

# CHAMPLAIN VALLEY CROP, SOIL & PASTURE TEAM

THE UNIVERSITY OF VERMONT  
**EXTENSION**  
SPRING 2021

## In This Issue

- Focus on Agriculture, pg 1
- News Events and Info You Should Know, pg 2
- Keeping the Nitrogen in Manure, pg 3
- Adaptability in Grazing Leads to Economic Returns, pgs 4-5
- Planting Food Plots for Wildlife, pg 6
- Planting Forest Buffers for Water Quality in the Lake Champlain Basin, pg 7



## FOCUS ON AGRICULTURE

*By Kirsten Workman, Agronomy Specialist*

With the shift from winter to spring comes new perspectives. For me, I find this change from winter to spring in Vermont is the toughest of the seasonal transitions. It always feels like a bit of a fight when both the landscape and my psyche are so ready to green up. The weather has a harder time letting go, until the cold wind and snow succumbs to the reality of spring. As the snow melts, it leaves us with the sense of seeing things we've seen a million times, but with new eyes and a fresh perspective. We knew it was under there all along, but it was hidden under snow and ice for so long, we forgot what it looked like.

The last twelve months have amplified this feeling for certain. As we emerge from COVID restrictions and begin resuming "normal" life, we are finding there are so many things we forgot were under there. Some things will be easy to resurrect, while others will never be the same. That said, at UVM Extension we look forward to a busy field season where we get to see your actual faces and learn from each other once again.

In this newsletter, you'll get to hear lots of fresh perspectives. **Jeff Carter** shares work from his sabbatical, looking at good fertility practices for wildlife food plots. He refines nutrient recommendations for specific crops like brassicas and forbs with the same agronomy expertise you use for your corn and hay crops. **Alison Adams**, the UVM watershed forestry coordinator, reminds us of the important role that your riparian buffers play in water quality. **Cheryl Cesario** shares the experience of a new grazer and the important lessons he learned as his journey to grazing has become a new way of production on the Cleveland's 80-cow dairy farm in Pawlet. It wouldn't be spring without the resumption of field work, and especially the application of livestock manure to provide

nutrients to our 2021 crops. In my article, I take a moment to look at how best to maximize the nitrogen of those manure applications to ensure a good crop and reduce nutrient loss. So, as we all emerge from winter to spring, I encourage you to look at things in a new way with your own renewed perspective.



# NEWS, EVENTS & INFO YOU SHOULD KNOW

## HELP US HELP YOU - WE NEED YOUR INPUT!

All of our work, including the publication of this newsletter, is grant funded. We need to demonstrate impact to keep our grants going, which means establishing that our work matters to you! Please help us by filling out a VERY SHORT 3-question survey at [go.uvm.edu/cvcropssurvey](https://go.uvm.edu/cvcropssurvey).

## SIGN UP FOR NEW PRIORITY EQIP PRACTICES

The [Vermont Natural Resource Service](#) (NRCS) has announced a top ten “high-priority” list of [Environmental Quality Incentives Program](#) (EQIP) practices. These practices are important for conservation and may be underutilized as well. These practices will be incentivized at a 90% cost payment rate, and include multispecies cover crops, reduced tillage, pasture/hay seed down, and nutrient management with manure injection. The list also includes riparian forest buffers, and on page 7 you can read more about them. For the entire list of practices see our blog post at [go.uvm.edu/eqip10](https://go.uvm.edu/eqip10) and contact your local NRCS office to apply. In Addison County, contact the Middlebury office at 802-388-6748.

## AGRICULTURAL RISK MANAGEMENT UPDATES

In January 2021, USDA reported that nearly three-quarters of all U.S. dairy operations with established production history are enrolled in the Dairy Margin Coverage (DMC) program for the 2021 program year. DMC paid out more than \$500 million in program benefits to dairy operations enrolled in calendar years 2019 and 2020. Approximately 3,000 operations purchased additional protection under the Dairy Revenue Protection (DRP) program, which covers 30% of the milk supply and has provided more than \$400 million in payments to covered operations since 2019. Additionally, approximately 200 producers purchased coverage through the Livestock Gross Margin (LGM) program. DMC is administered by the USDA Farm Service Agency and producers can enroll through their [local FSA offices](#). DRP and LGM are administered by the USDA Risk Management Agency and farmers can sign up through their [crop insurance](#). Contact your local FSA office in Middlebury at 802-388-6748.

