New from the Cornell Small Farms Program
by Kacey Deamer.................................3

On-Farm Plant Breeding Pt. 1: Getting Started with Diversity
by Kristen Loria.................................4

Remote-Sensing Aids Designed for Wildlife Management
by Ali Nafchi..................................5

Selling Real Farm Products in a Virtual Marketplace
by Erica Frenay...............................6

Cornell Vegetable Program Partner Counties Lead Production, Research and Marketing for NYS Dry Beans
by Julia Kikkert.................................7

Has New York Found the Secret to Linking Retiring Farmers and Eager Upstarts?
by Lisa Held..................................8

The ABCs of Almond Agaricus
by Mary Ellen Kozak.................................10

Turning Maple Syrup Forests Into Bird-Friendly Habitat
by Alison Haigh........................................12

Farming and Motherhood
by Kirsten Workman..................................13

The Sky’s the Limit for Cornell’s New Galaxy Suite
Grape Tomato Varieties
by Sarah Thompson.................................14

From Dreaming to Doing: 5 Tips for Beginning Farmers
by Mary Kate Wheeler.............................15

Track Sheep Bloodlines During Breeding Season
by Ulf Kintzel..................................16

How to Establish Crop Production History
by Fay Benson....................................18

High Tunnel Research to Support Winter Production
by Ethan Grundberg..................................18

Study to Help Heat-Stressed Dairy Cows Weather Increasing Temperatures
by Matt Hayes..................................19

Cornell Researchers Win Major Awards from Cider Industry
by Mark Burger..................................20

Cover photo courtesy of Meg Luton, Stones Throw Farm
This is how families farm: three generations on the tractor and 3,000 squash transplants in the ground at Stones Throw Farm in Nedrow, NY.
In the June webinar, participants conducted production research to develop budget tools with Steve Gabriel of the Cornell Small Farms Program, and heard from Yolanda Gonzalez from CCE Harvest NY about the Cornell Mushrooms project’s plan to train new mushroom educators. Viewers additionally heard from William Padilla-Brown of Mycosymbiotics, who forages, teaches, and grows many mushrooms in many forms, focusing on the connections to healing people and planet.

This project supports new and existing mushroom growers in all aspects of production, marketing, and sales through ongoing research and education efforts. Freely available fact sheets, videos, and guidebooks, as well as a directory of suppliers and a grower network email list, can be found on the project website. This material is combined with workshops and events to train growers in both indoor and outdoor production. Partners on the project include CCE Harvest NY, FarmSchool NYC, Just Food, Grow NYC, and Fungi Ally.

Learn more and view past webinars at: www.CornellMushrooms.org.
On-Farm Plant Breeding Pt. 1: Getting Started with Diversity
Learn how to get started with your own on-farm plant breeding project

by Kristen Loria

Often as growers we rely on our favorite seed companies to provide us with the various crops we grow. This strategy usually works well, and there are a lot of great varieties out there both new and old. However, by their nature most modern commercial varieties (we will focus on vegetables, but this applies to other crops too) were developed to perform well across as broad a geographic area as possible, with a focus on the major market regions for that crop. These varieties may not perform so well in non-target climates.

Breeders often tend to focus on the most commonly grown crops, so if there is an obscure crop that’s important on your farm (i.e. ground cherries or watermelon radish), odds are the commercially available options will be more limited — and the opportunity will be ripe for an on-farm plant breeding project. Major seed corporations also emphasize hybrid varieties in some crops, which are much more expensive and must be re-purchased every season.

All of these factors are common reasons that farmers and gardeners decide to try their hand at plant breeding. Plant breeding on the farm allows us to develop varieties that fit our specific farm environments, with the traits that we most value. However as useful as that can be to our business, it’s also important to realize that plant breeding is a long-term endeavor and takes additional time and attention in the growing season, so it’s probably going to be hard to sustain unless it’s an activity that you feel curious and passionate about.

Getting Started

The best plant breeding projects arise when you are already familiar with a crop, the traits that are important (at least to you) for that crop, and different varieties that are available. Unless you already have that familiarity, it’s worthwhile to spend some time trialing varieties and observing them closely. Through that process you will often notice interesting differences or traits that might spark an idea: “I love the heat tolerance of this winter squash, but I’d prefer a bush variety instead. Some backyard plant breeders ask to grow plots of differing alleles, which have the express intention of being a plant breeding “starter kit” — termating several different parent varieties. These are sold with information about where that population came from. You will be much more effective at selecting for traits that are highly heritable, rather than those that are more influenced by environmental conditions. In the initial vetting of parent varieties, the easiest way to determine if the variation in phenotype you see is heritable is to plant multiple replications of your variety plots.

There are several sensible starting populations for a plant breeding project on the farm.

1) Use an existing open-pollinated variety, especially an heirloom or landrace, which has obvious variability in the traits you are interested in.

2) Make a cross by taking two varieties that show variability in the traits you are interested in, and either cross them by hand (self-polliators) or interplant them in a plot (cross-polliators).

3) Use a commercial hybrid, as these are the first generation offspring (F1) of two distinct parents — you can think of the seed company as already having made your initial cross for you. If there is a hybrid variety that you like (and there are no intellectual property restrictions on it, see below) you will grow out the offspring and see segregation for whatever traits those two parents differed by. This works for both cross-polliated and self-polliated crops.

4) Some smaller seed companies are starting to sell ‘breeder’s grex’ populations, which just mean a population created by intermating several different parent varieties. These are sold with the express intention of being a plant breeding “starter kit” — there is sure to be plenty of diversity present, and you get to select what you like best for your own farm ecosystem.

Self-polliating crops (i.e. beans, peas) are unlikely to outcross even if grown right next to each other. That means that they will naturally form what breeders call “pure lines” — each plant self-polliates each generation to create a very genetically uniform and true-breeding line. Plants will be homozygous for most or all genes. Modern varieties of in-breeding crops are usually pure lines, which means they were often descended from just one high-performing plant. Older varieties such as heirlooms or landraces are less likely to have descended from a pure line, so you might see more diversity between different plants in your variety. With inbreeding crops, it is more likely that you will have to make an initial cross in order to introduce enough variation into the population to select from.

Picking Your Parents

It’s important to remember that in order to achieve gain from selection (i.e. improve the performance of your variety over time), you need to start out with a genetically diverse population. In particular, you want a population that has genetic variation in the traits or traits that you are most interested in improving. That means that either you find a variety or population that already has variation within it, or you make a cross between two varieties to introduce new variation. That genetic variation is the buffet of traits that you select from throughout the project, and if most or all of your plants in a field are already genetically very similar, you won’t be able to select plants that are any better than the rest.

Helpful terms

Heterozygous: Two different alleles present; one copy of each.

Homzygous: Two copies of the same allele are present.

Segregation: In a population, segregation refers to phenotypic variation resulting from the random assortment of differing alleles of a heterozygote into pollen/egg cells, creating offspring with different phenotypes.

One complication is that some of the variation we see between plants in the field is due to environmental effects rather than genetic differences (phenotype = genotype x environment), so in order to make sure you are looking at a genetically diverse population of plants, you will want to know something about where that population came from. You will be much more effective at selecting for traits that are highly heritable, rather than those that are more influenced by environmental conditions. In the initial vetting of parent varieties, the easiest way to determine if the variation in phenotype you see is heritable is to plant multiple replications of your variety plots.

Crop Pollination Strategies

The pollination strategy of your crop makes a big difference both in terms of what type of population you will be starting with, and the strategies you will use to improve it. A quick internet search will tell you whether your crop is an out-crosser (cross-pollinating) or an inbreeder (self-pollinating), if you don’t already know. Pollination strategy is a spectrum and some crops like peppers and squash often do both.

If you start with a cross-pollinated crop (i.e. corn), you can assume that plants planted near each other will freely intermate. This is helpful if you want to select within an existing variety or create a diverse population by intermating several different varieties, but it limits your ability to maintain “pure” varieties in a field without large amounts of space to isolate them. Another useful thing to look up is isolation distances for your crop — how far apart you need to plant two outcrossing plants if you don’t want them to cross. Often pollen from out-crossers is carried by wind, so distances can be large. If you have limited space, consider picking a crop that you would be comfortable with growing just one variety or population, or perhaps pick a self-pollinating crop to work on instead. Some backyard plant breeders ask to grow plots at neighbor’s properties to achieve isolation distances!

Highly outcrossing species also suffer from inbreeding depression, which means that if forced to self-polliinate or intermate repeatedly with very genetically similar plants, vigor and overall quality of the variety will decrease due to loss of genetic diversity (genotypes become more homozygous). To avoid inbreeding depression, it’s important to grow a sufficiently large number of plants in your breeding plot to maintain diversity within the crossing population. Some outcrossing species exhibit self-incompatibility, which means they can’t create viable offspring by self-pollination. This is an evolutionary strategy to ensure genetic diversity and can affect breeding approaches.

Helpful terms

Phenotype: morphological expression resulting from genetic makeup of a plant and its environment (i.e. plant height, fruit color).

