

# CHAMPLAIN VALLEY CROP, SOIL & PASTURE TEAM

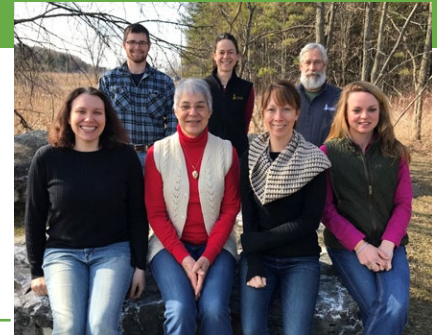


THE UNIVERSITY OF VERMONT  
**EXTENSION**

SPRING 2018

## In This Issue

- News & Events; Remembering Bob Parsons, pg 2
- Managing Agricultural Risk; Welcome, Rachel Orr, pg 3
- SMART Goals and Grants, pg 4
- The Things You Discover on Your Way to Discovery pg 5
- Nutrient Management is More Than Just a Plan, pg 6
- Spring Into No-Till Seedings, pg 7



## FOCUS ON AGRICULTURE

By Jeff Carter, UVM Extension Agronomist

### Changes for a New Year

Each year as we come out of winter, farmers are excited to see the first signs of spring. The normal cycle of new grass and planting crops means a renewal of life. I am impressed by the many farmers focused on moving ahead with major transitions in how they farm, investing in new practices to improve our soils, protect our many lakes and streams, and to provide food for many thousands of people. The farmer watershed organizations around the state are implementing new ideas to make Vermont agriculture stronger for the future. We also hope the momentum created with our annual No-Till and Cover Crop Symposium carries over into the spring – over 200 people attended!

It has been a tough year, but with the warmth of spring comes a strong urge to get out there and move ahead; we are all eager to get in the fields and to move ahead with projects. However, be patient and balance the need to “get going” with the problems created by driving on wet soils and turning cows out to pasture before adequate growth is there. Going out too early just sets growth back for the whole season. The strength of pasture is in the roots and how fast the plants regrow, not in how early cows can be turned out or how short they can chew the grass down. The real support for good crop yields is a healthy soil that is balanced for nutrients, and not compacted. Manure is a great thing for crops and soils, just be careful to keep it where the plant roots can get to that wonderful elixir.

This year has got to be better than last summer when the rains kept coming and ruining crops, and wholesale prices from milk, beef and even maple went down. The new state RAP rules for Act 64 have been put into full action to protect water quality. The farmers I meet are eager to improve and invest in their businesses, and to continue to providing low cost, local food for people. Yet farmers struggle to stay ahead of rising costs, decreasing income, and increasingly strong weather that seems to deal the final cards. We have seen a huge investment of public money this year, both federal and state, to help farms adopt new practices to protect our water and soil resources.

Not everyone will be on the same page, however; strength comes in numbers and in a diversity of ideas, so it remains critical for both farmers and the public to support a Vermont agriculture industry with all types of farming and related support businesses. You may hear the quotes about only one to two percent of the U.S. population is farmers, but in our area, farms of all kinds add hundreds of millions of dollars a year to the local economy and more than one in ten jobs is directly dependent on agriculture, the farms and the products they produce. That doesn't include recreation and tourism that indirectly benefits from the agricultural landscape.

In Vermont, there is currently a major transition going on with how farmers grow crops to protect both soil resources and water quality, by utilizing reduced tillage with no-till farming, cover crops, manure injection and improved pasture management. Farmers are shifting to these reduced tillage methods as a direct response to weather pattern changes that affect timeliness of planting and harvest operations. The new cropping systems are powerful methods to improve water quality, while also capturing solar energy and increasing soil organic matter, improving soil health and reducing greenhouse gasses (GHG) like nitrous oxide and carbon dioxide.

As we move ahead with excitement for a bright summer, I hope this year is kind to you and that we can continue increasing public support for the many different types of agriculture we have in Vermont.

Have a question for Jeff Carter?

