swnyteam@cornell.edu

Cornell Cooperative Extension

Southwest NY Dairy, Livestock and Field Crops Program

swnydlfc.cce.cornell.edu

CROPS COWS & CRITTERS newsletter

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

Volume 6 · Issue 9 · September 2025

Photo by Kelly Bourne

Contact Our Specialists

Amy Barkley
Team Leader
Livestock
716-640-0844
amb544@cornell.edu

Katelyn Miller
Field Crops
716-640-2047
km753@cornell.edu

Katie Callero
Dairy Management
607-422-6788
krc85@cornell.edu

Kate McDonald Polakiewicz
Farm Business Management
716-640-0522
kem348@cornell.edu

Kelly Bourne
Administrative Assistant
585-268-7644 ext. 10
klb288@cornell.edu

County Association Executive Directors

Allegany County
Laura Hunsberger
lkh47@cornell.edu
585-268-7644 ext. 17

Cattaraugus County
Kelly McDonald
kmm525@cornell.edu
716-699-2377 ext. 122

Chautauqua County
Emily Reynolds
eck47@cornell.edu
716-664-9502 ext. 201

Erie County
Diane Held
dbh24@cornell.edu
716-652-5400

Steuben County
Tess McKinley
tsm223@cornell.edu
607-664-2301

(USPS #101-400)
Cornell Cooperative Extension of Chautauqua County
Subscription included in minimum of $65 Program Participation fee. Periodical Postage Paid at Jamestown, NY 14701. "POSTMASTER: Send address changes to the: Chautauqua County Extension Connection at 525 Falconer St. JCC Carnahan Center, PO Box 20 Jamestown, NY 14702-0020." "Cows, Crops & Critters Newsletter" by the Southwest New York Dairy, Livestock and Field Crops Program with Cornell Cooperative Extension in partnership with Cornell University and the five county region of Erie, Chautauqua, Cattaraugus, Allegany, and Steuben and their CCE Associations. To simplify information, brand names of products may be used in this publication. No endorsement is intended, nor is criticism implied of similar products not named. Every effort has been made to provide correct, complete and up-to-date pesticide recommendations. Changes occur constantly and human errors are still possible. These recommendations are not a substitute for pesticide labeling. Please read the label before applying pesticides.
By law and purpose, Cooperative Extension is dedicated to serving the people on a non-discriminatory basis.
Newsletter layout and design by Katelyn Walley-Stoll.

County Association Agriculture Educators

Lynn Bliven
Allegany County
Ag & Natural Resources Issue Leader
lao3@cornell.edu
585-268-7466 ext. 18

Kim Oudemool
Cattaraugus County
Natural Resources Educator
kkr35@cornell.edu
716-699-2377 ext. 106

Katelyn Walley-Stoll
Chautauqua County
Agriculture Team Leader
kaw249@cornell.edu
716-664-9502 ext. 202

Sharon Bachman
Erie County
Agriculture & Natural Resources Educator
sin2@cornell.edu
716-652-5400 ext. 150

Susan Walker
Steuben County
Agriculture Educator
smw272@cornell.edu
607-664-2574

CROPS COWS & CRITTERS newsletter

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 585.-268-7644 ext. 10.

Udder Trouble in the Fall

By Katie Callero, Dairy Management Specialist, SWNYDLFC

It's only a matter of time before the leaves start to change and we find ourselves in the middle of fall. As the weather begins to change, you may notice warm days and cooler nights with dew that hangs around. These temperature fluctuations tend to result in damper bedding for cows. When cows only have access to moist bedding, mastitis cases on your farm may begin to rise. Mastitis is not only an animal welfare concern, but it can also hurt your milk check.

Mastitis is caused by bacteria entering the teat end of a cow. These bacteria multiply and cause an infection in the udder. Wet, dirty bedding isn't the only cause of mastitis. Anything that introduces bacteria to the teats, such as using dirty towels during milking, can cause infection. Mastitis can be identified by any flakes, chunks, or discoloration in the milk. This is best identified when you are stripping a cow's teat before milking. Quarters that have mastitis can often present as hard, hot, red, or swollen. If you find a cow in your herd with mastitis, talk to your veterinarian about treatment and write down their advice to use as a future protocol. It is also of paramount importance to record mastitis cases in your farm records or herd management system. Keeping records helps you make informed culling decisions for cows with recurring mastitis or other health issues.

As always, prevention is the best strategy. To help prevent mastitis, keep bedding clean and dry, fix holes or leaks that let rain into the bedding area, milk only clean teats, and milk sick cows last or with a separate unit to avoid spreading bacteria.
As we head into the challenges that fall weather brings, it is important to keep a close eye on bedding to add more when needed. Take extra time each milking to inspect quarters and stripped milk. Preventing mastitis and catching it early can help save you time and money. A little extra attention this fall can go a long way toward keeping your cows comfortable and your milk check steady.

