



**CROPS
COWS &
CRITTERS**
newsletter

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

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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.

Cornell Cooperative Extension Presents:

2023 BROILER FIELD DAYS



JOIN US FOR ONE OF OUR FIELD DAYS TO
EXPLORE BROILER PRODUCTION,
PROCESSING, AND FINANCES



FRIDAY, AUGUST 9, 2023

1PM - 4PM

HLW ACRES, Attica, NY

Hermann and Laura Weber run a 5A Small Enterprise poultry processing facility in addition to raising their own broilers.



SCAN NOW



THURSDAY, AUGUST 24, 2023

4PM - 7PM

Sunny Cove Farm, Alfred, NY

Meghan Snyder raises small batches of organic broilers, processing them on-farm under the 1,000 bird exemption.



SCAN NOW



MONDAY, AUGUST 28, 2023

2PM - 5PM

Laughing Earth Farm, Cropseyville, NY

Annie and her team run a 5A processing facility and 20C kitchen for their own farm's use, which allows them to process over 1,000 broilers a year and gives them the capacity to make value-added products like sausages and stock.



SCAN NOW



TUESDAY, AUGUST 29, 2023

12PM - 3PM

Majestic Farm, Mountaintale, NY

Brett raises slow-growth broilers and takes them to outside processors prior to sale as whole birds, pieces, and chicken sausage.



SCAN NOW



WEDNESDAY, SEPT. 20, 2023

6:30PM - 8:30PM

Online via Zoom

Learn the ins and outs of setting up your processing equipment, processing chickens, adding value through cuts, and pricing your chicken to make a profit!



SCAN NOW



THESE EVENTS ARE FREE
AND REGISTRATIONS ARE
REQUIRED. FOR
REGISTERING OR
QUESTIONS REACH OUT TO
KELLY AT 585-268-7644
OR KLB288@CORNELL.EDU

Chicken is a relatively low-input investment
with a quick turn-around.

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These field days provide the opportunity to
visit other farms and see how they raise and
process broiler chickens.

FREE WEBINAR

NEW DATE!

DATE
THU AUG 3

• **VALUE-ADDED ON-FARM DAIRY PROCESSING**

TIME
7:00 PM EST

Speakers:



Katelyn Walley-Stoll
Farm Business
Management Specialist,
CCE SWNY Team



Anika Gianforte
Dairy Processing and
Marketing Specialist,
Cornell CALS

Facilitated by:

Margaret Quaassdorff

Dairy Management Specialist, CCE NWNy Team

An introduction for
anyone looking to learn
more about on-farm
processing, and how it
may diversify your
current business.



Brought to you by

**NORTHEAST DAIRY BUSINESS
INNOVATION CENTER**

**Cornell
Cooperative
Extension**

**Cornell
CALS**
College of Agriculture
and Life Sciences

REGISTER NOW



tinyurl.com/ValueAddedDairy

We hope you're able to join us for our rescheduled webinar! If you can't attend live, register anyway and we'll send you the recording.

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This webinar is a part of a larger grant project funded by NE-DBIC. The project will also include discussion groups, resource development, and tours!

Shielding Grazing Dairy Cows From Heat Stress

By Camila Lage, Dairy Management Specialist and Victor Malacco, Michigan State University

