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A partnership between Cornell University and the CCE Associations of Allegany, Cattaraugus, Chautauqua, Erie and Steuben Counties.

CROPS COWS & CRITTERS newsletter

Crops, Cows & Critters Newsletter

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Newsletter layout and design by Katelyn Walley-Stoll.

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For accommodations or accessibility concerns, please contact our specialists at least one week prior to the scheduled event. If you need information provided in a different format, call 716-640-0522.

Reminder - Handling Union Conversations on Your Farm

By Katelyn Walley-Stoll, Farm Business Management Specialist

There have been increased conversations about farmworker unionization across the state. Farmworkers have been eligible to form unions per FLFLPA as of 1/1/20. As a quick reminder, there are certain things employers can and can't say when discussing unions with farm employees as outlined below. This information is from a presentation made by Richard Stup of the Cornell Ag Workforce Development Program.

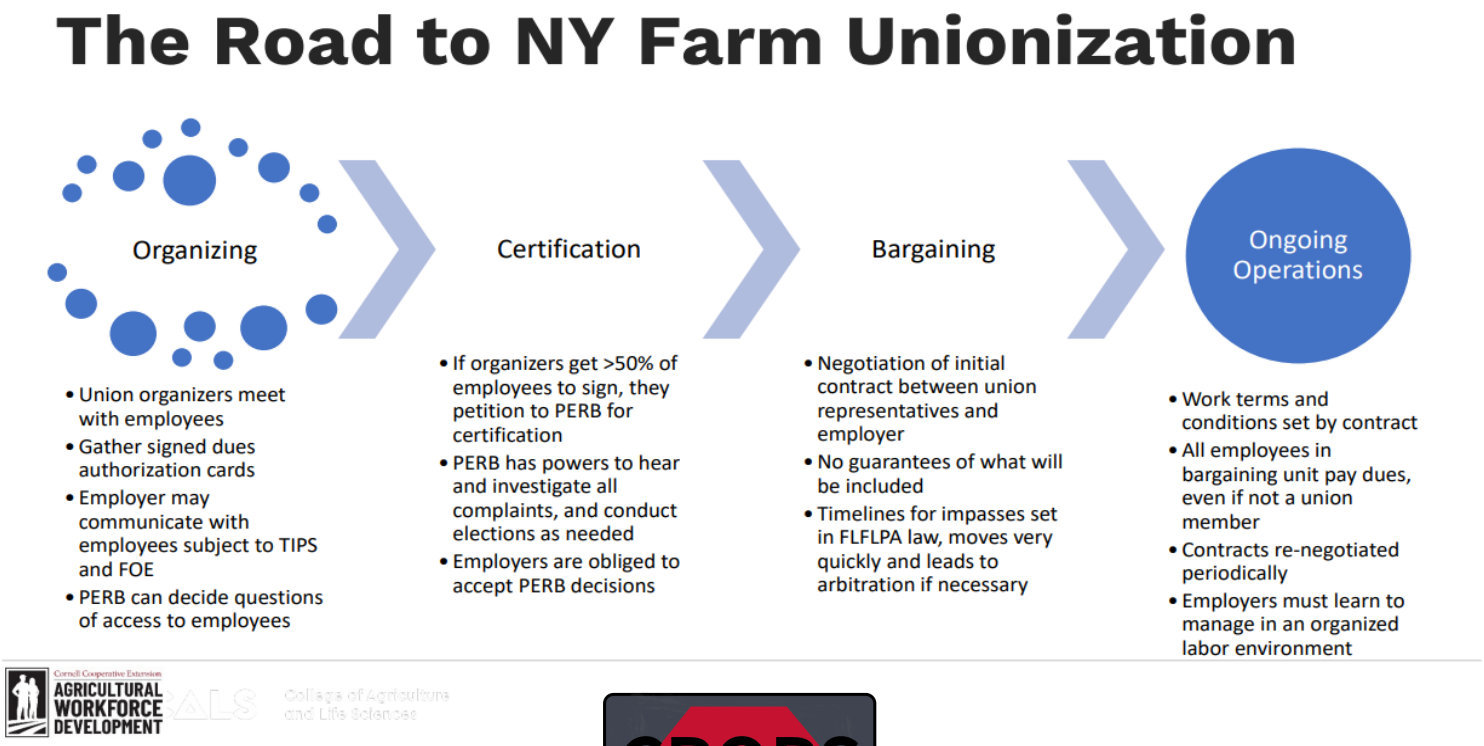
What Employers Can't Say - TIPS

- **T is for Threats.** Employers can't make any type of threat against employees who support the union. This includes discipline, terminations, a reduction in benefits, or other adverse action.
- **I is for Interrogate.** Employers aren't allowed to ask questions about the organizing effort or details about meetings and interested employees.
- **P is for Promise.** Employers can't promise raises, benefit improvements, or other items with value in exchange for not unionizing.
- **S is for Surveillance.** Employers can't utilize spies, cameras, or other surveillance methods to monitor union activities.

What Employers Can Say - FOE

- **F is for Facts.** Employers can share factual information about the union process, including collective bargaining procedures and the collection of union dues. They can also discuss how a union will affect the relationship between management and employees.
- **O is for Opinions.** Employers can state their own personal opinions about unions without threats or promises.
- **E is for Examples.** Employers can share specific examples such as example union contracts, news reports of other union activities, or current situations where management and employees have worked together through conflict.

Union organizers are able to communicate directly with employees and employers are not able to ban organizers. Employers may not lockout workers as a result of a dispute and farm employees may not strike or stop farm work in the case of a dispute once a union is implemented. For more information, contact Katelyn Walley-Stoll by calling 716-640-0522 or visit the Cornell Agricultural Workforce Development Program at agworkforce.cals.cornell.edu. ▪



Union activity on farms has increased significantly in New York State. It's important for employers to know what they can, and can not, say.

Remember TIPS (You CAN'T threaten, interrogate, promise, or surveille) and FOE (You CAN share facts, opinions, and examples).

Known Bale Weights are Critical this Year

By Mike Rankin; Adapted from Hay and Forage Grower

In the hay industry, there are still a number of hay sales that occur "by the bale." Yes, it's easier, but if the sale is made without factoring in bale weight and moisture, there's a good chance the buyer is paying either too much or not enough.

Known, accurate bale weights have always been important, but they've never carried the degree of economic significance as they have this year. It's true whether you're selling or buying hay, or feeding your own.

There are a number of factors that can explain why two or more bales of equal size can have drastically different weights. These include:

- Bale density
- Bale moisture
- Time of sale
- Forage species (grass or legume)
- Forage maturity (percent leaves and stems)
- Model and age of the baler

It's fairly intuitive that the size of a bale will impact bale weight, but what may be overlooked is the degree of change that occurs when a bale is only 1 foot wider or 1 foot greater in diameter.

A bale that is 4 feet wide by 5 feet in diameter (4x5) has 80% of the volume of a 5x5 bale (see table). However, a 5x4 bale has only 64% of the volume of a 5x5 bale. Those percentages also translate to differences in weight if all other factors are equal. Bale density, which typically ranges from 9 to 12 pounds per cubic foot, also plays a rather large role in final bale weight. In a 5x5 bale, the difference between 10 and 11 pounds of dry matter per square foot amounts to over 100 pounds per bale at both the 10% and 15% moisture levels. Missing the weight of a bale by 10% amounts to some pretty significant dollars when multiple tons are being purchased.

Forage moisture also plays a role in bale weight but to a lesser degree than bale density unless bales are extremely dry or wet. Wrapped bales, for example, can vary in moisture from 30% to over 60%. When purchasing baleage, it is always recommended to either weigh the bales or have a rock-solid moisture test.

Time of purchase impacts bale weight in two ways. First, if you're purchasing bales out of field, they are likely going to be at a higher moisture level and weight than they will be after being cured in storage. There is also a natural tendency for dry matter loss during storage that the buyer will incur if bales are purchased immediately after baling. As has been well documented by research, storage losses can range from below 5% to over 50%, depending on storage method.

