Champlain Valley Crop, Soil & Pasture Team

THE UNIVERSITY OF VERMONT EXTENSION

Fall 2018

In This Issue

FOCUS ON AGRICULTURE

By Jeff Carter, UVM Extension Agronomist

Fall harvest season is a busy time and shorter days are here. There is still a lot to finish before winter and less daylight to work with. Let me take this opportunity to remind you that running a tractor without lights at dusk on a highway is just tempting disaster. EVERY DAY, please think of your safety, even though you may be focused on financial stress and the strenuous tasks of fall farm work.

According to a recent survey, I don't make my bed in the morning because I am too pragmatic and moody, and I stay up too late, most likely because I WORK WITH FINANCES AND BUDGETS. I admit that paperwork is no fun; however, financial assistance programs are available to help farmers improve their businesses. Application deadlines are coming up soon, so get your materials in order and written now while the opportunity awaits. The following is a brief overview of programs and deadlines; visit the websites for more details and remember we can help you with questions.

UVA (Use Value Appraisal) - Vermont Current Use Program Certification for Agricultural Land and Buildings deadline is Nov. 1, 2018. If not filed with the Vermont Department of Taxes, your farm will be removed from the Current Use Program. You should have received your Form CU-313 already. Forest Management Activity Reports are due to your County Forester by Feb. 1, 2019. *go.uvm.edu/currentuse*

VHCB - This is the final fiscal year for Dairy Improvement Grants and Water Quality Grants from Vermont Housing and Conservation Board's Viability Program. For this year, the second round of applications are due by Nov. 7, 2018. A third round deadline is Feb. 6, 2019. Dairy Improvement, *go.uvm.edu/dig* and Water Quality, *go.uvm.edu/wqg*

CEAP - Vermont Capital Equipment Assistance Program grant applications are due to the Agency of Agriculture by Nov. 1, 2018. This is a way to have 90% of the cost paid for no-till, manure, precision agriculture and related equipment to protect water quality. *agriculture.vermont.gov/ceap*

I ADMIT THAT PAPERWORK IS NO FUN, BUT ...

MFP - USDA Market Facilitation Program Direct money payments to producers to make up for losses in the local dairy, corn, soybean and hog export markets. Applications due by Jan. 15, 2019. *www.farmers.gov/MFP*

EQIP – There is a time-limited opportunity to apply for NRCS Environmental Quality Incentives Program extra funding. This is for incentive payments to farmers for phosphorus reductions to meet EPA TMDL (Environmental Protection Agency Total Maximum Daily Load) requirements in targeted watersheds. These watersheds are receiving extra funds for field practices and production facility upgrades, but the money is limited to five years. Priority funding for McKenzie Brook ends in 2019. *go.uvm.edu/watersheds*

SARE - Sustainable Agriculture and Research Education Farmer Grants, up to $15,000 each to develop new ideas/experiments on your farm. Applications are complex, and due Nov. 27, 2018: start early with your advisor. *go.uvm.edu/sare-farmer-grant*

FAP - The state Farm Agronomics Practices grant program is an opportunity for up to $5,000 per farm. Think now about next spring. Consider applying for seeding down with a nurse crop, no-till, conservation tillage, aeration tillage or manure injection. *agriculture.vermont.gov/fap*

PRF – USDA Pasture, Rangeland and Forage program offsets potential losses due to lack of rainfall. Deadline is Nov. 15, 2018. See page 3 for more information.

Info on many of these opportunities:
go.uvm.edu/ag-financial-opps

That's a lot of paperwork to get done before the end of the year!

Have a question for Jeff Carter?
802-388-4969 ext. 332 *jeff.carter@uvm.edu*

23 Pond Lane, Suite 300 • Middlebury, VT 05753 802-388-4969 • *champlain.crops@uvm.edu*

www.uvm.edu/extension/cvcrops

NEWS, EVENTS & INFO YOU SHOULD KNOW

Otter Creek NRCD and VACD Annual Meetings and Farm Tour

Oct. 24-25, 2018

Middlebury Inn, Middlebury, Vt.

Otter Creek Natural Resources Conservation District (NRCD) and Vermont Association of Conservation Districts (VACD) are hosting a combined annual meeting. The Otter Creek NRCD is honoring the Conservation Farmer of the Year. Tours will be available to look at conservation in the East Creek watershed, field practices and dairy robots, and a third tour will explore value-added agriculture in Addison County.