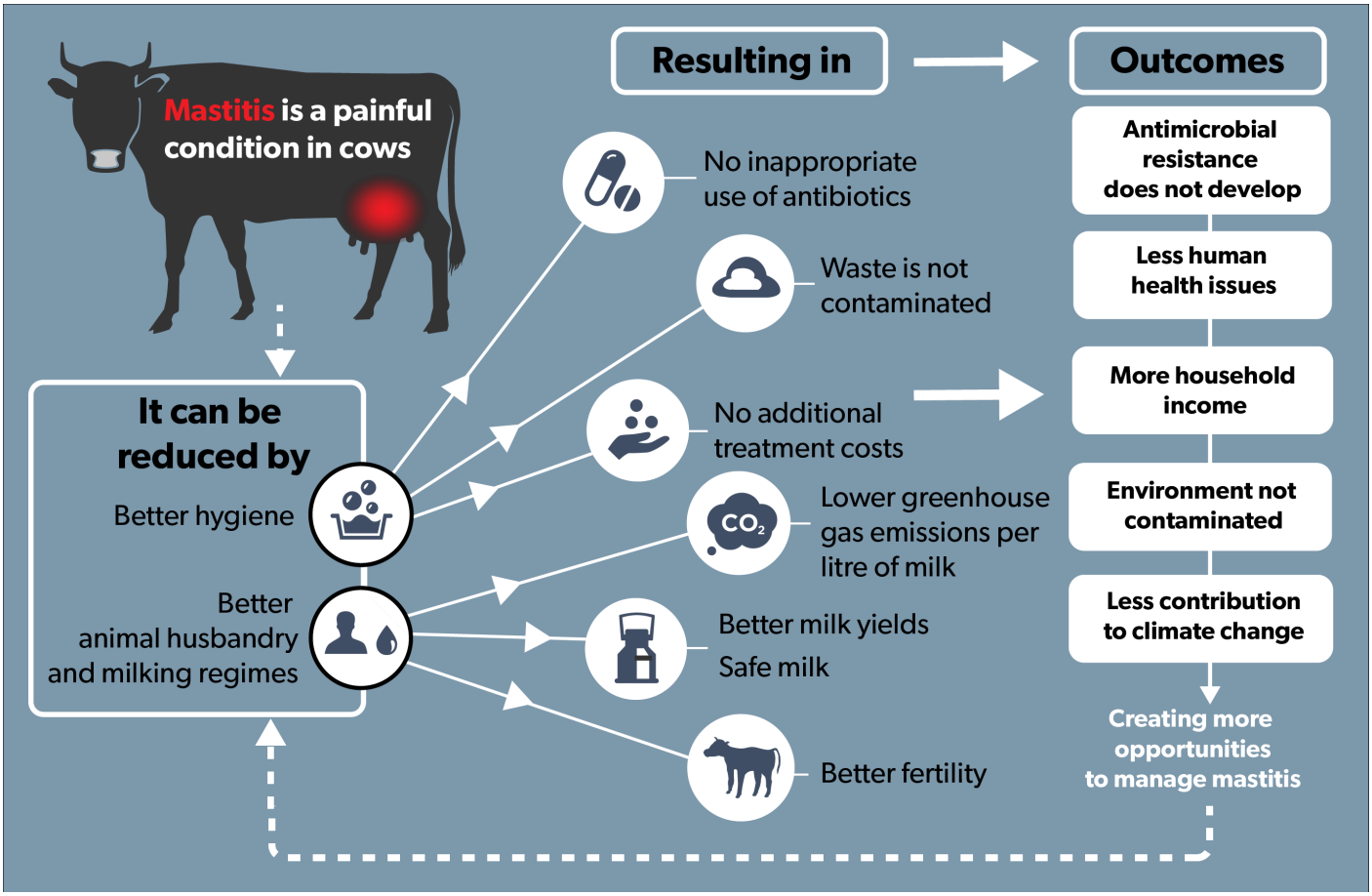


Image Source: Livestock pathways to 2030: One Health | Why Livestock Matter

Fall weather makes for damp bedding, which can result in an increase in mastitis cases.

You may need to change bedding or add new dry bedding more frequently than before.

The Tillage Toolbelt: Nutrient Cycling

By John Pirrung, Field Technician, SWNYDLFC

One of the more common conversations I see happening between growers lately is figuring out if a no-till system is actually worth switching to. There's quite a number of moving parts to consider, and what might be a helpful change for one person could worsen an existing problem for another. This article series aims to clear up some of the confusion about the ways that tillage (or a lack thereof) impacts our fields, and how the challenges you face could determine whether it's the right move for you.

What's all the fuss about till vs no-till?

Though tilling may seem harmless, research shows that intensive tilling can severely damage soil over the years, reducing its productivity and workability. No-till systems are ones that prepare the seedbed differently, aiming to disturb the soil as little as possible, in order to minimize the long-term damage that tilling can cause.

What do we get from tilling?

We've been tilling our fields for many good reasons, based on real concerns. Whether it's to prepare the seedbed, incorporate amendments into the soil (like manure or lime), manage surface residue, or control weeds, tilling has a number of benefits. All of these issues can be tackled at the same time by frequent tilling.

What do we lose from tilling?

Repeated tillage can damage the structure of the soil, reducing its ability to store and cycle water and nutrients. It also makes it more difficult for beneficial fungi, bacteria, and earthworms to survive and thrive. Most notably, tilling can cause the topsoil to erode over time, especially on fields with a slope over 18%.

What do we get from *not* tilling?

Choosing to opt for no-till means that you can preserve your topsoil, prevent it from eroding and build it back up over time. It will also help maintain a healthier soil structure, providing better habitat for microorganisms and improving water retention. You're also saving time and fuel when you choose not to till.

What do we lose when we don't till?

Leaving a field untilled for many years does wonders for the soil, but also for weeds. Perennial weeds can become a problem over time if not kept in check by herbicides, and slugs enjoy fields with heavy residue. Also, the increased water retention can be an issue during wet springs, leaving the soil too wet or too cold to plant on time.

How exactly do tilling decisions impact nutrient cycling?

