Champlain Valley Crop, Soil & Pasture Team

THE UNIVERSITY OF VERMONT EXTENSION

Spring 2019

In This Issue

FOCUS ON AGRICULTURE: THINK BIG THIS SPRING

By Jeff Carter, UVM Extension Agronomist

The "Ecosystem Services" payment train for Vermont farmers has left the station and is rolling ahead faster than I thought was possible. This winter, the three Vermont farmer watershed groups (see below) presented an idea to several legislative committee hearings about how important farmers are in the quest for clean water by reducing nutrient loading, as these nutrients may leave farms and get into bodies of water.

While phosphorus is the biggest culprit, soil erosion can contain other lost nutrients, bacteria, herbicide residues, nitrogen, salt, and fuel. This is a real problem, as we do need clean water to live. Come to find out, there are many interrelated groups which have been working to develop a real and possible way to actually pay farmers for the good that they can accomplish, instead of only focusing on penalties for environmental problems. You will be hearing more about this concept and I find this really exciting.

At the recent Vermont Clean Water Partnership meeting, my eyes were opened as to what it could mean to directly support farmers, and, as a result, all Vermonters. This concept is new to many of us, so it will take a lot of thought and coordination to understand the full potential and how this could change the conversation about how we can all support agriculture. It appears that the time is right for this new movement to keep Vermont farmers tending the land.

The same practices that improve soil health for better water management can also build soil organic matter and reduce fossil fuel use. These, in turn, can help offset Green House Gas (GHG) effects on climate changes which we are seeing here in Vermont. My colleague Josh Faulkner has done a great job of explaining that the sky is not falling, although we do have some major changes in climate patterns. We see every year now how this translates to our weather: increased rainfall followed by increased drought, weird spring weather, a warm winter followed by a good old-fashioned snowy winter. The problem is unpredictability.

The solution is resiliency, which is another buzz word I hear a lot. A steady income is far better than wide swings in product prices. A consistent crop year-after-year is better than boom and bust yields. A consistent, but safe, return on investment always lets you sleep better at night.

I want to learn more and be a part of this revolution in how farmers are respected for the good they do for our state. Basic field practices are always a good investment: APPLYING LIME to correct low soil pH; SOIL TESTING to meet crop needs; INCORPORATING MANURE quickly to save fertilizer value for your crop.

I hope you have a good season in 2019. BE SAFE as you are caught up in the rush of spring planting, grazing, raking, chopping, wrapping, packing bunk, felling, or whatever you like to do.

Vermont Farmer Watershed Groups: "A Voice for Farmers"

Champlain Valley Farmer Coalition (CVFC)
www.champlainvalleyfarmercoalition.com
info@champlainvalleyfarmercoalition.com

Franklin-Grand Isle Farmer's Watershed Alliance (FWA)
farmerswatershedalliance.org
FarmersWatershedAllianceNW@gmail.com

Connecticut River Watershed Farmers Alliance (CRWFA)
www.crwfa.org
pdoton@gmail.com

NEWS, EVENTS & INFO YOU SHOULD KNOW

Ongoing Monthly "Crop Signals" Workshops: Join the Champlain Valley Crop, Soil and Pasture Team, and members of the Champlain Valley Farmer Coalition for monthly "Crop Signals" workshops where we discuss relevant topics in-depth with a small group of farmers and professionals. The meetings are usually on the third Wednesday of the month, though as we transition outdoors, dates may change dependent on weather or field conditions. More info and RSVP: Nate Severy, 802-388-4969 ext. 348 or *nsevery@uvm.edu*.

June 19 – **Organic Field Crop Weed Control:** Live demonstration and discussion of mechanical weed control for organic operations. Time TBD.

July 17 – **Alfalfa/Soil Amendment Discussion Field Day:** Our team has set out replicated field trials of soil amendments on an alfalfa field. Time TBD.

April 30 – **Medium Farm Operations:** (MFO's) deadline to file paperwork with VAAFM. Permitted MFO's must submit an annual report and operating fee of $1,500 to the Vermont Agency of Agriculture, Food and Markets (VAAFM). Contact your MFO coordinator with questions, or visit the VAAFM website for more information: *agriculture.vermont.gov/mfo*.