Event Info: *www.vacd.org*
Or contact Otter Creek NRCD:
802-771-3037; *pam.stefanek@vt.nacdnet.net*

UPDATES ON EVENTS & MORE
SIGN UP FOR OUR E-NEWSLETTER AT
WWW.UVM.EDU/EXTENSION/CVCROPS

NMP Updates

- Nov. 27-28, 2018
- Dec. 11-12, 2018
- Jan. 8-9, 2019

Extension Office, Middlebury, Vt.

Every winter we teach Nutrient Management Planning (NMP) classes. Because those NMP's have to be updated *yearly* with both records and new plans, we also set aside time for previous attendees to come back and update their plans. Upcoming sessions are free, run from 9:30 a.m. to 3 p.m., and are "drop-in" style work sessions. However, we request RSVPs so we can plan appropriately.

Questions & RSVP: 802-388-4969

SPOTLIGHT ON GRAZING PLAN CLASS

When farmers are considering grazing as a new management practice, or want to change or improve their existing system, there are many questions both from the animal perspective and the land perspective. Is this going to work? Will my animals like it? What will this look like? How will I do it? These are all reasonable questions and are not easily answered in a one- or two-hour farm visit. As a result, we realized an in-depth training class was needed for farmers to develop and implement their own grazing plan. The class covers developing the plan, and in-field visits help farmers implement it.

We obtained a SARE grant and began the first round of classes in 2017. Farmers and employees from 14 different operations attended classes in Middlebury and Pawlet last fall/winter.

Classes will be offered in Middlebury this October/November starting October 18. Classes will also be offered in Rutland starting March 5, 2019. Each class offers up to 12 hours of classroom and planning time, and meets once a week over the course of a month. The cost is $40 and includes a copy of Sarah Flack's book, *The Art and Science of Grazing*. Eligible farmers will be able to use the grazing plan they develop in class to apply for USDA Natural Resources Conservation Service (NRCS) or state Pasture BMP funding opportunities to help cost share a variety of grazing practices. However, new infrastructure alone will not create improvements. To achieve healthy pasture ecosystems requires an understanding of the relationship among soil, plants and livestock grazing behavior. A clear goal and a plan based on plant and animal needs is essential for success, along with a willingness and excitement to follow-through with implementation.

Info & Registration:
blog.uvm.edu/cvcrops/grazing-class
Questions:
Cheryl Cesario, 802-388-4969 ext. 346

(below) Goats grazing in movable pasture and (right) new watering system at Ice House Farm, one of last year's class participants. Photos: Chad and Morgan Beckwith.

PASTURE, RANGELAND AND FORAGE INSURANCE INFORMATION

By Jake Jacobs, Agricultural Risk Management & Crop Insurance Educator

This summer's unusually hot, dry weather conditions have resulted in lower hay yields and restricted pasture regrowth on many Vermont farms. Reduced yields can significantly decrease income, and in cases where producers rely on their forages to feed livestock, diminished pastures may mean cutting into forage supplies intended for use later in the year. In some situations, farmers have to reduce livestock numbers to extend remaining forages.

USDA's Pasture, Rangeland, Forage (PRF) program was designed to help protect a producer's operation from forage losses due to one peril: lack of precipitation. This insurance can mitigate increased costs for feed, destocking, depopulating or other actions that are the result of losses of forage produced for grazing or harvested for hay.

PRF coverage is based on precipitation expected during specific intervals, utilizing a rainfall index to determine precipitation for coverage purposes. It does not measure forage production or loss of products themselves. The Rainfall Index uses National Oceanic and Atmospheric Administration Climate Prediction Center (NOAA CPC) data, which utilizes a grid system to determine precipitation amounts within an area. Each grid is approximately 17 by 17 miles. Acres to be insured are in one or more grids, based on the location to be covered. When the rainfall during the two-month insured period falls below the 50-year average for that grid, the producer may receive an indemnity payment.

Producers select the coverage level, index intervals and productivity factor:

- Policyholders select a coverage level from 70 to 90 percent.
- The index interval represents a two-month period, and the period selected should be the one when precipitation is most important to a producer's operation.
- The rainfall index does not measure direct production or loss. The producer is insuring a rainfall index that is expected to estimate production. Producers select a productivity factor to match the amount of protection to the value of the production that best represents the operation and the productive capacity of the producer's acres. Coverage is based on the rainfall index and the experience of the entire grid.

