

Give Your Farm a Labor Checkup for 2022

By Mary Kate MacKenzie, Farm Business Management Specialist

January 3, 2022 - If you have employees on your farm, this is a great time of year to review your labor practices to be sure your business complies with current New York State Department of Labor (NYS DOL) rules and regulations. Below you will find a summary of key provisions from New York State's Farm Laborers Fair Labor Practices Act (FLFLPA), Minimum Wage Order for Farm Workers, Human Rights Law, and HERO Act (source: NYS DOL).

Cornell Agricultural Workforce Development provides additional resources on regulatory compliance with state and federal labor laws.

Minimum Wage

Minimum wage across Upstate NY (excluding New York City, Long Island & Westchester) will rise to \$13.20 per hour effective December 31, 2021. The Minimum Wage Order for Farm Workers provides that all workers, with certain exceptions, receive the New York State Minimum Wage. This does not include members of the employer's immediate family. The Minimum Wage Order for Farm Workers applies only to farm workers employed on farms where the total cash remuneration paid all persons employed on the farm exceeded \$3,000 in the previous calendar year.

Overtime

All farm workers, including Foreign Visa workers, must now be paid one and a half times the regular rate of pay for hours worked over 60 in a calendar week.

Day of Rest

Employers must provide at least one day (24 consecutive hours) of rest in every calendar week. The employer must designate, and notify the worker in advance of, their day of rest and, whenever possible, ensure that the day off coincides with a traditional day for religious worship. Farm workers are permitted to voluntarily work on the day of rest, provided the employer pays them at the overtime rate. Employers must keep a weekly record of hours and days worked.

Pay Notice and Work Agreement

Farm operators can use NYS DOL form LS309 "Pay Notice and Acknowledgement for Farm Workers" to satisfy the pay notice provisions of NYS Labor Law and the written work agreement provisions of the Farm Minimum Wage Order. Employers must notify employees in writing if any information in the notice changes. A fillable version of form LS309 is available to download [here](https://dol.ny.gov/pay-notice-and-acknowledgement-farm-workers-ls309-english). (<https://dol.ny.gov/pay-notice-and-acknowledgement-farm-workers-ls309-english>)

Unemployment Insurance

Farm employers, and farm crew leaders under certain conditions, are required to provide unemployment insurance coverage for their employees. H-2A Foreign Guest Workers are excluded from unemployment insurance coverage.

Workers' Compensation

Farm employers, owners and operators are required to provide workers' compensation coverage for their employees, regardless of their annual payroll, and all employers are required to post the mandatory workers' compensation notice of compliance poster in both English and Spanish. Additionally, farm labor contractors, forepersons and supervisors who receive notice of an injury must notify the employer, owner or operator of the farm where the injury occurred, and employers are prohibited from discriminating against farm laborers who request workers' compensation claim forms.

Disability Insurance and Paid Family Leave

Farm employers, owners and operators are required to provide New York's disability benefits (DB) and Paid Family Leave (PFL) insurance

Inside this Issue:

An Urgent Request : Farm Employers Urged to Respond	2
Dairy Margin Coverage (DMC) Program Changes...	4
5 Tips for a Successful Dry Period	6-7
Focus on Farm Management: Stepping up Calf Protocols	8-9
Thoughts for Alfalfa Harvest Management	10-11
The Slow and Furtive Nature of Pasture Soil Compaction: ...	12-13
New Study on Farm & Residential Ponds: Examining Ponds	14
ACR/PLC Annual Enrollment	15

(continued on page 3)

The South Central New York Dairy and Field Crops Program is a Cornell Cooperative Extension partnership between Cornell University and the CCE Associations in 6 Counties.



Cornell Cooperative Extension

South Central NY Dairy and Field Crops Program

We are pleased to provide you with this information as part of the Cooperative Extension Dairy and Field Crops Program serving Broome, Cortland, Chemung, Onondaga, Tioga and Tompkins Counties. **Anytime we may be of assistance to you, please do not hesitate to call.** Visit our website: <http://scnydfc.cce.cornell.edu> and find us on social media! Facebook, YouTube, & Twitter!

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We put knowledge to work in pursuit of economic vitality, ecological sustainability, and social well-being. We bring local experience and research-based solutions together, helping our families and our community thrive in a rapidly changing world.

**Building Strong and Vibrant
New York Communities**

****An Urgent Request from Dr. Richard Stup, Cornell Agricultural Workforce Development: Farm Employers Urged to Respond to Labor Management Survey****

Many New York farm employers will receive a survey in the coming weeks in an envelope from our contractor, Michigan State University. This mailing is part of Cornell research about how changing labor markets and regulations are affecting the viability of farming in New York. The industry needs relevant and timely information from farms like yours to speak with authority about what is happening and find solutions for the future. We can't do this without you!

My colleagues and I have already produced a preliminary report based on the participation of farms in related research last year, see "[Effects of NY Overtime Laws on Agricultural Production Costs and Competitiveness](#)." The results from this study were used by policy makers, the press, and farm groups in the recent wage board hearings. We need your help to provide this type of work on a larger scale about farm labor management.

This work is important because:

1. New York's agricultural industry needs this important data about how changing markets and regulations affect the industry and the people who work in it. This data can affect state policies and regulations directly, as evidenced by the current wage board process.

2. Cornell researchers and educators need this data to help improve human resource management and workforce development in New York. A well-trained workforce is key to a viable future for farming in our state.

New York's labor challenges are not going away any time soon. We need data and insights to respond more proactively to challenges this year, and the next, and the next.

If you receive this survey in the mail from Michigan State, it is urgent that you respond. Fill out the paper survey with your farm information and return it in the provided envelope. If you need help, our Cornell team is ready to support you to complete the survey. Contact Rachel McCarthy (rpl4@cornell.edu or (607) 255-7871) to schedule assistance.



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coverage to eligible farm laborers. Visit paidfamilyleave.ny.gov for information on PFL employee eligibility and opt-out waivers that employers must give to those who qualify. All employers are prohibited from discriminating against employees who request DB or PFL claim forms. For more information, please call 844-337-6303.

Right to Organize

Farm workers possess the right to organize, which includes forming, joining, or assisting labor organizations, and the right to bargain collectively through representatives of their own choosing. This includes the right to engage in concerted activities (any activity, discussion, or meeting directed at improving terms and conditions of employment, or the group interests of employees), for the purpose of collective bargaining or other mutual aid or protection, free from interference, restraint, or coercion of employers. However, farm workers do not have the right to strike. Farm workers are protected from retaliation, including termination, if they are speaking to each other about labor conditions and organizing. For more information, please contact the Public Employment Relations Board at 518-457-6410 or see perb.ny.gov.