Weight of large round bales at two moisture levels and densities

Bale size		Volume		Bale wt. @ 10% moisture Density (dm/cu. ft.)		Bale wt. @ 15% moisture Density (dm/cu. ft.)	
Width	Diameter			10 lbs.	11 lbs.	10 lbs.	11 lbs.
ft.	ft.	cu. ft	% of 5x5	lbs.	lbs.	lbs.	lbs.
4	4	50	51	559	614	591	650
4	5	79	80	873	960	924	1,016
4	6	113	115	1,257	1,382	1,331	1,464
5	4	63	64	698	768	739	813
5	5	98	100	1,091	1,200	1,155	1,270
5	6	141	144	1,571	1,728	1,663	1,830

Forage species can also come into play. Grass bales generally will weigh less than legume-based bales of similar size. This is because legumes such as alfalfa will make a denser bale than a grass species. In one Wisconsin study, the average weight of a 4x5 legume bale was 986 pounds. This compared to 846 pounds for grass bales of the same size.

Plant maturity impacts bale density and ultimately bale weight. Leaves generally pack better than stems, so as plants mature and develop a higher percentage of stems to leaves, bales generally become less dense and weigh less.

Finally, there are many models of balers of differing ages. This variation, coupled with operator experience, lends further variability into the bale density and weight discussion. Newer machines are able to make a much denser bale than most older ones.

Given the number of variables that determine the actual bale weight, buying and selling large round bales based on a weight guess is likely going to result in a transaction that is either above or below the already high market values of today. This can be extremely expensive for the buyer or seller, especially when a large number of tons are purchased over a period of time. Take the time to weigh bales (all or a few), regardless of size or shape, whenever a transaction is made. Also, don't guess when making inventory estimates of your own hay. That, too, could be an expensive error come next spring. ▪

There are a number of reasons why bales of the same size can have different weights including moisture level, species, maturity, and density.

The difference between 10 and 11 pounds of dry matter per square foot amounts to over 100 pounds per bale at both the 10% and 15% moisture levels.

New York Soil Health Summit 2022

For farmers, researchers, agriculture service providers, government agencies, non-profits, and policymakers interested in advancing soil health efforts across the state

Tues. December 13 | 9am-Noon EST | Optional Workshop 1-2pm EST

NEW YORK SOIL HEALTH

For access to the agenda and registration, visit: **www.newyorksoilhealth.org/summit/**

NEW YORK SOIL HEALTH

Should You Be Concerned about Hay Fields That Didn't Get Mowed in Fall?

By J. Brackenrich & G. Wang: Adapted from Penn State Extension

In a wet fall or when frost comes early, the question comes up, "What happens if I don't take my last cut and leave 18 inches of forages on my field?" Having these conversations with producers always starts the same "why is the hay still in the field?" This occurs for a variety of reasons.

It's too late in the year, not hot enough, and too humid to dry and cure the hay. Baleage provides the flexibility to wrap hay at 45-60% moisture, removing the need for low humidity days and curing time. Even if you don't own a wrapper to make your baleage, renting or hiring a contract wrapper will be cheaper than buying supplemental hay from off the farm.

I don't need the hay (for my operation or to sell). The quality of the forage and its intended use or value should also be considered. If the forage is high quality from a field that has been well managed with fertility and weed control, there is greater value in that crop and more incentive to harvest. The opposite is also true. If the field was not fertilized and has broadleaf weeds and summer annual weeds like foxtail it has limited marketability and value. If it is a high value crop, with invested dollars, consider taking the crop and selling or stockpiling. This will reduce nutrient loss and increase economic potential.

I got too busy and now the frost is too close. Wait until after the killing frost to cut or rotary mow the field. If mowing for hay, this will remove the residue and provide a forage source. If rotary mowing, this speeds the decomposition process and preps the field for spring regrowth. Whether mowing for hay or rotary mowing, this will also work as a weed suppressant for the perennial weeds present in the field.

In some instances, we just may go into winter with 18 inches of standing forages. Is this an issue? As with most agricultural situations, there are pros and cons. Understanding these will let you decide whether it is best for the forage to be removed (rotary mowed, used as an emergency forage, harvested after frost), or if you are comfortable letting it over winter as is.

Pros of additional residue:

- More residue = more leaf area. If forages are not dormant (growing before killing frost) the grass can still be stockpiling carbohydrates for winter reserves. Better winter reserves can mean better winter survivability.
- Decomposing residue can add additional organic matter, and some removed nutrients back into the soil.
- Better weed suppression potential, especially winter annuals like dead nettle, chickweed, and henbit. This is especially helpful for thinner stands.
- Vegetative mat can retain heat and lessen chances of winter kill.
- If the area is, or can be, fenced the forage could be grazed in emergency situations.

Cons of additional residue:

- Additional forage can add habitat for insects and diseases to over winter. This can lead to increased damage by spring insects, or increased retention of pathogens, especially molds and fungi.
- If large amounts of forage are present, decomposition can be slow. This partially decomposed grass or weed material can become undesired residue in early cuts in the subsequent season.
- This additional residue can smother tillers and lower spring stand density and regrowth.
- Purchased fertilizers, like N and P, can be immobilized (converted from inorganic to organic forms) in this residue. This immobilization means that it will not be plant available in the spring and will need time to convert back to an inorganic form.

It is important to consider all of these pros and cons, as well as determining what works best for your operation based on farm management, cost benefits, and livestock needs. ▪

Register for the New York Soil Health Summit today at www.newyorksoilhealth.org/summit/

CROPS COWS & CRITTERS newsletter

If you didn't harvest forage late in the fall, consider how the additional residue left on the field might impact next year's crop and management.

Why Are My Weeds Not Getting Controlled?

By Katelyn Miller; Field Crops and Forage Specialist

As input costs rise, it's important to evaluate the efficacy of those being used in your operation. Although herbicides are an important component to crop production, they are not always completely effective. If it seems like your weeds didn't get controlled this year, some reasons may include:

The wrong herbicide was used: Herbicides target specific inhibitors for each species. Properly identifying the weed species that you are trying to control ensures you are going to utilize the right herbicide for that species.

Incorrect rate or spray volume: Utilizing an incorrect rate will reduce herbicide efficacy. If you don't utilize enough of the active ingredient, you may see damage to the plant, but it will likely grow out of it. If you utilize too much herbicide, there is an increased risk of the chemicals getting into the local environment, creating environmental risks.

Lack/improper use of spray additives: An adjuvant is a substance that is added to a pesticide product or spray mixture to enhance the pesticide's performance and/or the physical properties of the spray mixture. These work to facilitate and accentuate the emulsifying, dispersing, spreading, wetting, or other surface modifying properties of liquids. Utilizing an adjuvant can help improve the effectiveness of the herbicide by increasing plant surface coverage and therefore absorption into the plant.

Antagonism or other spray issues: Antagonism is a phenomenon wherein two or more herbicides in a tank mix produce poorer weed control than the individual herbicide components would supply alone. Not all chemicals are compatible for mixing so be sure to read the label.

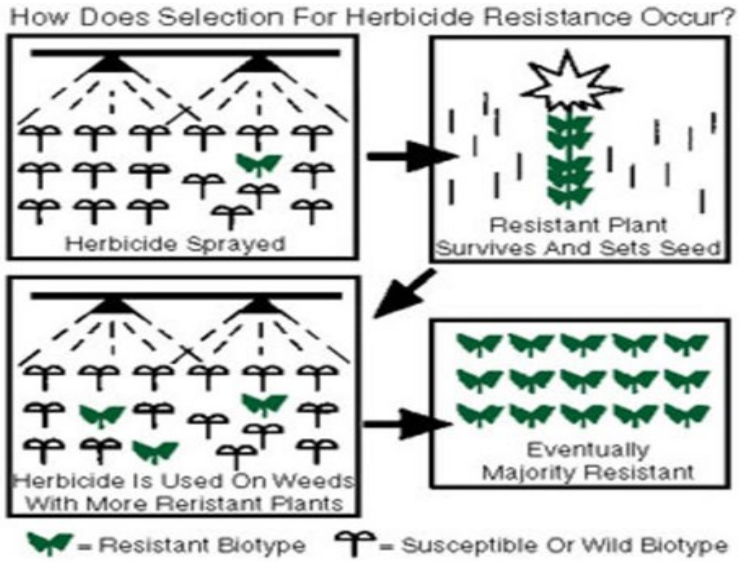
Weed height at application: When applying herbicides, it is ideal to spray the weeds below 4 inches tall. After this height, much of the early season competition has already created yield losses. Weeds that are tall at application may require an increased rate. Also, some herbicides cannot be used after your desired crop has grown to a specific height or crop stage.

Environmental factors: Environmental factors such as heat, humidity, drought, high CO2, and physical barriers such as dirt can all impact herbicide decomposition and activation. These create plant stress which reduces the movement of nutrients and water in the plants, therefore impacting herbicide movement as well.