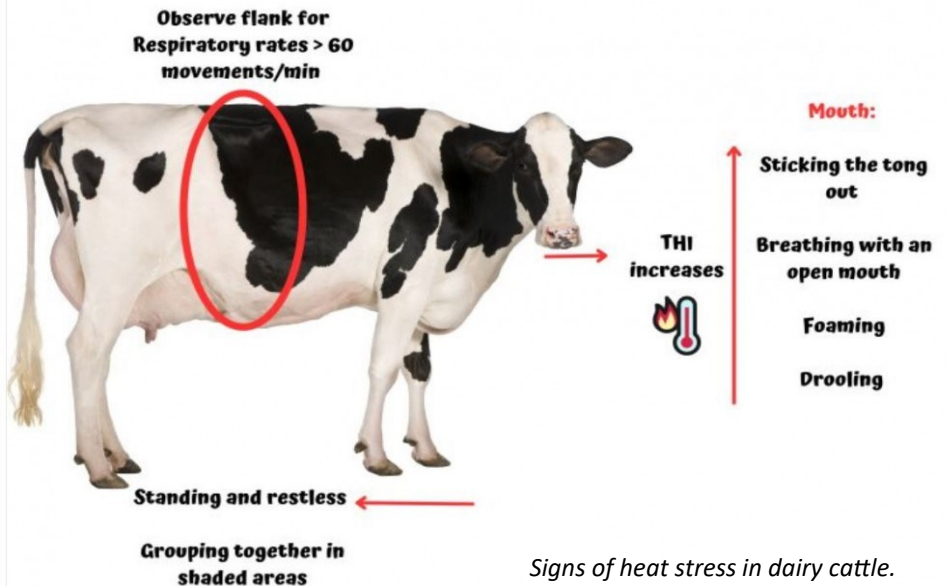
Prioritizing shade, ample water access, and thoughtful management practices are crucial for protecting grazing dairy cows from heat stress, promoting their well-being, and productivity during hot summer periods.

Summer is here, and as temperatures gradually rise, it is essential to recognize the potential challenges heat stress poses on dairy cows. Grazing cows are even more exposed since direct solar radiation exacerbates their vulnerability to heat stress alongside the rising ambient temperatures they encounter. Heat stress can significantly impact dairy cattle, even in states with shorter warm weather seasons like Michigan or New York. Cows in temperate regions may not be physiologically adapted to withstand heat stress conditions. As a result, even sporadic instances of heat stress can prove challenging for these cows, leading to significant losses in production. Therefore, farmers need to be aware of the signs of heat stress, its causes, and how to identify and abate it.

What is heat stress in cows?

Heat stress occurs when the body cannot get rid of excess heat. A cow's heat load is composed of the heat it produces through metabolism plus heat gained from the environment. To remain comfortable, cows must balance the heat load by releasing excess body heat. They do that through various processes, including conduction, convection, radiation, and evaporation. However, during sustained periods of high ambient temperature, especially when combined with high humidity, heat accumulation can surpass a cow's ability to release excess body heat, which leads to heat stress.

The temperature-humidity index (THI) is widely used to assess how challenging an environment is for animals at a specific



Signs of heat stress in dairy cattle.

moment. THI is calculated using a combination of environmental temperature and humidity and can be used to predict animal heat load. For dairy cows, 68 or above on the THI scale means that cows are under heat-stress conditions. These cutoffs were based on studies that observed reduced milk production in dairy cows.

Not all animals respond the same way under the same THI. In addition to weather conditions, the susceptibility and responses of dairy cows to heat stress are influenced by factors such as milk production level, stage of lactation, breed characteristics, and coat color.

A recent study that evaluated dairy cows' time budget changes due to an increase in temperature and THI in temperate climates observed that cows began to adjust their daily time budgets when the temperature reached 54 degrees Fahrenheit, and the THI reached 56. Cows decreased their time lying, eating, and walking while increasing their standing time, indicating that heat stress can affect our high-producing cows at lower THIs than previously predicted.



Cows in the shade of trees planted in a row.



Cows under a portable shade structure.

The susceptibility to heat stress is influenced by milk production level, stage of lactation, breed characteristics, and coat color.

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Farmers must be able to identify the early signs of heat stress in order to minimize its effects on their herd and avoid economic losses.

The Impact of Heat Stress on Cows

Heat stress significantly impacts dairy cattle and can result in direct and indirect economic losses. Direct financial losses are caused by reduced milk production due to decreased feed intake and increased energy spent to control internal temperature. Indirect economic losses are caused by decreased milk production in the subsequent lactation cycle, reduced production life, and increased culling rates. As mentioned, as temperature increases, cows tend to increase their standing time to dissipate heat, which has been speculated can increase losses due to more significant milk losses and a potential increase in herd lameness rates during summer.

Recent studies have shown that exposure to heat stress during late gestation (dry period) will affect the cow's next lactation and even extend to the performance of their daughters and granddaughters. In Michigan, for example, the estimated economic losses due to heat stress are around \$18.4 million per year.