A crop insurance agent will be able to assist you in working through the RMA online Decision Support Tool to help you determine whether or not PRF is the right choice for your farm. Using RMA's PRF Support Tool you can locate the grid where your forage acreage is located, *prodwebnlb.rma.usda.gov/apps/prf*.

Once you locate your grid, you can click on the Historical Indexes to see the 50-year history for your location. The enrollment deadline for PRF coverage is November 15.

You can locate an agent licensed to sell crop insurance in Vermont by visiting the RMA web site, *www.rma.usda.gov/tools/agent*.

(below) Cover crop trials – take your cover cropping up a notch, pg 4.

TAKING COVER CROPS UP A NOTCH

By Kirsten Workman, Agronomy Outreach Professional

Vermont farmers have been cover cropping for some time now. While cost share incentives are a useful buffer as you figure your system out, eventually cover crops will need to pencil-out on your farm. Here are some strategies producers are using to making this practice successful in the long-term.

Make the cover the CROP.

Many producers are treating their cover crops as a cash crop and harvesting them to utilize on farm, to sell, or both.

- Harvest winter cereal grains as seed. One field could be enough to seed your whole farm in the fall, with surplus to sell to neighbors. An added bonus is a straw crop to use/sell as bedding, feed, or mulch.
- Harvest winter covers in early May for a high-protein livestock feed. Whether you graze, bale or ensile it, you'll be glad to have the high-quality feed.
- Vegetable farmers are testing using chopped red clover as a mulch for vegetable crops.

Efficiency is key.

Time and labor are difficult for all cropping systems in Vermont. Our short growing season and unpredictable weather make it difficult to manage one crop in a field, let alone two. When it comes to a successful cover crop that won't break the bank, efficiency is key.

- Investing in equipment may be necessary to make the system work. A grain drill, broadcast seeder, or residue management tool could be the lynch pin to getting things done efficiently.
- Without cost share, seeding rates and cover crop species can be more flexible. If you are planting in early September with a grain drill, you could plant at much lower seeding rates.
- Adjust your cash crop to accommodate your cover crop. While potentially tricky, identifying earlier maturing corn hybrids that yield well on your soils could make more time for getting everything done. Utilizing no-till planting systems could also make establishing and terminating cover crops a quicker process.
- Have your seed ready to go ahead of time to ensure you can take advantage of short windows of opportunity.

Quantify the purpose and value.

Identify the objectives for your cover crop before you plant. Do you want to harvest it? How much spring biomass is ideal? Are you looking for additional nitrogen, weed suppression, disease management? Ask these questions first and plan your cover crop accordingly.

Quantifying the value of the cover crop is important, too. If harvesting or using it to replace another strategy on your farm, the math is easy. If your primary goal is improved soil health, that is harder to quantify. Do on-farm trials and track yields based on cover cropping strategies. Look at your soil tests and assign value to organic matter, cation exchange capacity and nutrient values.

Take it up a notch.

Farmers are INNOVATIVE. It's a required skill for the job. Funnel some of that creativity towards your cover cropping endeavors. I've seen many inventive approaches, including farm-fabricated roller-crimpers to roll down tall winter rye, a broadcast seeder modified to pull behind the corn chopper, cows grazing cover crops in the spring, custom cover crop mixes and innovative ways to get manure into the system. The sky's the limit!

Complex systems require flexibility. What worked like a charm last year may be a failure this year if you cannot be nimble. Your intent was to plant green into your standing cover crop, but the weather made it impossible? Chop it as feed instead! You were hoping to plant tillage radishes when you harvested your 85-day corn in early September, but August turned out to be cold and wet and the corn came off late? Stick to winter rye and save the radish for next year.

What are you going to do to take your cover cropping up a notch?!

Contact Kirsten Workman with questions, or if you'd like to do a cover crop trial on your farm.