## SIGN UP NOW FOR A FARM MANAGEMENT TEAM!

These teams help farmers with planning and problem solving. Participating producers select their own team of advisors and, working with a trained facilitator, the group collectively develops recommendations and potential solutions to address management priorities identified by the farmer. The program is offered free of charge to Vermont farms by the [UVM Agricultural Risk Management](#) program and you can apply at [go.uvm.edu/farmteam](https://go.uvm.edu/farmteam) or by contacting Jake Jacobs at [jake.jacobs@uvm.edu](mailto:jake.jacobs@uvm.edu) or 802-656-7356.

## KRISTIN WILLIAMS IS MOVING AND STILL WORKING WITH OUR TEAM!

Kristin is relocating to the other side of the state and back to her family farm where she grew up. She will continue to contribute to Champlain Valley Crop, Soil and Pasture team grant projects, including her role as the editor of this newsletter. Much of her work is accomplished remotely, though her office will be relocated to St. Johnsbury, Vt. and future funding efforts will evolve as she transitions to the Connecticut River Valley.

**UPDATES ON EVENTS & MORE**  
**SIGN UP FOR OUR E-NEWSLETTER AT**  
**[WWW.UVM.EDU/EXTENSION/CVCROPS](https://www.uvm.edu/extension/cvcrops)**

**SCAN THE QR CODE TO TAKE  
OUR NEWSLETTER SURVEY**



United States  
Department of  
Agriculture

National Institute  
of Food and  
Agriculture

*Funding for Agricultural Risk Management Outreach provided by USDA/NIFA. This material is based upon work supported by USDA/NIFA under Award Number 2018-70027-28584. USDA and the University of Vermont are equal opportunity providers and employers.*

# KEEPING THE NITROGEN IN MANURE

By Kirsten Workman, Agronomy Specialist

While manure often gets a bad rap, it gives farmers who raise livestock a valuable resource to meet the nutrient needs of crops and supplies organic matter to the soil in a way unmatched by commercial fertilizers. Utilizing manure effectively maximizes fertility, reduces runoff, and economizes spreading costs. Manure's nutrient content varies with on multiple factors such as moisture, livestock, bedding, storage and feeding strategies. You should analyze manure annually to value these nutrients, including nitrogen (N).

Nitrogen in manure comes in two forms: organic and inorganic. The organic is a slow release N, broken down by soil organisms into plant-available forms, a process called mineralization. Most mineralization happens in the first year of manure application, and will continue slowly for one or more additional years. The inorganic portion (expressed as ammonium-N or  $\text{NH}_4^+$  on your test results) is readily plant available, acting like a fertilizer application. Like fertilizer, it can be prone to losses. Liquid manure has much more readily available N, meaning it has the benefit of being available but also must be managed accordingly. Well-timed and incorporated manure optimizes N for your crop and minimizes losses, both to the air and water.

## Timing

Spreading manure on living plants is the simplest way to retain available N. Spreading in the fall instead of spring can drop the amount of N available to a crop by as much as 55%, depending on dry matter content and incorporation. Manure applied in the fall has far more opportunity for loss before utilization, than manure applied in May. Volatization (loss to the air), leaching and runoff are all more likely to occur when applying on bare soil between annual crops, or even when hay/pasture is dormant, particularly with rain and snowmelt. This is not only an environmental issue, but also a farm profitability issue. Purchased nitrogen is a significant cost, so the more efficient use of manure the better.

## Incorporation

Getting manure below the soil surface and into the root zone is key to retaining N. The longer the delay in time between application and incorporation, the greater the loss of ammonia volatization ( $\text{NH}_3^+$ ). There are several ways to incorporate, but timing is critical. Incorporation methods include tillage, injection with specialized equipment, and even gentle rainfall (as long as it does not cause runoff).

Other considerations for retaining nitrogen from manure include high soil organic matter and cation exchange capacity, both the pH of soil and manure below 7, little or no wind, cool temperatures (but not frozen soils), moist but not saturated soils, and applying to a living crop including a cover crop. This chart illustrates the relationship between broadcast, incorporation, and nutrient loss:

### Highest Loss

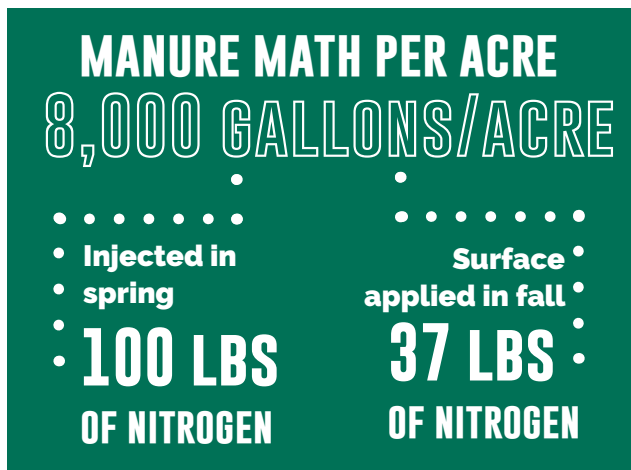


- Broadcast on surface without incorporation
- Broadcast, incorporation 1 to 7 days after application
- Broadcast, incorporation < 24 hours after application
- Immediate incorporation or injection

### Lowest Loss

### Manure Math

Using the book value<sup>1</sup> for liquid dairy manure  
8,000 gallons applied in the spring, immediate incorporation  
= 100 lbs. of available N  
8,000 gallons applied in the fall with no incorporation  
= 37 lbs. of available N for your crop



1 See "Nutrient Recommendations for Field Crops in Vermont" (<http://go.uvm.edu/nutrecs>; PDF, revised 2018, University of Vermont). Book values for manure are on page 24, Tables 15 and 16. Manure N availability changes with timing and incorporation are on page 25, Tables 17 and 18. Additional "nutrient management" resources and citations can be found on our blog ([blog.uvm.edu/cvcrops](http://blog.uvm.edu/cvcrops)).

Need to test your manure? Visit the UVM Agricultural and Environmental Testing lab website ([http://pss.uvm.edu/ag\\_testing](http://pss.uvm.edu/ag_testing)) for forms and sampling instructions. You can also call us at 802-388-4969 if you would like a manure jar sampling kit. Kits will be left in a box outside our office doors and can be resubmitted there. You must let us know ahead of time when you plan to drop it off because manure samples have to be frozen in a timely manner to retain N content. The best time to sample manure is at or near spreading.

# ADAPTABILITY IN GRAZING LEADS TO ECONOMIC RETURNS

By Chery Cesario, Grazing Outreach Professional



When I first met Scott Cleveland in 2018, he was getting ready to seed down 65 acres of his best corn ground. He had also just signed an NRCS contract to install the necessary infrastructure to implement a rotational grazing system on these newly seeded fields. The farm is in Pawlet, in the Mettawee Valley, where the soil produces some of the greatest corn crop yields in the state, so I was intrigued about his motivation for doing this. His answer was simple: if he could grow great corn here, he knew he could also grow the best pasture crop for his cows.

Cleveland Farms was established in 1985 and has been at its current location since 1994. Scott and his wife Traci run the farm together, along with their eldest son Justin who is on the farm full-time. The milk from their 80 milking cows is shipped to AgriMark/Cabot. Scott's main motivation for this transition was to reduce feed costs and thereby improve the economics of milk production.

**“ONE OF THE HARDEST THINGS WAS TO LEAVE THE RESIDUAL. IT'S HARD TO CHANGE THAT MENTALITY. IT'S NOT LIKE A LAWN. I WAS AMAZED AT THE RECOVERY.”**

However, he had some initial hesitations: “I was worried it was going to be too time consuming and that we weren't going to gain enough benefits from it.”

By September 2019, Scott had installed all the fence, laneways and water system as

outlined in his contract, and I went to visit him to see the finished results. As we stood there looking at his fields and admiring his achievement, he laughed and said, “So now what happens?”

They say the journey of a thousand miles begins with one step, but that first step can be the most difficult. Scott told me it was critical that he get this right. He didn't have room for error. As a jumping off point, we roughly measured out paddock sizes and discussed where polywire subdivisions might go. However, the key to success was going to be leaving at least a 4-inch post-grazing residual height, as well as maintaining adequate recovery periods between grazings. These two things are critical in preventing overgrazing damage and keeping the pasture yields productive.

A lot of farmers who transition to grazing feel like they are “wasting feed” when the cows don't mow the field down like a hay mower would. However, pushing the cows to do so can be a recipe for disaster. Scott said, “One of the hardest things was to leave the residual. It's hard to change that mentality. It's not like a lawn. I was amazed at the recovery.” Those two months of grazing at the end of 2019 gave Scott the confidence to move into the 2020 season full steam ahead.

Last year brought challenges of course, and at one point, like many dairy farmers, Scott was dumping milk and trying not to overproduce. However, his successes with grazing have been phenomenal, especially for someone in their first full year adapting to a new management system.

## SCOTT ESTIMATES \$34,000 IN STORED FEED COSTS OVER A 25-WEEK PERIOD AND A RETURN ON HIS INVESTMENT BY NEXT GRAZING SEASON.