Sexual Harassment Prevention

Every employer in the New York State is required to adopt a sexual harassment prevention policy. The policy must include a complaint form for employees to report alleged incidents of sexual harassment. An employer that does not adopt the model policy

must ensure that the policy that they adopt meets or exceeds the minimum standards. Employers must also provide employees with sexual harassment prevention training on an annual basis. NYS DOL provides a model policy, complaint form, and training materials, [available here](https://www.ny.gov/combating-sexual-harassment-workplace/employers). (<http://www.ny.gov/combating-sexual-harassment-workplace/employers>)

Additional farm-specific training resources are available from the [Sexual Harassment Prevention page](https://agworkforce.cals.cornell.edu/regulations/sexual-harassment-prevention/) on Cornell Agricultural Workforce Development's website. (<https://agworkforce.cals.cornell.edu/regulations/sexual-harassment-prevention/>)

Airborne Infectious Disease Exposure Prevention Plan

On September 6, 2021, Governor Kathy Hochul announced the designation of COVID-19 as an airborne infectious disease under the HERO Act. This designation requires all employers to implement workplace safety plans. The NYS DOL, in consultation with the NYS Department of Health, has developed various industry-specific model plans for the prevention of airborne infectious disease. Employers can choose to adopt the applicable policy template/plan provided by NYS DOL or establish an alternative plan that meets or exceeds the standard's minimum requirements. Employers are required to provide a copy of the adopted airborne infectious disease exposure prevention plan and post the same in a visible and prominent location within each worksite. A template for agricultural businesses is available online at dol.ny.gov/ny-hero-act.



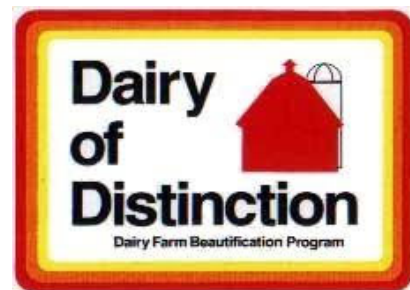
Tax Tips for Forest Landowners for the 2021 Tax Year

[Tax Tips for Forest Landowners for the 2021 Tax Year](#) is now available. The "tax tips" provided in this publication are intended to assist forest landowners and their tax advisors in preparing their 2021 Federal income tax returns. It can also help plan for future years.

To view the entire document, use this web address: <https://tinyurl.com/2p9ckdz5>



Dairy of Distinction Nominations



Applications can be submitted online by visiting the website: www.dairyofdistinctionawards.com

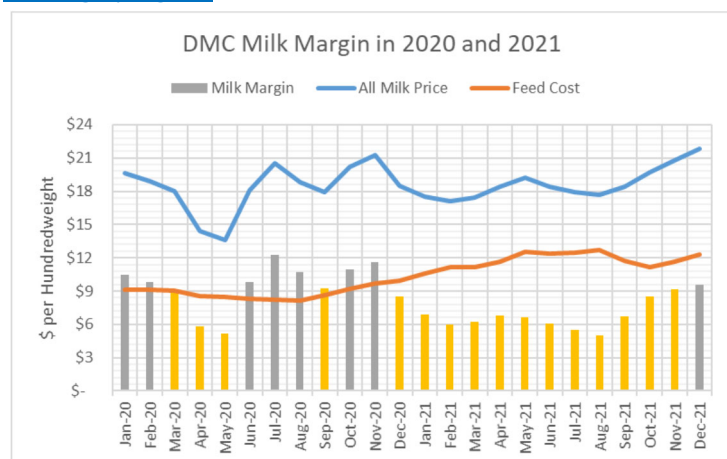
Application deadline is April 15th, 2022.

Dairy Margin Coverage (DMC) Program Changes and Decision Tools for 2022 Enrollment

by Mary Kate MacKenzie, Farm Business Management Specialist

February 15, 2022 - Dairy Margin Coverage (DMC) is a voluntary risk management program authorized by the 2018 Farm Bill that pays participating dairy producers when the difference (the margin) between the national price of milk and the average cost of feed falls below a certain level selected by the program participants. Historically, the milk margin has fallen below \$9.50 per hundredweight in 16 of the 24 months in 2020 and 2021, triggering payments for farms that enrolled at the \$9.50 coverage level.

The USDA recently extended the enrollment period for DMC coverage in 2022, which runs from **December 13, 2021 until March 25, 2022**. For more details about the program, or to enroll, contact your local Farm Service Agency. Additional information can be found on the DMC program website: <http://www.fsa.usda.gov/programs-and-services/dairy-margin-coverage-program>



Caption: The DMC milk margin dropped below the \$9.50 level for 16 months in 2020 and 2021 (yellow bars). Data Source: USDA Farm Service Agency

Program Changes

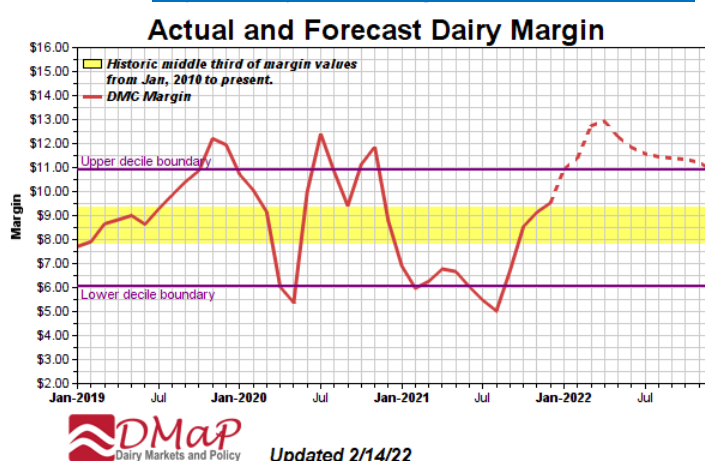
Two recent updates may make the DMC program more appealing to some producers in 2022. First, according to USDA, the program is “changing the DMC feed cost formula to better reflect the actual cost dairy farmers pay for high-quality alfalfa hay.” Going forward, FSA will use the price of premium alfalfa hay for 100% of the alfalfa included in the ration, up from 50%. This change will increase the cost of the feed ration used to calculate the dairy margin. As a result, this will increase program payments relative to past values.

Second, FSA will allow some producers to increase their historic milk production for the first time since the program started in 2014. According to Cornell University Professor of Agricultural Economics Chris Wolf, “this change will be particularly useful for farmers who had less than 5 million pounds of production base under the program but have grown since 2013.” Supplemental DMC Enrollment will allow eligible dairy operations with less than 5 million pounds of established production history to

increase their base according to a formula using their actual milk marketed in 2019. Supplemental DMC coverage is applicable to calendar years 2021, 2022, and 2023. Participating dairy operations that increase their base through supplemental enrollment will receive supplemental payments retroactively for 2021. A farm must complete Supplemental DMC Enrollment before enrolling in 2022 DMC coverage.

Decision Tools

The Program on Dairy Markets and Policy provides tools to help dairy farmers decide whether to enroll in the Dairy Margin Coverage program. One such decision aid is a chart that shows the actual dairy margin for the past several years and the forecast dairy margin for the next 12 months. This chart is updated daily to reflect current estimates of future milk and feed values taken from CME Futures prices. The current chart can be viewed here: <https://dairymarkets.org/Tools/MILC-MPP.html>



As of February 14, the forecast does not predict any payments for most of 2022 given the strong milk price forecast, despite rising input costs. Yet, according to Professor Wolf, “thinking about this as risk management means that it may still be entirely rational to purchase coverage. There have been many years in the past where payments did not look likely at this time the previous year but materialized because of weather or other supply or demand shocks. Historically, the DMC program has been a net positive in almost every year (2014 being the exception).”