802-388-4969 ext. 332 [jeff.carter@uvm.edu](mailto:jeff.carter@uvm.edu)



## NEWS, EVENTS & INFO YOU SHOULD KNOW

### Manure Spreading Ban Is Lifted

The annual manure spreading ban is Dec. 15 to April 1, OR Oct 15 to April 14 on mapped “frequently flooded soils”; please remember that even outside the ban dates, the RAPs dictate manure should not be spread on frozen, saturated or snow-covered ground. For questions about spreading call the Vermont Agency of Agriculture, Food and Markets (VAAFAM), (802) 828-2431.

### Required Agricultural Practices Pop Quiz

The Orleans County Natural Resources Conservation District has created an online course to give producers a way to obtain two hours of Water Quality Training Credits online, from home. Included are an outline of the RAPs, videos and photo examples of commonly misunderstood topics, info on how practices effect water quality, and links to resources. [www.vacd.org/rapquiz](http://www.vacd.org/rapquiz).

### What are “Water Quality Training Credits” anyway?

The RAPs require farmers (CSFO, MFO, LFO) to obtain FOUR hours of Water Quality Training Credits over the course of FIVE years. This requirement is easily fulfilled by attending a workshop or two that we offer. OR, you can be halfway there if you take the online quiz (above).

### Missed Our No-Till, Cover Crop Symposium?

Catch up on some of the presentations by visiting our site, [go.uvm.edu/ntcc](http://go.uvm.edu/ntcc), or view video teasers on our YouTube channel, [go.uvm.edu/cvcropsyoutube](http://go.uvm.edu/cvcropsyoutube). Save the Date for next year’s meeting, February 28, 2019.

### April 27: Cover Crop Demo and Research Field Day

10:30 a.m.-12:30 p.m. Hemingway Hill Rd., Shoreham, Vt. Come see our demonstration project looking at strips of winter wheat, barley, rye and triticale with and without oats. We will also be discussing the various research and demonstration projects we have in the area, including work with NRCS on watershed planning in McKenzie Brook and East Creek. Contact Nate Severy for more information 802-388-4969 ext. 348.

## FARMER, EDUCATOR, FRIEND

It is with great sadness that we pay tribute to longtime UVM Extension Agricultural Economist, Dr. Bob Parsons, who passed away recently. Bob wore many hats at UVM, including leading Vermont Farm Succession Program, managing the UVM Risk Management activities, teaching Agricultural Policy and Ethics, and overseeing research at UVM like the Organic-A apple research program. He sent regular UVM updates on milk production across the country and was an immense resource to farmers and other service providers alike. Watch the short video tribute from Across the Fence, [go.uvm.edu/bparsons-afence](http://go.uvm.edu/bparsons-afence).

Terry Bradshaw (Research Assistant Professor and Director of UVM Horticulture Research and Education Center) also wrote about Bob on his blog: [go.uvm.edu/bparsons-bradshaw](http://go.uvm.edu/bparsons-bradshaw).



Cheryl Dorschner photo

*Bob Parsons’ agricultural economics work spanned international boundaries, including Albania, Kenya and Zambia. (Above) He and his wife and fellow agricultural economist Grace Matiru, worked with farmers and students on dairy management, increased profitability and financial training.*

*(UVM College of Agriculture and Life Sciences)*

**UPDATES ON EVENTS & MORE  
SIGN UP FOR OUR E-NEWSLETTER AT  
[WWW.UVM.EDU/EXTENSION/CVCROPS](http://WWW.UVM.EDU/EXTENSION/CVCROPS)**

# MANAGING AGRICULTURAL RISK

By Jake Jacobs, Agricultural Risk Management & Crop Insurance Educator

Spring will be here soon, and this winter we've already had some glimpses of the weather to come. Now is a good time to update your farm business plan, including assessing how you will manage all the types of agricultural risk that can threaten your farm's viability.

Do you know the five types of risk that challenge every agricultural enterprise?