802-388-4969 ext. 347, *kirsten.workman@uvm.edu*

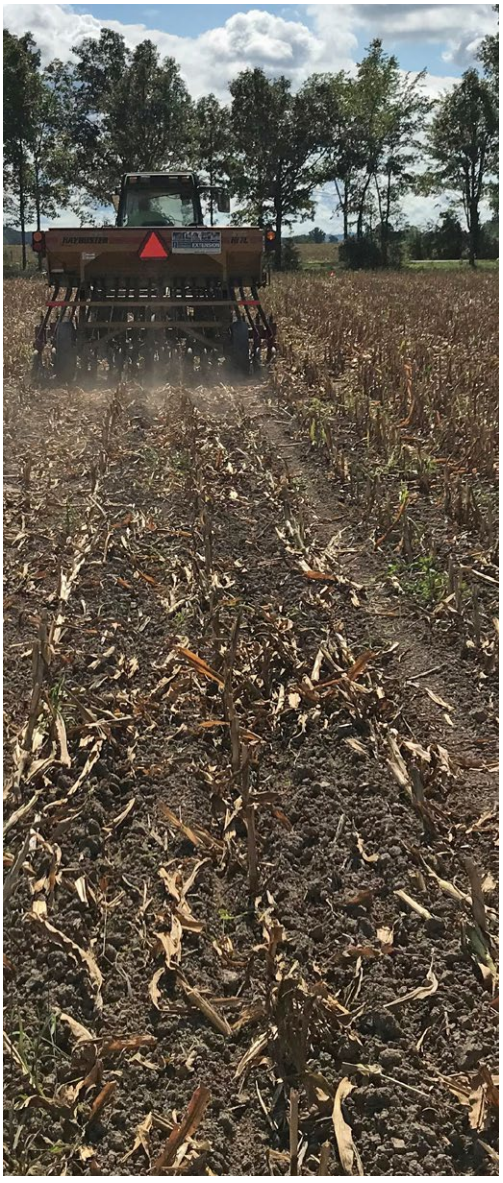
BY THE NUMBERS: PUTTING A VALUE ON GRAZING

By Cheryl Cesario, Grazing Outreach Professional

Brian and Cindy Kayhart of Chalker Farm in New Haven, began the planning process for a rotational grazing system in early 2017. Last year, with help from NRCS EQIP funding, they began installing fence, animal trails and water lines, in addition to seeding down river bottom cropland to high quality pasture species. The Kayhart's explanation for turning their best ground into pasture was simple – if they can grow good corn there, they can also grow good forages.

This year was their first full season grazing their 35 milking cows in a rotational system and the results are literally paying off. From mid-May through mid-September, Brian reported that he has reduced his ration by 3,600 pounds of corn silage, 2,200 pounds of haylage, and 1,200 pounds of grain - per week, over a 16-week period. When we put values on these feed sources, it results in an estimated feed savings of $400 per week, or $6,400 over the 16 weeks the Kayharts grazed, as of September. Every additional week the cows graze into the fall will add to this total. By comparing the winter and summer rations, we can calculate that the cows have been obtaining approximately 30 percent of their daily dry matter needs from pasture this season and milk production has maintained through it all. Brian says, "If anyone thinks it's as simple as just putting cows out, it's not. It's management. That part is what makes it successful."

SWITCHING TO ROTATIONAL GRAZING SAVED $400 IN FEED EACH WEEK OF GRAZING ALL WHILE MAINTAINING FULL MILK PRODUCTION.



BY THE NUMBERS: NO-TILL GRAIN DRILLS TRAVEL THE CHAMPLAIN VALLEY

By Jonas Hastings, Agronomy Field Technician

This year as of September, farmers have used our two no-till grain drills to plant 603 acres of crops including grass, pasture mixes, sorghum Sudangrass, alfalfa and triticale. The drills were purchased with the concept that they would be used in demonstration and research, and allow farmers to see and try this practice, with the hope that they would adopt the practices and purchase or retrofit equipment on their own farms. The drills are, in essence, catalyst tools for change in soil conservation.

Interestingly, over the past six years there has been a decreasing amount of total acres planted with our no-till drills, though this year saw an uptick from last year. From 2012-2015 we saw a steady number of users (somewhere between 60 and 75 farms) but after 2015 the numbers have slowly declined. Counter-intuitively we believe this number is a good thing, because this may be attributed to farmers adopting the practice full, and investing in their own equipment. This was always the goal of our no-till drills; not to be an equipment rental but to allow farmers to try a new practice and then hope they are able to move away from using our implements if it is financially feasible for them. Many of the farmers from 2012 and 2013 have purchased and continue to use their own no-till drills or modified conventional grain drill. This fact alone demonstrates how receptive farmers are to adopting new practices, and is important to the story of how Extension and farming work hand in hand.