Farms can also use an interactive DMC decision tool on the Program on Dairy Markets and Policy website to make coverage selections and view forecast results. This tool shows Net Benefit Forecasts, Price Forecasts, Historic Performance, and a Milk Price Trigger Analysis based on the selected coverage levels. This tool is free and available here: <https://dmc.dairymarkets.org/>. If you would like assistance using this tool, contact your local Cornell Cooperative Extension office.

Now is the time to consider whether to include Dairy Margin Coverage as part of your risk management strategy in 2022, and, if so, the level of coverage that best meets your needs.



F.A.R.M. 4.0 Updates & Insights

Thursday, March 17, 2022

Meeting via Zoom 12:00 pm EST

This program will cover the important updates in FARM Animal Care Version 4.0, review target guidelines and identify possible corrective actions, and highlight cow comfort and lameness benchmarks from dairies across NYS to indicate where we are today. This program is applicable to any type or size of dairy that participates in the FARM Program through their milk cooperative.

Please register through the following link:

https://cornell.zoom.us/webinar/register/WN_HTCiz1OtQ4Cb-xUUbga5Ow

After registering, you will receive a confirmation email containing information about joining the webinar.

For Questions, contact Betsy Hicks at 607-391-2673 /bjh246@cornell.edu

Lindsay Ferlito at 607-592-0290 /lc636@cornell.edu.



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Understanding & Mitigating Lameness

Thursday, March 22, 2022

Virtual Workshop via Zoom 10:00am—12:00 pm EST

This virtual workshop is for anyone who works with dairy cattle. This program will cover how to identify lameness, what factors cause lameness, and practical strategies to avoid and mitigate lameness on your dairy.

10am-10:15am	Economic Impact of Lameness: A brief overview of the impact lameness has on farm profitability due to milk loss, delayed conception, and costs related to extra handling, treatment, and early culling.
10:15am-11:00am	Risk Factors and Best Management Practice: Improving lameness in your dairy herd needs a multi-faceted approach. Presenters will discuss herd management and facility factors that are known risk factors for lameness and strategies to reduce lameness on your farm.
11:00am-11:15am	Foot Baths: A brief discussion on the best practices for implementing and managing footbaths.
11:15am-Noon	Effective Lameness Detection: Early detection of lameness combined with a routine foot-trimming program is critical to minimize the impact on the farm.

We can offer this program at no cost to participants because of the generous support of our sponsors.

[Register for Understanding and Mitigating Lameness Here](#)

https://cornell.zoom.us/webinar/register/WN_-Ai0fzxgRWmS-RR1a0KfYw

For Questions, contact Betsy Hicks at 607-391-2673 /bjh246@cornell.edu

5 Tips for a Successful Dry Period

by Casey Havekes, CCE NCRAT, and Sydney Moore, PhD Student University of British

****This article originally appeared in Progressive Dairy Canada, Issue 1: January 2022. Slight adaptations were made to match US cur-rency and the imperial system of measurement****

The dry period is essential for dairy cows, to allow for regeneration of milk secreting tissue and prepare the udder for optimal success in the next lactation. This period can also be very stressful on the animal due to social, physiological, and nutritional changes making it increasingly important to pay close attention during this time. Ensuring cows are effectively dried off to reduce intramammary infections and discomfort, combined with proper nutrition and general management is essential for cow health and productivity in the following lactation. This article will highlight five tips to promote a healthy, successful dry period!

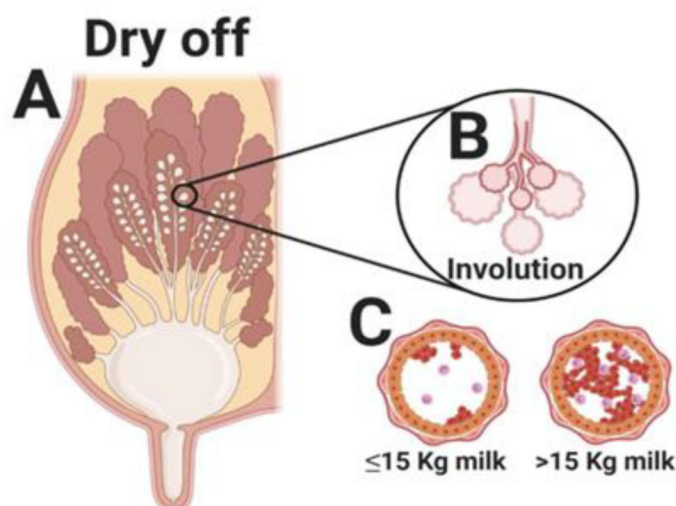
1. Gradually reduce milking frequency (~1/d) in the week leading up to dry off

A common but controversial topic within the dairy industry is how to properly dry off cows. Abrupt dry off is still commonly used, where cows are milked normally (2/3x per day) up until the day of dry off. Whereas gradual dry off reduces milking frequency to ~1/d to reduce milk yield leading up to dry off.

While some literature is conflicting as to which method is better, overall gradual reduction is deemed more efficient at reducing milk yield, accelerating mammary involution, and reducing intramammary pressure. Research from the University of Helsinki in 2020 has also demonstrated many positive impacts of gradual cessation of milking including reduced stress and discomfort and improved cow welfare, post dry off.

2. Aim to reduce milk yield to 15 kg (33 lbs) or less by the time of dry off

Research from the University of Guelph and Ohio State University have shown that milk yield at the time of dry off is the most important factor correlated with intramammary infection/mastitis. Cows with higher milk yields at dry off (>33 lbs/d) experienced a greater degree of milk leakage, intramammary infections, and a higher incidence of mastitis in future lactations. Researchers from the University of British Columbia have also investigated the impact of skipping a milking the day before dry off and they have found promising results in regards to further decreasing milk yield before dry off. Another strategy to limit milk production prior to dry off is to introduce a lower energy diet. Combined, these efforts will help cows achieve a target threshold of 33 lbs or less by dry off.



Adapted from Pascottini et al., 2020, Intramammary pressure

3.

Be thorough, consistent, and patient with (or without) dry cow therapy

If using dry cow therapy, ensure each teat is thoroughly cleaned with disinfectant, antibiotics are administered correctly, and teats are properly sealed. While it may seem taxing on your daily tasks, these small acts are crucial for mammary health and productivity in her next lactation. As concerns with antibiotic usage continue to increase, researchers have been thoroughly investigating blanket vs select dry cow therapy. When considering an approach to drying cows off, make sure to consult your veterinarian. Select dry cow therapy has proven to be effective in some circumstances, but it is not a 'one size fits all' approach. Researchers are still developing mathematical models to identify good candidates for this approach and while there is great potential, careful consideration should be used when making these decisions in your herd. Keep in mind that each mastitis case costs Canadian dairy farmers ~\$660/cow/year (~\$520 USD). Being proactive and making the decision that best fits your management and your cows, will always pay off in the end!