By comparing Scott's rations during the grazing and non-grazing seasons, we were able to determine that his herd was obtaining 64% of their daily dry matter intake (DMI) from pasture during May, June, August, September and well into October. In July, the dry weather conditions really slowed down pasture growth. Scott adapted accordingly by utilizing a hilltop pasture as a sacrifice area and increasing his stored feed ration, while decreasing pasture intake to 28% DMI. This shift was critical in preserving pasture forage yields for the remainder of the season.

Through all of this, he maintained average milk production at 65 pounds per cow. Based on current rates, we estimated the dollar savings per week of each feed type (grain, corn silage, haylage and baleage). In every month but July, Scott saved an estimated \$1,570 per week by having his cows harvest their own feed on pasture. In July, that savings dropped to \$644 per week. There is no doubt that if he hadn't adjusted the ration during the driest part of the summer, his overall savings would have been drastically reduced. In total, we estimated a \$34,000 savings in stored feed costs over a 25-week period. Savings were also realized in animal healthcare-related expenses, particularly with hoof health. Based on this, he anticipates a return on his initial infrastructure investment early this coming season. His words speak volumes, "I'm very pleased with how this went. I should have done this ten years ago."

What's Scott's vision moving forward? He says he's thinking about introducing more Shorthorn or Jersey genetics into his herd for their compatibility with his new system. He's also looking at his farm in a new way, thinking of where else he could be grazing: "The more you have fenced, the more options you have." Then



*Scott and Traci Cleveland are cohort participants in the Northeast Dairy Business Innovation Center funded grazing transition pilot program.*

he'd have the flexibility to crop or graze every field in proximity to his barn. Grazing the cover crops on his corn fields is another goal, which could provide a few additional weeks on pasture

**"I SHOULD HAVE DONE THIS TEN YEARS AGO."**

and add to the above totals. It's clear grazing has added value, and as Scott summarizes, "It's worth the effort."

Find out more about the Northeast Dairy Business Innovation Center through the Vermont Agency of Agriculture, Food and Markets at <https://agriculture.vermont.gov/dbic>.





## PLANTING FOOD PLOTS FOR WILDLIFE

By Jeff Carter, Agronomy Specialist

There are many wildlife food plots planted across Vermont, usually small plantings of one-quarter to a couple of acres at the edge of an overgrown meadow, beside a corn field, or in an opening deep in the woods.

The steps to success with new food plots is the same as breaking new ground to farm vegetable crops, or establishing a new pasture for livestock. The difference is in the types of plants grown and the lack of control over foraging deer, turkeys and bears alike. There are no plastic fences here, just free-range wildlife coming for a high-quality feeding for themselves and their young. Not only is the food important, but also the improved low height habitat cover for turkey poults and fawns as they hazard this new life fraught with predators and other perils.

Successful plantings can be delayed from early spring, and instead planted in July after field preparations in June. Summer plantings could be brassicas including kale, rape, turnip, rutabagas (swede), and radish and mixes of chicory, clover, alfalfa and oats. Many new seedlings are better off planted in early August to avoid the spring flush

of weeds that commonly overpower earlier plantings. Oats, planted at 30 lb/ac (maximum), protect young seedlings as a nurse crop, and provide excellent feed in early fall before brassicas are ready. I like clovers and brassicas side-by-side, not mixed.

Take your time developing your plot. Take a new soil test and prepare the soil correctly. Lime may take time, as they say, but even within one year you can see results. In my own plot

I applied lime in early June, mixed it with the soil, and the pH changed from a dismal 5.6 up to 6.9 when I tested again in November. Time and effort lugging bags of lime to spread 3 tons per acre manually was well worth the effort. Those plots grew excellent last year into the late fall. Then I over-seeded everything with winter wheat and rye to protect the soil through the winter, and to provide some early spring green-up feed for wildlife recovery after a long, hard winter.

Investing time last spring to shape and finish the fields, remove rocks and debris, add lime and fertility, and roll and plant properly, means that I will not have to plow or disc this field again. Once the soil is prepared and pH corrected, moving to a no-till system of relay interseeding different crops will provide fresh forage as the brassicas, cereal grains, buckwheat, clover and chicory all grow in sequence. This system means the ground is covered in continuous green vegetation and includes a rotation of forbs, cereal grain and legumes to maintain soil health.