May 10 – **Conservation Stewardship Program** deadline to sign up. This Farm Bill program helps agricultural producers with on-farm conservation activities, and includes higher payment rates for cover crops, organic, and transitioning to organic. More at: *nrcs.usda.gov/wps/portal/nrcs/news/vt/newsroom/releases.*

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

DAIRY REVENUE PROTECTION INSURANCE

By Jake Jacobs, Agricultural Risk Management & Crop Insurance Educator

This fall the Risk Management Agency (RMA) made a new dairy insurance program available to producers. Dairy Revenue Protection (Dairy-RP) provides protection against an unexpected decline in revenue (yield and/or price) on the milk produced from dairy cows. The policy covers the difference between your final revenue guarantee and actual milk revenue during each quarter of the year. My last article (in the Winter 2019 issue) described the general provisions of this insurance. Here are answers to some specific questions about this insurance coverage.

There are two pricing options available: the Class Pricing Option and the Component Pricing Option. The **Class Pricing Option** uses an insured's election of a combination of Class III and Class IV milk prices as a basis for determining coverage and indemnities. The **Component Pricing Option** uses the component milk prices for butterfat, protein, and other solids as a basis for determining coverage and indemnities. The insured selects the declared butterfat test and declared protein test, and the other solids test is fixed at 5.7 to establish the milk price.

Can I insure both the component pricing option and the class pricing option at the same time? Yes. You may choose either pricing option on separate quarterly coverage endorsements provided it is not covering the same milk.

What is the crop year for the policy? The crop year is July 1 through June 30. The contract change date is April 30. This is the date changes to the policy, if any, can be viewed on RMA's website for the upcoming crop year.

YOUR NEW SOURCE FOR AG RISK INFO & UPDATES: *GO.UVM.EDU/AG-RISK*.

THE AG RISK MANAGEMENT AND CROP INSURANCE EDUCATION PROGRAM IS A PARTNERSHIP BETWEEN UVM AND THE USDA RMA.

Can multiple Quarterly Coverage Endorsements be purchased for the same quarterly insurance period? Yes. There can be multiple Quarterly Coverage Endorsements in effect for the same quarter. The producer can elect different coverage levels and pricing methods for each Quarterly Coverage Endorsement. You may choose different coverage levels and protection factors for every endorsement purchased.

How do I buy Dairy-RP coverage? You must buy Dairy-RP insurance through an authorized crop insurance agent. You can fill out an application at any time. However, insurance does not attach until you buy a quarterly coverage endorsement. You may buy multiple quarterly coverage endorsements with one application. Your insurance coverage starts the first day of the quarter for which the quarterly coverage endorsement was purchased. The Dairy-RP is available for purchase every business day when the coverage prices and rates are validated and published on RMA's website.

Does this policy cover any other types of loss such as death of the dairy cattle? No, this policy does not insure against the death or other loss or destruction of your dairy cattle, or against any other loss or damage of any kind.

More information, including a link to a webinar about this program, can be found at the UVM Agricultural Risk Management website at *go.uvm.edu/ag-risk*, and by visiting the RMA website at *www.rma.usda.gov*. You and your crop insurance agent can work through a series of examples to help you decide the best options for your farm.

FISK-HAINES FARM: FLEXIBILITY IN GRAZING MANAGEMENT PAYS DIVIDENDS

By Cheryl Cesario, Grazing Outreach Professional

One of the highlights of my job as a grazing specialist is seeing how farmers adopt new practices and evolve with them over time. Seeing success stories on the ground is very inspiring. I first met Hilda Fisk-Haines and Steve Haines in early summer 2013. Hilda and Steve operate the Fisk-Haines Farm in Danby, Vt., which Hilda's father originally purchased in 1951. They milk 80 Holstein cows, ship their milk through Dairy Farmers of America (DFA), and manage approximately 250 acres.

On that first visit six years ago, they asked me to come down and discuss some ideas on rotational grazing, which they had begun experimenting with. They were moving cows between a handful of pasture areas covering about 20 acres. Looking back Hilda says, "I did not understand the logistics. I was doing it on a wing and a prayer."

Each year we would check in, and each year Hilda was adding more acres and more paddocks into the rotation. By doing this, she was able to increase the recovery time for her pastures to grow back and increase their dry matter yields. By the 2018 grazing season, the Fisk-Haines Farm had 60 acres incorporated into the pasture rotation. When I drove up to the farm late last summer, I was excited to see temporary polywire fencing around many of their hay fields. Hilda says, "The polywire fence I can do myself and run it the way I want, changing the paddocks mid-season. I love the flexibility of the poly."