4. Feed the appropriate diet

How to feed dry cows has become a hot topic in the last decade with several researchers and industry professionals promoting controlled energy dry cow diets, or more commonly referred to as the "Goldilocks diet". These diets incorporate high quantities of low nutrient dense forages (such as wheat straw) in an attempt to reduce the dietary energy density and limit body condition gain. When managed correctly, these diets have been

(Continued on page 7)

proven effective for promoting metabolic health post-calving. Pay close attention to straw particle size in the diet as recent research from the University of Guelph (2019 & 2020) has shown positive impacts of feeding straw with a 1-inch chop length vs a 4 -inch chop length. Further research from the University of Guelph also proved that providing Promix Dry Cow (a molasses based dry cow product from Liquid Feeds Inc.) will prepare the rumen for the fresh cow diet. These benefits include improved intake in the week leading up to calving, reduced sorting, and lower BHB levels 3-weeks after calving. Additionally, pay attention to mineral levels in the close-up diet. Anionic supplements or a calcium binder are commonly added in the dry cow diet to help control the risk of milk fever.

5. Limit stressors

The dry period is a stressful time for cows as there are several changes and challenges that they will face within a short period of time. While some of these stressors (dietary changes and pen changes) are inevitable, there are others that we can control and

limit through good management. Avoid introducing new animals to the pen as much as you can. Each time new animals enter a pen, antagonistic interactions increase while eating and resting time decrease – all of which are particularly detrimental in the weeks leading up to calving. Additionally, stocking density in the dry period should be under 100% to ensure that all cows have access to lying and feeding space (recommended 30 inches/cow). Keep in mind that space requirements will naturally increase as cows progress through their pregnancy, so try to ensure sufficient stall width (or at least 100 square feet of bedded pack space/cow) in the pre-fresh pen. Lastly, recent research out of the University of Florida has highlighted the importance of providing heat abatement in the dry period – not only for the dam, but also for the calf. Cooling cows during the dry period can increase mammary growth thereby resulting in better production throughout her lactation, improved immune status, and promote dry matter intake throughout the dry period.



We are looking for farmers to participate in a short-term discussion group focused on lameness. Can You Help?

It will include:

- *Two Meetings: First meeting with participants in April on group goals of tracking lameness & costs; final meeting after fall harvest*
- *Three months of tracking costs of hoof care using a PRO-DAIRY template*
- *Lactating cow locomotion scoring by Betsy*
- *Final meeting going over cost differences and benchmarking differences between participants*

For more information on participating, contact to Betsy Hicks, Dairy Management Specialist at 607-391-2662 / bjh246@cornell.edu.

Dairy Women's Group: Community Outreach in Dairy



**April 14th
12 - 2 pm EST**

Virtual Zoom Meeting, facilitated by
Beth Meyer of
American Dairy Association Northeast &
Betsy Hicks/Lindsay Ferlito of CCE

Register in advance for this meeting:

<https://tinyurl.com/DairyWomensOutreach>

After registering, you will receive a confirmation email containing information about joining the meeting.

Focus on Farm Management: Stepping up Calf Protocols Case Study

By Betsy Hicks, Area Dairy Management Specialist

Do you ever feel like your calf health is “pretty good” but you feel like you’re treating more calves than you should? Or always fighting a virus or scours bug at a certain age in your calf group? A step back to look at calf protocols might be a worthwhile exercise.

The case study I’ll share in this article was from a participating farm in our NY Farm Viability Institute grant project “Focus on Farm Management: Areas of Excellence and Opportunity with Calves, Transition Cows and Cow Comfort”. Participating farms received assessments in these three areas, worked with their Cooperative Extension Dairy Specialist to come up with an action plan, implemented the plan, and then had their farms reassessed about a year later. A benchmark of all fifteen participating farms was created for each farm to compare to, as well as against their original assessment.

Calf Measurements

This case study farm knew that calf health was an area on their farm that they wanted to focus on. Calf health here was not terrible, but they felt that they were treating more calves than they should. Their first assessment of calf health included using the University of Wisconsin’s Calf Health Scoring Chart. This method utilizes scoring criteria of evidence of cough, nasal discharge, eye discharge, ear droop, and fecal scoring; each area receiving a score from 0 -4. Indication of respiratory disease occurs when 2 of 4 categories score greater than 1. A copy of the chart can be found at: <https://www.vetmed.wisc.edu/fapm/clinical-info/> (both in English & Spanish!)

Upon comparison to the benchmark of participating farms, the manager’s suspicions were confirmed that calf health was an area they needed to focus on. While their respiratory scores were better than benchmark (81% vs 73% score 0), we found that calf fecal scores were much worse than benchmark (70% vs 83% score 0). Other data collected were nesting scores and bedding cleanliness, which the farm scored very well on, as they prided themselves on bedding hutches daily at a minimum, and ensuring calves had a clean and dry environment.

Forming the Action Plan

After viewing the assessment results, the farm wanted to make it a goal to improve calf health, even though respiratory scores were better than benchmark numbers. The assessment helped reveal where calves started to struggle with scours – about two weeks old. The farm to this point had only been feeding twice a day, as three feedings per day was too much for the current labor. As treatments and monitoring sick calves takes quite a bit of time, the farm decided to implement a third feeding, and add to their calf staff.




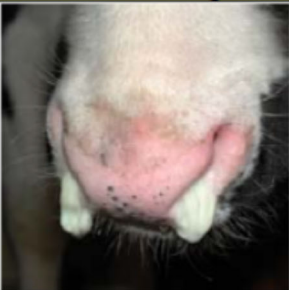




Taking a Step Back

The farm also wanted to review colostrum protocols as well as feeding and cleaning protocols, as there were new staff as well as feeding changes happening at the same time. The owner evaluated current protocols with their veterinarian and nutritionist. The decided changes were written down and dated, so that the farm knew when changes were made in order to make comparisons afterwards. Calf staff were called together to go over the updated colostrum feeding protocols and trained on cleaning protocols for feeding equipment.

The Results

About nine months after making changes, the farm received their second assessment. The farm manager was eager to see the results, as the calf staff felt that calf health had improved greatly and had far fewer calves to treat. The results? Calf fecal scores improved dramatically, from 70% score 0 to almost 99% score 0. Concurrently, calf respiratory scores also improved, from 81% score 0 to over 87% score 0. The farm saw calves achieving higher gains in addition to reducing treatment costs. The farm attributes their success to the calf crew’s ongoing care, and stated, “I was surprised on how a low investment could make such a big improvement”. Making time to review protocols with key farm individuals, decide on changes, and train staff was key in this case study. Like to go over calf health on your dairy, feel free to reach out! I’d be happy to do an assessment and walk through protocols with you!

Figure 1: Calf Health Scoring Chart, University of Wisconsin-Madison, School of Veterinary Medicine

Nasal discharge			
Normal serous discharge	Small amount of unilateral cloudy discharge	Bilateral, cloudy or excessive mucus discharge	Copious bilateral mucopurulent discharge
			
Eye scores			
Normal	Small amount of ocular discharge	Moderate amount of bilateral discharge	Heavy ocular discharge
			



In Case You Just Missed It...