- **Production:** What will our crop yields be this year? How will environmental conditions impact production?
- **Marketing:** Will we be able to sell our crops for a fair price? What will we do if there is an unexpected market shift?
- **Financial:** How can we manage our debt load? What do we do about inflation or other economic variables?
- **Legal:** What are we liable for? What do we do if someone – worker, customer, visitor – is injured on the farm? Are there environmental risks?
- **Human Resource:** Who will do the work if I am unable to do so? How can we find and retain good employees?



Do you have plans in place that will minimize each of these risks? For production and marketing risks, consider crop insurance. There are more options available, including some that are particularly suited to the types of diversified

farming operations that are often seen in Vermont and the other New England states. The federal government subsidizes the cost of insurance premiums, but you should also find out if your farm qualifies for some of the special provisions. This includes waived registration fees for beginning farmers, additional premium assistance through the whole-farm premium subsidy for two or more qualifying commodities in the Whole Farm Revenue Planning (WFRP) policy, or opportunity to use prices that more accurately reflect

market values for organic production.

Your insurance agent can present all the insurance options and programs available for your farm. To find an agent licensed to sell crop insurance in Vermont, go to the RMA web site and click on the "Agent Locator": [www.rma.usda.gov/tools/agent.html](http://www.rma.usda.gov/tools/agent.html).



## WELCOME TO A NEW FACE AT EXTENSION

Welcome Rachel Orr to our team! She has a wealth of knowledge in dairy farming and the local community; we believe her experience will complement our team well:

Hi my name is Rachel Orr, and I was born and raised in Orwell, Vermont on a small dairy farm with my two siblings. We milked 100 cows and raised replacements until June of 2017. I attended Castleton State College where I studied molecular biology. I am very passionate about the dairy industry and evolving farm practices, and am particularly intrigued with milk quality, mastitis control and overall animal health and welfare. On the side, I raise goats, pigs, beef cows and meat chickens, in hopes of developing a local meat market.

Aside from farming, I enjoy hiking, gardening, riding horses, distance running and spending time with my family. As I take this next step working for UVM Extension, I hope to broaden my understanding of soil health and conservation practices while staying connected to the farming community. I will be working on a project that evaluates whole farm nutrient mass balance (NMB). This is calculated looking at the differences between nutrients imported and nutrients exported. The importance of whole-farm nutrient mass balances is an important tool for evaluating the viability of dairy farms, improving nutrient imbalances and complying with environmental regulations.



# SMART GOALS & GRANTS

By Cheryl Cesario, Grazing Outreach Professional



## Developing SMART Goals for Grazing

In the 1980's General Electric pioneered an approach for goal-setting to drive results. These SMART goals are now widely used in many industries and are as follows:

- **Specific:** Identify what you want to accomplish.
- **Measurable:** Set milestones to track progress.
- **Action-Oriented:** Start with an action verb that is directive.
- **Realistic:** Don't set the bar too low! A little bit of risk lets you rise to a challenge.
- **Time-Keyed:** A deadline or frequency to spur action.

Is this approach appropriate for grazing management? I think so. Written goals help us gain clarity on what we are trying to achieve and help us overcome resistance. Early spring is a great time to set goals. Who

isn't optimistic about the year ahead as things are greening up?

Here is an example of weak or non-descript goals: I want to (a) be a better grazer and (b) get more out of my pastures. These are vague and do not hit on the criteria outlined above. How can we turn these into SMART goals?

Here is an alternative set of statements: I want to (a) move cows daily to fresh pasture

that is at least 6 inches in height and increase recovery periods from 21 to 30 days starting in July; (b) obtain an average of 40% dry matter from pasture from May 15 to October 31; and (c) extend the grazing season by 30 days with increased recovery periods and stockpiled forage. You get the idea. Try to be as specific as you can and have a measurable result and timeframe for achieving it. You may need help or funding to get your goals onto the ground.