Genotype: genetic makeup of a plant (the actual genetic sequence), often refers to one gene or trait — interacts with environment to produce phenotype.

Allele: one of several versions of a gene; different versions have different functions or are non-functional. Usually caused by a genetic mutation at some point in the crop’s history.

Heritability: the proportion of observed (phenotypic) variation that is genetically determined.
Remote-Sensing Aids Designed for Wildlife Management

Wildlife damage during crop production causes yield and quality losses that lead to diminished profits.

by Ali Nafchi

Many farmers experience wildlife damage during crop production each year. This damage causes yield and quality losses that lead to diminished profits. Wildlife damage to U.S. agriculture was reported to be at $944 million during 2001 (USDA, NASS-2002). In New York State, particularly, fresh market products are facing severe profit cuts due to wildlife damage. There is another issue concerning wildlife in produce fields and that is the potential for microbial contamination of the crops from animal feces and increased susceptibility to other pests and pathogens (Pritts, 2001; Duffy and Schaffner, 2002; Holb and Scherm, 2008).

Telenko et. al, conducted small plot trials of bird damage in sweet corn (2015-2017) that showed devastating economic losses for farmers. Being able to manage birds in larger fields is the next step. Large-scale plantings can attract many more birds; therefore, the management options need to be updated. To implement this project, Precision Agriculture Specialist Ali Nafchi has designed two new laser systems that will be tested this year in our region. Type (a) will have a programmed variable pattern laser beam across the field to scare birds. Type (b) has a radar detector that will turn on the laser beam when birds come near the field. Solar panels will power the devices. Once the designs are tested and optimized, growers will be able to build the scare devices themselves.

Ali Nafchi is a Precision Agriculture Specialist for CCE Cornell Vegetable Program. He can be reached at amn93@cornell.edu

News from 3

NOFA–NY. At the “Innovations in Organic Vegetable Production” field day, you’ll tour the fields and learn about soil health, perennial cover crops, hemp production, variety trials, and vegetable breeding for organic production. Find more information at nofany.org/our-events/2019-on-farm-field-days

We’ll also be at the Empire Farm Days Soil Health Center on August 8 in Seneca Falls, NY, sharing the latest research on strip tillage and cover cropping practices. We’ve been working on adapting these systems for organic crops while avoiding the pitfalls with weeds and residue. Come to talk crop mixes and tillage tools and hear lessons learned. Check out the full schedule, including the soil health and cover crop demonstrations at empirefarmdays.com

Breeding from 4

You can use any seed to start a plant breeding project, unless there are plant patents or “bag tags” that restrict this use. Odds are you will get your parents from seed catalogs that you are already using. Other sources can be seed saver organizations, the Open Source Seed Initiative, small seed companies that often focus on unusual or regionally adapted varieties, or the USDA-ARS Germplasm Resources Information Network.

For more information on variety trialing, check out the first article in this series, “What Can Variety Trialing Do for Your Vegetable Farm?” in the Spring 2019 issue of Small Farms Quarterly.

Part two of this “On-Farm Plant Breeding” series will be on crosses and selection. Look for it in the Small Farms Quarterly Fall 2019 issue!

Krysten Loria is a Masters candidate in the Plant Breeding and Genetics section at Cornell University. Her own research focuses on trialing and breeding vegetable varieties for organic production systems, under the USDA NIFA-funded Northern Organic Vegetable Improvement. She is excited to be a SFQ contributor and to help grow and support a more independent, adaptive seed system for small farms. Please reach out by email: kals52@cornell.edu

For more information:

Learn from experienced farmers and researchers to strengthen your practices!

JULY 10: Seed Varieties and Soil Can Make the Difference (Rochester, NY)
JULY 22: Food Safety in Stacked Enterprise Farming at Kingbird Farm (Berkshire, NY)
AUGUST 1: Organic@Cornell: Organic Apple Production (Ithaca, NY)
AUGUST 28: NOFA-NY at the Great New York State Fair! (Syracuse, NY)

See the complete schedule & register at: www.nofany.org/fielddays
Selling Real Farm Products in a Virtual Marketplace

There are myriad options to explore, from a personal online store to a collective online farmers market.

by Erica Frenay

Four years ago, I was using a common mix of marketing channels for my small diversified farm: a farmers market and restaurant accounts, along with direct sales of whole and half animals. I knew I was missing an opportunity to sell to the neighbors in my rural community who wanted to buy from me, but didn’t often make it to the farmers market where I was selling. That winter, I met George Duggan at a grazing conference.

George is the force behind Eat From Farms, a farmer-friendly online store platform. He convinced me to give it a try, and it has proved a fantastic addition to my marketing toolbelt. It did require hours of work to set up — photographing my products, writing a description for each one, entering all the quantities and pricing information — but I did all that during the winter “down time,” and my online store now requires very little maintenance. Combined with my self-serve on-farm store, it has completely replaced my farmers market sales. Of course, Eat From Farms is not the only online sales option.

There are myriad options to explore, from a personal online store to a collective online farmers market.

No Substitute for Marketing

Online sales are not a marketing strategy, but rather a sales channel. Selling online does not absolve you of any of the standard marketing advice. You still need to brand your product, clearly articulate why anyone should buy from you, and communicate with customers to use payment methods besides credit cards?

Ease of management: How easy is it to manage your inventory and pricing? What will be required of you once a customer makes a purchase? How easy is it to print out pack lists and other reports?

Order fulfillment: How will this online sales option fit with the rest of your marketing? Will you need to deliver or ship products? Can you integrate order fulfillment with your other markets for example, dropping off orders on your way to a farmer’s market, or servicing a buying club pick-up site when you are on your way to pick up feed? It’s never a good idea to rely solely on a single marketing channel, so think carefully about how this will fit with your other channels.

Customer experience: Peruse the online store of another farm on this platform to see what it’s like to be a customer. Is it user-friendly from a customer’s perspective?

New players are constantly entering the online sales marketplace for farmers, often with major venture capital backing and claims of disrupting the conventional retail market. Take all claims of success with a grain of salt! One company thought it would be the end of grocery stores, but ended its farmer sales and delivery platform after just a couple years.

Shelterbelt Farm now does only occasional holiday markets, like this Thanksgiving market in Ithaca, NY, due to the success with both online and on-farm stores. Courtesty of Allison Usavage

Platforms for Selling Online

There are so many models that it is difficult to classify the options available. Loosely, I will categorize them as “Online Marketplaces” and “Personal Farm Stores.” This is not a comprehensive list, nor are the platforms all the same, so I recommend any one service over others. There is no one-size-fits-all solution with this platform.

Online marketplaces are like big farmers’ markets on the internet. You can pay for a “booth space” or a listing, and your products will be presented to potential buyers alongside many other producers’ products. At farmersmarketonline.com, you can only sell one category of product per booth (i.e. melons, but not corn and tomatoes too). This site seems oriented toward farms willing to ship their products, though it could be used to service local orders for pick-up too. I explored this site as a potential customer and found it somewhat hard to use. When I searched for rabbit, I was directed to a list of rabbit products produced in China and sold via Amazon!

A small farmer runs locallygrown.net, which is designed for a farmer or market manager to start their own producer online marketplace. This platform simulates a live farmers market, with the ability to be open only during a certain time frame, display goods, collect money, and communicate with customers. Major benefits include the time saved not having to sit at a market and not having to harvest or pack up products until they are sold.

We have a few NY-based versions of this “online farmers’ market” idea already, though they each run on a different software platform. Schoharie Fresh is administered by SUNY Cobleskill and has been operating since 2011. Customers have a weekly order deadline, and farmers have about 48 hours from the deadline to deliver orders to the pick-up spot on the SUNY Cobleskill campus. Farmer Shannon Mason from Cowbel-la Creamery has sold value-added dairy products via Schoharie Fresh for years, though the dairy is not currently selling on the platform since they are reconfiguring their product line. “We used Schoharie Fresh almost from the beginning and found it to be an easy sales channel to add to our mix,” Sharon said. SUNY Cobleskill adds a 15% fee to the farmers’ price, and farmers get paid within a week or two for the products they’ve delivered. The software allows farmers to control inventory and limit orders on items only available in small quantities.

Source Otsego is a newer version of this idea and is hoping to launch in early summer. Jim Barber, who works for Cornell Cooperative Extension in Otsego County, is trying to build interest among farmers and customers to promote the service. “One challenge is finding a centralized drop site, like a workplace with a few hundred employees, with someone there who is willing to help with logistics on delivery day,” Jim said.

A third example of this online farmers’ market concept in NY is wildkale.com. This site is similar to the others mentioned above, featuring a diversity of products and farms, except these farms are scattered further afield (up to 4 hours from your zip code, in NY, NJ, and PA) and the farmers ship orders to their customers.

Personal Farm Stores

You can use any existing shopping cart software to build an online store connected to your farm website. Companies offering this service include Wix, Shopify, and Square. Their fee structures are all different, but what they have in common is that none of them were designed specifically for farms. Steve Gabriel of Wellspring Forest Farm uses Wix for their online store. “It works well enough for shelf-stable products but can be problematic with event registrations as the default is to charge a shipping fee,” Steve said. “Also, it’s not set up to handle variable-weight products like meat, where not all leg roasts weigh the same.”