Visit our YouTube Page to catch up on any of our programming you may have missed out on!

Our Playlist now includes the following materials:

- ⇒ Net Zero
- ⇒ Transition Cow Tuesdays
- ⇒ Healthy Hardy Heifers
- ⇒ Critical Calf Care
- ⇒ Feeder School (Spanish & English)
- ⇒ Podcast “Troubleshooting Herd Health Issues”
- ⇒ Podcast “Dialing In To your Best Dairy”

Visit Us at:

<https://tinyurl.com/SCDFCYTplaylists>

What To Expect To Receive Credits from a Zoom Conference

The DEC has firm guidance that we must follow for virtual meetings offering pesticide credits. You must pre-register for the meeting and send us a copy of your license. You can take a picture with your phone or scan it and send to Donette’s email at dg576@cornell.edu. You will be asked to sign into the chat box prior to the meeting or as it starts with your full name as it is on your pesticide applicator’s license and your number and again at the conclusion of the meeting. Please start the zoom a few minutes before the official start to give yourself time to enter the information into the chat box. Certificates will be sent via email when possible or snail mail. If you need further assistance,



Thoughts for Alfalfa Harvest Management

Excerpts from Dan Undersander, Marvin H Hall, Paul Vassalotti, Denis Cosgrove's "Alfalfa Germination & Growth"; website listed in article.

*Dear Reader: While preparing for a presentation on weed control in hay and pasture I became reacquainted with an excellent publication, *Alfalfa Germination & Growth*, a collaboration of several university and private sector Forage 7 agronomy Specialists: Dan Undersander, Forage-U of Wisc; Marvin H. Hall, Forage-Penn State, Paul Vassalotti, Tech Specialist with American Cyanamid Co.; and Dennis Cosgrove, Agronomy-U of Wisc. We are reprinting excerpts of the publication that focus on stand and harvest management. The full publication is available at <https://tinyurl.com/nakcza66>*

—Janice Degni

Growing Alfalfa -Management tips

- The ideal cutting height is at least 2 inches above the soil surface (3 to 4 inches if a grass is mixed with the alfalfa).
- Maximize stem density. Short cutting intervals (less than 35 days) will reduce the number of axillary buds. Moisture stress immediately after cutting will reduce the number of crown and axillary buds and therefore will reduce stem density and yield, even if rain occurs later in the growth cycle

When to cut- Management tips

When to cut for hay or haylage. Forage yield, quality, and stand persistence are affected by the cutting schedule chosen. Forage yield increases until the plant reaches full flower, while forage quality decreases continually during growth. Cutting for high quality will reduce total season yield, so one must ensure that the high quality will produce a return to offset the yield loss. Early season growth may not flower normally and quality will decline if it doesn't. Therefore, using a forage quality stick (available from some state forage associations and some alfalfa seed marketing companies), or measuring forage height and plant stage (as described later), is crucial in determining when to do the first cutting in order to harvest alfalfa of the desired quality. The stage to cut alfalfa for optimum forage quality for dairy cattle ranges from the vegetative to early bud stage on first cutting and is generally at bud stage on later cuttings. Later stages may be harvested for animals with lower nutritional requirements

Winter hardening and winter survival

Shortening days and declining temperatures in the fall can cause some alfalfa varieties to change their vegetative growth pattern. Stem growth in the fall serves as the basis for assigning varieties a relative fall dormancy rating. A fall dormancy of 1 indicates the greatest fall dormancy and least height of fall growth, while a rating of 11 indicates the least fall dormancy and greatest height

of fall growth. Usually, the more fall-dormant the variety, the slower it regrows after harvest but the better it survives adverse winter conditions. During the fall, dormant varieties alter their chemical processes to prepare for winter survival. Some of the starch in the crown and root is converted into sugars that function as antifreeze and help keep the crown, crown buds, and root from freezing at temperatures well below 32°F. Crown buds, which will be the source of growth the following spring, are formed during the fall. Dormant alfalfa varieties can survive temperatures of about 5°F after they have been prepared for winter survival by having had at least two weeks of temperatures alternating between nearfreezing nights and 60°F days. Plant tissue below the soil surface is insulated from cold air temperatures by soil and layers of snow. When there is no snow cover, extremely cold air temperatures can cause the soil temperature to drop below 5°F. This will injure or possibly kill the alfalfa plant.

Understand the risks of harvesting during the bud stage.

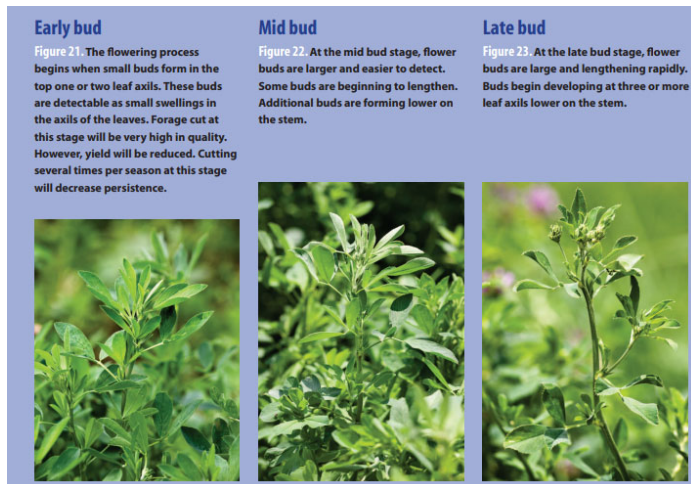
Alfalfa varieties developed in the past 10 years have greater disease resistance than older varieties. With adequate fertility and pest control, these newer varieties can survive aggressive harvest schedules better than older varieties. In addition, newer alfalfa varieties have been selected for rapid regrowth, which increases their yield potential. Faster regrowth is a result of decreased production of auxin (a plant hormone) during the flower bud stage, allowing earlier regrowth from crown buds. Harvesting during the flower bud stage provides relatively high forage quality, but continuously harvesting at this stage will result in low root carbohydrate reserves and stand decline. Alfalfa stands that are intended to remain in production for more than three years must be allowed to mature beyond the flower bud stage at least once during the season to replenish root reserves.

- **Forage yield, quality, and stand persistence** are considerations when deciding when to cut. Forage yield increases until the plant reaches full flower, while forage quality decreases continually during growth or regrowth (see figure 20). The optimum balance between yield and quality depends on the cutting and the forage quality desired. Early in the growing season, plants may not flower normally and quality may decline even though the plant is not flowering. This can be determined using a forage quality stick or by measuring plant height. Take

(Continued on page 11)

later cuttings based on growth stage or time interval (35 to 45 days).

• **The stage to cut alfalfa** for optimum yield and forage quality for milking dairy cows ranges from the vegetative to early bud stage on the first cutting, to 10 percent flower on the second and third cuttings, to full flower on a late fall cutting. For animals with lower nutritional requirements, later stages may be harvested. The pictures on the following pages depict growth stages commonly referred to when discussing cutting management.