Before the 2018 grazing season began, Hilda participated in UVM Extension's four-part grazing class where farmers not only learn in-depth grazing principles, but also have a hand in developing their own plans. This program is part of a two-year Sustainable Agriculture and Research Education (SARE) grant that combines classroom education with on-site consulting visits. "In the pasture class, I picked up stuff that made a difference this year," says Hilda. However, as far as implementation goes, it is her daily attention to both the plants and the animals that has been critical to her success.

Hilda and Steve invested in a water system in 2017. While that increased their cost, they said the payback was quick and worth it. It allowed them to bring water to more areas of the farm, increasing the ability to graze more acres and adding to the efficiency of the grazing system. Every investment they have made - from new polywire fence, to water pipe, to frost seeding - has been done independently without cost-share money. "There hasn't been a year we haven't done something new," says Hilda.

What has been their motivation to do all this? It's simple, Hilda says, "Money." Then adding, "This is the cheapest milk I've ever made." By comparing their winter ration to their grazing season ration, it is easy to see why. From early May through October, Hilda and Steve are able to reduce their per-week feed ration by 5,600 pounds of grain, 22,400 pounds of corn silage, and 8,400 pounds of haylage over at least a 24-week period. In some years, it has extended up to 28 weeks, as they gradually increase supplementation into the winter. When we put values on these feed sources, we estimate a savings of about $1,830 per week, or just under $44,000 over a 24-week period. Every additional week the cows graze into the fall will add to this total.

By comparing the winter and summer rations, we calculated that the cows obtained approximately 63% of their daily dry matter needs from pasture this past season and their milk production (average 70 pounds) has maintained through it all. Hilda says, "It has changed our breakeven point. If we hadn't done this, I don't think we could have withstood the price drop."

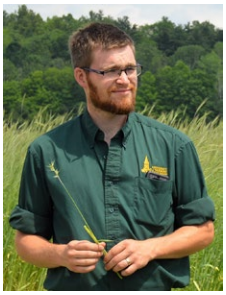
WE ESTIMATE A SAVINGS OF $44,000 OVER 24 WEEKS

As far as animal health goes, Hilda reports that her annual vet bill is now one third of what it had been in the past. "Our animals are healthier. They breed back better, their feet are stronger," she says. So what is next on the horizon? Grazing cover crops. Although they are now planting 20 acres less corn as a result of their improved grazing, Hilda figures if she grazes the winter rye cover crop on her corn fields, she can add an extra two weeks on the front end of the grazing season. For this farm, that is an easy decision. It's money in the bank.

Would you like help implementing a grazing system or improving your current system? Contact Cheryl at 802-388-4969 ext. 346 or *cheryl.cesario@uvm.edu*. We are now finishing the last of our grazing classes in our two-year grant effort, but we can still help you on an individual basis.

RESEARCH UPDATES: TILE DRAINAGE YEAR ONE SUMMARY

By Nate Severy and Kristin Williams, Agronomy Outreach Professionals



We have now completed the first year of tile drainage sampling. For those not following our work closely, we are participating in a Vermont-wide tile drain sampling project funded and coordinated by Vermont Agency of Agriculture, Food and Markets (VAAFM). The farm sites remain anonymous but we record site and management information. The objective is to capture and categorize a picture of what tile drainage outflows look like by attempting to sample every two weeks, along with rainfall events. We do not have on-site flow monitoring equipment, which is costly and requires maintenance. This is a kind of "quick and dirty" way to better understand, through regular sampling, the range of concentrations and flows we may see coming out of tile drains.

After one year of sampling in 2018, we had 20 sampling days at our 10 sites, resulting in 128 samples collected. Tile drains were not sampled at every sampling event because the dry weather meant many tile outlets stopped flowing in the middle of the summer. Tiles flowed continuously from January through May. As dry weather set in, outlets stopped flowing from as early as the beginning of May to as late as the end of July. All outlets stopped flowing during the month of August. Only one had flow during September, and four were flowing in October. The end of October and early November brought substantial rainfall to the parched region, and all tiles were flowing again by early November.

At the early November sampling, some samples had considerable total suspended solid (TSS), which makes the water murky, and when settled at the bottom, sediments were clearly visible. We measured TSS using a turbidity meter, which indicates how cloudy the water is. The samples from the sandy fields looked clear visually. The clay fields had a murky hue. In order to measure dissolved phosphorus we pass the sample through a filter system. At this time, one sample from a clay field needed three filters to get enough water for a dissolved phosphorus sample. Of the same samples that had visible sediment, these fields also had very high concentrations of total phosphorus (P) in early November.