Several online store platforms exist that were designed specifically for farmers.
Cornell Vegetable Program Partner Counties Lead Production, Research and Marketing for NYS Dry Beans

Dry bean growers, packers/shippers, seed suppliers, and Cornell faculty and Extension Educators came together to discuss the state of the industry and to receive reports of industry-funded research.

by Julie Kikkert

The March 15 NYS Dry Bean Meeting and Variety Evaluation, held in Geneva, NY brought together 44 dry bean growers, packer/shippers, seed suppliers, and Cornell faculty and Extension Educators to discuss the state of the industry and to receive reports of industry-funded research. According to Amie Hamlin from the Cool School Food Program, dry beans are overflowing with health benefits, being high in protein, fiber, iron and other nutrients. While the NYS Dry Bean industry has supported the Healthy School Food Program for many years, new interest has been stimulated through the NYS No Student Goes Hungry Program, which includes a higher incentive to school districts to use more local products and increases the reimbursement that schools receive for lunches to $0.25 per lunch to those schools that purchase at least 30% of their lunch ingredients from NY farms and food processors (whose product is comprised of 51% NY farm ingredients).

Cornell Vegetable Program (CVP) dry bean specialist Julie Kikkert facilitated discussions at the March 15 meeting between the Healthy School Food Program and the dry bean packer/shippers, and has worked with local CCE Farm to School Coordinators and CCE-Harvest New York to facilitate schools purchasing NY dry beans.

According to the 2017 Census of Agriculture, 72 western NY farms produce roughly 10,000 acres of dry beans, with CVP partner counties providing 6,820 of those acres. Leading counties in the CVP region are Monroe (2,298 acres), Steuben (1,360 acres), Genesee (1,192 acres), Ontario (906 acres), and Yates (844 acres). Black beans and red kidney beans are the types that produce well in our soils and climate. After local beans are harvested, they are sent to one of several factories in NY or PA for cleaning and processing into canned product or packaged for the dry pack market. Product is sold to local, regional, export and organic markets. The value of the NY crop varies, but averages around $7 million.

Other topics of high interest to the industry included market updates, development and testing of new varieties, as well as management of white mold disease, western bean cutworm insects and weeds. At the end of the educational meeting, the industry prioritized research proposals and allocated funds from the Dry Bean Endowment to five research projects, totaling $32,643. The group then moved to the Raw Products Building to view and evaluate 56 dry bean cultivars that were canned by Furman Foods and on display for taste and visual appearance.

Julie Kikkert is an Extension Vegetable Specialist for CCE Cornell Vegetable Program. She can be reached at jrk2@cornell.edu

The NYS Dry Bean Meeting and Variety Evaluation included discussions on the dry bean industry, research, and more. Photo by Julie Kikkert/ CCE Cornell Vegetable Program

Selling from 6

GrazeCart is based on the highly successful direct marketing efforts of Seven Sons Farm in Indiana. After field-testing their system for years on their own farm, these enterprising farmers have made the service available to anyone. They charge a monthly fee and don’t take any additional percentage of your sales. The monthly fees range from $768 to $2388 per year, depending on the scale of services you require, so your sales via the site would have to be significant to support the cost. The features they offer may be sophisticated enough to justify your expenses, including the ability to integrate their service with MailChimp for customer communication and QuickBooks for bookkeeping. And if you don’t already have a website, GrazeCart can fill that function too.

Barn2Door is another platform for online ordering, designed to be your website too. It is visually beautiful and mobile-responsive, including one-touch ordering and the ability to designate different delivery sites. The price varies from $468 to $1,188 per year, making an affordable option if you don’t already have a website.

Eat From Farms offers all the flexibility of these other options at the lowest price point, $108/year. This platform also allows for collaborative marketing, so you can add new products to round out your offerings, and the other farmers can control their inventory and pricing. A new feature that I really enjoyed last year, when I offered my first Orchard Membership U-Pick, is that Eat From Farms now allows customers to pre-load their account with a balance that they draw down throughout the season. It may not have the visual frills of some of the other sites, but it is probably the best value. Owner George Duggan provides an unusual and personal level of support whenever needed.

Would you get more customers with the convenience of online ordering? Could you grow your business? What are your goals for online sales? How does this fit with your existing marketing channels? Only you can answer these questions, but with the rise of consumer expectations around convenience, adding an online sales channel is probably a good bet. The platforms mentioned here represent a starting point for a research foray into your options. We hope they help you grow a profitable, thriving farm business!

Erica Frenay manages online courses for farmers and serves as the livestock specialist for the Cornell Small Farms Program. She is also the owner/operator of Shelterbel Farm, a livestock and perennial-based farm in Brooktondale, NY.
Has New York Found the Secret to Linking Retiring Farmers and Eager Upstarts?

Connecting retiring farmers and young upstarts is just the first step of a newly expanding statewide program — funding, access to markets, and a community of support help complete the picture.

by Lisa Held

At the end of 2017, Sandy Gordon spent six weeks helping Joshua Rockwood move his entire farming operation across about 30 miles of upstate New York.

"Josh had 65 head of cattle and draft horses and pigs and chickens," Gordon said. "We had two trucks and trailers going. We were moving cattle until eight o'clock at night."

Gordon, 64, was happy to help, because after listing his farm on Craigslist in cities around the world — from Boston and New York City to Miami, Seattle, and Hong Kong — and trying various land-linking websites, he had finally found a young farmer he felt he could trust to steward the land he had been planting and grazing on since 1983.

Rockwood was committed to organic practices and to building soil health via rotational grazing, just like Gordon. "The preservation part was easy, and I wouldn't have sold if it wasn't a part of it," he said.

Gordon and Rockwood represent two groups of farmers that are especially important to the future of American agriculture: those who are aging out of farming and have land to sell, and those who are young and hungry for land.

Helping these two groups find each other in order to make sure the land stays in farming has become a hot-button agriculture issue. The average age of the American farmer is now hovering around 60 (it was 58 at the time of the 2012 census). As a result, a significant amount of farmland will change hands in the next decade — and that crucial, often delicate transfer has become a community impact farmland investment fund.

The Hudson Valley Farmlink Network (HVFN) — is being held up as a model of success by many organizations and advocates, and its approach will now be implemented across New York State. Last October, the national group that launched HVFN, American Farmland Trust (AFT), announced a new land-linking program called Farmland for a New Generation New York, funded by $400,000 in state funds for the first year as part of a larger state investment in farmland protection.

"This [comes] out of a researched effort to make sure that we are meeting the needs of farmers across New York State," said AFT's New York state policy manager, Samantha Levy. "We're really taking the lessons from Hudson Valley Farmlink Network and applying them statewide."

Those lessons can be boiled down to a few key points: While listing land owners and seekers is important, it's adding boots-on-the-ground work to that service that really makes the magic happen. That kind of connection requires significant funding, however, which is usually lacking.

The Limitations of Land-Linking Programs

At face value, the idea is simple: create a database where people looking for farmland in a particular region and people selling it in that same area can find each other.

There are highly regarded organizations across the country that have done exactly that — like California FarmLink, and New England Farmland Finder — while also providing land access resources like workshops, loans, and help with leases. The farm-link programs across the country have had varying degrees of success, though, because matching a farmer to land is much more complicated than it seems.

"I hear a lot of 'I've got this farmland, why can't I find young farmers to buy it?'" said Holly Rippon-Butler, land access program director at the National Young Farmers Coalition (NYFC), noting that a lot of land that changes hands doesn't even go on the market, and finding out what's available is just the first step. On the other side, she hears, "Okay, there's land, but does that land have irrigation? A barn? Housing? What's the soil quality like?" There are all these factors that start to narrow down the pool."

That's before cost is even considered. For older farmers, their land is often one real financial asset and they are drawn to the highest bidder; for younger farmers, the cost of land is often prohibitive.

For all of these reasons, the little research that has been done on land linking programs shows limited success. In one 2014 study on 17 programs in the Northeast, the majority of land seekers rated the services as helpful, but only 7 percent actually secured land through a program. And most of the programs reported that they typically make fewer than 10 matches per year.

Seasoned experts like Kathy Ruhf at Land for Good, who has been working on the issue for about 30 years, cited similarly low numbers. "I have a database of about 60 [land link programs]," she said. "If we were to say 'How many farms got hooked up with farmland on all of those?' I would say a couple of dozen."

Plugging in to Resources

The Hudson Valley Farmlink Network, on the contrary, says it has made close to 150 matches over four years, and advocates in the space point to it as a uniquely successful program. The special sauce is not in the network’s website itself (although some farmers did say it was more professional and easier to use than other similar sites), but in the way that individuals at local organizations bring the program to life.

Lee Hennessy milking their goats at Moxie Ridge. Courtesy of Jude Harris, Moxie Ridge

Lee Hennessy, for example, was engaged in a long, frustrating search for land to house their goat dairy in upstate New York. They found the 46-acre farm they’re now running using the HVFN farmland finder, but when they first went to see the site, Hennessy didn’t think it would work.