The main effect that tilling has on nutrients is that it changes how quickly and easily they can move around, both into plants and out of the soil. Let's see how it affects three different elements:

Carbon

Tilling the soil exposes more of the organic matter to oxygen, making it decompose faster into CO2. Rapid decomposition creates lots of available carbon in the short term, but reduces the amount of carbon left in the ground in the long term, depleting the stores faster than they can rebuild. In no-till, a slower carbon turnover allows that carbon layer to build up, and it creates a much more stable and diverse environment for beneficial microbes. In particular, the nitrogen-fixing bacteria that are associated with soybeans rely on healthy, stable soils to perform well.

Nitrogen

Similarly, tilling rapidly increases nitrogen mineralization, which is the process that makes it available to plants. While this is helpful in the short term, the plants can only use so much nitrogen at once, and the rest can leach out of the soil. Comparatively, in a no-till system, the nitrogen mineralizes more slowly, especially organic nitrogen from crop residues. This means less of it is immediately available to the plants, but more can be stored in the soil for long periods of time without leaching away. Nitrates in particular, which may originate from manures or fertilizers, are especially susceptible to leaching, while ammonium and organic nitrogen are less susceptible and can be stored in the soil to be used in future seasons.

Phosphorus

Tilling mixes phosphorus deep into the soil, making it more available to the roots. Normally, this nutrient will only permeate the first two inches of soil in a no-till system. However, mixed-in phosphorus can be eroded away alongside the rest of the tilled soil. No-till can reduce erosion, but also leaves it vulnerable to runoff as it remains more concentrated near the surface.

How do we decide which tilling method is best for our farm?

Consider tilling if you are:

- Concerned that your seedbed will be too wet and/or too cold for planting
- Dealing with heavy residue or struggling with proper seed-to-soil contact

Tillage has a number of benefits, including controlling weeds, incorporating amendments, and managing surface residue.

The main effect that tilling has on nutrients is that it changes how quickly and easily they can move around, both into plants and out of the soil.

- Battling recurring weed infestations or persistent diseases
- Trying to minimize your use of herbicides
- Working to break up extremely compacted soils
- Trying to quickly incorporate bulk organic amendments into the soil

Consider no-till if you are:

- Trying to reduce fertilizer use and improve nutrient cycling
- Worried about soil moisture retention and drought risk
- Wanting to build up more organic matter and improve your soil structure
- Farming on sloped or erosion-prone land
- Concerned about long term soil microbial health
- Using or considering using cover crops or other integrated pest management strategies

What other options do I have?

While till or no-till is often seen as a yes-or-no question, there are other hybrid options that can possibly give you the best of both worlds. Strategic tillage, which is occasionally tilling in specific areas of a field that is otherwise not tilled, can help to remedy issues that no-till brings. Similarly, there are systems for strip tillage and ridge tillage, which can offer a middle-ground approach that still benefits the soil. There are many more approaches to tillage between just till and no-till that could work for you. We will cover these alternatives in more detail in future articles.

Unsurprisingly, there's no one-size-fits-all answer. Everyone will have different concerns and priorities. Consider your own main concerns: are you dealing with some particularly nasty weeds? Are you trying to cut back spending on labor, fuel, or fertilizer? Are your fields simply too wet or too dry? Think about the challenges that are costing you the most time and money, and see if any of these tilling strategies can help reduce that cost.

Sources

- https://crops.extension.iastate.edu/encyclopedia/consider-permanent-vegetation-steeply-sloping-soils
- https://crops.extension.iastate.edu/encyclopedia/frequent-tillage-and-its-impact-soil-quality
- https://extension.missouri.edu/publications/wq262
- https://extension.umn.edu/soil-management-and-health/reducing-tillage-intensity
- https://www.canr.msu.edu/resources/lessons-from-long-term-research-comparing-no-till-to-conventional-tillage-over-30-years
- https://www.sustainable-soil-management.com/sustainable_soil_management/soil_management_field_crops/conservation_tillage_effects_soil_properties.htm

Big News in H-2A

By CCE Agriculture Workforce Development Program

There was big news regarding the H-2A agricultural guest worker program last week.

2023 Wage Rule Rolled Back

Employers will recall the major changes that occurred with the 2023 H-2A wage rule, when use of the adverse effect wage rate (AEWR) was limited to only the "big six" standard occupational classification (SOC) codes for agriculture. All other workers brought into the country using H-2A would have to use a different, usually higher, wage rate from the Bureau of Labor Statistics. This often affected jobs such as truck drivers, supervisors, mechanics, and workers involved in construction on the farm, and it often forced employers to use separate job orders for the higher-paid workers, increasing administrative costs and complexity. Last week, as the result of an employer-led lawsuit in Louisiana, the 2023 rule was vacated for the entire country, and the U.S. Department of Labor announced that it would revert to the H-2A wage rules from 2010. Employers must still honor the terms in existing contracts, but, going forward with new contracts the restrictive "big six" job codes will not be relevant.

Agricultural (Farm) Labor Survey to be Discontinued

In other developing H-2A news from last week, USDA's National Agricultural Statistical Service (NASS) announced that it will discontinue the Agricultural Labor Survey (ALS) at the end of August 2025. This long-running survey provided valuable information about farm wages for many years, but it was criticized more recently for methods that artificially inflated the AEWR wage rates, which were set using ALS data. NASS stated that information from the U.S. Department of Labor's Occupational Employment and Wage Statistics data is sufficient for measuring farm wages.

Cornell Cooperative Extension
AGRICULTURAL WORKFORCE DEVELOPMENT

The decision to till or no-till is not a one-size-fits-all approach.

The U.S. Department of Labor announced that the 2023 Wage Rule has been vacated and will revert to H-2A wage rules from 2010.

