



Access to Safe, Local Food

Expanding Vermont's Food Crops

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Food and the Environment

Vermont's Next Generation of Growers

100 Years of Growth

Extension's dean looks to the future

Nearly 100 years ago, on February 15, 1913, the Vermont Legislature passed an act that appropriated funds "solely for work in agricultural extension ... " With the passage of this act, the organization now known as UVM Extension was created. In the early days, much of our work was focused on helping farmers increase crop yields and

productivity. Today, Extension is educating low-income families how to shop for and prepare nutritious meals on a limited budget, teaching youth life skills through 4-H, providing marketing and business planning services to farmers, and working with producers, distributors and retailers to promote a healthy local food system.

This issue, on supporting the local food movement, is the first in a three-part series on matters that affect Vermonters and our way of life, and how UVM Extension helps individuals and communities put research-based knowledge to

work. Our food, and the ways in which it is grown, processed and distributed, has an enormous impact on this state. In this issue, you will meet some of the people at the forefront of the local food movement in Vermont, from the producers who grow our food to the Extension specialists who support them.

In the 25th annual report on Extension, published in 1939, Dean Joseph Carrigan wrote: "The part that the Extension Service is playing in the lives of Vermont rural people appears to be of even greater importance at the present time than at any time in the past." These

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words are still true 73 years later. We face a number of pressing challenges in the years ahead. Our climate is changing, and we are already seeing the effects of that change in the maple industry. In addition, the dependence of modern agriculture on fossil fuels, the demand for water to grow crops, and the depletion of soils are making it ever more difficult to feed a growing population.

Yet, with these challenges come opportunities — opportunities for innovation, growth and discovery. During the past 100 years, we have faced a number of serious challenges, including the Great Depression, two world wars and two major recessions. Extension played an important role then and will continue to do so in the future. Change may be constant, but as long as Extension is here you can count on us.

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Access to Safe, Local Food

By Mark Aiken

It comes as a surprise to some that buying food can be risky business. This will soon change as a result of federal legislation. While most Vermont produce farms may be exempt from federal regulations due to their small size and incomes, UVM Extension's Hans Estrin and fellow Extension specialists make food safety a top priority. Together they have helped many Vermont producers become educated about the USDA's Good Agricultural Practices (GAPs) to increase food safety.

Hannaford and Price Chopper have announced requirements for produce suppliers, driving farmers like Paul Mazza and Sam Mazza to become GAP-certified Vermont producers. Through Extension, Local Food Network Coordinator Estrin, Produce Safety Outreach Coordinator Ginger Nickerson, and Food Safety Specialist Londa Nwadike offer workshops and information to help food producers get up to speed with the new regulations. They also offer on-site visits

and practice GAP audits to Vermont farmers working toward GAP certification.

Recently, the team designed a day-long workshop to give farmers the tools to write and implement their own food safety plans. Nickerson observed USDA auditors for a year as they performed site inspections and knows what auditors are looking for. "I think most of the state's agricultural community looks to Ginger as the authority," says the Burlington Intervale's Food Hub Manager Sona Desai. "She takes away much of the legal-ese and breaks it down into language farmers can relate to."

Supply and Demand

University of Vermont Extension and numerous grassroots organizations working across the state have created an extensive network to help communities and institutions gain greater access to locally produced foods. Vern Grubinger, Extension's vegetable and berry specialist, explains the aim of the initiative, which is

to help farmers help themselves while connecting local supply to the demand for fresh food.

Food hubs are access points where farmers and groups supporting local agriculture come together to provide reliable and comprehensive delivery of locally grown food to wholesale buyers. Hubs provide outlets for farmers to move their products. By teaming up with organizations like supermarkets, schools, hospitals, and correctional facilities, hubs can make locally produced food available to populations that haven't traditionally had access to fresh, local foods. An organized food hub meets their needs and helps fulfill the mission to bring fresh, healthy food to their patients, students, residents, or community members.

"Food hubs are proliferating in Vermont," says Nickerson, adding that the shift toward "local first" has also manifested itself with an explosion of farmers' markets and coops.

