter an irrigation date, a dashed vertical blue line will appear.

The tool currently assumes that an irrigation will restore the soil water availability to 100%, which is also called field capacity. The developers know that in real life it sometimes isn't possible to bring the soil back up to full water status, especially when you're limited by the capacity of your irrigation source. The current goal is to add a new feature to the next update that will allow growers to input the amount of their last irrigation to further increase the accuracy of the tool. Case studies have shown that the current version of the CSF Water Deficit Calculator is still a useful irrigation management tool.

You can highlight a section of the field season to zoom in on a specific cropping window. As you mouse over the graph you will highlight different dates. In the bottom left, the date and the water deficit for that date appears color coded to the stress zone your crops experienced. The two panels below show the water deficit on July 11th. The top panel is the situation without irrigation, and the bottom panel shows the impact of a complete irrigation on July 6th, when the crop was in the upper portion of the orange, physiological stress zone. The unirrigated field experienced 3 orange and 3 red stress days between 7/6 and 7/11/2020, while the irrigated field experienced only two orange days. You can see that the water deficit in the irrigated field (bottom) was only -0.7" on 7/11 while the unirrigated field (top) was -0.95". While that may seem like a small difference, that quarter inch makes a huge difference in crop stress.

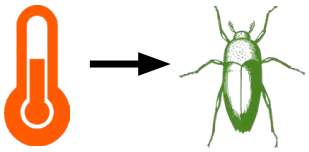
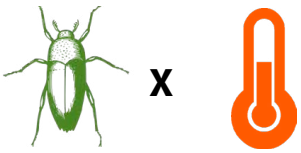
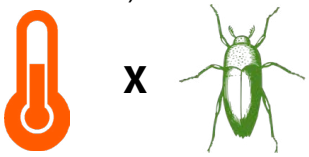
During the field season, the tool offers a prediction of upcoming soil water deficit (drought) conditions using the short-term forecast, current water status, and longer-range weather modelling. That feature is only available during the field season, but you can watch tutorials on that feature at: http://climatesmartfarming.org/videos/ ■

Forest Pest Risk is Heating Up

Summary

Insect pests and pathogens, and climate change, each threaten forest health. But what happens when the two are combined? Climate change brings pests to new areas, makes pests more damaging, reduces trees' defenses to pests, and can alter how forests recover after pest disturbance. Strategies for managing the combined impacts of forest pests and climate change include preventing new pest introductions, resisting pest spread by treating individual trees and diversifying forest stands, promoting more resilient forests that can rebound from pests, and helping forests transition to a state better adapted to our future climate.

How does climate change affect forest pests?

Table 1	Interaction	Example
	**Climate brings a pest to a new area** (1: Climate brings Pest) 	Hemlock woolly adelgid's (*Adelges tsugae*, HWA) spread is limited by cold winter temperatures, but warming winters and rapid adaptation to cold are expanding HWA's range and increasing its reproductive rates.
	**A minor pest becomes virulent with climate change** (2: Pest X Climate) 	Scale insects, which damage trees by eating their sap, survive and reproduce more in warm environments. Warming allows invasive (e.g. hemlock elongate scale, *Fiorinia externa*) and native (e.g. gloomy scale, *Melanaspis tenebricosa*) scale insects to reach high densities and damage host trees.
	**Climate stress makes trees more vulnerable to pest outbreaks** (3: Climate X Pest) 	Gypsy moths (*Lymantria dispar*) defoliate several tree species, but preferentially feed on oaks (*Quercus spp.*). Outbreaks cause more damage and mortality to oaks that are already stressed by drought.
	**Climate change alters the trajectory of recovery after tree mortality** (4: Pest then Climate) 	Emerald ash borer (*Agrilus planipennis,* EAB) attacks North American ash (*Fraxinus spp.*) and has become the costliest exotic insect in the U.S. Coupled with climate change, trees killed by EAB are replaced by other species resulting in permanantly altered ecosystems (e.g. converting black ash swamps to non-forests).

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Learn more at:
risccnetwork.org

NECASC Northeast Climate Adaptation Science Center
NYISRI New York Invasive Species Research Institute
UMASS AMHERST