Safe Production, Storage, and Feeding of Baleage

By Amy Barkley, Livestock Specialist, SWNYDLFC

When harvesting grass and legumes for stored forages for beef and small ruminant operations, there are two choices for bales: baleage and dry hay. Dry hay is forage that is cut and dried to below 18% dry matter (ideally between 15% - 18%). Large bales of dry hay are wrapped in breathable netting or with twine and stored either outside or inside. Small square bales are held together with strings and always stored under cover. Baleage is forage that is baled at a higher moisture - 45% - 60% - and is wrapped tightly in plastic wrap to keep out the air to allow for an anaerobic fermentation by the natural bacteria in the forage. In our region, many farmers lean towards making baleage, especially as fall approaches, because of the lower labor inputs and decreased reliance on a string of good weather to make quality dry hay. However, if not properly made, stored, and fed, baleage can host some potential problems when fed out to your livestock.

HARVEST AND BALING CONSIDERATIONS

While there is a little more wiggle room with getting baleage moisture just right (45% - 60% moisture is adequate), there are other considerations for harvest and baling.

- Rain is still a concern for the leaching of protein and energy from the forage. If the rain happens just after cutting, was a short & single event, and/or was a high intensity event, there will be less leaching than if the forage was cut for a longer time with a longer period of or multiple exposures to rain.
- Cutting too low and raking too aggressively can result in the baler picking up dirt clods, introducing increased amounts of bad bacteria like clostridia or listeria. Fields with very uneven terrain should be mowed higher to reduce the introduction of soil to your bales. If you have your forage tested, the ash content should be below 10%, with less than 5% recommended.
- Baling should occur at the proper moisture. If the moisture is too high, fermentation can be poor, resulting in the growth of harmful bacteria and spoilage. Too dry, and you risk incomplete fermentation and molding.
- Make sure bales are tightly wound and wrapped, limiting spaces where oxygen can get trapped, resulting in mold and incomplete fermentation in spots. Tighter bales also maximize the number of days the bale can set out unwrapped during feeding.
- Higher quality forages going in – those that are less mature and stemmy – are going to ferment more rapidly and completely, leading to a higher quality end product.

Percent Moisture	Resulting Fermentation Expectation	Management Adjustment
<30%	Possible, but not ideal for fermentation. Some mold growth could occur.	Let hay dry down If possible to produce dry bales.
30% - 45%	Possible, but not ideal for fermentation. Some mold growth could occur.	Add at least 2 more layers of wrap to ensure oxygen exclusion.
45% - 60%	Ideal for baleage production and fermentation.	Wrap bales with at least 6 layers of 1 mil polyethylene plastic film.
60% - 70%	Possible, but the high levels of moisture can result in spoilage and low palatability.	Add at least 2 more layers of wrap to ensure oxygen exclusion.
>70%	Too wet for proper fermentation; baleage production is not recommended.	Wait for forage to dry down further before baling.

Chart showing forage moisture content, resulting fermentation expectation, and management adjustments should the moisture not be exactly where you'd like it to be. Credit: Penn State Extension

STORAGE

Wrapping should occur within 24 hours of baling. Once wrapped, the bales can be stored outdoors. It takes 14 – 21 days for the fermentation to complete in an ideal scenario. However, waiting 6-8 weeks will ensure that the forage is stable. If bales are wrapped in-line, it's important to make sure that the full 6-8 week waiting period is completed so that the bale that's next in line doesn't degrade as quickly when the bale in front of it is removed.

During storage, keep an eye on your bales to ensure that critters or equipment don't rip the wrappings. Bales with air exposure will spoil. Any tearing of the plastic should be taped over with a high-quality tape as soon as they're noticed.

High quality, safe baleage production relies heavily on harvest timing, mowing, moisture content, and proper wrapping.

Sheep and goats require the highest quality baleage.

FEEDING

When deciding which lots to feed out first, select those that may have been more mature, not wrapped as tightly, or had a moisture content outside of the ideal range at the time of baling. These bales will not last as long in storage and their nutrition will degrade faster. Any bales that you're concerned about should not be fed if they are obviously moldy or rotten. Each bale should be inspected for quality prior to feeding. Sheep and goats are more susceptible to listeriosis than cattle, so baleage that is anything other than perfectly fermented should be fed to cattle or discarded. If you're unsure if your baleage has properly fermented, there are tests available through Dairy One and other forage labs to determine not only bale moisture, but also the acids present as part of the lot's fermentation profile. This information can tell you with relative accuracy the safety of the bale lot tested.

Timing is critical when it comes to ensuring unwrapped baleage stays safe. In the summer, a bale should be fed and consumed by cattle within 1-2 days in warmer weather and within 4 days if temperatures stay below 40 degrees Fahrenheit. Because of small ruminants' susceptibility to listeriosis, experts at Cornell recommend removing any feed that isn't consumed daily.

References:

- Ehrhardt, R. 2015. *Silage part two: making more sense than ever for sheep production in Michigan.* Michigan State University Extension. https://www.canr.msu.edu/news/silage_part_2_making_more_sense_than_ever_for_sheep_production_in_michigan
- Martinson and Undersander. 2021. *Determining the value of rained-on hay.* University of Minnesota Extension. https://extension.umn.edu/horse-nutrition/rained-hay
- Arnold, Smith, and Lea. 2017. *Baleage mistakes can lead to major health consequences.* Off the Hoof Kentucky Beef Newsletter. April 2017. https://afs.ca.uky.edu/files/offthehoofapr17.pdf
- Williamson, J. *Baleage.* Penn State Extension. https://extension.psu.edu/baleage.

Sort baleage into quality groups and feed out based on quality.

Poorly fermented, moldy, or rotten bales should be discarded.