### New UVM Recommendations for Wildlife Food Plots

Food plot crops are very popular with landowners and there are many different mixes of seed offered. Crops like brassicas, sugar beets, small burnet, and cowpeas are not very common options for University lab recommendations, which are often focused on local agricultural forage production. However, I have worked with the UVM Agricultural Testing Lab (AETL) and drafted a new set of fertilizer recommendations for wildlife food plots associated with your soil tests. Starting this year, AETL can provide additional guidance. [go.uvm.edu/wildlifefoodplots](http://go.uvm.edu/wildlifefoodplots)



# PLANTING FOREST BUFFERS FOR WATER QUALITY IN THE LAKE CHAMPLAIN BASIN

By Alison Adams, Watershed Forestry Coordinator,  
Lake Champlain Sea Grant Program

On a hot, sunny day in July 2020, I waded through neck-high reed canary grass and poison parsnip on a Franklin County dairy farm. I followed Ben Gabos and Phil Wilson, who work on the USDA Conservation

Reserve Enhancement Program (CREP) in Vermont, and Katie Kain, a Fish and Wildlife Biologist with the U.S. Fish and Wildlife Service. CREP is implemented through the Vermont Agency of Agriculture, Food and Markets (VAAF) as an enhancement to the NRCS CRP (Conservation Reserve Program) program. We were checking on a riparian forest restoration project started in 2014. We walked among planted trees removing plastic marking tape, and noted which trees were faring well, struggling, or had died. New in my position as the Watershed Forestry Coordinator with UVM Extension and Lake Champlain Sea Grant, I accompanied them to learn – in the field - how riparian forest restoration projects are managed.

UVM Extension and Lake Champlain Sea Grant launched the Watershed Forestry Partnership (WFP) in 2020 to support and facilitate riparian forest restoration efforts in the Lake Champlain Basin. The WFP serves as an information-sharing hub, supports outreach projects, and identifies and tackles riparian forest research questions. Because Lake Champlain currently fails to meet current Clean Water Act standards for phosphorus, water quality in the lake and its tributaries is of significant concern. Reforesting riparian areas—the land alongside streams and rivers—is critical to restoring water quality in the basin. Riparian buffers slow the flow of surface runoff and sediment, allowing nutrients more time to infiltrate soils where they can be trapped or utilized by vegetation. As a result, buffers can reduce the concentration of nutrients from agricultural areas that reach local and downstream waterways.

Many farmers have stepped up to add additional buffers to fields to meet the Required Agricultural Practices (RAPs). Multiple state and federal programs, like CREP, can assist farmers in establishing forested riparian buffers on their land, and studies have shown that forested buffers are more effective than grassed buffers at reducing nutrient runoff. Forested buffers can also provide wildlife habitat and landscape-scale habitat connectivity, store and sequester carbon, stabilize streambanks, and regulate in-stream water.

The lessons that came out of that July day include how we consider appropriate tree species given open fields and potential for heavy deer (or other wildlife) browse pressure. Katie, Ben and Phil pointed out that the trees that fare best in new riparian buffer plantings aren't necessarily those found in mature riparian forests. Instead, riparian plantings may need to focus first on “early successional” species which can compete in an open field setting, and produce conditions where other species can then establish. Species such as cottonwood and silver maple may be heavily browsed by deer and have trouble establishing in high-pressure areas. Other species like tamarack may be more successful, at least in the establishment period, and as the first plantings grow more mature species may appear or be planted in the shade they create. The WFP will continue to look at what strategies lead to the most successful establishment of riparian forest buffers, and how to tailor our approaches to fit locations.

Additional support for the WFP comes from American Forests, PUR Project, USDA-NRCS, and UVM alumnus Bruce Lisman. To join the WFP email list, contact Alison Adams at [alison.adams@uvm.edu](mailto:alison.adams@uvm.edu). Read more about the Lake Champlain Sea Grant program at <https://www.uvm.edu/seagrant>. If you are interested in implementing a CREP project on your farm, contact Ben Gabos at 802-461-3814 or [ben.gabos@vermont.gov](mailto:ben.gabos@vermont.gov).



*A riparian forest restoration site in Vermont. The site shortly after planting in 2005.*



*The site with mature trees in 2017. Photographs courtesy of Kate Kain, US Fish & Wildlife Service.*



College of Agriculture and Life Sciences  
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  
Kristin Williams  
Kirsten Workman

**Administration**  
Karen Gallott

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

This newsletter is edited and managed by Kristin Williams, with editing and design assistance from the UVM Extension Media Team. Questions? [kristin.williams@uvm.edu](mailto:kristin.williams@uvm.edu).

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



**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)**

*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.*