Continued on next page

A Model that Works

Every food hub is different, says the Intervale's Desai, because each hub is defined by the needs of its surrounding area. The Intervale hub's cornerstone is a corporate-led community supported agriculture (CSA) model that provides regular produce baskets in exchange for purchased shares. The Windham Farm and Food Network caters more to public school districts. Wherever a food hub might emerge, producers have to look at the needs of the population, which is where Extension staff can help.

Estrin provides outreach to established and aspiring food hubs, while addressing food safety issues on farms. His office serves as a sounding board for existing and aspiring food hubs around the state. "They call, we meet, I tell them what we're doing, I listen to their story, and we try to come up with a plan," Estrin says.

Making Food Safe

Regardless of what shape a food hub takes, one advantage of buying local is the 100% traceability. Fletcher Allen Health Care's Executive Chef Richard Jarmusz sees buying local as a safety net. He points to his weekly order form from the Intervale: For every item, the form lists the producer and how the product is grown. "When we see national recalls, we sit here and know that it's not us," he says, because he knows where his food comes from.

Buying local food provides a level of transparency for shoppers and providers because there is no barrier to learning how the food was grown and what steps went into ensuring its safety. Local food is traceable food, with a full complement of Extension experts to help ensure that safe practices and reliable delivery networks keep it flowing from Vermont farms to Vermont tables.



Bringing Farms to Plates

The movement to bring local food to Vermont plates is good for health, jobs, our working landscape, and Vermont's future. To that end, the Farm to Plate Strategic Plan was developed and released in 2011. This 10-year plan to improve Vermont's food systems includes food hubs as one part of an economically viable, diverse, and accessible overall food system. Whether they are large- or small-scale, run as nonprofit, for-profit, or as cooperatives, these hubs keep farms producing and food moving to markets, consumers, schools, and institutions around the state. Here are some examples:

Intervale - Burlington - not-for-profit, multi-farm aggregator; uses CSA model to support agriculture and feed its urban population.
www.intervale.org

Mad River Food Hub - Waitsfield - for-profit, rentable meat, fruit and vegetable food processing facility with cooler and freezer storage; links producers to chefs, small markets, and distributors.
www.madriverfoodhub.com

Deep Root Organic Co-op - Johnson - for profit, large-scale producer cooperative for diversified organic vegetables; delivers product at scale

to meet the needs of markets like Whole Foods and food cooperatives.
www.deepprootorganic.com

Sam Mazza's, Paul Mazza's, and Harlow Farm - local for-profit producers deliver produce at scale to meet the needs of markets like Hannaford, Price Chopper, and Whole Foods.

For more information on the Farm to Plate Strategic Plan, visit www.vsjf.org

Expanding Vermont's Food Crops

By Melissa Pasanen

When Madonna and Peter Rainville took their four daughters to Maine last summer, it was one of the most stress-free vacations they'd spent away from their Fairfax dairy farm, thanks to the new robotic milking system that milks each of the farm's 60 Holsteins whenever it chooses to be milked. "No one had to milk while we were away," Madonna explains, "and we could check the laptop and see which cow was being milked from the beach."

Defining Success

A few years ago, after a devastating barn fire at their Four Girls Dairy, the Rainvilles were in a very different place. The couple, both 42, had grown up on farms and returned to farming after attending college. They were committed to dairy, but decided to take a hard look at how they farmed, hoping to find a better life-work balance on their 247-acre farm. Working with University of Vermont Extension specialist Tony Kitsos, the Rainvilles investigated options to increase efficiency without expanding. "I wouldn't go back to hand-milking," Peter says. "Life's a lot better this way." Madonna notes proudly that they're using less electricity with the new system and now, "If one of our girls wants to go into farming, we can feel good about it."

Like most Extension specialists, Kitsos focuses on a particular segment of agriculture, in this case navigating the challenges facing dairy farmers and helping them take advantage of opportunities. That might mean helping farmers transition from conventional to organic production, diversify by raising replacement heifers, or integrate agritourism into their business. Kitsos also helps farmers evaluate where operations could run more efficiently or manage the next stage of growth.

Arda and Gert Schut of Millborne Farm



in Shoreham had been shipping milk to a local co-op since the mid '80s. In 2005, with Kitsos' help they rethought their model and launched a line of drinkable yogurts. The UVM Extension Farm Viability program helped them bring in marketing and business planning experts, while Kitsos gathered a dairy management team to ensure the farm operation also stayed on track. "You are often wearing too many hats," as a farmer and small specialty-foods business owner, Gert says. "Extension definitely helped me focus. There's so much free help out there, if only you're willing to ask."