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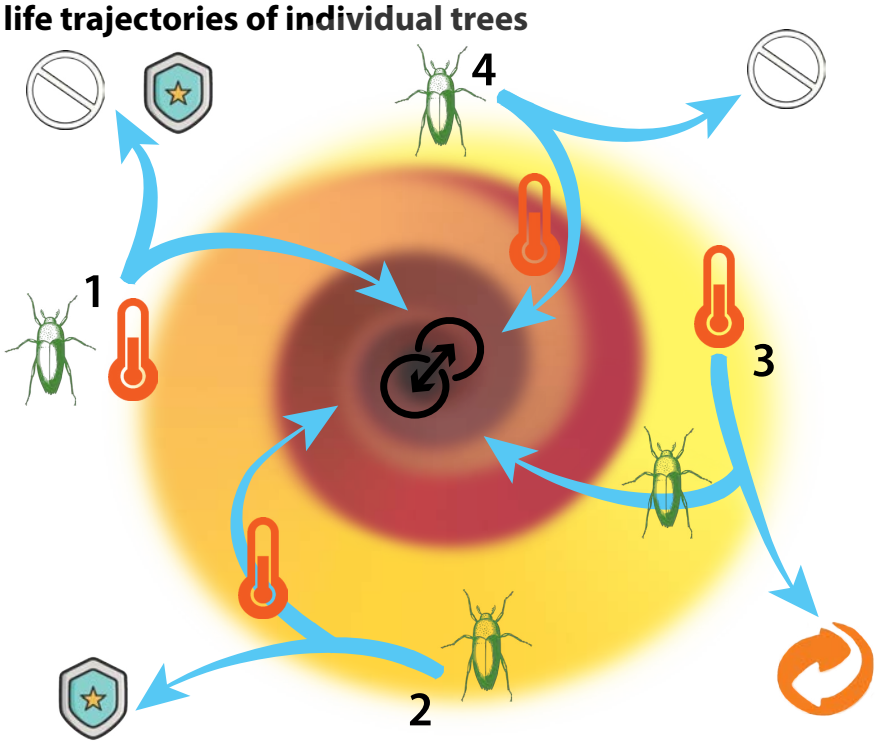
Forest death spiral - visualizing life trajectories of individual trees

Figure 1. The tree mortality spiral, adapted from Franklin et al. (1987), illustrates how single or multiple stressors can push individual trees towards death (i.e. towards the center of the spiral), and how management actions (see below) can pull trees back to health.



(1) Climate change brings a pest to a new area, **(2)** a minor pest becomes virulent with climate change, **(3)** climate stress makes trees more vulnerable to pest outbreaks, or **(4)** climate change alters recovery after tree mortality.

Examples of each interaction type are in Table 1. Management actions depend on the stage of invasion and type of climate X pest interaction.

Management Actions

PREVENTION
- Support policies that reduce introductions of novel pests, such as switching to pest-free packaging and restricting live-plant imports
- Spread the word about slow-the-spread campaigns such as Don't Move Firewood and engage your networks in monitoring forests for novel pests

RESISTANCE
- Eradicate small pest populations when possible
- Work with a licensed pesticide applicator to treat individual trees or special groves
- Remove hazard trees near trails and infrastructure
- Work with your forester to promote tree species diversity and/or reduce the abundance of host species for specific pests

RESILIENCE
- Work with your forester to increase stand vigor and diversity, for example by thinning
- Monitor pest populations for early-warning signs of outbreak.
- Utilize the National Phenology Network's forecast tool to identify when insects will reach life stages critical for monitoring and management.
- Consider leaving host trees as a seed source for regeneration and then as wildlife habitat after mortality

TRANSITION
- When mortality is widespread, consider managing the forest for a warmer future. For example, consider diversifying tree species composition at the landscape level with particular attention to climate resilient species. Want to learn more? Check out https://forestadaptation.org/
- Salvage harvesting isn't always necessary: dead and dying trees provide wildlife habitat and diversify the forest structure.

References: Aukema et al. 2011 PLOS One 6(9): e24587; Campbell & Sloan 1977. For. Sci. M19; Franklin et al. 1987 BioScience 37:550-556; Franks & Just 2020 Insects 11:142; Lombardo & Elkinton 2017 Ecol Evol 7:5123-5130; Lovett et al. 2016 Ecol Apps 26:1437-1455; McAvoy et al. 2017 Forests 8:497; Paradis et al. 2007 Mitig Adapt Strat Glob Change 13:541–554; Simler-Williamson et al. 2019 Ann Rev Ecol Evol & Syst 50:381-403; https://ag.umass.edu/home-lawn-garden/fact-sheets/elongate-hemlock-scale; Youngquist et al. 2017 Wetlands 37:787-799; https://www.usanpn.org/data/forecasts; https://www.caryinstitute.org/science/tree-smart-trade; https://usfs.maps.arcgis.com/apps/MapTour/index.html?appid=ade657567ff445d5bb3aaa7d898d9fb9; https://www.risccnetwork.org/dont-move-fire-wood; https://forestadaptation.org/assess/ecosystem-vulnerability/new-england; https://forestadaptation.org/sites/default/files/NE_NEnNY_Species_final.pdf

Is Farmland the New Gold?

Kathleen McCormick, Agriculture Educator, CCE Erie

What will happen to the estimated four million acres, more than half of New York's farmland, when the 55+ year old farmers who own or manage it decide to retire? Will it go to other farmers? Developers? Bill Gates? Yes, that's right, Bill Gates of Microsoft fame. He and other wealthy individuals have been buying farmland. According to the Winter 2020 Land Report, no individual owns more American farmland than Bill Gates. But even with an estimated 242,000 acres, Bill is only middle of the pack when farmland, forests and rangeland are considered. With an estimated 2.2 million acres of working lands in his portfolio, the largest private landowner in America is John Malone, a media magnate whose nickname is the "Cable Cowboy."