## How Can I Get a Grant?

Several grant opportunities for farmers are available to help address both water quality issues and general farm improvement. These include the **Dairy Improvement** grants through the Vermont Housing and Conservation Board (VHCB) and Commonwealth Dairy, and the **Water Quality and the Capital Equipment Assistance Program (CEAP)** grants through the VAAFM.

VAAFM is also offering the **Best Management Practice (BMP)** program as well as the **Farm Agronomic Practices (FAP)** program, which can provide funding for structural or field-based practices. While these are all great opportunities, it can be a bit overwhelming to navigate the various programs and what they offer. Additionally, while some programs may only require a short application form, others such as the Dairy Improvement grant requires a full project description, current financial information, and a recently completed business plan. If you would like assistance figuring out which program might benefit your farm, we can help. While deadlines for the Water Quality and Dairy Improvement grants just passed, it is highly likely they will be offered again. Now is the time to start thinking about your project ideas and budget. We can help you pull together the items needed for a grant proposal, but don't wait until the last minute! A well-written proposal is more likely to get funded, so please plan ahead.

## The National Dairy Farm Program

Many of you are likely aware of the national Farmers Assuring Responsible Management (FARM) program, which is an industry-wide animal welfare program created by the National Milk Producers Federation in 2009. Most major buyers/haulers in Vt. have now adopted this program, including AgriMark, DFA, St. Albans Co-op, Organic Valley/CROPP, Horizon Organic and Stonyfield.

Farmers are subject to inspections (called "second-party evaluations") to review animal care practices based on FARM Program guidelines. Based on this inspection, farmers may be required to develop a plan to improve their management and come into compliance with the guidelines. The FARM Animal Care Manual covers calf management, nutrition, herd health, hygiene, body condition scoring, hock lesions, facilities, handling procedures and more. Find the manual at [www.nationaldairyfarm.com/sites/default/files/Version-3-Manual.pdf](http://www.nationaldairyfarm.com/sites/default/files/Version-3-Manual.pdf).

We have heard from farmers who have recently for the first time been inspected based on these guidelines and have felt unprepared for the documentation that is required. We are looking into how we can help farmers prepare for these inspections, by having the appropriate records and documentation in place. If you need help navigating FARM, please give our office a call.

If you need assistance with grazing goals, grant writing or FARM compliance, contact [cheryl.cesario@uvm.edu](mailto:cheryl.cesario@uvm.edu) 803-388-4969 ext. 346.

# THE THINGS YOU DISCOVER ON YOUR WAY TO DISCOVERY

By Kristin Williams, Agronomy Outreach Professional

Our gypsum project hit a few roadblocks in 2017 with a delayed start date, unpredictable soil results, wet weather, delayed corn silage harvesting, rutted fields and late or no cover crop plantings. Let's just say things didn't go exactly as planned. All of these things complicated our analysis, but we were able to get a year of results. We also learned a couple important lessons that apply to farming and research projects in general.

## Results Thus Far

The original objective was to use gypsum amendments in high-test P fields as a way of managing phosphorus, while also improving soil health and yield. We soil sampled and then applied amendments on two farmer's fields in sod. This was tilled in and corn silage was planted. We estimated corn populations and yield and soil sampled again in the fall. We had four treatments: fluegas gypsum, "Black Ag" gypsum, mined gypsum and a control plot (rates based upon product recommendations). We sampled the soil at 3 depths and each treatment was replicated 4 times on each farm field. Unfortunately, the first-year results showed no significant differences in corn population or yield by treatment. Neither did the results show any significant differences in available or reserve soil test phosphorus by treatment (all definitions of "significant difference" are based on  $\alpha=0.1$ ).

## Lesson Learned

The first obstacle we ran into turned into an important lesson, though we probably should have known better. We relied on soil tests from the farmer's NMP to

determine what fields to study. However, we did not think about how field variability would affect where the phosphorus actually was! One field we chose seemed ideal during planning, but it turns out it was not ideal based on soil test irregularity. We got the first soil test results back after we had begun the project, only to realize the soil in that corner of the field was very low in soil test phosphorus (P). In fact, looking at the field we discovered one section of the field was very high in P, which gradually decreased as you moved across the field. And the lowest P was where we chose to do our replicated trial.