Beyond Dairy

Dairy may be the biggest segment of Vermont agriculture, but other iconic

products including maple and apples continue to thrive and grow. Vermont producers are also working to diversify and rebuild historical strengths like grain farming and meat production, while delving into new areas from grapes to mushrooms, and developing food products for added value.

"In Vermont, producing to the commodity market doesn't work," explains Chet Parsons, recently retired Extension livestock specialist. "We can't compete with low-cost producers. You've got to work the value-added angle." Lamb producers with whom Parsons worked over the years, from Sterling Brook Farm in Morristown to Tamarack Tunis in Corinth, have carved new niches for themselves offering finished and

packaged meat at farmers' markets and through direct sales to home cooks and restaurants. These operations are small compared to Mountain Meadow Farm in Orwell, which sells their Charolais-Angus organic, grass-fed beef year-round to Whole Foods, but small and larger Vermont meat farmers work together, often through Extension, on industry-wide issues like improving access to processing facilities. Mountain Meadow farm manager Brian Kemp and owner Amiel Cooper have hosted Extension workshops on the farm and participated in discussions with vendors, producers and processors. "Extension facilitates getting more and more people involved," Kemp says,



they needed. She then set up a lab with grant funding to do regionally specific tests on grain, and developed a wheat breeding program to help Vermont farmers grow varieties for optimal baking performance. “For an agronomist, Heather pays a great deal of attention to the final result,” George says. “She saw that the only way she could advise the farmers was to go to the end-user and find out what they wanted.”

The value added to that bread and its Vermont label is a direct result of the research, collaboration and support Extension specialists, educators, and staff all bring to Vermont food producers.



Profile:

Fat Toad Farm

Fat Toad Farm, a farm run by two generations in Brookfield Center, produces fresh goat cheese and a nationally acclaimed goats’ milk caramel that was included in the 2011 Emmy Awards gift bags.

The family has come a long way since they started milking four goats in their garage and sanitizing their equipment in a tub. Their successful journey has included what co-owner Judith Irving describes as “eye-opening” UVM Extension workshops on goat dairying, general business planning, and Web marketing. “If you’re going to be small, you have to be good at so many things,” Irving says.

Fat Toad is also involved in a regional co-operative of farms and food-related enterprises that has received funding from The Vermont Farm Women’s Fund, a source of financial support for women farmers that is coordinated by the Women’s Agricultural Network (WAgN).

which allows for dialogue and many points of view.

Learning on the Job

“I’ve been in this business my whole life and I’m constantly turning to Extension,” says Nick Cowles, owner and orchardist of the 60-acre Shelburne Orchards. Cowles depends on Extension alerts on apples and integrated pest management to help target and reduce his need to spray, and has also turned to Extension for advice on cultivating new crops like table grapes in his diversified orchard.

Extension maple specialists from Proctor Maple Research Center share findings with Vermont sugarmakers who, in turn, bring back valuable field information to advance issues like tap hole and tubing sanitation’s impact on sap yields. David Marvin, founder of Butternut

Mountain Farm, which distributes Vermont maple products worldwide, praises Extension’s “terrific history of information dissemination” through electronic newsletters, centralized websites, facilitated bulletin boards, discussion groups, and regular meetings.

Growing Vermont Grain

Creating and spreading knowledge has also helped reinvigorate Vermont’s grain-growing sector, which was anchored by a few intrepid farmers when the localvore movement took off in the early 2000s. Extension agronomist Heather Darby works with farmers to develop viable, consistent quality, food-grade grain businesses. Her Northwest Crops and Soils Program team provides testing and research on varieties, optimal growing practices, and processing of wheat, corn,

soy, oats, pearl barley, malting barley, and oilseed.