We think the reason why the clay fields had such high TSS and had higher total P is because clay soils shrink and swell with moisture, then form large cracks during dry periods. These cracks, some well over one-inch wide, can extend far down into the soil profile and have the possibility of getting close to the drainage tiles. Once moisture returns and the clay expands, soil particles on the outer-face of those cracks theoretically fall to the bottom, and eventually find their way to the drainage tile and out with the water.

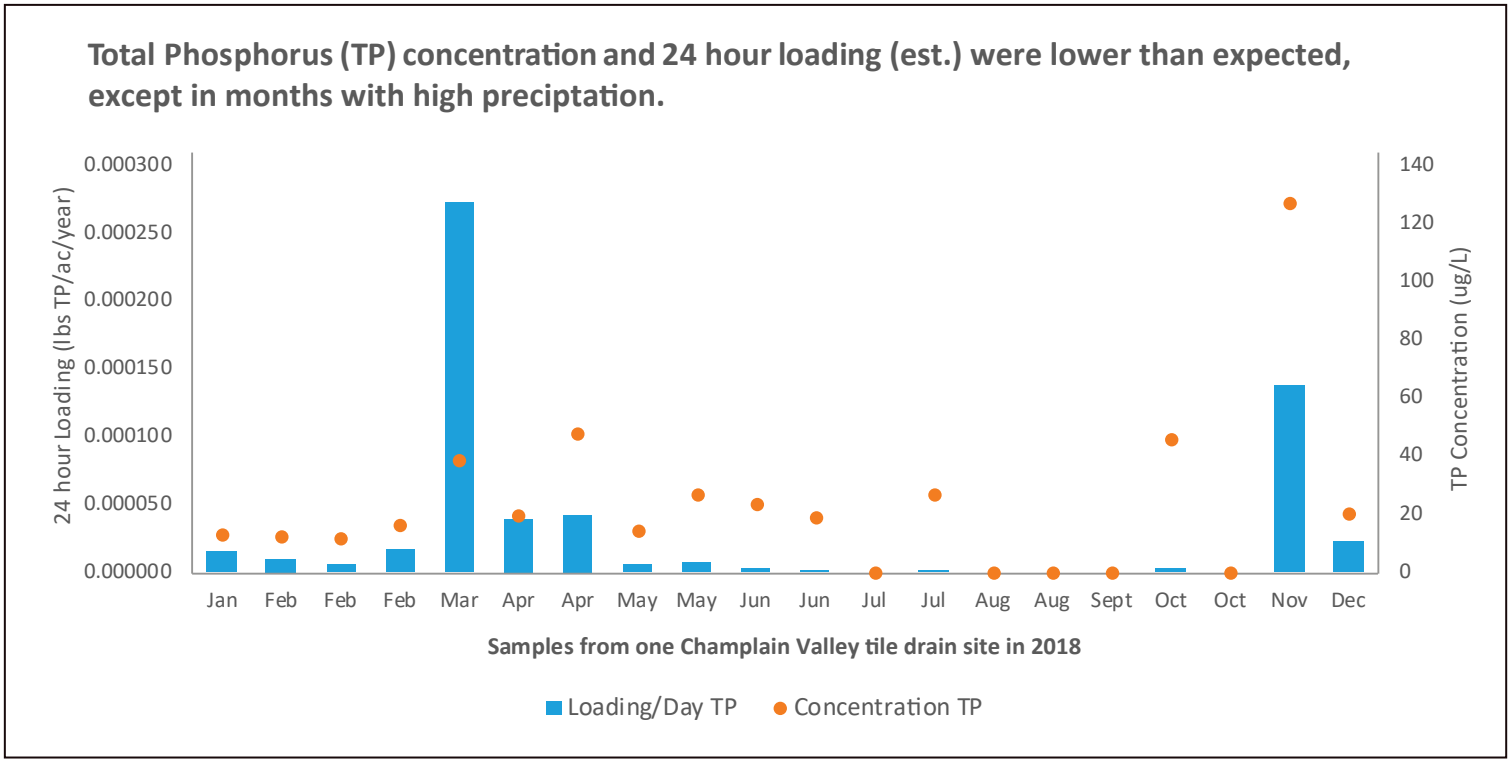
Even though we had these higher flow/sediment/P events, over the course of the seasons the total loading appears to be very low. To have any guess at estimating P loading we need the P concentration of the sample and the flow x time. At the time of sampling, we measured instantaneous flow as the time in seconds it took to fill one liter (this can be inversed to understand flow in L/sec or L/min, etc.). This has ranged from a high of 0.1 seconds/liter during the highest flow event on a clay field, to a low of 120 seconds/liter on a loamy clay in summer right before the outlet stopped flowing. What we don't know for sure is whether we were capturing this flow at its highest point, or at some other point.