Preventing Fires in Baled Hay and Straw

by Linda M. Fetzer, Pennsylvania State University; LaMar J. Grafft, East Carolina University; Dave E. Hill, Pennsylvania State University; Dennis M. Murphy, Pennsylvania State University; Cheryl Skjolaas, University of Wisconsin; and Aaron M. Yoder, University of Nebraska Medical Center

Most hay fires occur within the first six weeks after baling. Understanding the causes of fires in stored hay and learning how to reduce fire hazards will protect your feed supply and could prevent the loss of time and money associated with a fire.

CAUSES OF FIRES IN BALED HAY OR STRAW

Moisture content is the main factor that causes hay and straw to spontaneously combust. Hay fires are more common than straw fires, for reasons involving the type of forage, the moisture content in the stored forage, and heat production.

After forages are cut, respiration of plant fibers (burning of plant sugars to produce energy) continues in plant cells, causing the release of a small amount of heat. When the forages are cut, field dried, and baled at the recommended moisture level (20% or less), plant cell respiration slows and eventually ends.

When forages are baled at moisture levels of greater than 20%, the right environment is provided for the growth and multiplication of mesophilic (warm temperature) bacteria found in forage crops. Mesophilic bacteria release heat within the bale and cause the internal bale temperature to rise between 130ºF and 140ºF. At this temperature range, bacteria die and bale temperature decreases. Fire risk is greater for hay than for straw because a hay bale's interior temperature does not cool after the first initial heating cycle. The respiratory heat created by the mesophilic bacteria provides a breeding ground for thermophilc (heat loving) bacteria. Basically, the higher the moisture content, the longer a bale will remain at a higher temperature. For example, a bale with 30% moisture content may have higher interior bale temperature for up to 40 days. When thermophilic bacteria are present, they multiply and produce heat, which can raise interior bale temperature to over 170??°F. At these temperatures, spontaneous combustion can occur.

Additional factors that contribute to the risk of hay fires include the volume of the mow or bale stack, bale density, and ventilation or air flow around the stacked bales. Bales with a lower density that are stacked lower and have good air flow and ventilation have a lower risk of overheating.

DECREASING THE RISK OF FIRE

The best way to reduce the risk of a hay fire is to bale hay at a moisture content of 20% or less because at this moisture level, microbial activity decreases. There are several ways of reducing moisture content in baled hay:

- Baling under appropriate conditions: Weather plays a critical role in achieving the appropriate moisture level in baled hay. The recommended weather conditions for haymaking are a slight wind and a humidity level of 50% or less. Because hay has a higher moisture content in the morning, it is recommended that you bale later in the day. The recommended practice for haymaking is to mow hay in the morning and allow it to dry in the field for a minimum of one full day prior to baling.
- Using specialized equipment: Another way of decreasing moisture content is to use specialized haying equipment designed to increase drying rates. Such equipment includes tedders, windrow inverters, hay rakes, and conditioning equipment.
- Using hay preservatives: Hay preservatives, such as liquid propionic acid, applied to the hay during baling inhibit or reduce the growth of bacteria in hay with a high moisture content.

Another way to reduce the risk of a hay fire is to ensure that stored hay remains dry.

- When storing hay inside, make sure the barn or storage area is weathertight and has proper drainage to prevent water from entering the barn.
- When storing hay outside, cover the hay with plastic or another type of waterproof material. If you are unable to cover the bales, arrange the bales so that air can circulate between them to promote drying. Bales can be protected from ground moisture by storing them on a bed of gravel or lifting them off the ground on used tires, poles, or pallets.

MONITORING THE TEMPERATURE OF STORED HAY

If you are concerned that hay may have been baled at too high a moisture content, monitor the internal bale temperature twice daily for the first six weeks after baling. For safety reasons, you must work with a partner when checking the temperature of stacked bales. One of you stands atop the bales to measure the internal temperature while the other observes. The person testing the hay should wear a harness and a lifeline that is attached to a secure object. In the event of an emergency, such a system allows the observer to pull the person checking the temperature out of the hay. Due to the potential dangers of this situation, this task should not be assigned to youth workers.

High moisture contents in hay can allow the internal temperatures to rise to the point of spontaneous combustion (175°F).

Moisture can be monitored twice daily for the first 6 weeks after baling on at-risk bales.

You can use a commercial thermometer to test the temperature of baled hay, but commercial thermometers are not always the appropriate length to monitor the interior zone of baled hay. If a commercial thermometer does not meet your needs, you can fabricate a probe from a 10 ft. length of 3/4 in. iron pipe. Drill eight holes that are 3/16 in. in diameter about 3 in. from one end. Hammer that end of the pipe to form a sharp edge with which to probe. Insert the probe into a hay bale, and use a piece of light wire to lower a thermometer down into the end of the pipe. Alternatively, you may use a piece of 3/8 in. pipe that is 8 to 10 ft. long to test the temperature of hay.

To test the temperature of the hay, place wooden planks or plywood across top of the bales so that the weight of the person standing on the hay is distributed evenly and he or she will be at less risk of falling into a burned-out cavity. Drive a commercial thermometer or a homemade probe into the bale of hay. If you use a fabricated probe, keep the thermometer in the probe for approximately 10 to 15 minutes to obtain the temperature reading. If you use a 3/8 in. pipe, leave the pipe in place for 20 minutes. When you remove the pipe from the hay, if the pipe is too hot to hold in your hand, then you should remove the hot

The temperature chart below outlines further actions that may need to be taken depending on the temperature of the hay.