"I didn't like that it's all on the side of a hill, there's no room for hay," they said. "I was like 'I don't think this is for me. There's so much I need to put together for this,' and I couldn't see it working at the scale I want."

Hennessy was discouraged, and ended up on a farmland bus tour organized by the network. While they didn’t find new property on the bus tour, they introduced them to a world of resources, like fellow farmer Tim Biello, who runs the network and offered advice that led Hennessy to reconsider what was possible on the original property.

Those new connections also led Hennessy to the Hudson Valley AgriBusiness Corporation, which helped them access resources; Dirt Capital Partners, which purchased the land and leased it back to them with the option to buy in the future; and GrowNYC’s FARMroots program, which provided mentoring and legal help related to the leasing process. Suddenly, Hennessy said, it was like they had a whole team working for them.

Hennessy officially established Moxie Ridge Farm & Creamery in early 2017 and is now raising goats, pigs, and chickens. Recently, they snagged a spot at the coveted Union Square farmers’ market in New York City, thanks to the relationship with FARMroots.

"Once you find these organizations, it’s a tight-knit community of people who seem to work tirelessly to try to make this stuff happen," they said. "It's why I think the AFT was right. It’s not the website itself, it’s the ground work and the boots on the ground that makes the magic happen. That kind of connection requires significant funding, however, which is usually lacking."
project is such a big deal—they have the resources to support that.

‘Navigators’ on the Ground

Building on that idea, $200,000 of the state funding for Farmland for a New Generation NY will go toward giving local organizations, dubbed “regional navigators,” more resources to interact with farmers and landowners.

“So much of this work is one-on-one work. It needs these navigators on the ground visiting farms with beginning farmers, doing the financial analysis to make sure they can afford it, helping them write a lease, etc.,” said Christopher Wayne, the director of FARMroots, which trains and supports beginning farmers — especially immigrant farmers — in and around New York City.

Wayne is hoping FARMroots will be named a regional navigator because the additional funding “will allow us to expand and increase that one-on-one support,” he said.

Organizations like FARMroots are especially essential to the success of HVFN because they help bridge the gap between what retiring farmers want to be paid for their land and what younger farmers can afford.

Both Rockwood and Hennessy, for example, were able to secure their land by working with impact investment groups — Local Farms Fund and Dirt Capital Partners, respectively — that bought the land and leased it to the new farmer long-term, with options to buy down the road.

FARMroots often helps land seekers find those groups. It also has its own program to help farmers access capital: It works with microlending platform Kiva to get beginning farmers zero-interest loans, of which the organization contributes 30 percent from the get-go.

Many of the other organizations involved in HVFN—such as Orange County Land Trust and Columbia Land Conservancy—also work on conservation easements, another tool for getting land owners a good price while making it more affordable for seekers.

Making Matches Across the State

All of these elements could seemingly come together across the state and in other areas across the country to duplicate the model. But Ruhf said it’s also important to remember that the Hudson Valley is a unique locale for many reasons. Its proximity to New York City means resources (like impact investors and a plethora of organizations) and customers (via farmers’ markets, CSAs, and restaurants) are close by. Land is more expensive than in other parts of the state, but off-farm jobs are also more available.

Take Kama Docoure as an example. Docoure is a farmer from Mali who completed the FARMroots training program and an internship at Glynwood, a Hudson Valley nonprofit that focuses on saving farming in the Northeast, where staff helped him create a profile on the HVFN. Doucoure has been limiting his search to properties that will work for vegetables and livestock and that are within about an hour’s drive from NYC, where his wife works. After one property fell through, he was feeling optimistic about another. “I’m keeping my fingers crossed,” he said.

Farmers across the state will be doing the same as Farmland for a New Generation NY kicks off.

Lisa Elaine Held is a New York City-based journalist who writes about the food system, health, and sustainability. She is a regular contributor to Civil Eats, Eater, and Edible Manhattan and Edible Brooklyn; she is also the host of The Farm Report on Heritage Radio. Her work has appeared in print publications like Women’s Health and Conde Nast Traveller. She covered health and nutrition as an editor at Well+Good for more than six years and has a master’s degree from Columbia University’s School of Journalism.

This article was original published by Civil Eats, an excellent online resource for agriculture and food system articles, on January 8, 2019. Visit www.civileats.com for more stories about the American food system.

For website publishing, the original article link: https://civileats.com/2019/01/08/has-new-york-found-the-secret-to-linking-retiring-farmers-and-eager-upstarts/
The ABCs of Almond Agaricus
This warm weather mushroom is superlative in any garden.

by Mary Ellen Kozak

Meet the cousin to the white button mushroom, crimini and portabella: Almond Agaricus (Agaricus subrufescens). This sweet, fragrant summer mushroom is much easier to grow than its cousins. In fact, it can be grown in your garden compost.

Just like button mushrooms, it grows in compost, but does not require pasteurization, caves or grow houses. Anyone who has a garden ... flower, vegetable, shade, or container, can grow this mushroom. You don’t necessarily need to plant them with vegetables or flowers, but plants help create necessary shade and harness humidity for perfect mushroom development when they are planted side by side. Grown together, there is also the mutual benefit from the CO2/O2 exchange.

If you can get your cardboard to stay wet, the spawn run underneath will be excellent. By Mary Ellen Kozak

Almonds can be cultivated commercially (and in larger scale) in beds within high tunnels and greenhouses, or in areas outdoors where moisture can be added and monitored. It can grow in the shaded woods and sunny garden (best alongside big, leafy plants because of the added shade). Or, it can be grown “small scale” in window boxes or large potted plants, indoors or out. It can be planted May until early July in the North, earlier in the South, or whenever the last frost date is in your area. It is best to plant them so you can get at least 2-4 months of frost-free weather. Almond mycelium can actually survive some freezing weather, but developing baby mushrooms will not, so it’s best to pack in as much growing season as possible.

Almond Cultivation in 6 Steps:
1. Gather supplies
2. Find a site for the bed
3. Build the bed
4. Inoculate
5. Mulch and maintain
6. Harvest and enjoy!

1. Supplies:
   - Spawn, compost (bagged or homemade), and a watering can or hose with spray nozzle is basically all you need. You will also want a mulch material to help maintain adequate moisture throughout the growing medium profile. For spawn rates, see Step 4 below.
   - Site preparation and shade requirements:
     - Choose a location for your almond bed. The shade requirement for almonds is related to the ability to keep the bed moist during spawn run, and humidity to encourage large and succulent mushrooms when they fruit. This can be done outdoors in a fully sunny garden if you can provide lots of mulch and frequent, light watering from a sprinkler or soaker hose over the almond bed for its spawn run phase, and big leafy plants nearby to capture humidity for its fruiting stage.
     - Chard, lettuces, zucchini, tomatoes and other large leaved vegetables are all suitable companions for almonds.
   - We have taken to growing all our tomatoes in a high tunnel, and it turns out to be a really good location for almond production as well. We live north of the 45-degree parallel, so the extra heat and extended season provided by the greenhouse plus the daily attention to plants and soil alike make for a great spot to grow almonds. We also plant beds constructed in the garden or forest, but yields are frequently lower because the bed is more likely to dry out due to our own negligence.
   - 3. Choose your compost and construct the bed:
     - While mushrooms like shiitake and oyster must have undecomposed lignin and cellulose found in just-cut trees and other woody substrates, Almonds like rich, decomposed plant matter, further down the decay chain. As mushroom growers, we use both spent plant matter, further down the decay chain. We use both spent composted Shiitake (sawdust) blocks and myceliated, composted oyster mushroom straw; a dual “waste” substrate. It’s pretty cool that you can grow two different mushrooms from the same substrate, just utilizing the food from different levels of decay.
     - You can also use kitchen/garden waste compost, bagged composts and worm castings. We are still working with leaf-based mulch and compost, but cannot yet recommend it.

   If you are using bulk or homemade compost, take the time to make sure the compost is moist enough, which is typically the biggest problem with using homemade compost. Use the “squeeze test” — grab a handful and squeeze as hard as you can. One or two drops of water should want to drip away. The compost does not have to be perfectly crumbly and finished, but you should aim for it to get this way.

   For bed construction, we have tested several bed depths and spawn rates and have determined that beds 5 inches deep inoculated at a 5% rate (5 lbs. of spawn to 100 lbs. of compost) is optimal. Make attention to bed depth your priority. Deeper beds (but not too deep for the companion plants) are easier to maintain moisture, and shallower beds are prone to excessive drying requiring more constant watering.

   * Note: Choose the right companion plant. It’s important to remember that compost is also considered a fertilizer and that too much might not be a good thing for some plants you may be considering to pair with your mushroom growing. Some of the nutrients are being used by the mushroom mycelium, so we honestly have never had much leafy growth from our tomatoes even when planted into an extra thick compost bed. However, we are a little more reluctant to pair with plants like peppers which have a finicky reputation in regard to an overly rich soil.