For comparison sake (which would not pass a scientific publication), we decided to do some math with the assumption that the flow and concentration we measured did, indeed, represent the flow for an entire 24-hour period. We then extrapolated that out,

based on our monthly sampling to yearly averages by site. Again, this is not actually what happened, but it might give us an idea of scale on a per-acre basis.

We came out with a HIGH of 0.68 lb/ac P per year on our clay hay field (with very low soil test P) and a LOW of 0.005 lb/ac P per year on our sandy continuous corn field (with very high soil test P). Agronomically, these values are exceptionally low. While we are working on year two of tile sampling, it will be interesting to see what the cross-Vermont sample results suggest.

As we were recently driving around the county during the big spring thaw, we couldn't help but wonder about how much P and other nutrients we were losing from our crop and hay fields from surface runoff (via both soil-bound and dissolved P). Is it premature to worry about tile when we have so much left to do to manage the soil surface? We are excited by a research project being installed by colleagues at UVM/UVM Extension, to look at P-loss from surface runoff versus tile outlets, capturing flows to have a better estimate of loading. This data set will take years to suss out. We are also looking at surface soil amendments and whether they might affect available and water soluble P in the soil matrix. More to come on that. We still have a lot to learn about the soil directly underneath our feet, and we plan to continue monitoring tile outlets into the future. It's possible that we may end up with more questions than we started with.



One year of grab sampling at a tile site in Addison County in 2018 (above) showing total phosphorus concentration and estimated phosphorus loading. Results indicate phosphorous was lower than expected, except in months with high precipitation.*

**Estimated loading is based on an instantaneous flow measurement at time of sampling, extrapolated out to 24 hours for comparison purposes (loading = concentration x flow x time).*

MANURE CALIBRATION IS WORTH THE EFFORT

By Kirsten Workman, Agronomy Specialist

Do you really know how much manure you are spreading on your fields? Unless you have a flow meter or you recently calibrated your spreader, then the answer is probably not. When working through nutrient management plans with livestock producers, we often ask if their manure spreader is calibrated. After a pause, the answer is usually, "Well … not really." Most producers and custom haulers are keeping track of loads, which is a legitimate way to calibrate. If you know how much a load really is, how many loads go to a field, and how big the field is, then the math is pretty simple.

What is a Load?

However, when was the last time you actually measured a load of manure? Just going by the capacity rating or direct volume measurement of the spreader doesn't cut it. You first need to account for what percentage of the rated capacity you typically load the spreader. For solid spreaders it depends on how you heap the load (see drawing). For liquid spreaders, we usually estimate 90% of capacity to allow for foaming and head space needed for travel. However, without an accurate density measurement, we are still guessing. Weighing a five-gallon bucket of solid manure can tell you a lot, as manure density will vary quite a bit. Weighing your empty and loaded spreader will tell us a whole lot more!

There are three main ways to more accurately account for your manure application rate:

1. *Based on a Single Spreader Load.* Use the capacity of your spreader, adjusted for actual loading methods or measuring the volume of your spreader, and multiply by density of your manure. Better yet, weigh a loaded spreader. Then measure the area covered by one spreader load, accounting for overlap between passes.
2. *Based on Total Spreader Loads Applied to a Field.* Determine the amount of manure per spreader load (see above) and count the number of loads applied to the field. Determine field acreage. Then calculate rate: (spreader size x # loads) ÷ total acres = gallons or tons/acre.
3. *Based on Direct Measurement of Application.* This is done by capturing the manure "as spread" in the field and weighing what is spread over a known area. For solid manure, spread over a small tarp, weigh the tarp and manure in a bucket, subtract the weight of the tarp and bucket and divide by the square-footage of the tarp. For liquid manure, we can use a special pan that collects manure as it is being spread (see picture).