Identifying Heat Stress in Cows

First things first, farmers must be able to identify the early signs of heat stress in order to minimize its effects on their herd. This includes increased respiration rate (more than 60 respiration movements per minute), increased water intake, and reduced grazing time, sometimes observed as lower milk in the bulk tank. Severe panting is the most recognizable sign of heat stress, and cows with severe heat stress will pant with their tongues hanging out. This is often accompanied by drooling. Grazing cows will seek shade or hang out around the water trough.

Managing Heat Stress in Cows

To minimize the negative impact of heat stress on cow comfort and productivity, several strategies can be implemented:

Providing Shade

During periods of a high probability of heat stress, cows should have access to paddocks with shade, ideally providing at **least 40 square feet of shade** per cow to avoid competition. Shade provided by trees is an effective strategy, and assuring the proper space/cow will reduce mud formation and the chances of killing the tree. Having a tree or two in the paddock is a welcome gift to the cows, but it's essential to consider the impact on pasture health when all the cows concentrate in one spot, resulting in excessive shade and concentrated manure. This can hinder pasture availability and regrowth, especially in rotational grazing systems. Some farmers have devised a practical solution to address this issue: planting trees in rows along the lanes. The trees can serve as paddock divisions by planting them in a row, utilizing

fiberglass stakes and ties instead of step-in posts. This arrangement not only protects the newly planted trees, but also facilitates effective management of the paddocks. A simple yet effective approach is to run a single strand of electric fencing between the livestock and the trees to safeguard the row of trees. This creates a clear barrier, preventing the cows from causing damage to the trees while still allowing them access to the pasture. Research has revealed that certain pasture grasses can thrive under partial shade conditions. By strategically integrating rows of trees, farmers can provide shade for the cows, effectively manage the paddocks, and create an environment that promotes the growth and performance of these desired pasture grasses.

Portable shade structures can also be a good solution. They allow you to control where your cows congregate for shade and you can move them around within a paddock or to another paddock as needed. If you are constructing shading structures, it is crucial to ensure that the long axis of the structure is oriented in a north-south direction. As the sun moves across the sky from east to west, the bars of light and shadow travel across the area to help keep the area beneath the structure dry. Shade cloth can be installed over off-paddock facilities, such as holding pens or feeding areas, to provide shade and protection for cows. Barns or other enclosed structures, if available, can be used to house animals during the warmest part of the day.



Cows cooling with water.

Cooling With Water

Sprinklers can improve evaporative cooling for 2 to 6 hours after wetting, but cows must be soaked to the skin. Fans can be used to increase the effectiveness of sprinklers by moving the water-laden air away. Take advantage of milking time or when supplementing cows in feed bunks to cool grazing cows. If cows are grazing under pivot irrigation, one strategy can be to use the pivot to get the cows wet.

Continued on next page...

Prioritizing shade and ample water access is crucial for protecting grazing dairy cows from heat stress. On hot days, cows require 40 sq ft of shade/cow.

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Cows will graze less during the warmest part of the day. Consider providing supplementation during this period of the day in shaded feeding areas.

Drinking Water

Lactating cows require more than 30 gallons per cow per day and drink between two to six times daily. High flow rates (at least 10 gallons per minute) to the water trough should be maintained, and a water trough should be installed to minimize the walking distance for cows (a rule of thumb has water no more than 800 feet from the animals). The farther the animals have to walk to reach water, the less evenly they will graze the pasture and the more unevenly distributed the manure will be. Providing 3.5 linear inches (9 centimeters) of accessible water trough perimeter per cow and/or more than one water source can reduce the impact of dominant cows. An ideal scenario is to provide water in each paddock. Several creative ways exist, including small portable tubs with quick-connect couplers and hoses. If using a system to pipe water long distances, ensure enough water reaches the tub fast. Water lines can be buried, or pipes can be laid on the ground along a fence line or a lane. The downside of aboveground water lines is that they may heat the water on warm sunny days if not shaded. Research shows cows under heat-stress conditions can benefit from drinking cooler water.

Management

Walking distance and speed should be minimized, and cows should spend less time in unshaded yards. More yard space per cow should be provided at milking times, and milking earlier in the morning and later in the afternoon can be beneficial. Cooling cows with water and fans in the yards or waiting areas before milking is also a good strategy.