The appearance of the first flower bud usually indicates that forage quality is beginning to rapidly decline (see figure 20). This decline is partly due to the loss of lower leaves when they are shaded by leaves higher on the stem, and partly due to continued thickening and lignification of cells in the stem. Some producers begin harvesting when buds first appear in order to avoid the rapid decline in quality thereafter. However, root carbohydrate reserves used to support early vegetative growth have not been fully replenished at the bud stage.

Estimating preharvest alfalfa quality

Choose five representative 2-square-foot areas in the field. (Sample more times for fields larger than 30 acres.) In each area, determine the stage of the most mature stem (see below). Then measure the height of the tallest stem, NOT the highest leaf. Note that the tallest stem may not be the most mature stem. Use the chart to determine relative feed value of the standing alfalfa forage. This procedure does not account for changes in quality due to wilting, harvesting, and storage. These factors may lower relative feed value by 10 to 20 points.

Summary

Management tips for optimum alfalfa growth and development • Select alfalfa varieties with proven high-yield potential, disease

resistance, and winter hardiness in your region. • Get the soil tested, then fertilize and lime according to the soil test recommendation. • Plant alfalfa in well-drained fields. • Buy pre-inoculated seed, or inoculate your own seed. • Plant less than 1/2 inch deep at an adequate rate for your area. • Ensure good seed-to-soil contact by firming soil around seed with press wheels on drill or cultipacker. • Control weeds, especially during first 60 days after seeding. • Control insects. • Apply needed nutrients annually, based on soil or tissue tests. • Follow a harvest schedule which will provide forage of the required quality and will lead to the desired life expectancy of the alfalfa stand.

late vegetative	stem is more than 12 inches tall, no visible buds or flowers
early bud	1 to 2 nodes have visible buds; no flowers or seed pods present
late bud	more than 2 nodes have visible buds; no open flowers or seed pods
early flower	1 node with at least one open flower
late flower	2 or more nodes have open flowers

height of tallest stem (inches)	stage of most mature stem				
	late vegetative	early bud	late bud	early flower	late flower
relative feed value					
16	234	220	208	196	186
17	229	215	203	192	182
18	223	211	199	188	178
19	218	206	195	184	175
20	213	201	191	181	171
21	209	197	187	177	168
22	204	193	183	173	165
23	200	189	179	170	161
24	196	185	175	167	158
25	191	181	172	163	155
26	187	178	169	160	152
27	184	174	165	157	150
28	180	171	162	154	147
29	176	167	159	151	144
30	173	164	156	148	141
31	169	161	153	146	139
32	166	158	150	143	136
33	163	155	147	140	134
34	160	152	145	138	132
35	156	149	142	135	129
36	154	146	139	133	127
37	151	144	137	131	125
38	148	141	134	128	123
39	145	138	132	126	121
40	142	136	130	124	118

Source: Derived from equations developed by R.W. Hintz, V.N. Owens, and K.A. Albrecht at the University of Wisconsin-Madison, Department of Agronomy.

(Our alfalfa height measurements in the spring are based on this science.)

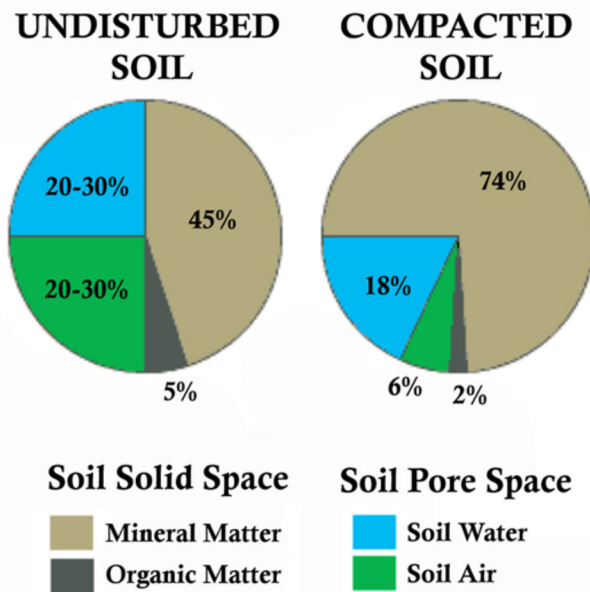
Additional Resources:

Alfalfa Management Guide (NCR547) - <https://www.americasalfalfa.com/Alfalfa-University-Content/Production-Management/Alfalfa-Management-Guide>
Alfalfa Stand Assessment: Is This Stand Good Enough to Keep? (A3620) - <https://fyi.extension.wisc.edu/forage/alfalfa-stand-assessment-is-this-stand-good-enough-to-keep/>
Cornell Forage Trial Results - <https://blogs.cornell.edu/>

The Slow and Furtive Nature of Pasture Soil Compaction: Project Develops Ratio to Monitor Impact

By Fay Benson, Cornell Cooperative Extension of Cortland County

In my work, first as a grazing dairy farmer and now as a Cornell University Cooperative Extension educator working with graziers across New York State, I have been aware of pasture soil compaction but one experience in particular gave me the insight into the slow and furtive nature of compaction in pastures. This article summarizes my findings from a three-year, Northeast Sustainable Agricultural Research and Extension (NESARE)-funded project developed to better understand soil compaction in pastures.



Graphic: USDA Natural Resources Conservation Service

Permanent pastures for livestock can have some of the healthiest soils due to the fact they provide the four principles described by the Natural Resources Conservation Service to achieve a healthy soil: Maximize Soil Cover, Maximize Living Roots Year-round, Maximize Plant and Animal Diversity, and Minimize Soil Disturbance. One weak spot for some pastures is soil compaction, which is a form of soil disturbance. Soil compaction reduces the spaces between soil particles causing them to become denser. Theoretically, the space in a healthy soil aggregate is made up of 25% air, 25% water, 45% of sand, silt, or clay, and 5% organic matter. When compacted, the soil's air and water portions are reduced so that biological functions, water retention, and root elongation are reduced.

Once the grazing season arrives, livestock go into the pastures no matter the weather, if the soil is wet it's more prone to compaction. Whether the livestock is cows, horses, or small ruminants, the weight of the animal compared to the size of the hoof can exert more compaction than a tractor. This is why in the past, sheep were used to pack an area to create a dam. Even though the animal's compaction is great it only shows up in the upper portion of the soil

where it can be erased in time provided that it's not repeated. Compaction from the tractor goes deeper into the soil where it is harder to erase. This is more damaging in terms of overall soil health.

Repeating compaction over many years causes a very slow and damaging effect on the functions of the soil and the species that make up your grazing sward, reducing the productivity of your pastures. What I learned from my three-study is that although compaction is unavoidable, a change in management will quickly remedy it.