This fall, expect to see about the same number of cover crop acres seeded down with our drills as in past years; around 400 acres. We encourage all those who are wondering about the benefits of no-till and cover cropping (it's a system), or are curious to see if it will work with their farm's management practices, to give us a call so we can get you on our list and have the drill to you in a timely manner. We also continue to do cover crop demonstration plots with different mixes and will be offering spring field days to showcase those efforts. Please remember that Extension is here for farmers, and sharing your story helps those who are not familiar with your work understand what you do. This farmer-Extension collaboration is an important narrative in demonstrating how farmers contribute to the Vermont economy, landscape and environment. I would like to take this opportunity to thank all the farmers who have welcomed me onto their farms, been open and inviting, and allowed me to help in any way I can!

FOCUSING ON PROGRESS IN LOCAL SUB-WATERSHEDS

By Rachel Orr, Agronomy Field Technician

While we are wrapped up in everyday life on our farm, trying to get everything tended to, we are also trying to keep up with all expectations and water quality concerns at the same time. Whatever the news says, I want to end the day knowing that we are doing everything we can to reduce nutrient runoff from our farms, and I believe most other farmers share this feeling. We know that farmers are implementing innovative and best practices, contracted through Natural Resource Conservation Service (NRCS) or state funding, and some farmers are clearly doing work outside of these funding streams. However, there is no one place where all these practices are compiled. This makes it hard to have a comprehensive look at what farmers are doing, and be able to tell the full story of our work.

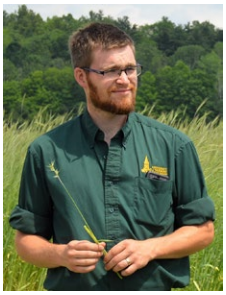
Our team secured a grant in 2015 through NRCS to help with implementation of a focused priority watershed approach on McKenzie Brook. This grant now extends to the adjacent East Creek watershed. This is a priority because of the need for nutrient runoff reductions and means NRCS is specifically making more dollars available for practices in those sub-watersheds. To account for both NRCS funded and non-funded practices, we are tracking 2018 crops and conservation projects in both sub-watersheds. Being able to paint this picture should have a big impact on policy makers because the data will help define progress and give farmers credit for their work in nutrient runoff and cleaning up Lake Champlain. We are working on mapping all practices for 2018, and hope to attach numbers of acres to practices and calculate phosphorus reductions more accurately, demonstrating the positive impact this group of farms have on the Lake.

Other work going on in East Creek and McKenzie Brook includes soil amendment demonstrations on two different farms. We are providing technical assistance including applying for EQIP; certifying practices for payment; implementing conservation practices; completing nutrient management plans and updates; providing assistance in taking soil and manure samples, grazing management and writing grazing plans, and grant writing. For farms that are in these priority watersheds, sign up for EQIP through your NRCS office. Being in these watersheds will allow you to rank higher in the EQIP ranking and get funding for practices and projects you may want to do. Don't wait until a deadline to sign up. If you have questions or concerns please contact our office, we would love to help!

Information: *go.uvm.edu/watersheds*
Middlebury NRCS office: 802-388-6748.

(above) Cows grazing in the East Creek Watershed.

FIRST YEAR TILE SAMPLING RESULTS VARY BY SOIL TYPE & CROP ROTATION



By Nate Severy, Agronomy Outreach Professional

Starting in January 2018, we began monitoring ten tile outlets throughout Addison County. This is part of a of a larger sampling effort throughout the state, with UVM Extension and Vermont Association of Conservation Districts sampling over forty individual tile outlets. The samples are analyzed for total and dissolved phosphorus (P), nitrates and turbidity. A flow estimate is also taken at the time of sampling.

The tiles we have been monitoring vary in soil type, crop rotation, nutrient management and farm management. All sites are systematically tiled, with all tiles buried at least three feet below the surface using plastic corrugated piping and range in age (since tiled) from one year to over 20. For this sample set, we have 14 sampling times. During the summer, all of the tile outlets gradually stopped flowing. The earliest stopped flowing May 22, while others continued to flow then dried up in late August. Our entire sampling area was in a moderate drought for almost all of the summer, so having some outlets flowing nearly all summer suggests that those outlets were draining springs and other areas with high water tables. It would be interesting to do this study during both average and wet summers to see if there are differences in flow and concentration. We suspect, for example, that analysis from last year would have been different compared to this year.