Feeding

Cows will graze less during the warmest part of the day. If any supplement is fed to the animals, consider feeding during this period of the day (usually 3-5 hours after noon - when the sun is at its highest point in the sky) in feeding areas where they are protected from direct solar radiation.

Selecting Animals Bred For Heat Tolerance

Heat tolerance in dairy cows can be altered genetically, and this option may become an important longer-term adaptive strategy as forecast higher temperatures raise the risk for heat stress on farms. One approach is the choice of breed or crossbreeding, which allows for the combination of heat resilience and production qualities by crossing, for example, Bos Indicus (more heat resistant) breeds like Gyr with temperate dairy breeds (more productive) like Holstein and Jersey. Within temperate dairy breeds, a study has shown that Jerseys are more tolerant to heat stress showing a decrease in milk production and butterfat only in situations of severe heat stress (THI > 90), while Holsteins experience this

with moderate and severe heat stress. However, in this study, Jersey cows produced 20 pounds less milk (57 pounds) than Holsteins. Another strategy is the introgression of thermotolerance genes, where specific alleles associated with heat tolerance are introduced from different breeds. For example, some cows have a naturally shorter hair coat known as "slick." This distinctive coat is the result of a mutation in the prolactin receptor gene, which is naturally found in specific breeds. The inheritance pattern of this genetic mutation is dominant, meaning that offspring with a single copy of the gene will also have a short hair coat. In an effort to enhance heat tolerance, the slick gene has been introduced to the Holstein breed.

Recent studies indicate that cows with the slick gene exhibit greater heat tolerance and that this genetic trait helps reduce the negative effects of heat stress on milk production. Selection criteria within breeds is another strategy, allowing for the selection of individuals based on their heat tolerance traits. This method targets a combination of traits and offers the potential to develop breeding values for heat tolerance, but it poses challenges in selecting specific genes and managing trade-offs between heat tolerance and other desirable traits. Each strategy requires careful consideration of breeding objectives, environmental conditions, and available resources.

No single strategy alone is enough to mitigate heat stress effectively. A combination of adaptive strategies, such as providing shade and water, changes in management, and selecting for heat tolerance, need to be adopted on farms to help cows cope with heat stress. ■



A cow originated from crossing Gyr cattle, a Bos indicus breed known for its tolerance to hot temperatures, with Holstein cows.

Interested in discussing heat abatement strategies or having your facilities and herd assessed for heat stress?

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For more information about managing, preventing, and prioritizing heat abatement on your farm, contact Camila Lage at 607-422-6788.

Pregnancy and Maternity at Work

By Rich Stup, Cornell Agricultural Workforce Development

Recent changes to employment law at both the federal and New York state levels affect pregnancy and maternity at work. This topic comes up frequently with employers of all sizes and types so it's good to review and update your policies and plans to support working mothers. Employers have three issues to consider:

- Accommodations for the pregnant employee while they are working
- Leave time after the baby is born
- Assisting the nursing mother after they return to work

Accommodations for Pregnant Employees

The Pregnant Workers Fairness Act (PWFA) is a new federal law that went into effect on June 27, 2023. The law applies to all employers with 15 or more employees, but it provides good guidelines that even smaller-sized employers should consider. The possible accommodations for a pregnant woman are reasonable for most employers and include items such as:

- Being able to sit or drink water
- Receiving closer parking
- Having flexible hours
- Receiving appropriately sized uniforms and safety apparel
- Receiving additional break time to use the bathroom, eat, and rest
- Taking leave or time off to recover from childbirth
- Being excused from strenuous activities and/or exposure to chemicals not safe for pregnancy

Of course, this all depends on what exactly your employee does in their job. Get input from your employee about exactly what accommodations they need.

Both federal law and New York law provide employment protections for pregnant employees. It is illegal to discriminate against someone because they are pregnant.

Leave Time

Employers in the U.S. with 50+ employees have to follow the federal Family Medical Leave Act (FMLA). FMLA provides for up to 12 workweeks of unpaid leave after a child is born, health benefits maintained while the employee is away, and that employees must be able to return to the same or similar job. Smaller employers often follow the guidelines of FMLA for their family leave policies because it is increasingly a necessary part of a competitive benefits package.