- The ideal air temperature for applying most post-emergence herbicides is between 65°F and 85°F but this can have some variation between pesticides.

- Many labels state the rainfast period, or the time that must elapse between spraying herbicide and a rainfall event to ensure optimal performance.
- When humidity is too high it can suppress evaporation, leading to an extended droplet lifetime and a greater chance for drift.

Herbicide resistance: Herbicide resistance is the inherited ability of an individual plant to survive an herbicide application that would kill a normal population of the same species. Often, we do not recognize this until approximately 30% of the population is resistant. Evaluating if weeds are being killed in your fields can help manage these populations effectively.



Picture above from UNL, Figure from University of Minnesota Extension.

Storage: If you used herbicides from last year and stored them over winter, know that freezing and extremely hot conditions can cause the active ingredient to become ineffective. Pesticides are best stored in temperatures between 40°F and 90°F but be sure to check the label for the proper storage instructions. ▪

**Some information from a presentation by Lynn Sosnoskie: School of Integrative Plant Science Horticulture Section*

Wind speed, boom height, and the nozzle you spray with can all impact how much herbicide spreads in the environment.

Ensuring that chemicals are being mixed in the right order can ensure that they do not gel, or form precipitates that could damage your spray equipment.

Census of Agriculture Facts

- Taken every five years, it's a complete count of U.S. farms, ranches, and the people who operate them.
- The only source of uniform, comprehensive and impartial agriculture data for every county and state in the nation.
- A farm is defined as any place from which $1,000 or more of agricultural products were produced and sold, or normally would have been sold, during the census year.

Why Respond?

- Combined responses show the value and importance of U.S. agriculture.
- Census data inform decisions about policy, farm and conservation programs, infrastructure and rural development, research, education, beginning farmer programs, and more.
- Response is required by federal law. The same law requires USDA to keep all personal information confidential.
- The Census of Agriculture is your opportunity to have a voice in the future of U.S. agriculture.

What's new in 2022?

Partner Tools. Help spread the word about the upcoming census by using the Partner Tools on NASS' census webpage nass.usda.gov/AgCensus. Tools include the brochure (in several languages), videos, web banners and ads, flyers, presentations, FAQs, and more.

Online Response. Completing the census online is more convenient than ever. Launched in 2022, the new Respondent Portal is where producers can complete their surveys, track upcoming surveys, access data visualizations and reports of interest, link to other USDA agencies, and more. Online reporting is fast and secure; time-saving features include pre-filled information from previously completed NASS surveys, drop menus, automatic calculations and the skipping of questions that do not apply to your operation. Respond online through the portal at agcounts.usda.gov.

Be sure to complete this year's Ag Census, and reach out if you haven't received yours in the mail yet!

Operations Managers Conference

January 31st & February 1st, 2023
Doubletree by Hilton, East Syracuse, NY
Presented by Cornell CALS PRO-DAIRY and the Northeast Dairy Producers Association

Operations Managers Conference providers an opportunity for the people responsible for day to day activities on dairy farms to increase their management and operations skills. This year's conference theme and topics focus on managing for consistency while leading through change.

Featured keynote speakers and presentations apply across management specialties and include:

What You Do Everyday Matters in Building Consumer Confidence

Everything You Must Know About Sleep But Are Too Tired to Ask!

The Intersection Between Animal and Human Wellbeing and Productivity

Using DairyComp to Evaluate Employee Performance and Compliance

Conflict Management for Those Who Don't Like Conflict Management

Creating a Culture of Safety in Your Workplace

Planting Green: Advantages of Delayed Cover Crop Termination in Western New York

CAFO Updates: How Do They Apply to Me as a Middle Manager?

Registration for the full event is $300 with options for single day attendance. Contact Heather Darrow by calling 607-255-4478 for more information.

OPERATIONS MANAGERS CONFERENCE
Presented by PRO-DAIRY & NEDPA

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Richard Stup (rstup@cornell.edu) is the Agricultural Workforce Specialist for Cornell Agricultural Workforce Development.

Save Money with DIY [Sheep] Hay Feeders

By Ulf Kintzel, guest writer for Cornell Small Farms and owner of White Clover Sheep Farm

Various companies offer round bale hay feeders for sheep. They all have one characteristic in common: they cost a lot of money. I have been using self-made hay feeders made from livestock panels for two decades. I received the original idea more than 20 years ago when I went to a Polypay sheep breeder in Vermont at the banks of the Connecticut River. I'd love to give him credit, but his name has escaped me and I cannot find a listing of his farm. I refined his design over the years. I abandoned some designs as well, and they too will be part of this article.

Many of you are likely familiar with a feedlot panel, these are the base of my design. It might be called livestock or cattle panel at your farm store. Such panel is 16 feet long by 48 or 50 inches high, and costs about 20 dollars. The mesh measures usually four inches horizontally and eight inches vertically. The bottom may have narrower rows of mesh. I cut staggered holes in the panel. This will amount to three rows with holes that are eight by eight inches. I use a disc grinder to cut the wholes and then smoothen the rough edges with the same. I then bend the panel that both ends touch each other. I use three three-inch snap ring hooks to connect the ends and the feeder is done. (I used to use smaller hooks but found out they bend too easily when they are under pressure and are also hard to open when you want to open the feeder with hay still in it.) I now have a feeder that costs about $30, which is far less than the several hundred dollars that most round bale feeders cost.

You can then open the feeder up and put it around a round bale that is sitting on its flat side, or you can leave it closed and lift the feeder over the round bale. If your bales are net-wrapped, I recommend removing the net prior to putting the feeder around. If they are held together with bale strings you can go either way. Initially, when the bale is just set up, the sheep can eat basically at all places throughout the mesh. As they dig deeper into the bale, the better portions of the hay become available only when a sheep puts its head into one of the eight by eight holes.

When about half or two-thirds of the bale is eaten, the better parts of the hay become less accessible. Since my sheep are grass-fed and I wish to encourage consumption, I flip the bale over by flipping the entire feeder over with the bale inside it. Now the remainder of the bale is likely to sit slanted in the feeder, which makes the better parts of the remaining bale available again. Also, there is waste - I estimate up to ten percent. The waste is mostly the stemmy parts of the hay. If I feed hay in the barn, I use that waste as bedding. When the weather and soil conditions allow, I prefer feeding my hay outside in the pasture. Manure and especially urine, when it is directly deposited to the pasture as opposed to spreading manure form the barn, have more value that way because fewer nutrients are lost. Whenever I feed hay outside in the pasture, there will be some wasted hay piled up around the feeder. I always distribute that hay with a fork so that it doesn't choke out any pasture when it starts growing in the spring. I also use a new spot for each new hay bale, that way nutrients are as evenly distributed as possible. I favor feeding hay in those parts of the pasture where I will make hay in the coming season or that are well-protected from the elements when it is cold and windy. Any hay the sheep pull out of the feeder without eating it is not actually wasted. It is adding nutrients to the soil and increases organic matter. While the wasted hay would have had optimum value had it gone through the animal first, it still has plenty value by being fertilizer.

View of snap ring hooks that connect the ends of the panel.
Ulf Kintzel / White Clover Sheep Farm

One could argue that professionally built hay feeders waste less hay. Here is what I know: When I went to agricultural college in Germany back in the early 1990s, I read up on a field trial with round bale feeders for

Moving a hay feeder regularly can help spread the sheep out and reduce soil compaction if feeding outside.

There can be a significant amount of wasted hay if it is not fed out through a bale feeder, no matter the style.

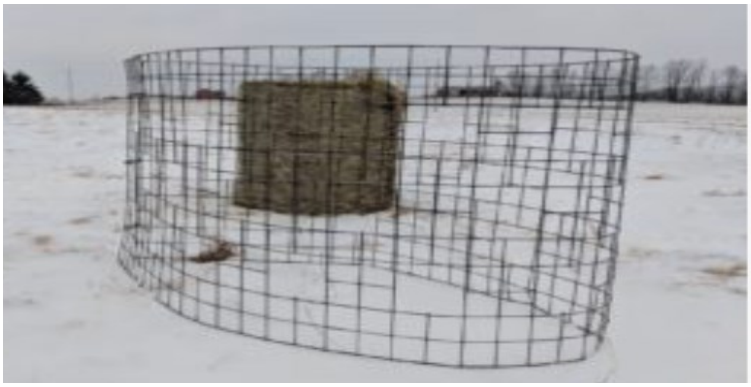
sheep. No matter the price or design, none of them reduced waste so significantly that it justified the high price. As I recall, most of them wasted about eight to ten percent of hay. Many of them have the same or similar design still today, which are vertical bars only with no horizontal cross bars and no mesh. It is very easy for sheep to pull the hay through and waste a significant part of it. I think it is unlikely that there is less waste than with my self-made ones.