The Northern Grain Growers Association, which Darby helped found, brings farmers and processors together with food producers like tofu-makers and bakers to share their needs and knowledge. It is “a great tool for networking,” says Tom Kenyon of Aurora Farms in Charlotte and the Nitty Gritty Grain Company. Kenyon hopes his son David, 25, will take over the business and is working with Extension’s Farm Viability Program to figure out a transition plan. In the meantime, he continues to sell flour to local bakeries like Red Hen in Middlesex, where baker and co-owner Randy George got help through Darby to create a 100% Vermont-flour bread.

Darby pulled together bakers like George and Jeffrey Hamelman of King Arthur Flour to help her identify what

Smart Furnaces Extend Growing Seasons

By Mark Aiken

In 2004, UVM Extension Vegetable and Berry Specialist Vern Grubinger participated in *Climate Change and Agriculture* — a project that brought together internationally recognized experts to discuss climate change and how it relates to agriculture. “I came to the realization that renewable energy was a win-win-win situation for many farms,” says Grubinger, who began the grant-funded UVM Extension biomass furnace project in 2007 to help offset installation costs for alternative furnaces on 14 Vermont farms. “It’s a strategy for reducing fuel costs, controlling their volatility over time, and reducing greenhouse gas emissions,” he explains.

Paul Betz, owner of High Ledge Farm in Woodbury, Vt., is a grant recipient. When a 2009 failure in the propane heating system for his two greenhouses caused a fire that consumed all of the buildings on his farm, Betz turned to UVM Extension as he rebuilt greenhouses and installed heating systems using renewable fuels. “I had been interested in making a switch before everything happened,” says Betz. “Being forced to start from scratch gave me some flexibility.”

“I feel that the writing is on the wall in terms of energy use and that we all need to do a better job with how we spend it,” he says.

Like the other farmers who benefited from the project, Betz sees renewable energy as a viable option for expanding Vermont’s food-production opportunities.

Greenhouses on the Rise

Walk into the produce section of any supermarket at any time of year, and you find fruits and vegetables. This is what Vermont farmers have to compete with and confront when it comes to consumer expectations. Greenhouses enable Vermont food producers to push the limits of traditional growing seasons by offering more products, longer.



But extended growing seasons aren’t the only reason for raising crops in a controlled environment. Rain, wind, floods, insects and other factors can significantly affect the quality of crops grown in the elements.

Put a roof overhead and wind and heavy rain will no longer damage crops. A greenhouse environment also lets farmers introduce beneficial insects and control noxious ones, or install drip and mist watering technologies.

Smarter Heating Options

The key to a successful greenhouse is a consistent climate, which means turning on the heat. According to Grubinger’s findings, Vermont’s two million square feet of greenhouse space use 296,000 gallons of propane and 59,000 gallons of fuel oil per year. At a financial cost of \$768,000 and a carbon output equivalent of 6.2 million automobile miles traveled, the economic and environmental incentives to alternative energies are obvious.

“We are looking at energy resources and asking, for every unit of energy used

to make a fuel, how many units of energy do you get out of it?” Grubinger points to renewable biomass energy sources — wood and corn — as better alternatives to fossil fuels, which add carbon dioxide to the atmosphere when burned.

To date, the biomass furnace project has saved farmers money and benefited the environment. The shift to renewable energy saved participating farmers an average of \$2,589 on fuel per farm per year and provided an average payback in 3.4 years. Figures also show that 5.2 trillion BTUs of biomass energy were provided to 14 greenhouses, equivalent to 56,592 gallons of propane. The benefit for the environment? The total net carbon dioxide emissions avoided was estimated to be 110 tons.

Andy Jones of the Intervale Community Farm opted for a corn furnace, dubbed the LDJ Amaize-ing Furnace. Amazing? Jones won’t say that, but he will point out that the LDJ is full of potential, if a farmer is willing to work with the machine and give it TLC. “We couldn’t be happier with the system, and it has reduced our propane consumption

by about 80%, and since shell corn is cheaper than propane in terms of dollars per BTU, that’s cut our fuel costs in half.”

Worth the Investment

But that’s not the only value of this initiative. By working together in partnership, Grubinger and Extension are noting everything the farmers find, including whether there is a better way to install or use a particular system, what accessories work best, and each farmer’s recommendations for how to have better success with each furnace. “This is still an R-and-D project,” says Grubinger. “New ways of heating aren’t going to just drop out of the sky; we have to start somewhere.”