4. Inoculation:
   - After the bed is laid out (if polyculturing, we...
plant our transplants first and build the bed around them), it’s time to inoculate. You will need about 10 lbs. compost per sq. ft. of bed space that is 5 inches deep seeded (inoculated) at a rate of 1/2 lb. spawn per sq. ft. A standard garden bed 3 ft. wide and 10 ft. long requires about 15 lbs. of Almond spawn.

Open the spawn bag and break off egg-sized pieces of spawn and bury on 6-8 inch centers apart in a grid pattern, making sure spawn is covered with some compost after inoculation (take a moment to enjoy the significant almond-ish fragrance of the almond spawn). Placing the spawn at different depths is also a helpful strategy.

5. Mulching and spawn run

Keeping the bed moist is perhaps the biggest challenge — you will want to keep it damp to the very top of the compost. We have used straw, paper grain sacks, shredded office paper and cardboard to try to hold moisture without excessive watering. The best solution so far is cardboard kept moist by a soaker hose laid on top. Daily light sprinkling underneath dry cardboard or even without it!

As the mycelium sets pins, you will be able to judge how large the mushrooms will be. We let the large pins develop into a more open mushroom, like a portabella, for stuffing or grilling use. Smaller pins are harvested closer to buttons as they store longer and produce single, large mushrooms, with later flushes producing smaller mushrooms, but many of them.

The mycelium starts to knot just prior to fruiting, indicating that mushrooms are on the way. Now is the time, as an option, to apply a casing layer (preferably just before this stage), as the compost starts to show 60 percent myceliation as shown in the photo above). A casing layer is just a nutrient poor, thin layer of a water holding material that helps increase yields. Adding this layer is optional. You will get plenty of mushrooms without it and it is an extra step. To get the most out of your planting though, application of this layer is helpful for maintaining bed moisture and reducing the need for constant watering. We make our casing out of peat moss and adjust the pH with a little hydrated lime (found at garden and farm centers).

We often skip the casing stage because fruiting happens faster than we expected and once fruiting occurs, we feel we have missed the window of opportunity. And even with the yields even without it!

Casing recipe:
- 3 lb. peat moss
- 3 qt. water
- 1 1/2 T hydrated lime (look for types with less than 1% Mg (Magnesium) like Hi-Yield)

Mix well.

The mixture is spread out over the top of the bed, about 1/2” deep. Cover with mulch again and wait for the spawn to grow up through the extra layer, usually 7-10 additional days. Once the mycelium, showing at the top of the bed, starts to move from a feathery look to little tiny knots, you will know that you are just days from a mushroom harvest. Keep things moist!

6. Harvest:

New flushes will continue every 2-3 weeks. The first flush will produce single, large mushrooms, with later flushes producing smaller mushrooms, but many of them.

As the mycelium sets pins, you will be able to judge how large the mushrooms will be. We let the large pins develop into a more open mushroom, like a portabella, for stuffing or grilling use. Smaller pins are harvested closer to buttons as they store longer and transport easily.

From this point, keep the bed reasonably moist until freeze up. Expect mushrooms every few weeks after a good rain or heavy sprinkling from your garden hose.

Mary Ellen Kozak is part founder and owner of Field and Forest Products in Pestigo, WI. The company continues to look at new possibilities in the world of mushroom cultivation and fungal interactions that are compatible with overall sustainability and renewability within the environment around each of us. Learn more at: https://www.fieldforest.net/

This article originally appeared on the Field and Forest blog in 2015, where other articles can be found: https://mushroomingtogether.blogspot.com

After initial knotting, real pins will start to develop which happens within days.

Agaricus emerge and benefit from an increased humidity during development.
Turning Maple Syrup Forests Into Bird-Friendly Habitat

Birds and maple syrup share the same critical ingredient: healthy northeastern forests.

by Alison Haigh

High in the branches of a maple tree sit the tattered remains of a muddy, grassy bird nest. I train my binoculars on the small lump, but it was built the previous year and is very much empty. Closer to eye level, it’s harder to miss the metal spigot and tangle of blue tubing attached to the tree’s trunk like an IV drip. This tree is one of the 6,000 tapped for Cornell University’s signature maple syrup, and last year it also raised a family of birds.

Birds and maple syrup share the same critical ingredient: healthy northeastern forests. Every year, millions of birds breed, feed, and fledge in the same forests that are tapped for syrup (called “sugar bushes”). As long as a sugar bush stays tapped, it will remain a forest and not be cleared for development.

Since 2014, Audubon Vermont has worked with nearly 40 maple syrup producers in the Green Mountain State on the Bird-Friendly Maple Project to help sugar bushes meet their full potential for bird habitat. Now the Cornell Lab of Ornithology is partnering with the Cornell Maple Program to sweeten the deal for both birds and the bottom line in the university’s own sugar bush.

From Maple Monocultures to Bird-Friendly Forests

Maple-syrup producers exert considerable control over how the habitat looks in a sugar bush. At the same time, what is good for birds in a forest is also good for maple producers in the long run: the health and sustainability of the crop.

Aaron Wightman oversees operations at the Arnot Research Sugarbush in a Cornell University–owned forest south of Ithaca, New York. After learning about Audubon’s maple programs in Vermont, he approached Cornell Lab of Ornithology conservation biologist Steve Hagenbuch, who heads up Audubon Vermont’s Bird-Friendly Maple Project, says sugar bushes that contain at least 25 percent nonmaple trees support a greater diversity and abundance of birds than stands growing only maps. And he says syrup producers in the Audubon Vermont program are finding that managing a sugar bush for tree diversity is good for sugaring sustainability, too. A University of Vermont study found that sugar bushes with a bird-friendly ratio of tree diversity experienced insect outbreaks that were significantly shorter and less intense than in maple monocultures.

Wightman was interested in helping the birds, but also in helping the forest he manages.

The understory of the oldest part of the Arnot sugar bush was thinned decades ago and deer have kept the shrub layer from regenerating, explains Wightman as we walk through the Cornell research forest on a delicately sunlit May morning. Here, slender maples tower over us like an arched cathedral ceiling; tiny beechn and hornbeam seedlings pop out of the leaf litter—but there is nothing but empty space between the canopy and forest floor.

Ideally, forest managers aim for a diversity of tree species at a diversity of ages, with layers of branches and leaves at the top, middle, and bottom. Without younger generations of trees growing up underneath the canopy layer, the entire forest community faces an abrupt decline when all those oldest-generation trees begin to die.

Birds suffer, too, from a lack of diversity in sugar-bush habitat. For example, without a conifer component among the maple trees, birds like the Blue-headed Vireo, Blackburnian Warbler, and Sharp-shinned Hawk are missing valuable nesting habitat. Fruiting trees and shrubs in a sugar bush like the black cherry, also provide critical energy supplies for birds fueling up for migration.

Next to the monoculture in Arnot Forest stands a plot that is a perfect model for bird-friendly management. The bright blue tubing disappears and reappears among the thick understory, winding around a few snags with holes drilled out by woodpeckers. There are more than just maples here; we stop to admire a Black-throated Green Warbler flitting around in a hemlock, and a Scarlet Tanager in an oak tree.

Conservation biologist Steve Hagenbuch, who heads up Audubon Vermont’s Bird-Friendly Maple Project, says sugar bushes that contain at least 25 percent nonmaple trees support a greater diversity and abundance of birds than stands growing only maps. And he says syrup producers in the Audubon Vermont program are finding that managing a sugar bush for tree diversity is good for sugaring sustainability, too. A University of Vermont study found that sugar bushes with a bird-friendly ratio of tree diversity experienced insect outbreaks that were significantly shorter and less intense than in maple monocultures.

“Is that a coincidence?” Hagenbuch asks rhetorically. “I don’t think so. I think that speaks to a healthy, functioning forest, thanks to its structure and composition.”

Bringing Back the Forest for Birds

The quaint, colonial scenes on maple syrup bottles are misleading. Maple syrup is big business, but that doesn’t mean it has to be harmful to the environment. By diversifying the tree species at the sugar bush, maple producers are helping birds and also improving the sustainability of the crop. Since 2014, Audubon Vermont has worked with nearly 40 maple syrup producers in the Green Mountain State on the Bird-Friendly Maple Project to help sugar bushes meet their full potential for bird habitat. Now the Cornell Lab of Ornithology is partnering with the Cornell Maple Program to sweeten the deal for both birds and the bottom line in the university’s own sugar bush.

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Farming and Motherhood

When I reflect on my own skills as a mother, I cannot help but also think about my skills as a farmer.

by Kirsten Workman

This morning our family celebrated a milestone. Our oldest child, Johnny, boarded a big yellow school bus and rode off into the horizon as a Kindergartener while his little sister Ruby looked on seeming a little jealous of his new mode of transportation. He was super excited and I managed to keep the tears to a manageable level. And as these life events have a tendency to do, it makes a mother reflect on her success raising her children.