When feeding hay outside and you have heavy soils, be careful when it is wet in the spring and the soil is losing its structure and cohesiveness. It may lead to pugging around the feeder. In that case, I will either feed in the barn or I will set the bales in the woods or in a spot where pugging is not an issue. However, pugging is something that I cannot always avoid entirely. This should not be a concern when you have sandy soils.

The light weight of the feeders is an advantage. It allows for a lot of flexibility when I want to move them around. Sometimes, I just tip a feeder with a bale in it over, pick it up with the front spear of my tractor, and move the feeder to a new spot when there is danger of pugging or when it is supposed to rain, and I wish to move the feeder in the barn. Empty feeders can be laid on the side and puled with the trailer hitch of a truck to a different location.

I don't have as many feeders as it takes that all animals can simultaneously eat at the feeders. That can be a problem if they are hungry. They then push at the feeders and it can lead to losses, particularly to abortions when you have sheep that are due to lamb soon or if you have young lambs and they get trampled by larger ewes. Therefore, I try to not let the sheep go hungry and have always enough hay available that not all of my sheep feel compelled to eat all at the same time. Sometimes they do eat almost all hay that is in the feeders before restocking it. In that case, I run the tractor with a bale on the back spear and spread a bale out in dry or frozen or snowy spots in the pasture. That reduces the risk of soiling the hay, followed by setting up feeders with hay. I always keep the sheep away from the hay when I feed it that way until I am done. When I then let the sheep to the hay after spreading it out, they too spread out and eat the hay that is on the ground and some feed at the feeders. By the time they are done with the hay on the ground, they no longer are likely to push at the feeders and many will be full.

There have been significant changes in the production of the livestock panels in the last two decades. Twenty years ago, they were sturdy and lasted a long time. Then they became flimsier. When I now bend the ends together and attached my hooks, pieces of wire just snap off after just a few months. I investigated alternative designs. Most farm stores also offer goat panels. They are the same length and height, but the mesh is four by four inches. Although made from the same gauge wire, the design is much sturdier. I assume this is because the points of welding are more numerous and closer together. I made feeders using the same design of three rows of staggered eight by eight-inch holes, just that I had to cut more wire to get the same-sized holes. I have some of these feeders that are several years old and they are holding up well. There are three disadvantages compared to my previous design: The sheep can now only eat at these holes. They cannot reach any part of the bale through the four by four-inch wide holes. They are costlier, totaling about $70 when I include the clips. They are a little heavier. If you are not strong enough to lift them over the hay bales, you will need to open them every time you put them around the bale. However, I continue to be happy with the design.



My current design of a hay feeder, made from a goat panel.
Ulf Kintzel / White Clover Sheep Farm

I also use a third kind of hay feeder. The old hay feeders made from the cattle panels that were broken often had large sections in them that were still good, especially in the areas that weren't bent too much. I cut out the good sections that were between four feet and five feet long. I laid them on the ground and rolled carefully over them with my tractor until the were flat again. Then I used the same hooks and connected two panels with three clips — bottom, center, and top — and connected four panels that way. I purchased some wire connector hinges but found no advantage to them compared to the clips.

What is the downside of my self-made feeders? The life expectancy is limited. They will not last a lifetime. Looking at the design of feeders that are welded and of heavy steel, I suspect such feeder will last quite a few years longer. Of course, that comes at a cost. ▪

Like all other ruminants, sheep aren't shy when it comes to picking out their favorite parts of the bale and discarding the rest. Feeders help reduce that waste.

Hay feeders don't need to be expensive to be effective. Using what you have works so long as it meets your feeding goals.

Keeping Your Flock in Production Through the "Off Months"

By Amy Barkley, Livestock and Beginning Farm Specialist

Commercial-type egg production facilities can produce eggs year-round without much trouble, resulting in a steady supply of eggs to grocery store shelves. Therefore many local egg customers, especially those who are new to purchasing eggs from small farms, anticipate that they will always be able to get their eggs locally throughout the year. This is not usually the case. This time of year, egg production from pastured laying flocks is down while demand increases going into the holiday season. The cyclical nature of hens' laying patterns can result in missed sales opportunities and the potential movement of customers to another farm that can meet their needs. However, there are some management tactics that can help maintain production through the winter months. These are based around the 4 inputs for optimal egg production: daylength, hen age, hen breed, and feed and water availability.

Daylength is the most important factor to consider for optimizing production. Hens are seasonal creatures, maintaining their wild ancestor's reproductive strategy of hatching chicks when food is plentiful. While domestic chickens will outlay their wild cousins, they still hold much of their genetic code which tells them to slow down and eventually stop laying as daylength decreases. For most flocks, this begins in October until egg production becomes a trickle or stops entirely by the winter solstice.

One of the ways to overcome this is to provide a steady daylength to your hens artificially. The optimum daylength for laying eggs is 14-16 hours. By early October, daylength has decreased to 12 hours. On December 21st, a day is a mere 10½ hours. However, keep in mind that daylight for chickens is slightly longer than from sunrise to sunset. Chickens can perceive the small amounts of light present during the shoulder times of sunrise and sunset, known as civil twilight. This adds an additional hour to the effective daylength. Even still, this is not enough daylength in the fall and winter to promote egg production.

There are two ways to provide artificial light to poultry. The first is to keep them in a facility where a light is timed to keep 14-16 hours of daylight in the living quarters year-round. This can include a combination of natural and artificial light hours. The second option is to provide more light once the birds are moved indoors from pasture. At this time, daylength is extended in intervals of 30 – 60 minutes weekly from the current daylength until 14-16 hours a day is reached. Not much light is needed in an artificially lit system, since hens can see in light as low as 1 foot-candle, which is a term that describes there being enough light to read a newspaper 1 foot away from your face. Having the supplemental light come on in the morning hours and letting dark occur naturally is most comfortable for the birds. A word of caution with increasing light artifically : if light is increased faster than 30-60 minutes a week, hens may be at increased risk for prolapses. It is also worth mentioning that if hens are producing under artificial light and that light isn't consistent, it may throw them out of lay.

A Southern Sustainable Agriculture Research and Education (SARE) research project found that hens exposed to 14 hours of artificial and natural light a day during the winter months produced 1.125 eggs/week/hen as compared to 0.25 eggs/week/hen from hens exposed to 10 hours of natural light daily. If eggs are selling for $6/dozen and all eggs coming from the hens are saleable, a flock of 50 hens would produce 44 more eggs, valued at $21.88, per week with the supplemental light.

Automatic light timers are an easy way to add morning hours to the day with minimal investment and effort. Any programmable outdoor rated timer is sufficient. Photo from HomeDepot.com

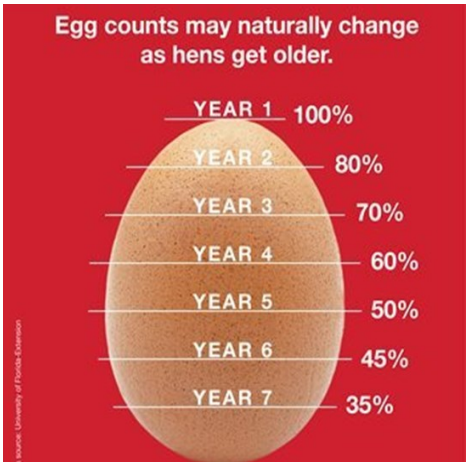
Hen Age strongly influences how well a chicken will produce in the winter months. Young hens have more "get up and go" than older hens, which tend to molt sooner and stay in molt longer. A typical production flock will lay well for two seasons, going through one molt. Keeping hens for 3 years of production isn't unheard of, but following year 3, it's important to consider if keeping lower producing hens is financially viable, especially if you want your flock to maintain higher egg production in the late fall and winter.

The time of year the chicks are hatched will also influence how well they will lay their first winter. A chick hatched in springtime will take anywhere from 18-26 weeks to come into lay. If she is hatched in mid-to-late summer, it's likely that she will not begin lay until after the daylight patterns increase in January/February. When daylength decreases while the chick is growing, there are

Turning on artificial lights in the morning instead of the evening reduces flock confusion because they will naturally and easily find their roosts as the sun sets.