Oops. Why was this the case? Most likely there were historic applications of manure, or a manure stack, on the section of the field closest to the road, being easy to spread on. Applying this knowledge, we looked at adding another field to the study. We pre-sampled a field that was supposed to be high in P at a nearby farm and discovered the same problem! The result came back low. Then we used some basic sleuthing, and realized the field had multiple soil types. In this case, it wasn't the closest part of the field that was higher in P, it was the further half of the field, that had a different



soil type. Soil type, not history, was playing a role in soil P. We found two fields originally tested with "high P" that for different reasons were not consistently "high P" across the entire field.

## The Big Take-Away

We know that fields are not uniform, and soils can vary greatly within small distances. When we have a field that is high in soil test P, it is probably worth the small effort and time to break that field into sections based on management, landscape and soil type, and test them separately. If results come back consistent, manage it as one field, but if they come back drastically different, that means you should manage them separately. Now, I know that isn't always realistic, but from a nutrient and yield point of view, if half your field is actually low in phosphorus, wouldn't you want to know that?

## More Results to Come

We have another year of our project to measure soil nutrients, corn silage, cover crops and soil health tests before we come to our final conclusions about gypsum amendments, and more reporting to come. Stay tuned for part 2 where I describe the other lesson we learned that does not have to do with gypsum.



(Left) Measuring corn silage yields on gypsum plots.



## NUTRIENT MANAGEMENT IS MORE THAN JUST A PLAN

By Kirsten Workman, Agronomy Outreach Professional

As spring begins, so does manure spreading in fields across Vermont. While many of our neighbors will notice the manure trucks becoming part of their commute once again, they might not realize just how valuable manure is or how much thought goes into every spreader load of it. Manure contains valuable nutrients and organic matter to feed crops; manure spreading requires a lot of science and decision-making.

We spent all winter with farmers working on Nutrient Management Plans (NMPs). Dozens of farmers across Vermont spent six weeks with UVM Extension and Conservation District staff meticulously planning every gallon on every field. Dozens more came in to update their plans – organizing and inputting their records from 2017 and making any necessary changes to their plans for the 2018 crop year. The simplest way to explain an NMP is that we test the soil, test the manure, figure out how much the crop needs to grow and then make sure it all balances – ensuring a healthy crop while minimizing runoff. An NMP is a complex binder full of maps, calculations and decisions.

One of the most important tools we use in preparing a nutrient management plan is the Phosphorus Index (P-Index). The P-Index is a comprehensive risk assessment tool that analyzes the details for each individual field and then figures out the possible risk of that field's phosphorus loss to surface water. A new version of the P-Index was released in 2018, calculating ratings for dissolved P loss in surface runoff, sediment-bound P Loss, and subsurface loss from tile drainage.

The P-Index analyzes a suite of factors and outputs a score with a rating of low, medium, high or very high. Fields with low and medium risk can be managed according to the nitrogen need for the crop, while fields with high risk

are limited to University recommendations or crop removal. Fields with a very high risk have applications prohibited until the P-Index goes down. The P-Index is designed so that a field with a high or very high rating can be recalculated with different plans and lowered to reduce risk. This feature makes it an important planning tool for farmers.

One higher risk situation in the Champlain Valley is manure applied on the surface of hay fields. Even though erosion is low in a perennial hay field, when manure is applied on the surface it can be prone to dissolved phosphorus loss in surface runoff. This is a big challenge, because there has not been a good alternative to get manure below the surface in a hay field without damaging the crop or causing erosion. Aeration toolbars are a first step, but they still leave a substantial portion of the manure on the surface. Thanks to funding from the VAAFM Clear Water Fund, we were able to purchase a brand-new grassland injector from Holland designed to truly inject liquid dairy manure in grass and legume crops. This is exciting new technology! When comparing a theoretical hay field in Addison County with moderate applications of manure after two cuts of hay in the summer, the difference between surface applications versus injection led to a change in the P-Index from high to low! [See table.] We will be using this equipment this spring and will report on how it works, and host field days showing it in action.