When I reflect on my own skills as a mother, I cannot help but also think about my skills as a farmer. Being a farmer and being a mother have so many things in common. They both require fortitude, flexibility, creativity and harbor elements of surprise, shock, and awe. I am always amazed by those women who pull it off so effortlessly. I always feel like Pig Pen from Charlie Brown, running around with a tornado of dust and debris as I jump from one imminent task to the next. Move the cows, water the plants, make dinner, shut the greenhouse, give someone a bath (animal or child), get the naps they took in the stroller inside the greenhouse in March, the Saturdays spent at Farmers Market stands instead of playgrounds, and the dinners that happened after dark all summer.

All in all, I am happy for the life we have chosen for our family. Although it is not an easy feat, I am proud to be able to raise my children in connection with the land, the weather, the ups and downs of farming, and the people we interact with as a result of our agricultural pursuits. I hope when they grow up they have fond memories of their childhood and are also glad their parents chose to teach them to work hard, eat well, and roll with the punches.

Kirsten Workman is an Agronomy Specialist with UVM Extension’s Champlain Valley Crop, Soil & Pasture Team based in Middlebury, Vermont. She and her husband, Paul, own have owned, lived and worked on farms since before their kids were born — both in Washington state and in Vermont. She can be contacted at Kirsten.workman@uvm.edu or 802-388-4969, or check out www.uvm.edu/extension/cvcrops.

This article was originally published in 2013 on the Women’s Agricultural Network Blog, when Johnny was just starting kindergarten and Ruby was 3. Johnny is now 11 years old and Ruby is 9.

Women make up more than half the U.S. population, and own an increasing number of farms. Surveys show that women own or co-own nearly half the farmland in the Midwest. But they are under-represented on the boards of policy-making bodies, and often encounter communications barriers when accessing information from agencies and institutions.

Women’s Farm & Ag Network (WFAN) exists so that women can give each other the information, connections, and encouragement they need to be effective practitioners and supporters of sustainable agriculture and healthy localized food systems.

WFAN members come from all across the U.S. and several other countries. They are diverse in ages (ranging from teens to eighties) and backgrounds. They are farmers, urban gardeners, environmental educators, community activists, academics, and others who care about food and our environment.
The Sky’s the Limit for Cornell’s New Galaxy Suite Grape Tomato Varieties

New York farmers now have a new way to satisfy consumers’ hunger for something different.

by Sarah Thompson

New York farmers now have a new way to satisfy consumers’ hunger for something different. Phillip Griffiths, associate professor of plant breeding and genetics at Cornell AgriTech, has released a collection of organic grape tomato varieties that are pretty, profitable and pack a culinary punch.

The new Galaxy Suite of five grape tomato varieties offers outstanding flavor in novel shapes and colors: the yellow fingering Starlight, orange grape-shaped Sungrazier, small red grape-shaped Comet, marbled and striped Supernova, and dark purple pear-shaped Midnight Pear. They are available now from High Mowing Organic Seeds.

“These varieties are ideal for organic and conventional growers, or hobby gardeners, and will make a great contribution to the diversity and quality available for small-fruited tomato medleys,” said Griffiths. “They provide high flavor options with good shelf life and aesthetics in high-yielding plants for growers.”

Griffiths, whose breeding program seeks to diversify quality traits in fresh vegetables, started this project in response to consumer demand for more local, organic products with better flavor, color, quality and uniqueness.

“This led me to focus on the incredible natural diversity in heirloom vegetables with their unique shapes and colors and to hone in on developing higher quality products using traditional selective breeding,” Griffiths said.

By harnessing that diversity, Griffiths also created products that may connect more New York farmers to lucrative niches in markets like New York City. His Galaxy Suite combines consumer-quality traits with better yields, uniformity and firmness to stand up to transportation. The new varieties also perform well in high tunnels, greenhouses that many New York growers use to extend the short upstate growing season.

The Galaxy Suite of grape tomatoes has already sparked interest from markets such as Wegmans, which performed small field trials on their organic farm last season.

“They grew and produced well, and Phillip’s focus on developing varieties that produce high flavor, without jeopardizing productivity, really came through,” said Jess Crabtree, growing manager at the Wegmans Organic Farm & Orchard. “Our customers desire fresh, local produce that is both organic and sustainably grown, so any new varieties that are developed to produce well in the Northeast and can experience an extended growing season through high-tunnel production mean good things for New York state growers and our customers.”

Hannah Swegarden, who is undertaking her Ph.D. research with Griffiths, brought samples and conducted taste tests at various New York City Greenmarkets and also demonstrated them with Griffiths and staff from High Mowing Organic Seeds at the Culinary Breeding Network’s 2018 Variety Showcase in New York City.

Common questions were, “Where can I buy these?” and “Where can I get seed of these?” Swegarden said.

Liz Carollo, assistant director of GrowNYC’s Greenmarket program, believes Griffiths’ work is essential to her market’s mission. “Our customers expect innovation and improvements to ingredients based on physical attributes and flavor,” she said. “Chefs especially respond to new varieties. They, and many Greenmarket customers, are also demanding a shift towards growing in organic systems and without a reliance on chemicals, which we all know will not happen without innovative plant breeding and research.”

“This effort is coming to fruition at the same time these markets are expanding,” Griffiths said. “It has helped us link with consumers, farm-to-market growers and people who are ultimately just interested in great food.”

Sarah Thompson covers agriculture, science and alumni news for Cornell University, contributes to local food and wine publications, and creates marketing communications for clients.

Maple from 12

business. By the barrel, syrup costs more than oil. Products like maple-derived alcohol, candies, and even sports drinks have exploded in popularity. New York alone taps over 2 million trees, and its maple products were worth over 30 million dollars last year.

But the boom in sugar bushes, as another form of farming monoculture, is compounding a tree diversity problem in the Northeast’s forests.

Throughout the 1800s, settlers cleared nearly 90 percent of all forests in the Northeast for farmland, only to suffer season after season of poor yields in their harvests. After the settlers abandoned their farmland, the forests began to grow back. But wave after wave of invasive species, forest pests, and diseases stunted the growth of young trees, leaving many forests lacking in successive generations of native trees. The irony, noted in the 2016 State of the Birds Report, is this: “In the East, there is more forest today than there was 100 years ago, yet forest stands lack the diversity of young and old trees that makes for prime bird habitat.”

With habitat loss and degradation looming as the greatest threats to birds today, sugar bushes have the potential to offer a big conservation footprint for birds.

“Conservation of anything...birds, habitat, anything...requires an all-hands-on-deck approach,” Hagenbuch says. “We can’t rely on protected areas, or even the goodwill of people interested in wildlife. We need to integrate [bird conservation] into our businesses, create financial incentives, and encourage people to think about the role that their land management has in conservation.”

Bird-friendly maple syrup is only one part of how the food production systems of modern society can help address the massive loss of bird habitat. After all, the very same Scarlet Tanagers that spend summer in sugar bushes in New York, Vermont, and Quebec fly to South America for the winter, where they may look for habitat among shade-grown coffee farms in Colombia. Ultimately, Wightman hopes the sugar bush in Arnot Forest will be a model for bird-friendly maple production in New York, and for the international importance of sustainable food production.

“Any healthy forest has a healthy bird population,” he says. “That’s how we should grow all our food.”

Alison Haigh is a senior Environmental Science major at Cornell University and freelance writer based in Ithaca, N.Y.

This story was originally published in the spring 2019 issue of Living Bird magazine (www.livingbird.org), produced by the Cornell Lab of Ornithology.
From Dreaming to Doing: 5 Tips for Beginning Farmers

The number of young farmers is growing. These tips can help new farm businesses successfully navigate the startup stage.

by Mary Kate Wheeler

Newly released data from the 2017 U.S. Census of Agriculture show an increase, for the second census in a row, in the number of farmers under the age of 35. A 2017 National Young Farmers Coalition survey found that a majority of young farmers are college educated, and many are first-generation farmers. Census data reveal that beginning farmers, with 10 or fewer years of farming experience, made up 27% of all U.S. producers in 2017.

What advice would you give to this growing group of well-educated yet relatively inexperienced women and men looking to forge their own pathways into farming? Here are my top five considerations for beginning farmers. This list draws to forge their own pathways into farming? Here are my top five considerations for beginning farmers. This list draws

1. Get clear on your goals and abilities. Why do you want to farm? Are there other ways that you could achieve your goals with less risk or less effort?

If you aspire to work outdoors with plants, animals or machinery, why not get a job with an existing agricultural business? If you dream about the self-sufficiency of growing your own food and pursuing a rural lifestyle, perhaps approaching farming as hobby would be appropriate.

Can you identify a burning consumer need that your farm business is uniquely suited to fulfill? Congratulations, now you're ready to develop a business model.

2. Develop a business model. Once you have developed a big idea, take time to create and practice an "elevator pitch" so you can explain your farm business concept in less than 60 seconds to someone who knows next to nothing about agriculture.

Before you dive into farming, reflect on what competencies you are lacking, and on how you will address those deficiencies. Working for a successful farm operation (or several) can be a wonderful way to build skills and experience, and give you a head start in your own business development.

A marketing plan describes your target market and their critical need that your business is uniquely positioned to meet. This section should explain how you will approach the 4 P's of marketing — product design, placement, pricing, and promotion.