Older hens may start to molt as early as September/October, where younger hens may hold off on their molt until November.

fewer hours per day for her to eat and grow her body and egg tract in preparation for lay. This in combination with a natural decrease in daylength-sensitive reproductive hormones creates a double-edged sword. Starting chicks no later than June will help ensure that they lay their first year and possibly through their first winter. That said, chickens that start to lay in late spring/early summer may end up going into molt in their first winter vs those that start to lay in later summer, but this is not always the case. Production breeds are more likely to lay through winter with a later start than heritage breeds… more on that later!



This egg production chart is from Purina Mills. The percentage of production in this chart indicates the percentage of a breed's maximum production.

Hen breed influences not only how many eggs a hen will produce, but also her sensitivity to daylight patterns. Production breeds such as Red Sex Links (also known as Production Reds, ISA Browns, Bovan Browns, Cinnamon Queens, etc.) and White Leghorns (especially if they are from a production line) will tend to lay relatively persistently through their first winter. They have been bred to not be as sensitive to daylight changes, thereby increasing the number of eggs they will produce per year. For example, a White Leghorn or Red Sex Link may lay up to 320 eggs per year whereas a Wyandotte or Ameraucana may only lay up to 280 eggs per year.

Another consideration is body size. Those birds that are heavier bodied like Plymouth Rocks or Orpingtons tend to lay more persistently through winter than lighter-bodied breeds like Legbars or Andalusians. That said, some of the heavy breeds may lay fewer eggs overall, even if they are more persistent winter layers.

Feed and water availability are important for optimized eggs production. Just one day without water can stop egg production for up to two weeks! Water management is especially important in climates where water tends to freeze during the day in the winter months. Heated waterers or waterers that have ice regularly removed are the best for any flocks, but especially important for production flocks. Remember that even heated waterers should be checked at least once daily to ensure functionality.

Even production strains can go into molt, especially as they age. This is a molting three-year-old Cinnamon Queen.

In winter, poultry tend to burn more calories to keep warm and take part in normal behaviors. Once they have enough energy to meet their needs, the rest of the energy can be directed to egg production. Therefore, a free choice, nutritionally complete diet should be the primary winter diet. The provision of snacks of any kind should continue to be limited to 10% of their total feed intake, which is about 1/3 pound/hen/day. Fat and protein deficient treats like vegetables and fruit can dilute nutrients and slow egg production. Carbohydrate dense treats such as cracked corn can result in fatty hens and vent prolapses if not restricted. A further consideration is to limit the feeding of wetted feed if it freezes during the day, since chickens don't need to waste extra calories pecking frozen blocks of feed to get their daily nutrition!

While these four components should be considered for optimal egg production in the late fall and winter, keep in mind that molting is a natural part of a chicken's lifecycle. Molts are how chickens reset their reproductive systems to provide larger, higher quality eggs when they come back into lay as well as provide them a with period to rest and recharge. Hens that produce more eggs for a longer period and don't go through a natural molt tend to "burn out" quicker, while hens that produce fewer eggs overall and/or are allowed to molt tend to produce quality eggs over more years with fewer health complications. ▪

Egg color can correspond with production potential. Generally, the more vibrant color a hen lays, the fewer eggs she will produce.

CROPS COWS & CRITTERS newsletter

For more information on keeping your hens producing optimally, contact Amy Barkley at (716) 640-0844 or amb544@cornell.edu

A Real Life Reminder For Farm Safety Around Animals!

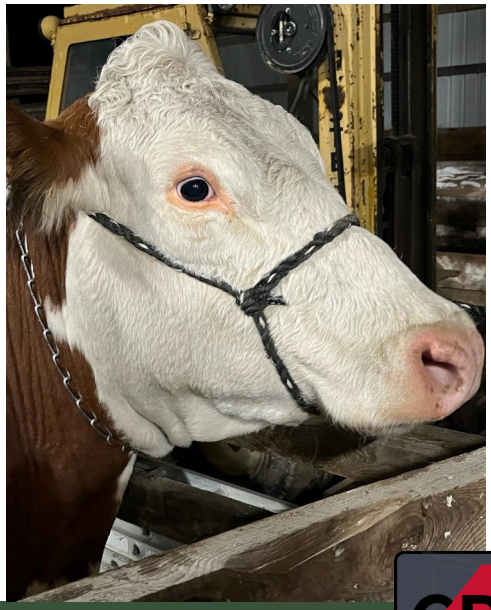
By Katelyn Walley-Stoll, Farm Business Management Specialist

A very pathetic looking photo of me in the Emergency Room due to a Farm Safety Fail!

If you've tried to email or call me in the past month, you probably received an automatic "out of office" message and an extended wait for a reply! I have been using up all of my sick time to deal with a long concussion recovery - caused by, you guessed it, an unfortunate farm accident.

In a classic case of "do as I say, not as I do," I was ear tagging cows on our farm using less than ideal animal restraints. One cow decided to swing her head in just the right way to catch me on the forehead with her jaw! This resulted in a bad concussion and whiplash with symptoms like nausea, inability to focus, sensitivity to light and sound, issues with speech and vision, and general exhaustion. I was out of commission for a couple of weeks and am still working through lasting symptoms more than a month later.

This incident was a stark reminder for myself and my family about just how important farm safety is and should be. Farming is an inherently risky business, and we've all heard about some of the truly shocking accidents that have hit our agricultural community in just the past few years.



The offender - a Hereford cow, "Pistachio", who has recently been renamed to "Head Banger". You'll notice that she's in a poorly restrained position using a simple (and loose!) rope halter.

When working with any type of livestock or equipment, it's key to consider safety to keep yourself, your farm family, employees, and animals safe. On average from year to year, one in every four farm accidents involve animals. Below are some farm safety reminders for working with animals on the farm.

1. **Animal Behavior is instinctive AND learned.** For example, cows can learn to be calm around humans and wear a rope halter without too much fuss. However, natural instinct when experiencing something new (ear tagging) will be to react in "fight or flight" mode which will cause sudden movements. Be prepared for sudden movements and don't trust animals just because they're the kind ones in the herd.
2. **Consider depth perception and color blindness.** Many animals have different vision than we do. This results in big reactions to blind turns, color changes, gaps in flooring and pens, and quick movements (think - fans, children, equipment, etc.). Go through your housing and handling facilities looking out for areas that might cause hang ups when working with animals. Always operate in areas with adequate lighting.
3. **Facilities need to be up to par.** We can often times prevent accidents by thoroughly preparing our animal handling facilities. In addition to the lighting mentioned above, there are other things to check on periodically. Look for any loose boards, gates, panels, or other handling areas that might need some new screws, bolt tightening, or replacement. Watch for any sharp projections (aka - that nail that never got pounded in all the way). Add traction to areas that get slippery and reduce blind spots.
4. **Remember the Flight Zone.** We've all heard about cow flight zones, and often use them to our advantage to calmly and safely move cattle when necessary. However, remembering that cows can't see directly behind them, have varying flight zones, and react suddenly to sounds and movements will keep everyone safe.
5. **Ask for help.** Oftentimes, we're put into situations where we have to handle animals alone. However, having an extra person around is always better! More help, and clear communication, will allow for extra time and safer handling.
6. **Plan for Human Exits.** When working animals, we tend to avoid working in the center of the group or facility to limit the chance for trampling, kicking,

I'm slowly getting caught back up on emails and phone calls - and appreciate your patience and kindness as I recover from my Farm Safety Fail!

Working with animals is always a risky business, but preparing as best you can will help reduce injuries for both the handler and the animal.

and headbutting. However, working in corners and against walls can also lead to getting pinned. Plan for space with animal handling facilities and know how you can get out of a situation quickly if needed.

7. **Be Patient, Kind, and Consistent.** Animals (and humans, too) are creatures of habit. Keeping activities consistent and calm will help everyone involved. Allow animals for space and time to get acclimated to new areas, new people, and new routines. Keep the barn a calm environment by reducing loud and sudden noises and avoiding overcrowding. Handling animals humanely regardless of their age or demeanor. Animals will remember poor animal handling situations for the rest of their lives and will continue to react strongly. At the herd level, calm and consistent handling will lead to calm and consistent animals.

One way you can offset the cost of farm safety improvements for your farm is through the John May Farm Safety Fund. This program, managed through the Bassett Healthcare Network's New York Center for Agricultural Medicine and Health, is available to all New York State farms with annual farm incomes of $10,000 to $350,000.