Nutrient management is a complex process, but one that can be worth it for both the farm and the environment if done well and implemented effectively. The goal is to have thoughtful planning, resulting in sound farm management, and healthy and productive cropland.

Field Name	Hay-Surface Applied Manure	Hay-Injected Manure
P Index	82	14
Interpretation	High	Low
Pathway I: Sediment-bound P	12	5
Pathway II: Dissolved P in surface runoff	54	6
Pathway III: Subsurface loss of dissolved and sediment-bound P	15	2

(Above) P-Index ratings assuming a medium soil test phosphorus, Vergennes clay soil, 5000 gallons/acre dairy manure applied twice during the summer, tile drainage present, with a 25-foot buffer along a stream. (Above, left) By injecting manure with our new Veenhuis grassland injector, we reduce phosphorus loss.

## VERMONT P-INDEX

Some of the factors the P-Index utilizes are inherent to the field, such as:

- Soil type
- Elevation
- Rainfall
- Slope and slope length
- Distance to surface water
- Soil test phosphorus

Some are management decisions made by the farmer or are inherent to the farm:

- Manure type
- Amount of phosphorus being applied in manure and fertilizer
- Timing of phosphorus applications
- Incorporation method of manure/fertilizer
- Erosion based on crop rotations and field management (tillage) calculated on an annual basis
- Presence of tile drainage
- Presence of spring vegetation
- Vegetative buffer width and/or manure spreading setbacks

## Resources

**Vermont's P-Index & Nutrient Recommendations for Field Crops in Vermont:** [go.uvm.edu/vt-p-index](http://go.uvm.edu/vt-p-index)

**goCrop:** [www.gocrop.com](http://www.gocrop.com)

**CVCrops Soil Health and Nutrient Management Resources:** [go.uvm.edu/soil-health](http://go.uvm.edu/soil-health)

# SPRING INTO NO-TILL SEEDINGS

By Nate Severy, Agronomy Outreach Professional

Spring is upon us, and that means farmers are getting ready to head out to the fields if they haven't already been out frost seeding. Using a no-till drill for new hay crop seedings is another method that can be very successful. There are several options including custom operators, or borrowing a no-till drill from UVM or your local conservation district.

## Seedbed Preparation

We often get questions from farmers asking about the best way to plant new hay seedings and how to do it with minimum tillage. The key drivers for successful no-till new seedings are the same as conventional seedings:

1. Have a soil test and apply nutrients to meet your crop needs.
2. Create a smooth, firm and slightly moist seedbed with seeds planted  $\frac{1}{4}$  to  $\frac{1}{2}$  of an inch deep.
3. Select a seed mix that includes several different species and varieties that can tolerate our frigid and icy winters.

We like to see a nurse crop with new seedings as it greatly reduces erosion, protects seedlings and reduces weed pressure. Oats or barley at 1-1.5 bushels/acre can provide high quality forage if harvested at boot stage. Italian ryegrass at just 2-3 lbs/acre is also great. When going no-till, you would apply nutrients and prepare the seedbed the previous fall when you plant your cover crop. In true no-till, you would avoid working the ground and would also apply your cover crop using no-till. However, you may need some tillage to create a flat, well-made seedbed (firm, fine-tillth, free of clods and ruts) for both the cover crop and the subsequent hay



crop. With this no-till system, instead of planting the nurse crop with the new seeding, you plant the nurse crop in the fall as a cover crop, and then plant the new seeding into the cover crop in the spring. Just like for planting corn, the optimum planting soil moisture is the same for no-till and conventional hay seedings. We have seen that legumes like alfalfa and clover do very well when properly planted no-till. Grasses also do fine but seem to take longer to establish than when planted conventionally. It is possible that we are seeing a slight allelopathic effect from winter rye, and planting winter wheat instead might address this issue. While

no-tilling new seedings may seem intimidating, if you approach it with the same dedication and effort as with conventional seedings it can be economical, provide large labor-savings, and be environmentally sound.