3. Keep business and personal finances separate. Before you spend a penny on the farm business, open a new checking account for all of your farm transactions. To open a business checking account, you will first need to visit the county clerk’s office and file a DBA form to register your business name. Having separate personal and business checking accounts will make it easier to distinguish between farm and non-farm expenses, which is critical for accurate record keeping.

4. Dream big, but also manage risk and plan for failure. Farming is an incredibly risky venture, and it takes a colossal investment of time and money to get started. Minimize your financial risk as much as possible by financing the business from savings or business earnings, rather than debt. Grow slowly. Live frugally. Be prepared to keep an off-farm job for years until the business is large enough and stable enough to support you.

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Implementing best practices for record keeping and farm business accounting from the start lays a foundation for data-driven management decisions later on. Here, Mary Kate helps farmer Jon Ryan, of Ryan Apiaries, record end of year inventory values. Courtesy of Emma Mullen

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Track Sheep Bloodlines During Breeding Season

How to effectively use breeding harnesses and spray paint for sheep.

by Ulf Kintzel

A customer of mine asked me: “Do you use a breeding harness for your ram?” She did and had problems keeping it on the ram. Her question prompted me to write this article, explaining how I make certain that I know which ram breeds which ewes at what time.

Why and how is that knowledge important? One main reason is to avoid inbreeding. You don’t want a ram to breed his daughters; you want to expose them to a different ram instead. You can also greatly extend the number of years you can use a ram when he is purposefully matched with ewes unrelated to him.

I am using two different methods of keeping track of which ewes were bred by which ram. One method is the use of breeding harnesses. The other is the use of spray paint to identify the ewes. They work, in my view, equally well. Which method I use depends on any given year and the relation of my ewes to existing rams I own. I will describe both methods and you, the reader, can decide if one or the other works for you.

The use of a breeding harness is a well-established way of keeping track of breeding activity. The harness will be put on the ram and a crayon block will be attached to the harness. Some blocks are secured by a metal pin, some can be snapped in. The placement of the crayon is in the brisket area. When the ram tops a ewe in season, he also marks her on the rump. Crayons come in various colors like blue, green, purple, orange, yellow, and red. They are also available in three different degrees of hardness, which makes them suitable for a variety of weather conditions from hot to mild to cold. Be sure what your temperature range will be during breeding season so that you order crayons with suitable hardness. There are various harnesses on the market. The most common and the cheapest is a black nylon harness, which I very much dislike. It never stayed in place when I used it. Other sheep farmers reported the same problem. The customer I quoted above used it as well. Other slightly more expensive harnesses were developed in the attempt to address that flaw in design. Premier One Supplies, Weaver, Syrvet, and Sure-Sired are some of the most common brand names for breeding harnesses of various kinds and quality. I have settled for a harness called “Matingmark,” made in New Zealand. It is sold by companies like Hunter Nutrition, Valley Vet, and Amazon. The added benefit of this harness is the use of different colors for the same ram by Ulf Kintzel

Dreaming from 15

Ask lots of questions, not just about production, but especially about finances. Be generous in supporting other farm businesses in your community. Establishing strong ties with the agricultural community will give you access to resources for support and information. A solid social network can help you make better decisions and grow your farm business faster.

Mary Kate Wheeler is the Farm Business Management Specialist with the South Central NY Dairy and Field Crops Team, which covers Onondaga, Cortland, Tompkins, Broome, Tioga and Chemung counties in NY. She can be reached by email at mkw87@cornell.edu.

Working with other farmers is a great way to get started in agriculture. Mary Kate spent a summer as a part-time intern at Shelterbelt Farm before starting her own grazing operation. Courtesy of Erica Frenay

If farming sounds like the right direction for you, check out the many resources on the Cornell Small Farms Program website. Their website offers a variety of technical resources on topics ranging from establishing your production system, to navigating regulations, to farm business planning.

The National Young Farmers Coalition educates and advocates for young and aspiring farmers and ranchers. For a review of challenges facing young people in agriculture today, and policy recommendations to address those challenges, check out the 2017 NYFC publication “Building a Future with Farmers II: Results and Recommendations from the National Young Farmer Survey.” This report identifies land access as the number one obstacle that young farmers face. In response, NYFC offers resources, trainings, and decision-making tools to help young farmers and ranchers secure access to productive farmland, https://www.young-farmers.org/land-access/

A version of this article was originally published on the South Central NY Dairy and Field Crops Team blog (blogs.comell.edu/senydairyandfieldcrops) and in the team’s April 2019 Dairy Digest newsletter.
breeding season for each of these rams since there are six different colors available. Please keep in mind, blue and green crayon colors will, in my experience, be almost indistinguishable when they are faded after a few months.

The quality of the crayon blocks can vary greatly. At times, the rams leave a definitive mark when breeding, at other times, it is rather faint. Changing weather can play a role, too. I tackle this problem by running the entire flock through the chute and spraying a dot on the wither of the ewes that matches the color of the crayon. This dot will surely last all the way to lambing season. I do that a few weeks after breeding season to avoid stress right after the ewes have been bred, which can cause fertilized eggs to abort and not attach to the uterus wall. That is a common problem when ewes are stressed during breeding season. The spray paint I use is specifically designed for sheep. That may be of concern to anyone who has wool sheep and has a good market or a good use for the wool. The paint can easily be washed out when the wool is being processed. There are a few different brands on the market. I currently use the brand Sprayline. However, I have not found a difference in any of the brands that were available over the years. Mid-States Wool Growers and Premier One Supplies are two companies that offer spray paint for sheep. A few other companies that offer sheep supplies may also offer it.

My second way of keeping track of breeding activity is to split the flock into the groups I want for each ram, and to mark the ewes with a dot on the wither just before breeding starts. I tend to use colors that will match or will somewhat match the color of the tags of the future lambs that I described in my previous Small Farms Quarterly article, “How Crayons Inspired My Sheep Tracking System.” For instance, all my ewe lambs born to “Slick” will receive a fuchsia-colored ear tag.

I am aware of sheep farmers who find that approach too cumbersome and too management intensive. Perhaps you too may feel that way. However, think about it this way: inbreeding brings genetic faults to show while genetic diversity does not. If your ram breeds some of his own daughters and just one lamb shows a genetic default that will keep it from thriving or even living, you lost income. To me, the extra time spent, and the extra management skill needed, is well worth the effort. If I still haven’t convinced you, there is another approach you can use. You can use a ram lamb one season, then castrate him and turn him into burger meat, and use a new ram the following year. That can be done year after year.

Ulf owns and operates White Clover Sheep Farm and breeds and raises grass-fed White Dorper sheep and Kiko goats without any grain feeding and offers breeding stock suitable for grazing. He is a native of Germany and has lived 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 email at ulf@whitecloversheepfarm.com or by phone during “calling hours” specified on his answering machine at 585-554-3319.

An orange dot on the wither of these ten select ewes will indicate five months later that they were bred by my White Dorper ram Outback.

Photos by Ulf Kintzel, White Clover Sheep Farm
How to Establish Crop Production History for Crop Insurance

As the government moves away from disaster payments and programs, New York farmers are increasing their reliance on crop insurance to take some of the risk out of their cropping enterprises.

by Fay Benson

As the government moves away from disaster payments and programs, New York farmers are increasing their reliance on crop insurance to take some of the risk out of their cropping enterprises. During the period between 2007 and 2017, liabilities covered by New York farmers increased by 46% according to the USDA Risk Management Agency (RMA) Summary of Business Records.

In order for farmers to take advantage of crop insurance, certain records are necessary. To determine insurance coverage, all insurance policies have three main components:

- Number of units protected: Acres, Bushels, Tons, etc.
- Guaranteed price per unit
- Actual Production History (APH) for the crop on your farm

Once these are established a “guaranteed” amount of coverage is determined. The most time consuming record required is the APH, because in order to determine the APH database, a farm needs four years of yield records for that crop on their farm.

Without the four years of acceptable records farmers can still participate with crop insurance, but they will have to use their county’s average yields for their production history. County average yields are almost always lower than a farmer’s actual production. For each year the farmer creates an acceptable record of production, they can replace a year of the county average. RMA uses the term T-Yields for county averages. Your county’s T-Yields can be found by using the Cost Estimator tool on RMA’s website.

Acceptable Third-Party Sales and/or Commercial Storage Records

For all crops, acceptable third-party sales and/or commercial storage records must contain the following: Name and address of the buyer or the commercial storage facility, insured’s name, load or ticket number, crop, gross weight, tare, date weighed, load number, identification and location of farm-storage structure in which the load(s) from each field are stored. The insured must handwrite any of the required information listed if the scale being used is not capable of printing a ticket or the required information.

For weights, acceptable scale types are non-portable on-farm scales, commercial elevator scales, or grain carts. Each ticket must provide at least the insured’s name, crop, the gross weight, tare, date weighed, load number, identification and location of farm-storage structure in which the load(s) from each field are stored. The insured must handwrite any of the required information listed if the scale being used is not capable of printing a ticket or the required information.

To help with this last record keeping option, contact your Cornell Cooperative Extension Office for a free “New York Crop Insurance Education Program” – Crop Production Record Book.