Farms are eligible to apply for matching funds up to $5,000. Funds are awarded on a rolling basis and only require a simple application, a farm visit from program staff, and monthly project updates. Farms right here in SWNY have received funds from the John May Farm Safety Fund to install cattle squeeze chutes, purchase animal handling equipment, redesign farm working facilities to improve safety, and more.

Ironically enough, our farm was awarded funds from the John May Safety Fund to purchase and install a cattle handling system a few months ago. We just haven't "had the time" to get everything together, and this accident was a great reminder and motivator! ▪

Resources that we used in preparing this article:

- Penn State Extension Animal Handling Tips: https://extension.psu.edu/animal-handling-tips
- John May Safety Fund: https://www.nycamh.org/programs-and-services/john-may-farm-safety-fund.php

I'm sharing this Farm Risk Management Topic with support from our NERME project. *This material is based upon work supported by USDA/NIFA under Award Number 2021-70027-34693.*

NORTHEAST EXTENSION RISK MANAGEMENT EDUCATION

USDA National Institute of Food and Agriculture
U.S. DEPARTMENT OF AGRICULTURE

Infographic from the John May Farm Safety Fund:

Consistently calm animal handling will create good habits for the animals and the handlers. Set this expectation on your farm for your family and employees.

The John May Farm Safety Fund provides up to $5,000 in matching funds for any projects on NYS farm business that will improve safety in some way.

Dairy Market Watch

PRO DAIRY Education & Applied Research prodairy.cals.cornell.edu

November 2022

Prepared by Katelyn Walley-Stoll. Funded by PRO-DAIRY.

An educational newsletter to keep producers informed of changing market factors affecting the dairy industry.

Milk Component Prices			Milk Class Prices				Statistical Uniform Price & PPD				
Month	Butterfat	Protein	I (Boston)	II	III	IV	Jamestown, NY		Albany, NY		Albany $/gal. to farmer
Oct 21	$1.94	$3.01	$20.33	$17.08	$17.83	$17.04	$17.29	($0.54)	$17.89	$0.06	$1.54
Nov 21	$2.15	$2.75	$21.23	$18.40	$18.03	$18.79	$18.39	$0.36	$18.99	$0.96	$1.64
Dec 21	$2.29	$2.59	$22.42	$19.84	$18.36	$19.88	$19.34	$0.98	$19.94	$1.58	$1.74
Jan 22	$2.95	$2.35	$22.96	$22.83	$20.38	$23.09	$21.59	$1.21	$22.19	$1.81	$1.91
Feb 22	$3.02	$2.31	$24.89	$23.79	$20.91	$24.00	$22.52	$1.61	$23.12	$2.21	$1.99
Mar 22	$3.09	$2.71	$26.13	$24.76	$22.45	$24.82	$23.59	$1.14	$24.19	$1.74	$2.09
Apr 22	$3.41	$3.42	$27.63	$25.71	$24.42	$25.31	$24.92	$0.50	$25.52	$1.10	$2.20
May 22	$3.10	$3.86	$28.70	$25.87	$25.21	$24.99	$25.42	$0.22	$26.03	$0.82	$2.24
June 22	$3.33	$3.41	$29.12	$26.65	$24.33	$25.83	$25.83	$1.50	$26.43	$2.10	$2.28
July 22	$3.36	$2.91	$29.12	$26.66	$22.52	$25.79	$25.21	$2.69	$25.81	$3.29	$2.23
Aug 22	$3.40	$2.14	$28.38	$26.91	$20.10	$24.81	$24.27	$4.17	$24.87	$4.77	$2.14
Sep 22	$3.56	$1.88	$26.87	$26.51	$19.82	$24.63	$23.67	$3.85	$24.27	$4.45	$2.09
Oct 22	$3.65	$2.45	$25.96	$25.73	$21.81	$24.96	$23.62	$1.81	$24.22	$2.41	$2.09

October Utilization (Northeast): Class I = 30.2%; Class II = 25.1%; Class III = 29.6%; Class IV = 15.1%.

Class I *= fluid milk;* ***Class II*** *= soft products, cream, and yogurt;* ***Class III*** *= cheese (American, Italian), evaporated and condensed products;* ***Class IV*** *= butter and milk powder.*

Dairy Commodity Markets (Excerpt from USDA Dairy Market News – Volume 89, Report 46, November 18th, 2022)

Dry Products: Low/medium heat nonfat dry milk (NDM) spot prices in the East and Central regions are steady to weaker in the range pricing series. This week, dry buttermilk prices adjusted lower throughout all regions. Spot loads of dry buttermilk are available as production outpaces demand. Dry whey production is steady on active cheese making. Dry whole milk prices are mixed, with expectations of increased spot market availability near year's end. Prices for whey protein concentrate 34% moved lower this week.

Cheese: In the Northeast and West, increasing milk production is enabling cheesemakers to run busy production schedules, though some cite labor shortages and supply chain delays as limiting their ability to operate full production schedules. Food service demand is strengthening in the Northeast, though this is contrasted by softening retail demand in these regions. In the Northeast and West, export sales of cheese are strong.

Butter: In the East, butter makers are utilizing volumes of cream to make more butter than they have in previous years. Demand for retail butter is strong in the Northeast, while food service demand is unchanged. Butter inventories are down compared to previous years and some Northeast stakeholders report they are purchasing loads from other regions to meet current market needs.

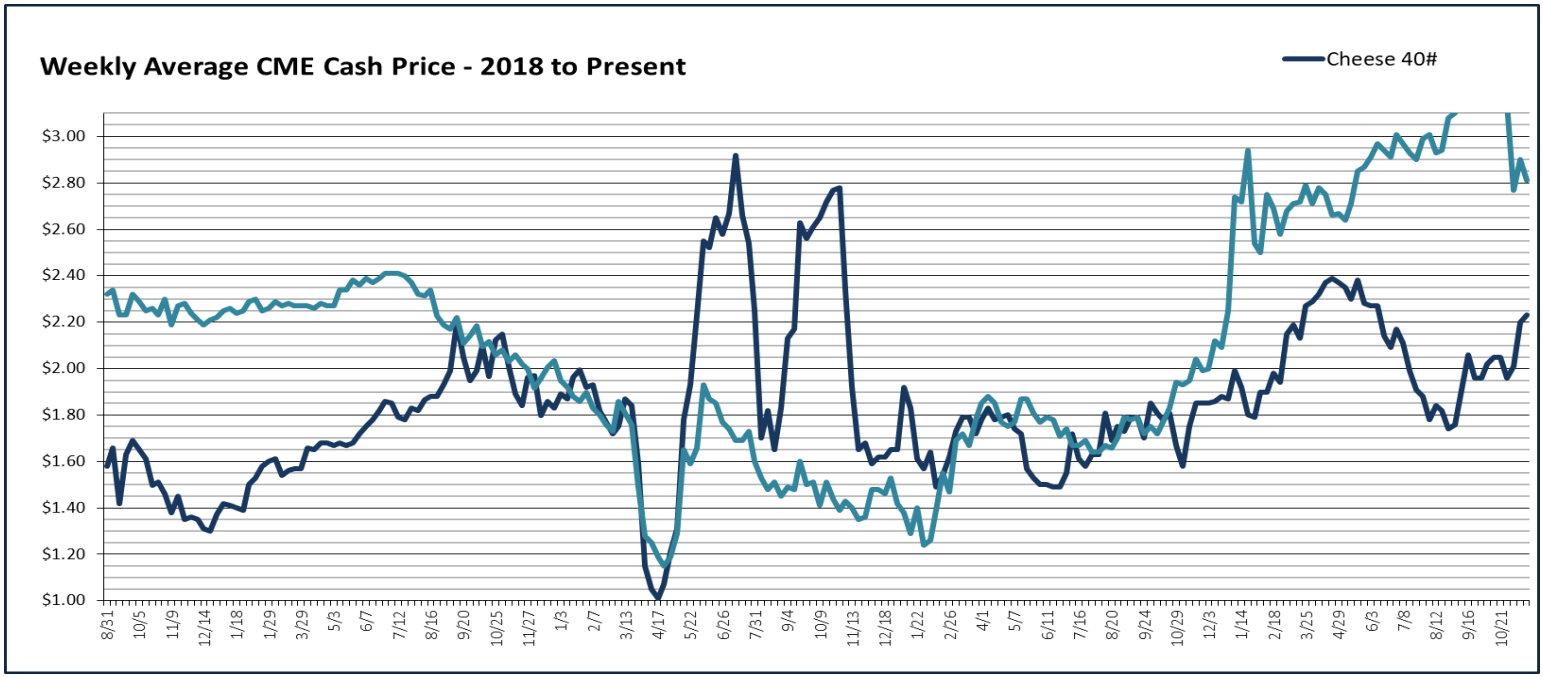
Fluid Milk: With a few exceptions, milk production is steady to higher across the country. In the East, last week's tropical storm did not hit land as strongly as anticipated, and dairy processing was not interrupted. Class I demand from retailers is strong ahead of Thanksgiving, with eggnog and flavored milk bolstering demand. However, school milk bottling orders have declined in anticipation of school holidays. Some cheesemaking contacts noted a 7-day work schedule due to slight discounts reported for spot milk loads.