Essentially all New York employers are required to provide paid family leave (PFL) for employees. New York's PFL is an

insurance program that employers and employees pay into, and this fund then pays out benefits to cover 67% of an employee's average weekly wage when they take leave from work for a variety of reasons including bonding with a newborn child for up to 12 weeks. New York's PFL also requires employers to allow employees to return to the same job after the leave, maintain health insurance during the leave, and prohibits discrimination or retaliation against employees for taking paid family leave.

Accommodations for Nursing Mothers

Once your employee returns to work, they may be nursing for a while. Federal law includes the Providing Urgent Maternal Protections for Nursing Mothers Act (PUMP Act) which provides nursing employees the rights to receive break time to pump and a private place to pump at work. Further, the "Fair Labor Standards Act (FLSA) requires employers to provide reasonable break time for an employee to express breast milk for their nursing child for one year after the child's birth each time such employee has need to express the milk. Employees are entitled to a place to pump at work, other than a bathroom, that is shielded from view and free from intrusion from coworkers and the public."

New York State law provides further protections for nursing mothers for breast milk expression in the workplace. This law applies to all New York employers. Please see the detailed factsheets on the NYS Department of Labor's website for more information. ■



PHOTO CREDIT: Katelyn Walley-Stoll

Creating a safe, accommodating, and welcoming workplace for all employees should be a priority for farm owners and managers.

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23% of moms have thought about leaving a job due to a lack of reasonable accommodation or fear of discrimination from an employer during pregnancy .

We Hosted a Farm Tour - and You Can, Too!

By Katelyn Walley-Stoll, Farm Business Management Specialist

8 things I did ahead of time to avoid calling our insurance agent (aka – keeping everyone safe and the day running smoothly!)

Many of you know that on top of my “day job” with Cornell Cooperative Extension, my husband and I also have a small, diversified livestock farm in Cattaraugus, NY. Because that’s not enough chaos, we also have four little two-legged critters (human children).

These unique critters sometimes make bad choices in school, which result in a “you need to come meet with the teacher” phone call. It was during one such school visit over this past winter when I mentioned to the teacher that homework was sometimes an issue because of us spending our evenings busy in the barn!

Well, one thing led to another, and I managed to volunteer our farm to host a school field trip. This may have been done to earn some brownie points for the kiddo. I may have forgotten how time works and thought that November to June was years and years away. I may have wanted to show students (and their parents) that farming is really cool and that we’re all good people who really just want to make and grow safe food! Well, wouldn’t you know, November flew by, and then it was December and January. Spring crept in as I was busy with work, and the farm was rearing up its chaotic head. Then, about March, I remembered that I should tell my husband about the farm trip. By April, I was in full panic mode! But, June showed up. We hosted a farm tour. And it was awesome.

Throughout this process, I considered getting everyone to and off of the farm safely as our first priority. If the students had some fun while they were here, even better. If the students, parents, and teachers learned something new about agriculture while they were here, well by golly, that’s a giant success! Here are 8 things I learned along the way.

1. The key to avoiding a phone call to your insurance agent is to call your insurance agent. My first priority, because I’m a Farm Business Management specialist and I worry a lot, was to connect with our farm’s insurance provider. I explained what we were looking to do, and discussed options for coverage. Depending on the organization that you’re working with to schedule a farm tour, there may be different insurance requirements and obstacles. Make this phone call ASAP and ask questions. Do they have any suggestions for hosting a tour safely? What are rules or policies that need to be in place to avoid liability? How much will it cost to carry additional coverage?

2. Make a plan with a schedule and learning objectives. You could host a “go look around and get back on the bus” farm tour. OR – you could host a carefully crafted and scheduled farm tour with tailored learning objectives, discovery based activities, and connections to multiple aspects of agriculture. You could also pick something in the middle! The more detailed and structured you get, the more involved it will be. BUT – structure provides guardrails for chaos. Our farm tour consisted of 8 “stations” that groups rotated through. Each station was 10 minutes long, covered a specific topic, and included a hands-on activity (like tasting REAL Maple Syrup – thank you Rublee’s Maple Farm!). For our event, we covered Beef, Poultry, Pumpkins, Equipment, Fruit, Goats, Dairy, and Maple. After morning stations, we had lunch which included donated milk (Thank you Upstate and Hill’s Valley Farm!) and tables/chairs in the shade! For the afternoon, students were able to revisit their favorite stations, feed goats and chickens, paint/color farm scenes, play in a corn bin, and more. Each activity that we offered had a specific purpose, and our volunteers and school personnel had copies of maps/those objectives.