Temperature (Fahrenheit)	Condition and Action
125	No action needed.
150	Hay is entering the danger zone. Check temperature twice daily. Disassemble stacked hay bales to promote air circulation to cool the hay.
160	Hay has reached the danger zone. Check hay temperature every couple of hours. Disassemble stacked hay bales to promote air circulation to cool the hay.
175	Hot spots for fire pockets are likely. Alert fire services to the possibility of hay fire incident. Stop all air movement around the hay.
190	With the assistance of the fire service, remove hot hay. Be aware that hay could burst into flames.
200 or higher	With the assistance of the fire service, remove hot hay. Most likely, a fire will occur. Be aware that hay could burst into flames.

Source: National Resource, Agriculture and Engineering Service (NRAES)

HAY FIRE HAZARDS

The following three hazards exist from hay fires:

Flare-Ups: When the internal hay bale temperature is between 150ºF and 170ºF, the potential exists for spontaneous combustion, and the hay should be moved to allow it to cool. If the temperature is at the higher end of the range, moving the hay could expose it to oxygen and cause flare-ups. Contact your local fire department and have charged water hoses available.

Burned-Out Cavities: These cavities form when temperatures deep within stored hay reached high temperature levels and the hay has burned. A person can become trapped in a burned-out cavity if he or she is walking over the top of the hay pile. Due to the risk of a person falling into a burned-out cavity, at least two people should investigate a hay mow.

Toxic Gas: Toxic gases such as carbon monoxide can be released by smoldering and burning hay. Chemically treated hay may emit additional toxic gas vapors. A trained fire-rescue worker with a self-contained breathing apparatus (SCBA) should be called to assist at the scene in either situation.

WHEN A FIRE OCCURS

In the event of a fire, or even when hay is smoldering, contact the fire department immediately. Your next action step and main priority should be to protect human life. Remember that you can replace hay, buildings, and equipment, but you cannot replace human life.

Before taking any action to fight a fire, consider other valuable actions you can take to address the situation prior to the arrival of fire fighters, including the following:

- Account for all personnel on your farm or ranch operation.
- Check the area for flammable products. If any are present, immediately leave the area and upon the fire fighters' arrival, make them aware of the flammable products.
- Determine whether electricity needs to be turned off in buildings.
- If the hay fire is located inside a building that houses livestock, consider personal safety before relocating livestock to an area away from the structure.

Continued on next page...

Prevent water from entering the bales during storage.

...from previous page

- Remove any extra vehicles or machinery from the area around the fire to clear space for the fire service equipment.
- Stage bale-moving machinery out of the immediate fire area, but have it available to help move bales, as directed by fire fighters.
- Retrieve material safety data sheets (MSDSs) for any chemical preservatives that may have been used on the hay and that fire fighters will need to review.

Moving hay bales is hot, smoky, and physically demanding work that can cause injuries, exhaustion, smoke inhalation, and heart attacks. Individuals involved at the scene need to be monitored and should receive medical attention should they exhibit signs related to any of these health concerns.

THINGS TO REMEMBER:

- Most hay fires related to moisture levels occur in the first six weeks after baling.
- When baling hay, keep moisture levels at 20% or less.
- Keep baled hay dry by covering it or storing it inside.
- Monitor internal bale temperature on a regular basis.
- Youth workers should not be given the task of checking hay temperatures.
- If you store uncovered bales outside, arrange bales so that air can circulate around them.
- The use of ventilation changes based on the temperature of the hay. At lower temperatures, increased ventilation around the bales will help the hay return to an acceptable temperature. If hay temperatures reach 175ºF, stop ventilating hay because the increased air flow could feed a fire.
- Maintain MSDSs for any crop preservatives that may have been used on the hay, and have the MSDS readily available for fire service personnel.

Reviewers, Contributors, and Summarized by:

- Linda M. Fetzer, Pennsylvania State University - lmf8@psu.edu
- LaMar J. Grafft, East Carolina University - grafftl@ecu.edu
- Dave E. Hill, Pennsylvania State University - (Has since retired)
- Dennis M. Murphy, Pennsylvania State University - (Has since retired)
- Cheryl Skjolaas, University of Wisconsin - skjolaas@wisc.edu
- Aaron M. Yoder, University of Nebraska Medical Center - aaron.yoder@unmc.edu

Preventing fires in baled hay and straw. (2012). Farm and Ranch eXtension in Safety and Health (FReSH) Community of Practice. Retrieved from http://www.extension.org/pages/66577/preventing-fires-in-baled-hay-and-straw.

Sources

- Gay, S., Grisso, R., Smith, R., & Swisher, J. (2003) Hay fire prevention and control. Virginia Cooperative Extension. Retrieved from https://www.uky.edu/Ag/Forage/Hay%20Fire%20Prevention%20and%20Control%20….
- Harshman, W., Yoder, A., Hilton, J., & Murphy, D. (2011) Hay storage fires. Hazardous Occupations Safety Training in Agriculture 3.7.2. Retrieved from http://www.extension.org/sites/default/files/NSTMOP%20Task%20Sheets%20Se….
- Lemus, R. (2009) Hay storage: Dry matter losses and qualify changes. Mississippi State University Extension Service. Retrieved from http://msucares.com/pubs/publications/p2540.pdf.
- Murphy, D. & Arble, W. (2000) Extinguishing fires in silos and hay mows. New York: Natural Resource, Agriculture, and Engineering Service (NRAES).

Most hay fires related to moisture levels occur in the first six weeks after baling.

CROPS COWS & CRITTERS newsletter

Youth workers should not be given the task of checking hay temperatures.