Friday CME Cash Prices					
Dates	10/21	10/28	11/4	11/11	11/18
Butter	$3.20	$3.14	$2.77	$2.90	$2.81
Cheese (40# Blocks)	$2.05	$1.96	$2.01	$2.20	$2.23

October's Albany $/Gallon to the farmer was $2.09, a repeat from September. There were some rapid price changes this month as holiday orders flowed in.

CROPS COWS & CRITTERS newsletter

For more information on Dairy Business Management and Market Analysis, contact Katelyn Walley-Stoll, Farm Business Management Specialist, at 716-640-0522 or kaw249@cornell.edu.



Dairy Situation and Outlook - November 21, 2022 by Bob Cropp, Professor Emeritus, University of Wisconsin-Madison

Originally published here: https://fyi.extension.wisc.edu/kewauneeag/files/2022/10/Dairy-Situation-and-Outlook-November-2022.pdf

Milk production continues to run above year ago levels. October production was 1.2% above a year ago, the result of 31,000 more cows, an increase of 0.3% and 0.9% more milk per cow. This was the third straight month of more than a 1% increase.

The price of barrel and 40-pound block cheddar cheese was above $2 per pound from mid-September to early October. By the end of October barrels fell to a low of $1.925 and 40-pound blocks to $1.96. But increased buying by grocery stores, building inventory for the holidays, and continued strong exports surprisingly rallied the cheese market.

There is a lot of uncertainty as to where milk prices will end up in 2023. As of now it looks like milk prices will average lower than 2022 but remain as the second highest average milk price over the past two years. Much higher feed prices, labor issues, high construction costs and milk base plans still implemented by some dairy cooperatives will restrict increases in milk production.

USDA is forecasting just an increase of 10,000 cows in the average herd size for the year and an increase of 0.9% in milk per cow resulting in an increase of 1.0% in total milk production. Milk production could easily increase by more than this but should be at a level for favorable milk prices.

Fluid (beverage) milk sales will likely continue the downward trend in 2023. Fluid milk sales through September of this year were down 2.2% from a year ago. But butter and cheese sales in 2023 are forecasted to more than offset declining fluid sales resulting in an increase in total milk sales.

Dairy exports set a record in 2021 and are on path to set a new record in 2022. Through September the volume of nonfat dry milk/skim milk powder was down 9% from a year earlier but up 13% for cheese, 6% for whey products, 18% for lactose and 39% for butterfat resulting in an increase of 4% in the volume on a total milk solids equivalent basis. It may be hard to set another record in 2023 but there is a possibility of increased exports.

Milk production in the two leading dairy exporters, New Zealand and the EU has been below a year ago. Some recovery in milk production may occur in 2023 but high feed costs and environmental regulations will dampen any increase. Other than butter U.S. prices have been competitive on the world market. While still competitive world dairy product prices have weaken making U.S. products less competitive.

USDA is forecasting Class III to average about $2.25 lower in 2023 than 2022. Class III will average about $21.90 for 2022 and USDA's 2023 average is $19.65. USDA is forecasting Class IV to average about $4 lower in 2023 than 2022. Class IV will average about $24.30 for 2022 and USDA's 2023 average is $20.35. But final 2023 prices could very well end up higher or lower than USDA's forecast. ▪

Reminder - Dairy Margin Coverage Enrollment Deadline is December 9th. There is strong indication of repeated payments in 2023 due to tightening margins.

2023 milk prices will be lower than 2022, but will still likely remain high enough to round out another "good year".

Six Straw Alternatives to Get You Through a Bedding Shortage

By Taylor Leach - Dairy Herd Management

Weather conditions certainly took a toll on this years wheat crop, leaving straw in short supply for some farmers. This commonly used bedding material is the ideal choice for calves during the winter time. However, here are six bedding alternatives to consider when straw supplies get tight:

Chopped Corn Stalks - If you've just harvested a field of corn, consider saving the leftover stalks for bedding. They are widely available and very absorbent.

Chopped Soybean Hulls - Similar to corn stalks, this bedding alternative can be found soon after harvest and can be used to help keep calves clean and dry.

Wood Shavings - One of the most common alternatives to straw bedding is wood shavings. This material performs similarly to straw and provides a clean spot for calves to nest.

Almond Shells - Ground almond shells, usually found out west, can be used to help soak up excess moisture and keep dry and clean.

Peanut Hulls - Down south, this absorbent organic material can be ground to make a fine bedding similar to wood shavings.

Shredded Paper - Chopped recycled newsprint can be used for bedding and is relatively inexpensive. Consider reaching out to a nearby recycling facility to see if they can custom chop used paper.

Gloves: Are You Protecting Your Herd? - PSU Extension

By Amber Yutzy (Assistant Director, Animal Systems Programs - PSU)

Weekly we receive calls from producers experiencing milk quality issues on their farms. Often, we find common denominators on each farm that is the source of the high somatic cell count (SCC). Wearing gloves is a simple management practice that could help reduce contagious and environmental bacteria spread between quarters and cows.

Do you wear gloves while milking cows? You should! Gloves are a very inexpensive prevention tool for a large cost problem. This preventative tool can help to prevent bacteria and dirt from staying in the cracks, crevices, and fingernail beds on your hands. Gloves can easily be disinfected between cows because of their smooth surface. Studies have shown that there are 75% fewer bacteria on used gloves than on bare hands. Wearing gloves also reduces the spread of contagious and environmental bacteria by 50%. Bacteria causing contagious mastitis on a farm is hard to cure, causing farms loss of milk production and money. Cows infected with contagious mastitis often cause a high bulk tank Somatic Cell Count (SCC). Due to this, producers should take every step necessary to prevent the spread of bacteria to other herd mates or within the udder. This bacteria travels from quarter to quarter via milk on your hands or within the milking unit. To limit the spread of contagious mastitis, milking practices such as milking infected animals last, post-milking teat disinfectant, universal dry cow treatment, and wearing gloves should be implemented on your farm.

Gloves used for milking. Credit Amber Yutzy

In today's milk market, gloves are necessary to reach the highest premium available to your farm. It should be written into your standard operating procedures and required that all employees wear them. When choosing a glove, be sure that it smoothly fits the employee's hands like skin. Gloves come in many sizes and colors. It may be necessary to buy a variety to find what works on your farm. Gloves that are too large often tear easily and get stuck in the inflations due to vacuum. Gloves should be disinfected regularly during milking with teat dip or disinfecting solution. Used gloves should be disposed of; reusing gloves makes them brittle, causing frequent tears and increased risk of udder contamination. Wearing gloves is an inexpensive tool to help reduce overall herd SCC without a significant investment. Will it take a while for you and your employees to get acclimated to how they feel? Yes, but it is worth the time and effort in the long run. Who knew something as easy as putting on a pair of milking gloves could help you reduce your overall herd SCC and increase profits on your farm? ▪

Wearing gloves is a simple management practice that could help reduce contagious and environmental bacteria spread between quarters and cows.

CROPS COWS & CRITTERS newsletter

If your farm is experiencing milk quality problems and you would like to learn more, please contact Camila Lage at 607-422-6788.

Dairy Margin Coverage - Foundational Risk Management for Your Milk Production

By Katelyn Walley-Stoll, Farm Business Management Specialist

For dairy farmers, milk production and profitability can be tricky things to plan for. It's even trickier when you take into consideration all of the different places where systems can break down, prices can drop, and life (or a more visual term synonymous with manure) happens. Knowing your options for farm risk management, especially dairy price risk management, is important to make sound decisions to help protect your farm financially.