How This Study Started

As I was working on another SARE-funded study, planting brassicas into fall pastures to improve the nutrient density of the fall swards <https://projects.sare.org/project-reports/one14-197/>, I noticed that the soil under the fence in one of our study paddocks was about six inches higher than in the pasture, and the sward under the fence was greener and had only cool season grasses compared to the paddock that also had some weeds and sedges. Knowing that sedges grow in oxygen-limiting soils, I realized that soil compaction was limiting the productivity of this pasture.

The other lesson I learned that day was that compaction was furtive, meaning that it happened slowly over time so the change was hidden from the farmer, who was a good grazer and had farmed there for nearly 20 years, but had not noticed the change in his paddocks.

That day seeded the idea for investigating ways to monitor soil compaction for better pasture management. Since that day, I've noticed the evidence of compaction in other pastures and the farmers hadn't noticed the change probably due to the fact that compaction is compounded over many years. Productivity is reduced when compaction is left for many years. Plants that can live in compacted soils are not as productive due to shallow roots and are often not palatable to the livestock.

The SARE study revealed that soil compaction will dissipate within months if management changes and has provided a basis for developing those changes to enhance pasture productivity.

Testing a PCR Hypothesis for Pasture Monitoring

To measure soil compaction, the penetrometer is a readily available tool. When pushed into the soil, it measures the soil's resistance. Its meter indicates the pounds per square inch (PSI) of resistance at the tip. The limitation of the penetrometer reading is that the resistance is highly affected by the changing moisture of the soil. A soil will have more or less resistance on different days as the soil dries out or

becomes damp. This has precluded the penetrometer from being a reliable monitoring tool.

I decided to develop a ratio representing the unique conditions of pastures where the soil is impacted by grazing animals but the pastures' fenceline is not impacted by animal or machine-based compaction to determine if such a monitoring technique could be helpful. Monitoring with this Pasture Compaction Ratio (PCR) would look for any change between the optimum compaction area (fenceline) and the compacted area (pasture).

To test my PCR hypothesis, I selected a 35-acre pasture continuously overgrazed by 40-60 beef animals. As expected in overgrazed pastures, there is increased traffic by the animals as they get only small bites from the sward that consisted of mostly bluegrass, Dutch clover and other forbs. The increased traffic leads to increased compaction. Due to the declining productivity of the pasture, the animals in the trial pasture mostly relied on stored hay brought into the pasture.

How to Compute the Pasture Compaction Ratio (PCR)

Using a Penetrometer collect five readings (lbs./sq. inch) of the top six inches of the pasture; these are averaged to determine Pasture Resistance.

Divide the Pasture Resistance number by the average of five readings collected under the fenceline to determine Fenceline Resistance.

Divide the Fenceline Resistance number by the Pasture Resistance number to determine the Pasture Compaction Ratio (PCR).

$$\text{PCR} = \text{Fenceline Resistance} / \text{Pasture Resistance}$$

In November of 2019, I installed an enclosure, a ten-foot by ten-foot square in the pasture that excluded animal traffic. To mimic hay production within the enclosure, I cut the area to a four-inch height twice during the season. In 2019 and 2020, I took penetrometer readings of the enclosure and divided them into the fenceline readings to arrive at the enclosure's PCR (Figure 1). I continued to do the same for the pasture PCR.

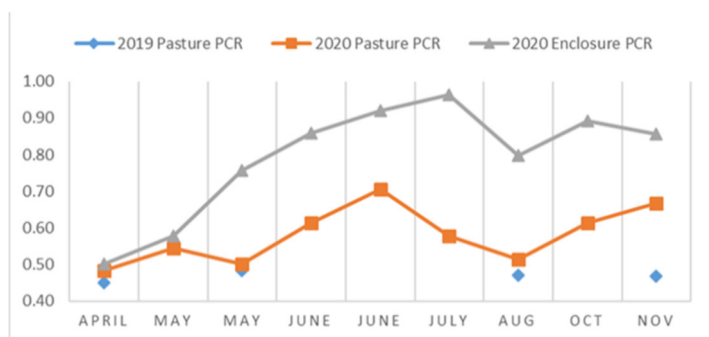


Figure 1. Comparison of Pasture Compaction Ratios (PCR) for study areas, 2019 and 2020.

PROJECT TAKEAWAYS:

The pasture PCRs for 2019 and 2020 are similar which would be expected since no management changes happened.

In April the PCRs for both the pasture and enclosure in 2019 and 2020 start out the same. The rising pasture PCR after May of 2020 indicates that the pasture's compaction resistance is improving since the PCR is moving closer to the fenceline's compaction PCR which peaked at 1.0.

The separation of the 2020 PCRs for the pasture and the enclosure is an indication that the use of the PCR is capable of monitoring management changes. The switch to hay production only within the enclosure reduced the compaction of the soil.

I would have expected that the reduction in compaction in the enclosure would have shown up in April of 2020 due to frost and heaving of the soil. The reduction in compaction happening after the beginning of May indicates that possibly it occurred as a result of the increase in soil temperature and biological activity causing the (aggregate) soil's air and water spaces to expand.

I can't explain why the 2020 PCRs for pasture and enclosure deviate in August. Why did they both drop? It was suggested that the one measurement I failed to track was soil moisture. I assumed that moisture would change equally but, if the pore spaces increase as the soil is less compacted, that soil would have more water in those pores.

The reduction in compaction in the enclosure happened within a few months. What didn't change was the makeup of the sward of bluegrass and other lower productivity species that was brought about by years of compaction in the pasture. This is why it is important to monitor compaction, changing management before the sward specie changes.

The most interesting takeaway from this study for me was how quickly the shallow compaction in the pastures dissipated. The real damage was caused in pastures where the management didn't change and the years of compaction reduced the function of the soil so that it changed the grazing sward to less productive species.

Obviously, much more study is needed to better understand the usefulness of using a ratio between two soil management areas as a monitoring technique. This project raised more questions to be addressed before a PCR can be a reliable tool. Developing a way to monitor soil compaction with a readily available tool such as the penetrometer would provide a great advantage to farmers and advisors who seek to improve the function and health of agricultural soils. To learn more about the technical details of the PCR study, see <https://scnydfc.cce.cornell.edu/submission.php?id=1477&crumb=soil|7>.

SIDEBAR: MANAGEMENT CHANGES TO REDUCE PASTURE COMPACTION

(Continued on page 15)

New Study on Farm & Residential Ponds: Examining Pond Greenhouse Gases and Carbon Burial

Do you own a pond? Are you curious to learn more about its ecology, and are you willing to let Cornell researchers come sample? If so, consider participating in this new project measuring pond greenhouse gas emissions



and carbon burial. The aim of the project is to better understand the drivers of carbon emissions and burial so that we can identify strategies to reduce pond greenhouse gas emissions.

Requirements for a pond to be included in the study:

- Pond must be human-made (though natural ponds are needed for a separate study!)
- We need to know year of pond construction
- We need to know if the pond has been dredged, and when the last dredging occurred
- Pond is < 5 hectares (< 12 acres) in surface area
- Pond depth is < 5 meters (16 feet) in maximum depth (it's okay if depth is currently unknown)

What pond sampling entails:

If your pond is included in the study, Cornell researchers will sample your pond between three (extensive survey, 22 sites) and eight times (intensive survey, 8 sites), with each sampling event happening over two days. Sediment coring may occur in 2022; other sampling will occur in 2023.