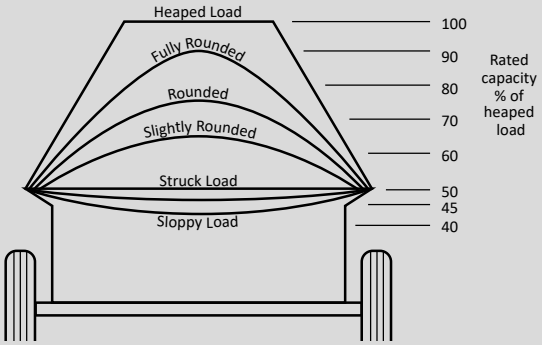
However you decide to calibrate, you should be prepared to do it at least three times to get an accurate average rate measurement for that scenario. You will also want to record the gear/speed you are driving in and do this for the different "typical rates" of manure you might apply. For step-by-step directions on calibrating your manure spreader, visit *go.uvm.edu/manurecal*.

Benefits of Calibrating Your Manure Spreader

- Target rates versus actual rates can vary quite a bit. In one project, with a 5,000 gallons/acre targeted application rate, we measured 3,771 gallons/acre on one farm and 6,432 gallons/acre on another. This could have significant implications on fertility, crop yield, and nutrient management.
- Many farms (MFO/LFO) are required to report the total number of gallons or tons of manure applied annually over the farm. Calibrated spreaders make this reporting much more accurate.
- Calibrated manure application equipment is part of the O&M Plan for an approved NRCS 590 Nutrient Management Plan.

WE CAN HELP!

Our team here in the Middlebury Extension office is happy to help you calibrate manure spreaders. We have a set of truck scales we can bring out to help you weigh manure spreaders, forage wagons, trucks and more, and a liquid manure calibration pan. Give us a call and we can get your equipment calibrated this spring: 802-388-4969.



Your manure load can be estimated by accounting for the rated capacity of the spreader (above), but it is not very accurate. (Image adapted from Winston Way, 1983, Manure Primer. Br. 1339. UVM Extension.)

A far more accurate method is to weigh your spreader (above). For liquid manure, you can place a pan to capture the manure as it is spread, then measure the weight of a 5-gallon bucket (below).

CONSIDERING A NO-TILL GRAIN DRILL? OUR TEAM IS HAPPY TO HELP IN ANY WAY, FROM REVIEWING DRILL FEATURES, TO GUIDANCE ON A GRANT APPLICATION.

TIPS AND ASSISTANCE FOR INVESTING IN A NO-TILL DRILL

By Jonas Hastings, Agronomy Field Technician

It's amazing to see the increased popularity of no-till cover crops and perennial seeding of cropland, and you may be looking at how you can implement these practices into your system. The first implementation step is to ensure that practices coincide with the equipment you have, and this often starts with a no-till grain drill. No-till drills allow farmers to plant cover crops and perennial crops without having to intensively prepare the ground for planting, thereby decreasing erosion and reducing water quality.

Conventional drills can be modified to offer more weight to the discs and break through sod so that no-till methods can be effective, while the purchase of no-till drills is also an option for farmers. Eight farmers in Addison and Chittenden County have recently received Capital Equipment Assistance Program (CEAP) grants offered by VAAFM. The CEAP program offers assistance for the purchase of equipment to aid in conservation practices; this can range from no-till drills to corn planters. If you're interested in purchasing machinery to implement soil conservation practices for 2020, we are happy to help you in the grant-writing process.

Things to consider when buying a new no-till grain drill:

1. How much capital can you afford to spend? Is a retrofit a better choice?
2. What are your agronomy objectives?
3. What size drill is appropriate for your acreage needs (typical range six to 30 feet wide)?
4. Towing application - three-point hitch or tow-behind?
5. Seed delivery systems – accuracy and consistency are important.
6. Down force method - e.g., weight or mounted air compressor?
7. Brand satisfaction and warranty.
8. Add-ons for your planting system.
9. Opportunity to look at it before you buy.

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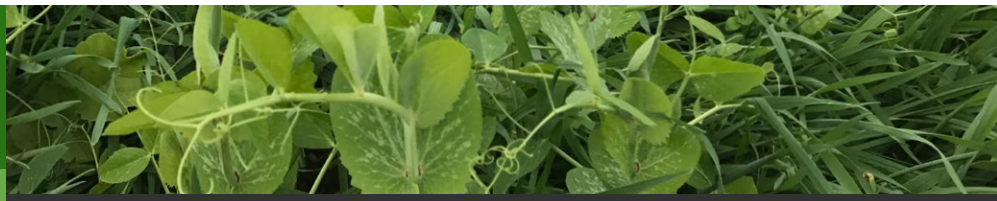

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