Coverage Level	Tier 1 Premium per cwt for covered production history of 5 mil lbs. or less	Tier 2 Premium per cwt, all years for covered production history over 5 mil lbs.
$4.00	None	None
$4.50	$0.0025	$0.0025
$5.00	$0.005	$0.005
$5.50	$0.030	$0.100
$6.00	$0.050	$0.310
$6.50	$0.070	$0.650
$7.00	$0.080	$1.107
$7.50	$0.090	$1.413
$8.00	$0.100	$1.813
$8.50	$0.105	N/A
$9.00	$0.110	N/A
$9.50	$0.150	N/A

What is it? Dairy Margin Coverage (DMC) is one risk management tool dairy producers can use to help protect against low milk prices and/or high feed costs. Enrollment occurs annually, and for 2023 you can sign up until December 9th at your local FSA office.

What's it Do? DMC pays participating dairy operations when the difference (margin) between the national milk price and the national average cost of feed falls below a certain, selected level. The margin is calculated using national averages, *not* farm specific feed costs and milk prices. Farms choose their coverage levels based on their production history.

How is Production History Calculated? Pounds of milk that you can enroll/cover, unless you're a new farmer, is based on your highest milk production in 2011, 2012, and 2013. This is called your "Production History".

What's Supplemental DMC Enrollment? If your milk production has increased from your 2014 "historical milk production" level (above), you can add supplemental coverage. This is only for producers with less than 5 million pounds of production and uses 2019 actual milk production. Payments are retroactive to 2021 and coverage can be selected for 2021 – 2023.

What do I Select? Dairy producers select two different variables to insure. If you lock in your coverage selections for 2022 AND 2023, you can receive a 25% premium discount. These include:

- **Coverage Level** is the margin price that will "trigger" a payment. You can choose levels form $4.00 to $9.50 per cwt in $0.50 increments. Catastrophic coverage is $4.00/cwt. The higher you choose the more likely you'll receive a payment, especially in 2022, but your premium due will be higher as well.
- **Coverage Percentage** is the portion of your production history, in cwt, that you'll cover. You can select to cover 5% to 95% of your production history in 5% increments. Your premium price is on a per cwt basis.

How much does it cost? The minimum catastrophic coverage only costs an annual $100 administrative fee. For higher coverage levels, you'll also be required to pay additional premiums based on your selected coverage level.

Is this the right program for me? More often than not, DMC is profitable for farms – and, at the bare minimum – provides some peace of mind to balance out price fluctuations. There is a really handy tool available at dmc.dairymarkets.org where you can put in your farm's specific information and see what historical performance might have been AND estimate future performance at various coverage levels. It's important to note that, at this time, the forecasted 2022 margin is $9.19 and monthly margins range from $8.75 to $9.61.

When do I get Paid? If the milk margin drops below $9.50, you may be eligible for a payment depending on the coverage level you chose. In 2021, payments were triggered in every month at various levels less than $9.50.

Am I Eligible? Farms that ship milk in the United States are able to participate. This includes a variety of business models, including partnerships with multiple producers and even beginning farmers. Participating in other risk management programs, like Livestock Gross Margin for Dairy Producers Program and Dairy Revenue Protection Program, does not exclude you from participating in DMC (ie – you can participate in all three!).

What's the Process? Call your local FSA office to get the ball rolling sooner rather than later, especially if you haven't participated before. They'll help you determine your production history, register, select your coverage level, and select your coverage percentage. ▪

If you're new to DMC, you might remember the old MPP (Margin Protection Program) and MILC (Milk Income Loss Contract) programs.

DMC is the United States Department of Agriculture (USDA) Farm Service Agency's (FSA) current voluntary program for dairy farm risk management.

Chop Talk: The Importance of Forage Particle Size in the Diet -Progressive Dairy

By Casey Havekes for Progressive Dairy

Most dairy farms feed carefully balanced diets that are formulated to meet the dietary needs of their cows, depending on their age and stage of lactation. However, the diet formulated on paper and delivered to the farm is only part of the equation. How that diet is mixed and delivered to the cows, as well as how the cow actually consumes the diet, are all vital pieces of the equation. Preferential selection of the diet, or feed sorting, is a common behavior performed by dairy cows. Typically, cows will sort in favor of the grain component of the diet and against long forage particles, due to the high palatability of the grain. This behavior can lead to various undesirable consequences, including subacute ruminal acidosis and the compromised nutritive value of feed remaining at the feedbunk for cows feeding later in the day.

The appeal of incorporating long, dry forage particles into the diet, particularly in the fresh cow diet, is understandable. Historically, it has been believed that these long forage particles (often in the form of dry hay) stimulate rumination and promote better rumen health. While long forage particles have their place in maintaining a healthy rumen, it's important to understand the role that forage particle size truly has on rumination, chewing activity and, consequently, rumen health. In order for forage nutrients to be utilized by the cow, she must first chew the forage and break it down into smaller pieces so that the rumen microbes can have a greater surface area to work on.

Previous research has concluded that cows will chew the total mixed ration (TMR) particles until they are a uniform size of 8 to 11 millimeters before they swallow the bolus, which evidently takes time. According to one group of researchers, cows need to spend more time chewing per unit of fiber when forage particle size is longer, and other researchers have concluded that longer forage particle size equates to longer eating time at the bunk. This is in part because of the mechanics of chewing longer forage particles, but also because longer forage particles increase the risk of sorting, and if cows are sorting, research has shown that they will take longer to consume a meal while not necessarily increasing their dry matter intake (DMI).

If you think about what this means for the cow and her time budget, longer forage particle size in the diet may end up reducing resting and lying time. This makes it increasingly important to provide cows with sufficient fiber to stimulate chewing and activate saliva secretion, all while balancing for optimal time budgets and a variety of other management aspects. In a perfect world, cows should be spending three to

TABLE 1 Penn State Particle Separator guidelines for TMR

	Sieve (MM)	% Retained	Comments
TOP	19	<5	Sortable material, too long, increased time needed for eating especially if over 10%
MIDDLE	8	>50	Still long and physically effective, more so than 4-mm material. Maximum amount on this sieve 50-60%
BOTTOM	4	10-20	Functions as physically effective sieve, no recommendation for amount to retain here other than total of top three sieves equal physically effective fiber
PAN	–	25-30	A 40-50% grain diet results in at least 25-30% in the pan

Source: Table adapted from Rick Grant, Miner Instit

How diets are mixed and delivered to the cows, as well as how the cow actually consumes the diet, are all vital pieces of the equation.

Table 1 outlines revisions to Penn State's Particle Separator recommendations for lactating cows. These recommendations come from Rick Grant at the Miner Institute.

five hours of their day eating and 12 hours of their day resting, with a large portion of that resting time being shared with rumination.

Physically effective fiber (peNDF) is the portion of fiber that is effective in stimulating chewing, and it is a tool that can be used to monitor forage particle size in the diet.
Physically effective fiber in the diet can be calculated by multiplying the portion of feed particles that remain on the top three screens of the Penn State Particle Separator (PSPS) by the neutral detergent fiber (NDF) content of the diet. It's been well documented that lactating cows require 19% to 22% peNDF in the diet to ensure proper rumen function, but to many people's surprise, forage particle size does not actually have to be that long to provide sufficient peNDF to the cow. For example, in one research study, cows were fed a high quantity of wheat straw (9% of TMR on a DM basis) that was chopped with a 1-inch screen or a 4-inch screen. Even at the 1-inch chop length, the diet supplied 20.8% peNDF, which is sufficient to maintain proper rumen function.

The easiest way to accomplish having enough peNDF in the diet while limiting the risk of sorting is to limit the amount of forage particles retained on the top screen of the PSPS and focus more on the particles retained on the second and third screen. To put this in context, the third screen of the PSPS has an opening of 0.16 inch, which means that the particles retained on this screen are smaller than 0.3 inch but greater than 0.16 inch. This fraction is referred to as the "physical effectiveness factor" because this is the fraction that contains particles long enough to stimulate chewing. This serves as a good reminder that small forage particles (less than 0.16 inches or 4 millimeters) are still sufficient at stimulating chewing and rumination. It was mentioned earlier that long forage particles in the diet can result in increased sorting and consequently increased meal time and reduced lying time. It's important to remember that cows will sort a diet where the particles are more easily distinguishable - or in other words, if the diet is easier to sort, they will sort it.

To minimize the risk of sorting, provide a diet that is more uniform in particle size. This will make it physically more difficult for the cow to sort, and it will ensure that she, as well as her more subordinate pen mates, are consuming a well-balanced diet. ▪

Picture: Example of the use of a PSPS

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If you want more information about the articles content or have any question related to dairy cows management, please contact Camila Lage at cd546@cornell.edu

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