Sampling will include:

- Collecting 2-3 sediment cores
- Mapping sediment thickness
- Collecting water samples for water chemistry and greenhouse gas concentrations
- Measuring greenhouse gas flux off the pond using chambers and bubble traps
- Vegetation surveys
- Fish surveys
- Outfitting a subset of sites with temperature sensors, oxygen sensors, and methane bubble traps continuously for 5-8 months

Do you want your pond to be considered for this

study? If so, email Meredith Holgerson (meredith.holgerson@cornell.edu). Include your pond's location (address or latitude/longitude) and surrounding land use, pond age, and if the pond has been dredged. Please include a pond photo if you have one.

Timely Field Crop Resources

The Handy Bt Trait Table for
U.S. Corn Production:

[Bt Corn Trait Table - Extension Entomology,
Texas A&M AgriLife Extension
\(\[texasinsects.org\]\(http://texasinsects.org\)\)](#)

An up-to-date version of the table is posted
at <https://www.texasinsects.org/bt-corn-trait-table.html>

Editor: Chris DiFonzo, Michigan State
University, difonzo@msu.edu

Web host: Pat Porter, Texas A&M University

*“Agriculture is our
wisest pursuit because
it will in the end
contribute most to real
wealth, good morals,
and happiness.”*

- Thomas Jefferson

As mentioned earlier, compaction in pasture soil is unavoidable. Some immediate suggestions for reducing compaction on your pasture and grazing lands, include:

- Graze mature swards. Benefits include deeper roots, longer rest periods, and denser bites so that the animal fills with fewer footsteps.
- Know the soil texture of your pastures. Soils high in sand and silt are more prone to compaction problems. Where these soils are, try to graze when soil is dry. A healthy texture would be equal amounts of sand, silt, and clay.
- Track your organic matter. Higher organic matter makes stronger soil aggregates or particles.
- Vary the use of paddocks where possible, e.g., start your grazing in different paddocks each spring, and allow paddocks to be harvested for hay at times.

For more tips, see “Pasture Soil Compaction: Prevention and Remediation” online and downloadable at <https://projects.sare.org/wp-content/uploads/Compaction-Fact-Sheet-Final-1.pdf>.

Fay Benson is the NY Soil Health Trailer Coordinator, the education coordinator for the New York Dairy Grazing Apprenticeship Program, project manager of the NY Organic Dairy Initiative, and a small dairy support specialist with the six-county Cornell University South Central New York Dairy and Field Crops Team. He can be reached at 607-391-2669, afb3@cornell.edu.

GRAPHIC FILES:

Pie charts comparison of undisturbed vs. compacted soil: [NRCSPieChartscompaction-of-soil.png](#)

Figure 1. Comparison of Pasture Compaction Ratios (PCR) for study areas, 2019 and 2020.



ACR/PLC Annual Enrollment Deadline Approaching

USDA's Farm Service Agency (FSA) is encouraging producers to contact their local USDA Service Centers to make or change elections and to enroll for 2022 Agriculture Risk Coverage (ARC) and Price Loss Coverage (PLC) programs, providing future protections against market fluctuations. The election and enrollment period opened on Oct. 18, 2021 and runs through March 15, 2022.



Producers can elect coverage and enroll in ARC-CO or PLC, which are both crop-by-crop, or ARC-IC, which is for the entire farm. Although election changes for 2022 are optional, producers must enroll through a signed contract each year. Also, if a producer has a multi-year contract on the farm and makes an election change for 2022, it will be necessary to sign a new contract.

If an election is not submitted by the deadline of March 15, 2022, the election remains the same as the 2021 election for crops on the farm. Farm owners cannot enroll in either program unless they have a share interest in the farm.

Covered commodities include barley, canola, large and small chickpeas, corn, crambe, flaxseed, grain sorghum, lentils, mustard seed, oats, peanuts, dry peas, rapeseed, long grain rice, medium and short grain rice, safflower seed, seed cotton, sesame, soybeans, sunflower seed, and wheat.

Web-Based Decision Tools

In partnership with USDA, the University of Illinois and Texas A&M University offer web-based decision tools to assist producers in making informed, educated decisions using crop data specific to their respective farming operations. Tools include:

[Gardner-farmdoc Payment Calculator](#), a tool available through the University of Illinois allows producers to estimate payments for farms and counties for ARC-CO and PLC.

[ARC and PLC Decision Tool](#), a tool available through Texas A&M tallows producers to estimate payments and yield updates and expected payments for 2022.

Crop Insurance Considerations

ARC and PLC are part of a broader safety net provided by USDA, which also includes crop insurance and marketing assistance loans.

Producers are reminded that ARC and PLC elections and enrollments can impact eligibility for some crop insurance products.

Producers on farms with a PLC election have the option of purchasing Supplemental Coverage Option (SCO) through their Approved Insurance Provider; however, producers on farms where ARC is the election are ineligible for SCO on their planted acres for that crop on that farm.

Unlike SCO, the Enhanced Coverage Option (ECO) is unaffected by an ARC election. Producers may add ECO regardless of the farm program election.

More Information

For more information on ARC and PLC, visit the [ARC and PLC webpage](#) or contact your local [USDA Service Center](#).



Cornell Cooperative Extension

South Central NY Dairy and Field Crops Program

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Upcoming Events Calendar

March 9—10	Northeast Dairy Management Conference; Virtual To register: https://cals.cornell.edu/pro-dairy/events-programs/conferences-seminars/northeast-dairy-management-conference
March 15 9am Registration 9:30am -2:30pm	Dairy Support Service's Spring Safety Meeting CNY Farm Supply / In-person (\$20) or Virtual (Free) To register for virtual: https://scnydfc.cce.cornell.edu/event.php?id=1822 To register for in-person: https://scnydfc.cce.cornell.edu/event.php?id=1823
March 16— <i>virtual</i> March 30/ April 1 <i>in-person</i>	Implementing Practical Genetics for the Commercial Dairy; \$50 End of series: To register: https://scnydfc.cce.cornell.edu/event.php?id=1755
March 17 12 pm	F.A.R.M. 4.0 Updates & Insights; Free Virtual Workshop To register: https://scnydfc.cce.cornell.edu/event.php?id=1804
March 22 10 am-12:30pm	Understanding and Mitigating Lameness; Free Virtual Workshop Via Zoom To register: https://scnydfc.cce.cornell.edu/event.php?id=1805
March 29 1—4pm	Pesticide Applicator Training; Virtual Workshop; \$15 To register: https://scnydfc.cce.cornell.edu/event.php?id=1827
March 31, 12:00 - 1:30 pm	Dairy Manager Discussion Group Meetings -Part 3 of 3; Free Virtual Meeting Via Zoom To register: https://scnydfc.cce.cornell.edu/event.php?id=1801
April 14 12 pm	CNY Dairy Women's Group: Community Outreach in Dairy; Virtual To register: https://tinyurl.com/DairyWomensOutreach

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