This partnership has created a learning community where participating farmers supply real world data, grant moneys come from several government agencies, and partners such as Chris Callahan of Callahan Engineering supply technical support and assistance to farmers and the project. “We have created a robust web of partnerships,” Grubinger says.

“Changing fuel prices change behaviors,” he adds, so it makes sense to do the research now, before farmers start scrambling for alternative energy sources in a crunch. “We have opened communication, and we have to keep talking.”

The farmers involved in the biomass furnace project put great effort into changing how they heat their greenhouses and in speaking about their experiences, proving there is more to renewable energy use than simple economics. In the end, Extension, its partners and these farmers are making the effort in order to keep Vermont farms viable, to grow fresh foods locally, and develop alternatives for maintaining a healthy planet.



Food and the Environment

By Mark Aiken

Times have changed since UVM Extension began 100 years ago. Back then, there were no tractors or commercial fertilizers. Farmers maintained their soil through grazing and crop rotations, and the fertilizer of the day was manure.

Vermont farms continue to fertilize with manure — a practice that is often misunderstood and raises concerns about the impacts of agriculture on the environment. All this has led to increased monitoring, improved application, technological advances like a smartphone application for nutrient management, and enhanced nutrient management plans. “There has been a general shift,” says Jeff Carter, who joined Extension 27 years ago. “We still ask how we can help farmers grow more and better crops, but there’s a much heavier emphasis on protecting water quality and the environment.”

A Working Relationship

Tony Pouliot, a farmer from Westford, sees UVM Extension as a collection of people who look out for Vermont farmers. “There is a difference between someone who does a job for a paycheck and people who really care,” Pouliot says. When it comes to Extension, “I’ve yet to come across someone who doesn’t *care*.”

In this partnership, Extension experts may ask a farmer to try something new in order to get feedback. Two years ago Extension agronomist Heather Darby approached Pouliot and suggested that he apply for a state grant for an AerWay machine that incorporates manure with minimal soil disturbance. Pouliot had never heard of an AerWay, nor was he aware of state monies.

“Working the soil immediately after applying manure helps soil retain the

nutrients” and reduces the risk of runoff in heavy rains, Darby explains.

“Just because farmers spread manure and then we have a heavy rain does not mean it washes into the lake,” says Darby. “In a well-managed field, the nutrients seep into the soil.”

Farmers as Environmentalists

“Agriculture is like any industry or business,” says Darby. Like many industries, farms comply with rules and regulations. For example, the state of Vermont requires farms to maintain buffer zones for fields adjacent to waterways. They must also document and follow a nutrient management plan, which helps farms apply appropriate amounts of manure or commercial fertilizers like phosphorus and nitrogen. These plans are updated with the state each year.

Darby sees a strong respect for the environment among farmers and offers two courses about soil health and creating nutrient management plans. “Digging In” is an introduction, while “Digging Deeper”

is for the more advanced.

The courses have dual purposes. First, they cover what farms can do to keep their soils healthy. Second, they cover how to avoid runoff by fertilizing properly and in the correct amounts. Nutrient and sediment runoff is the biggest environmental concern of farmers in Vermont, says Darby. “We want to keep nutrients in place,” she says. “We want them to stay in the soil and in the barnyard.” Since 2006, over a hundred Vermont farms have crafted nutrient management plans through this class, affecting over 20,000 acres of farmland.

While the development of such a plan doesn’t always result in a reduction in fertilizer use and may indicate that a field needs more fertilizer, Darby has had some class participants realize savings of \$25,000 or more.

“I can’t think of too many situations where environmental control and saving money don’t go hand in hand,” says Carter. It’s good news when environmentalism also makes good business sense.

An Extension “App” for That

Environmental friendliness and good economics are two pieces of the puzzle, but success comes with making the practices advocated by Extension easy enough to follow. In the case of nutrient management, the key is documentation and record-keeping. Twenty years ago, Carter led the way by installing GPS systems in tractors to minimize wasted fertilizer. Today Darby is developing the iCrop application for smart phones to help calculate yields and document manure applications.

“The drivers keep track of their daily loads,” Pouliot says. “Then I plug them into my iPhone.” The phone syncs with his computer at home, transfers the data, and lets Extension’s iCrop package do the calculations and update the records. It’s agriculture for 21st century Vermont.