Cornell CALS
College of Agriculture and Life Sciences

SAVE THE DATE

2025 Cornell Sheep & Goat Symposium

Cornell University
Ithaca, NY

October 31 - November 2

https://cals.cornell.edu/pro-livestock/events-programs/sheep-goat-symposium

PRO LIVESTOCK

Cornell's Sheep and Goat Symposium brings together farmers, researchers, veterinarians, and members of industry. Registration opens later this month!

CROPS COWS & CRITTERS newsletter

Contact our Livestock Specialist with questions.
Amy Barkley | amb544@cornell.edu
716-640-0844

Ferment To Be: Silage Inoculants

By Katelyn Miller, Field Crops & Forage Specialist, SWNYDLFC

I was in a field recently that was just a few weeks out from being ready to chop for corn silage. I can remember a few months back when we thought we would never get there amidst the rain. Our wet spring resulted in varied planting dates and then we transitioned into a dry summer. These conditions leave a lot of questions on harvesting silage, whether it be immature or drought-stressed corn. A crop that is stressed can add challenges to successfully ensiling including:

- Fermentation complications because of forage that is too wet/dry
- Increased potential for mold and yeasts (already on the crop coming into the bunk)
- Lower energy content (which means less food for fermentation bugs)

While proper storage in the bunk should always be a priority, challenging growing seasons reinforce the importance of proper ensiling. John Wooden once said "It's the little details that are vital. Little things make big things happen." Why am I quoting a famous basketball coach you may ask? Because it takes doing all the little things correctly to have a quality forage that your production will be correlated to for the next year, which is a BIG deal.

One of the "little things" you could be doing is incorporating the use of silage inoculants, which work by shifting silage fermentation in a direction that better preserves the crop. There isn't a one-size-fits-all recommendation on when and how to use inoculants, it depends on the situation and your goals.

The main types of silage inoculants are homofermentative and heterofermentative. Typical homofermentative types include *Lactobacillus plantarum*, the *Pediococcus* species, and *Enterococcus faecium*, while heterofermentative bacteria includes *Lactobacillus buchneri*. There is also a third type that combines the two. Homofermenters turn carbon sugar molecules into one product - lactic acid. Heterofermenters produce multiple products, which could include any combination of lactic acid, ethanol, CO_2, or acetic acid.

While there is data that supports that inoculants bring value and enhance silage management, they are not a silver bullet.

Inoculants work by shifting silage fermentation in a direction that better preserves the crop.

On the front end, bacterial inoculants enhance "good" bacteria that produce acid and drop pH, which speeds up the fermentation process and reduces dry matter losses from it. Back-end products (*L. buchneri)* can improve stability at feed out. This will also depend on your management of the bunk face, the heat of summer, and the success of fermentation. If you're looking to preserve crop quality as close to the point at ensiling, use a product that maximizes lactic acid production (homefermenters). If you don't want silage to heat, use a product that produces acetic acid (heterofermenters).

I have received the question before about whether wet or dry inoculants are better. Unfortunately, there doesn't appear to be any research that has specifically studied this. What does ring true, regardless of formulation, is that the product will only work if the bacteria are alive when placed on the crop. They need to be stored properly in a cool, dry place. This tends to be easier with wet products because the packages are small and can be stored in the refrigerator until they're needed. Some important notes for preparing inoculants:

- The water you use is important since it must support microbial life. Ideally, chlorine-free water should be used, but levels should be less than 1 part per million (ppm).
- The second thought on water; temperature. Research conducted by the University of Delaware showed that temperatures above 95°F impacted bacteria populations. Water temperatures should remain below 85°F, which can be accomplished by using insulated tanks or using frozen water bottles. Don't use ice as it will melt and dilute the concentration.
- These bacteria cannot move on their own. They need to be uniformly spread across the crop.

Regardless of whether you choose to apply a wet or dry product, it all depends on coverage and keeping those bacteria alive! In addition to these points, it's important to consider maintenance of the equipment applying the product. Nozzle function is important, and plugged or broken nozzles will impact coverage.

When picking out a product, we want to select an option that has been researched and proven to be effective. Make sure when comparing products that you are looking at "even" products, comparing apples to apples if you will. Look at the concentration (colony forming units or CFU's), cost, and rate of the different products. A product may look cheaper but have a lower concentration, requiring a higher application rate, making application costs the same as the "more expensive" option.

While there is data that supports that inoculants bring value and enhance silage management, they are not a silver bullet. At the end of the day, a quality crop needs to be harvested out of the field and managed using a variety of techniques to maintain quality and reduce losses.

Resources:

- https://www.agproud.com/articles/31831-forage-inoculants-keep-them-alive#:~:text=Research%20conducted%20by%20the%20University,of%20CFU%20in%20the%20inoculant.
- https://fyi.extension.wisc.edu/forage/silage-inoculants-what-the-research-tells-us-about-when-and-how-to-use-them/

There isn't a one-size-fits-all recommendation on when and how to use inoculants, it depends on the situation and your goals.

When picking out a product, we want to select an option that has been researched and proven to be effective.