We have not conducted statistical analysis on this data set yet, as all the data across the state will first be aggregated together. However, our results from this winter and spring did provide some interesting trends. We saw greater levels of nitrates in tile water from sandy fields and very low nitrate levels from clay fields. Nitrates are highly mobile in sandy soils, so this was not a surprise.

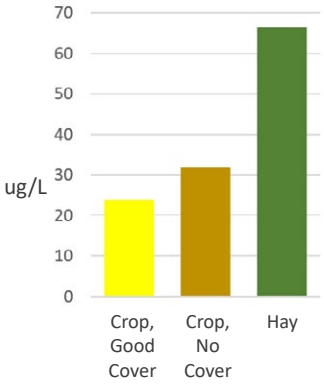
What was a surprise, however, was the trend between soil test-P, soil test reserve-P in comparison with dissolved-P in tile samples. Our sampling sites with the greatest average soil test and reserve-P were inversely the lowest in dissolved-P, suggesting that other factors were influencing dissolved-P in the tile samples. Most striking was that tiles associated with clay fields had greater average dissolved-P than those associated with sandy fields. Surprisingly, tiles associated with hay fields had greater average dissolved-P than those with annual crops, particularly annual crops with good cover crop soil cover.

This latter result was particularly puzzling, and made us wonder what was leading to the results. First, we realized all of our hay fields were on clay soils, so we do not have any sandy hay fields to compare. The larger study should provide some insight into whether this was a localized or statewide trend. Given this limited data, we are wondering why these clay hay fields behaved this way. We suspect it could have something to do with the nature of clay soil in permanent sod. It is possible that clay hay fields have more developed macropores and preferential flow. It may also be possible that long-term hay fields have healthier soils, with more developed and diverse root zones and fungal hyphae that are closer to the tile lines and in the spring they release P into the soil and the tile line. It is also possible that manure spread on the surface in fall is released through macropores in spring on hay fields but is not released to such degree in corn fields, particularly if the manure is incorporated in some manner.

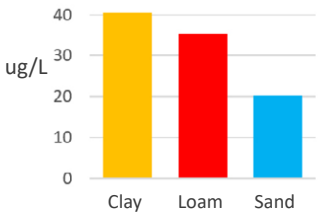
The majority of our samples fall in the range of 15-45 ug/L. Several samples spiked during thawing events to over 150 ug/L. Other research suggests this spring (or winter) thawing can have significant impacts on total loading from tiled (and untiled) fields. This is one of the many reasons cover crops that over-winter may be beneficial in addressing water quality. There isn't a set limit for P levels in tile samples, but 27 ug/L is the current standard for surface water. When we think of these concentrations, the amount of flow accompanying them is very important. Also, if they run at high concentration for either a long or short period of time is not something we can document well with grab samples. High concentrations will have most immediate consequences in relation to the total volume and concentration of the streams that they empty into. However, over the long term, we want to have a bigger picture of total loading to the lake.

It is important to not get hung up on this limited sample set. It will be interesting to see how our results compare to the other tile results and to examine them over a second season to see if variability in weather lessens or increases trends. It is clear that we still have a lot to learn about tile and that our work is providing valuable insight into tile management. With eight months of sampling and six months' worth of results, our knowledge of how nutrients behave in fields with tile outlets has grown substantially. As fall and winter arrive, we are eager for the tile outlets to start running again so we can continue learning about how these systems behave. With time, hopefully we will be able to make informed decisions on best management practices for fields with tile drainage.

Dissolved-P was greater in tile outputs from hay fields than those with annual crops.



Dissolved-P was greater in tile outputs from clay fields than sandy fields.



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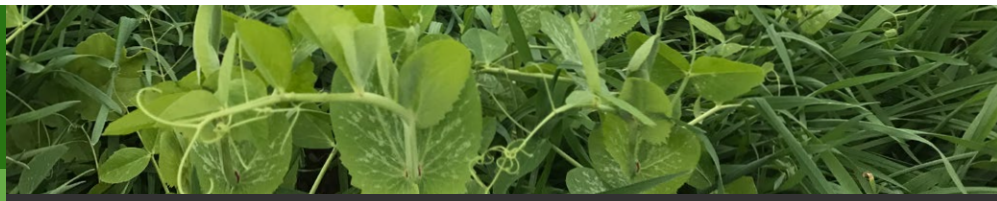

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