Wealthy individual investors are joined by a growing number of investor groups that see earnings potential in the generational farmland transition expected to occur as baby boomers retire. The number of full-time producers over the age of 65 outnumbers the number of producers under the age of 35 by roughly 6.41 to 1 in the 2017 Census of Agriculture. Investors are ready to fill the gap. According to a 2018 report from Valoral investment advisory firm, the number of food and agriculture investment funds went from 38 in 2005 to 446 in 2017. Just a few of these funds are open to the public. Two of the largest, Gladstone Land and Farmland Partners, started as private funds and went public in 2010 and 2014, respectively. Both are real estate investment trusts (REITs). REITs are companies that pool money from investors and use it to buy, manage or finance real estate that will generate income for the investors.

Most farmland investment funds are privately held and open only to institutional investors like investment banks, insurance companies, endowment funds, hedge funds, and pension funds. Institutional investors have enough wealth to buy and sell in such large quantities that they qualify for preferential treatment and lower fees. One of the institutional investors with a large stake in farmland is Teachers Insurance and Annuity Association of America (TIAA, formerly TIAA-CREF). TIAA will be familiar to many in Erie County because it manages retirement money for people employed by several of our local colleges and universities. TIAA owns 2.2 million acres of farmland globally according to its 2020 Farmland Report.

Another avenue for investing in farmland opened when the Jumpstart Our Business Startups (JOBS) Act was passed in 2012. This federal law eased regulations so that entrepreneurs could use equity crowdfunding to raise money. Equity crowdfunding provides business owners with an alternative to banks and venture capitalists when they want to start or grow a business. Equity crowdfunding pools the resources of a group of smaller investors willing to give money in exchange for a share of the business. A number of equity crowdfunding enterprises focused on farmland have launched in the last several years including AcreTrader, FarmFundr, Farm Together, and Harvest Returns.

What Is Attracting Investors to Farmland?

The 2008 housing crisis followed by sustained low federal interest rates sent investors looking for tangible assets with solid returns. Land offers both. You can see it, walk it and as Mark Twain said, ". . they are not making more of it." Farmland is an attractive investment for several reasons. First, it has a long history of producing steady returns in the form of current income (cash from rent and commodity sales) and from capital appreciation (rising land values). Second, farmland is historically less volatile than other asset classes like stocks and gold that are easier to sell quickly. Third, farmland returns are not correlated with stock market returns, giving investors a way to diversify their portfolios. Fourth, farmland provides inflation protection because it produces commodities. Commodity prices typically rise when inflation does. Some people consider farmland like gold with yield. Finally, investors see plenty of room for more investment as retiring farmers look for ways to cash out.

Photo by Jim Bradley

Is What's Good for Investors Good for Farmers and for Farmland?

The money investors are pouring into farmland has raised concerns for some in the ag community. They worry that investors with a single-minded focus on profit will keep beginners out of farming and push small family farms to extinction by driving land prices up and squashing the local and regional food systems that provide stable markets for so many small producers. High land prices will benefit retiring farmers who have land and no retirement account, but it will limit the number of buyers and continue the trend toward consolidation that began three decades ago. A 2018 USDA report on farm consolidation found that farms with over 2,000 acres operated 15% of the nation's farmland in 1987; by 2012, it had grown to 36%. Production trends followed. Farms with at least $1 million in sales accounted for 31% of production in 1991; by 2015 it was 51%.

Others question whether investors will be good stewards of farmland. Landlords have a reputation for being poor caretakers. They benefit by minimizing costs. Some farmland investors hire firms to manage their land; others lease it to farmers. Will tenants or managers be motivated to do more than the absolute minimum? Maybe. It's conceivable that tenants with long-term stable leases and farm managers will focus as much on the long-term productivity and earning potential of the land as on annual yields and profits. Some research suggests otherwise. These studies report that conservation practices are less likely to be adopted on rented land (Petrzelka et al., 2013; Ulrich-Schad et al., 2016). Others suggest that the rate of return influences whether or not conservation practices will be adopted (Soule et al., 2000). For instance, a tenant with a one-year lease may not plant cover crops because it may increase short-term costs and may take several years to generate benefits.

Some investors are working to address concerns about land access, consolidation and stewardship directly by helping farmers who are focused on responsible land management gain access to farmland. One investor group, Dirt Capital has done several projects in eastern New York. Like other farmland investor groups, Dirt Capital leases land to farmers. What's different is that the leases are long-term and include an option to purchase mid-term and when the lease expires. In addition, farmers can make payments towards the purchase throughout the lease term so that their equity grows as their business grows. Finally, the farmers Dirt Capital works with are committed to using organic methods, but do not need to be certified organic. Their New York projects include Moxie Ridge Farm & Creamery and Dharma Lea Dairy Farm , both purchased from retiring families, Triple 3 Livestock Farm which moved its organic dairy operation from leased land to land the family is in the process of purchasing, and Fishkill Farms, an organic fruit and vegetable operation which has a lease-to-purchase option on land Dirt Capital purchased in partnership with two land trusts.

Time will tell whether the generational farmland transition becomes another land grab in a country with a long history of land grabs. What's sure is that whoever owns farmland will have a profound influence on the viability of agriculture and the security of the food system in New York State.■

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