Vermont's Next Generation of Growers

By Melissa Pasanen

At Green Mountain Girls Farm in Northfield on a chilly spring day, a huge red Tamworth sow lies patiently on her side while a half-dozen piglets jostle for space at her belly. Farm owners Mari Omland and Laura Olsen watch happily before moving on to show off the bare-earth hoop house that serves as winter shelter for the farm's laying flock and goat herd who, in turn, add nutrients to the soil that will soon be planted with vegetables. Their eggs, milk, and meat are just some of the bounty available to the farm's community supported-agriculture (CSA) share members and other customers of their well-stocked farmstand. Even in mid-spring, the shelves, cooler and freezer overflow with jars of pickles and salsa, sweet dried cherry tomatoes, containers of frozen pureed squash, bags of blanched greens, fresh milk, eggs, and meat.

Agriculture for the Future

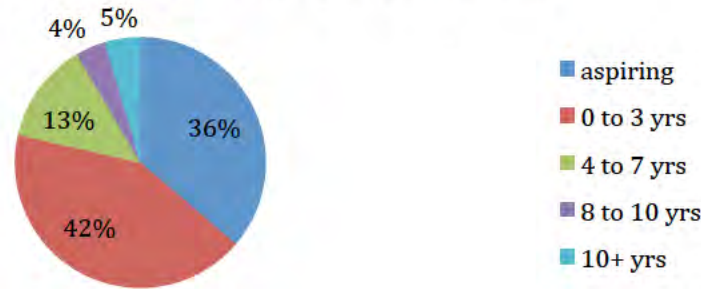
Like hundreds of aspiring farmers, Omland and Olsen turned to UVM Extension and found resources ranging from business planning, to pasture management, to animal husbandry. As their business developed, Omland and Olsen also took advantage of workshops on taxes and QuickBooks, as well as plant disease, and marketing for agri-tourism. "The breadth of what they offer is notable," Olsen says. "They really cover everything from production skills to the financials."

"We are growing the next generation of agriculture in this state," says Mary Peabody, UVM Extension specialist in Community Resources and Economic Development and director of the Women's Agricultural Network (WAgN), "and it won't look like agriculture has looked before." In 1994, Peabody obtained a



Snapshot of Vermont Farmers

*Based on UVM Extension's New Farmer list of November 2011



grant to research the different styles and needs of women farmers, which ultimately led her to develop WAgN, a collaborative effort between UVM Extension and the United States Department of Agriculture (USDA). WAgN is now a model for similar programs around New England.

As a direct result of the popularity and success rate of WAgN's introductory business courses, Extension helped start the New Farmer Project through UVM's Center for Sustainable Agriculture to help all new

farmers build successful businesses. New Farmer Project offerings include workshops, connections to marketing and financial experts and tools, and networking to share best practices.

Face of New Farmers

Farmers are considered "new" by the USDA for their first 10 years in business. In Vermont, 26% of the almost 7,000 farms have been in business for 10 years or less and contribute significantly to Vermont's agricultural landscape, selling 12% of the

state's total agriculture value

New farmers Lindsay Arbuckle and Scott Courcelle, both 28, are just starting their third season at Alchemy Gardens in West Rutland, where they grow herbs and vegetables sold mostly at the local farmers' market and a few retail locations. Between them, they have taken a variety of UVM Extension business planning and management courses through WAgN and the New Farmer Project. For specific technical advice, they also depend on UVM Extension vegetable experts, whom they praise for their accessibility and responsiveness. "I really don't know what we would have done without the help. It helped with everything from registering a trademark to taxes," says Arbuckle. "It also connected us with other local farmers to network and support each other. That's been really powerful."

WAgN's outreach education coordinator, Beth Holtzman, notes that the needs of new farmers are as diverse as the farmers themselves, but include certain fundamental building blocks like access to capital, land, and markets, financial and business management, marketing, and production skills to ensure their success.

"The best way to preserve our farms is to have them be profitable," Holtzman says. Just as there is no one path to learning, the team recognizes that not every farmer wants to grow big. "We help each person create a learning plan that will help them build a successful, sustainable business including how this farm and this business fit in with their life," says Jessie Schmidt of the New Farmer Project.



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