For More Information

- To find a crop insurance agent, visit the RMA Agent Locator.
- For more information on crop insurance options in New York, visit the New York Crop Insurance Education Program.
- This article draws information from the Acceptable Records of Production publication by American Farm Bureau Insurance Services, Inc.

High Tunnel Research to Support Winter Production

Season extension infrastructure is needed for farmers to maintain year-round supply of local produce.

by Ethan Grundberg

The rise in demand for year-round supply of local produce has led many vegetable growers in Eastern New York to invest in season extension infrastructure. WhileAmy Ivy and Teresa Rusinek have collaborated with Jud Reid from the Cornell Vegetable Program to research high tunnel fertility demands and best practices for summer tomato production, little work has been done to better understand nutrient demands and cycling in tunnels for winter grown greens. With financial support from Northeast Sustainable Agriculture Research and Education (NE SARE) Partnership Grant, Ethan Grundberg collaborated with the Poughkeepsie Farm Project to study nitrogen availability and uptake in winter grown spinach, kale, and salad mix. Specifically, Grundberg was interested in the role that temperature plays in nutrient cycling in winter production and the economics of minimal supplemental heating in high tunnels.

The Poughkeepsie Farm Project has identical side-by-side high tunnels with propane heaters, so the thermostat of one tunnel was set to 33 degrees and the other to 40 from November through March. Grundberg took soil nitrate samples from each tunnel weekly and submitted tissue samples from the crops every other week to assess nutrient uptake. Grundberg also tracked propane use in each tunnel while the farm crew tracked yield from research plots in the tunnels. While the data analysis is not yet complete, it does appear as if the added cost (2.14 times more propane was used to heat to 40 degrees than to heat to 33) of higher heating could be economically beneficial to winter lettuce growers. However, the additional yield measured in spinach and kale was not enough to offset the additional heating expense.

Amy Ivy investigated the question of nitrogen uptake and yield impacts from using different fertilizers for winter grown spinach at the Willisboro Research Farm. With funding from the Northern New York Agricultural Development Program, Ivy tracked the yield and nutrient content of plant foliage in plots fertilized with urea, bloodmeal, and alfalfa meal over the winter in an unheated high tunnel. Again, the data analysis is not yet complete, but the initial findings show almost no measurable difference in nitrogen uptake or yield across treatments, including the unfertilized control.

These two research projects highlighted the need for further investigation of fertility needs and management in winter high tunnels; the data generated through this work will be used as the basis for a proposal for multi-year state-wide funding to continue developing best management practices for winter high tunnel producers.

Ethan Grundberg is a Vegetable Specialist for CCE Eastern New York Commercial Horticulture, and can be reached at eg572@cornell.edu.
A warming world represents a growing threat to the dairy industry. With climate change pushing global temperatures higher, finding scientific solutions that protect the well-being and productivity of dairy cows is critical. A Cornell researcher has won a grant to do just that.

"Climate change and extreme heat represent key barriers for the sustainable production of milk that meets consumer expectations for quality as well as the rising global demand for dairy foods," said Joseph McFadden, assistant professor of animal science in the College of Agriculture and Life Sciences (CALS).

"We must act now to develop innovative solutions that revolutionize how we feed heat-stressed cows to ensure optimum animal health and welfare while achieving gains in efficient milk production," said McFadden, the Northeast Agribusiness and Feed Alliance Partners Sesquicentennial Fellow in Dairy Cattle Biology.

McFadden is principal investigator on a nearly $1.5 million grant from the Foundation for Food and Agriculture Research (FFAR) and industry sponsors, announced April 11. The $736,392 FFAR grant is matched with funding from AB Vista, Adisseo, Balchem Corporation, Berg + Schmidt, Elanco, Phibro Animal Health, and Vetagro S.p.A. The study will explore the relationship between dairy cattle’s gut health, intestinal permeability, liver health, immunity and milk production; it will also seek ways to improve dairy cows’ ability to withstand extreme heat.

Dairy cows struggle to produce milk efficiently when their body temperatures rise above normal, a condition known as hyperthermia-induced heat stress. Along with curtailing milk production, heat-stressed dairy cows can also become infertile, develop infectious and metabolic diseases, and may succumb to premature death.

Working with industry, McFadden’s team will determine whether heat-stressed dairy cows can recover through diet. The project aims to identify a nutrition-based solution that improves dairy cows’ ability to adapt to extreme heat.

The demand for dairy products and milk globally is expected to increase 57 percent by 2050, while rising temperatures are expected to stress the dairy industry, according to FFAR. In 2017 in New York state, milk production reached its highest levels ever, according to the New York State Department of Agriculture and Markets. On average, a dairy cow in New York produced 23,936 pounds of milk in 2017.

Average annual temperatures are projected to increase across New York state in the coming decades. Temperatures could increase by 10 degrees Fahrenheit by the 2080s, according to a 2014 report from Art DeGaetano, professor of climatology and director of the Northeast Regional Climate Center at Cornell, and other collaborators for the New York State Energy Research and Development Authority.

“Heat stress is an urgent animal health and welfare concern, and it also creates additional pressures for the nation’s dairy farmers,” said Sally Rockey, FFAR’s executive director. “FFAR is optimistic that Cornell’s research can improve the health of dairy cows, increase efficient milk production and help American dairy farmers protect their livestock.”

According to FFAR, McFadden and his team will partner with industry collaborators to reduce the use of limited natural resources and drive down dairy production costs in support of a more sustainable and economically viable American dairy industry. McFadden will work with the grant sponsors and the Cornell PRO-DAIRY program to disseminate new knowledge in an annual editorial series called “Beat the Heat: Dairy Nutrition Strategies for Optimum Cow Health,” which will be shared with thousands of American dairy farmers.

“This translational research program in collaboration with industry has the potential to revolutionize dairy cattle nutrition to ensure that our American dairy farmers will continue to produce a high-quality food,” said McFadden. “Global population growth and climate change are real challenges and we aim to develop real solutions.”

Kathryn J. Boor ’80, the Ronald P. Lynch Dean of CALS, is a board member at FFAR.

Matt Hayes is a writer, journalist, photographer and communicator who promotes the scientific discoveries and expertise of Cornell’s faculty and staff and to highlight the unique student experience at Cornell CALS.
Cornell Researchers Win Major Awards from Cider Industry

Hard cider is a fast-growing segment in the U.S. fermented beverage industry, and New York’s position as a leader in craft beverage production and expertise is paving the way for cider producers to succeed.

by Erin Flynn

Hard cider is a fast-growing segment in the U.S. fermented beverage industry, and New York’s position as a leader in craft beverage production and expertise is paving the way for cider producers to succeed.

“The burgeoning craft beverage industry in New York state has helped create a lot of applicable resources and expertise for cider makers,” said Ian Merwin, M.S. ’88, Ph.D. ’90, owner of Black Diamond Cider and Cornell professor emeritus of plant science. “We can get bottles and equipment from well-established companies in the area. We have the legislative support we need and Cornell experts like Chris Gerling and Greg Peck to help us every step of the way.”

Merwin noted that the benefit of cider makers working with both Gerling, extension associate in the Department of Food Science, and Peck, assistant professor in the horticulture section of the School of Integrative Plant Science, is that they can gain expertise on both ends of the spectrum—when growing the cider apples and when making the cider itself.

Recently Gerling and Peck received major awards from the cider industry. Gerling was given the Apple of Appreciation award from the New York Cider Association (NYCA), and Peck was chosen as the Grower Advocate of the Year by the U.S. Association of Cider Makers (USACM).

Chris Gerling, who began his career offering extension expertise in the field of enology, found a natural transition into hard cider extension work. Wine and cider have many similarities, including the types of yeast used and the effect of climate, soils and terrain on the overall flavor profile.

“Chris has distinguished himself as being fully invested in improving the quality and profitability of cider made in New York and beyond,” said Jenn Smith, NYCA executive director. “He is as curious as he is knowledgeable, and in particular has been central in NYCA’s work to tackle the challenges of measuring and communicating the tricky concept of dryness to drinkers. We are grateful and lucky to have him as a partner in our work of developing a sustainable, excellent cider industry in our region.”

Greg Peck’s research explores ways to increase the quantity and quality of New York–grown cider apples, including best practices for fertilizer, crop load and harvest management. Peck also helps cider makers select varieties that will work best for high-quality and flavorful cider.

Michelle McGrath, executive director of the USACM, said the organization’s members overwhelmingly voted for Peck to receive the Grower Advocate of the Year award.

“His advocacy for cider at Cornell and his research collaborations with the industry are important for expanding our knowledge of growing cider apples. We know so little about propagating cider-specific varieties in the U.S., and Greg is such a valuable resource for cider makers looking to use specific apple varieties.”

While hard cider makers have many valuable resources in New York, the recent awards for Gerling and Peck underscore the fact that producers value experts who can help them piece together the many components that equate to a high-quality end product.

Erin Flynn is an experienced marketing and communications professional whose work spans several topical areas including academia, agriculture and government affairs.