2025 Soil Health & Climate Resiliency

Field Days

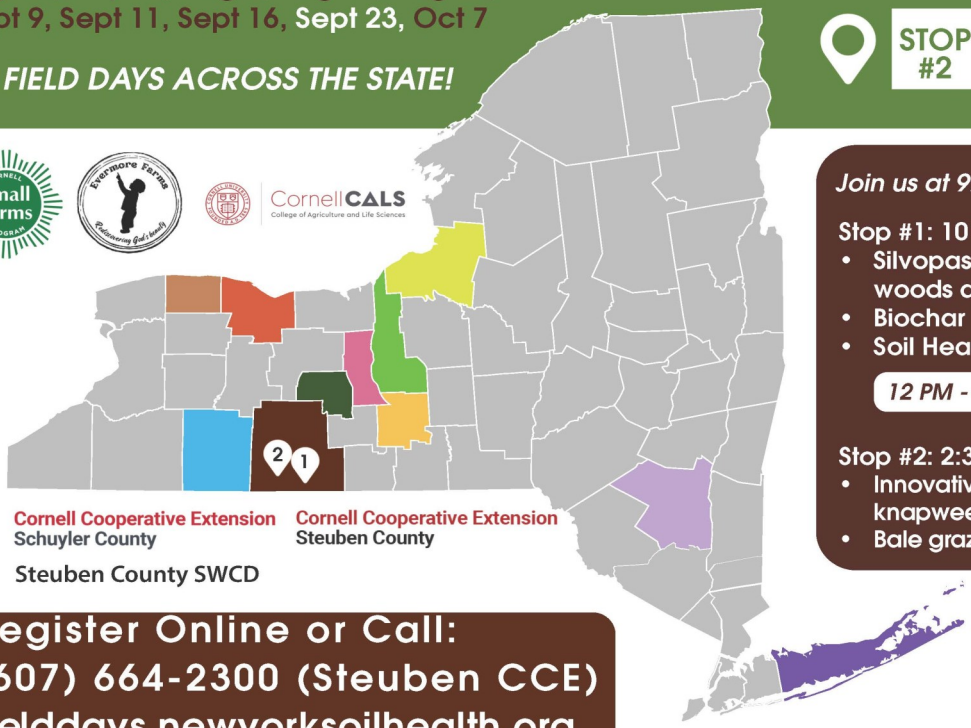
April 24, June 24, July 11, July 16, July 17, July 22, July 24, Aug 7, Aug 13, Aug 15, Sept 9, Sept 11, Sept 16, Sept 23, Oct 7

15 FIELD DAYS ACROSS THE STATE!

Sept 23 | 10:00 AM - 4:00 PM

STOP #1 Evermore Farms
8475 Morgan Creek Rd
Lindley, NY 14858

STOP #2 Begell Farms
3624 County Rte 1
Addison, NY 14821



Cornell Cooperative Extension
Schuyler County

Cornell Cooperative Extension
Steuben County

Steuben County SWCD

Join us at 9:30 AM for coffee & networking!

Stop #1: 10 AM - 2 PM | Evermore Farms
- Silvopasture forage management in mature woods and invasive shrublands
- Biochar production
- Soil Health Trailer & Soil Health Benchmarks

12 PM - 1 PM: Lunch at Evermore Farms

Stop #2: 2:30 PM - 4:00 PM | Begell Farms
- Innovative water systems & organic spotted knapweed control
- Bale grazing

Register Online or Call:
(607) 664-2300 (Steuben CCE)
fielddays.newyorksoilhealth.org

ROTATIONAL GRAZING AND SILVOPASTURE FARM TOUR - JOIN ONE OR BOTH STOPS!

NEONIC SURVEY

Participate in a survey of farmers in New York State focused on farmer views, experiences, and usage of pesticides, specifically NEONICOTINOID SEED TREATMENTS

There are two ways to get to the survey - use this web address or the QR code.

https://cornell.ca1.qualtrics.com/jfe/form/SV_72N2yNt0344QERM?Q_CHL=qr

The survey data will be utilized to understand farmer's perspectives better on the environment, the role of government in farming, trust in science, and knowledge and current practices of Integrated Pest Management (IPM) to better inform the development of on-farm research trials and extension education programs in the future.

Neonicotinoid seed treatments are used to control soil-borne insects and include active ingredients such as clothianidin, imidacloprid, and thiamethoxam. In 2029, neonicotinoid seed treatments will be prohibited for corn, soybeans, and wheat seeds. After 2029, farmers who wish to plant with neonicotinoid seed treatments may request a waiver.

Note: For questions/concerns regarding your rights as a subject in this study, contact the Institutional Review Board (IRB) for Human Participants at 607-255-5138 or access their website at http://www.irb.cornell.edu. Concerns or complaints can be submitted anonymously through Ethicspoint online at www.hotline.cornell.edu or by calling toll free at 1-866-293-3077.

Join New York Soil Health for their upcoming field day on September 23rd.

CROPS COWS & CRITTERS newsletter

Contact our Field Crops Specialist with questions.
Katelyn Miller | km753@cornell.edu
716-640-2047

We are saving seeds from weed species to screen for herbicide resistance

DESIRED SPECIES TO COLLECT:

Waterhemp
Palmer Amaranth
Redroot Pigweed
Common Lambsquarters
Horseweed
Common Ragweed
Foxtails (yellow, green or giant)

Do you have any of these weed species in your fields?
Are you suspicious of herbicide resistance?

Reach out to Katelyn Miller
716-640-2047
km753@cornell.edu

Cornell Cow Convos

a podcast by Cornell Cooperative Extension

New 20-minute Episodes Released Monthly

Listen on:
SoundCloud, Spotify, Apple

Rotating Hosts:

Kathy Barrett | Katie Callero | Lindsay Ferlito | Daniela Gonzalez | Betsy Hicks | Margaret Quaassdorff

CCE Dairy Educators

Concerned about herbicide resistant weeds on your farm? Contact Katelyn Miller at 716-640-2047.

CROPS COWS & CRITTERS newsletter

Check out the Cornell Cow Convos podcast!

The Crops, Cows, and Critters (USPS#101-400)
is published monthly by Cornell Cooperative Extension
of Chautauqua County, JCC Carnahan Center
525 Falconer Street, PO Box 20
Jamestown, NY 14702-9608.

Periodical Postage Paid at
Jamestown, NY 14701.