## Spring Field Day for Cover Crops

Jeff requested that we explore more alternatives to winter rye cover crops. In our past cover crop trials we tried mixes with winter wheat and triticale, but found winter rye to be more consistent. We also tried various ratios of oats with winter rye. However, farmers have been asking for a cover crop that still overwinters but doesn't accumulate as much biomass as winter rye does as quickly in the spring. Last fall we planted winter rye, winter triticale, winter wheat and winter barley in side-by-side demonstration plots at two locations in Shoreham. We are hoping to have a spring event looking at these plots. This will be a good winter to see how they stood up. Stay tuned via email, or give Nate a call if you would like to know more about this field day: [nsevery@uvm.edu](mailto:nsevery@uvm.edu), 802-388-4969 ext. 348.

(Below) Cover crop growing in early spring.

## DID YOU KNOW?

Farmers in Vermont manage about 1,250,000 acres of land, impacting 20 percent of the total land in the state. About half of that land is in active crop production including nearly 100,000 acres of corn, soybeans, cereal grains and vegetables; 338,000 acres of hay for livestock feed and biomass crops for bedding and mulch; 139,000 acres of permanent pasture. The rest is over 500,000 acres of farmer woodlots plus farmsteads and undeveloped land (USDA NASS, 2016).

In 2016, a total of \$776 M of all agriculture products were sold including \$505 M from milk sales. Add the income from related value-added products and support industries and this is a substantial part of the Vermont economy.



23 Pond Lane, Suite 300  
Middlebury, VT 05753

Non-Profit Org.  
U.S. Postage  
**PAID**  
Burlington, VT  
Permit No. 143

## CHAMPLAIN VALLEY CROP, SOIL & PASTURE TEAM



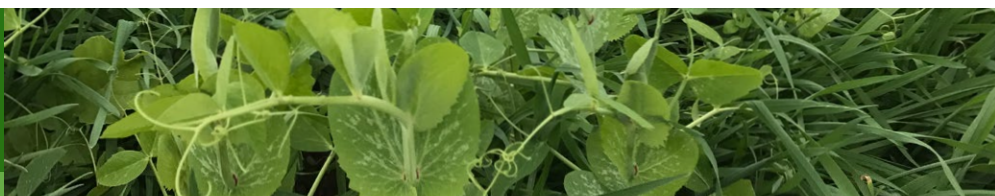
Middlebury, VT  
802-388-4969 • 800-956-1125  
[cvcrops@uvm.edu](mailto:cvcrops@uvm.edu)  
[www.uvm.edu/extension/cvcrops](http://www.uvm.edu/extension/cvcrops)

**Project Leader**  
Jeff Carter, Agronomist

**Agronomy Outreach**  
Cheryl Cesario  
Rachel Orr  
Nate Severy  
Kristin Williams  
Kirsten Workman

**Administration**  
Karen Gallott

*If you would like to make a donation to  
SUPPORT THIS PUBLICATION & OUR RESEARCH:  
[go.uvm.edu/donate-extension](http://go.uvm.edu/donate-extension)*



**UPDATES ON EVENTS & MORE INFO**  
**SIGN UP FOR OUR E-NEWSLETTER AT**  
**[WWW.UVM.EDU/EXTENSION/CVCROPS](http://WWW.UVM.EDU/EXTENSION/CVCROPS)**

**UVM Extension is grateful to our supporters and funders:**



*Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the United States Department of Agriculture. University of Vermont Extension, Burlington, Vermont. University of Vermont Extension, and U.S. Department of Agriculture, cooperating, offer education and employment to everyone without regard to race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, and marital or familial status. Any reference to commercial products, trade names, or brand names is for information only, and no endorsement or approval is intended.*

*USDA is an equal opportunity provider and employer. This material is funded in part by a partnership with USDA, Risk Management Agency, under award number RM17RMETS524005.*