Shantel Rublee and her family from Rublee’s Maple Farm were on hand to show how syrup is collected and made. Students were able to taste test their delicious syrup (some had never had real maple syrup before!).

Continued on next page...

Insurance and managing risk is a key component of having visitors on your farm. It’s important to weigh the risks against the benefits and manage your risk where you can.

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Connect with your county’s 4-H department and your school district’s FFA/Ag Department. You can recruit volunteers and access curriculum or ideas.

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3. Over communicate with the school/group/club that's visiting. My husband is a school bus driver and we have three school teachers in the family. With these experiences, I know that school staff are under a lot of pressure to do "all of the things". Planning for a farm field trip is a low priority. To help take the burden of planning off of their shoulders, and to clearly communicate needs and expectations, I touched base several times throughout the month before the field trip. We connected with transportation to discuss parking, with administration to discuss expectations, and teachers to develop schedules and "learning objectives". We also reached out to the school's FFA and Ag Department to recruit help (more on that next). This helped the day's event run smoothly because everyone involved knew what the plan was.

4. Ask for help and donations. It took 30 people to pull the farm tour off in addition to the school's staff. The help was needed to pick up the farm beforehand, make posters and activities, and lead tours on the day of. I reached out to CCE-Cattaraugus staff who were able to attend as it connected with their programming (Thank you Carrie, Abby, Tamara, Gayle, Amy, Camila, and Katelyn!). For example, the 4-H youth department assisted with age appropriate curriculum and activities. The Expanded Food and Nutrition Education Program and SNAP-ED made berry smoothies for the students to try. Master Gardeners were on-hand to help plant pumpkin seeds and make pollinator friendly "seed bombs". I also connected with some of our local farm friends who helped by bringing supplies and leading tour stations on topics related to their farm. We asked for and received donations for portable toilets, pumpkin seeds and corn, and tables and chairs. Even with 30 helpers, I still felt like we could have used 20 more.

5. Stay as flexible as you can. Remember those few days that were so smoky you couldn't see 20 feet ahead? Outdoor events were cancelled, we sent out articles about keeping livestock safe, and it was just plain hard to breathe? Well, that was when our farm tour was scheduled. Knowing that it wouldn't be safe to ask a bunch of elementary aged students to stay outside all day, we needed to reschedule our event last minute! Once it was rescheduled, it rained. And rained. And rained. Because of the rain, we didn't have time to do a lot of the cleaning and set up that we wanted! So, a lot had to happen that morning set-up wise which meant we had to prioritize what got done. All of this to say, make a really great plan – but also have the flexibility to adapt when the plan goes to the manure pit.

6. Remember your audience. As farmers, the things we find interesting and cool and important are a lot different than the average consumer. And they're definitely different than an elementary aged student! It's important to

remember who we're talking to and adjust what we share accordingly. For example, you might be excited to talk about how cows are ruminants and eat all sorts of things we can't, use their four-part stomach to digest the material, and create milk AND high quality fertilizer. All a second grader hears is "poop". We tried to keep everything simple, fun, and engaging. When everyone went home to talk about their field trip, we wanted them to remember how cool farming is and how nice farmers are. Plus, kids who are engaged are less likely to wander off and do something they shouldn't.

7. Make a list and prioritize it. Imagine this. It's 4am on the morning that 100+ people are coming to visit your small farm. Predictably, you're running around making sure there's soap for the handwashing stations, putting up caution tape, and doing all of the last-minute things. You check in with your dear husband, thinking he must also be doing all of the important, last-minute things. He tells you he's pressure washing off the round baler. You know, so it looks shiny for the kids. The round baler. You see, I had a list and he had a list and we both had priorities on our lists. But – we didn't take a moment to compare lists to make sure we both had the same priorities. There was so much that we wanted to do, projects that we haven't gotten to in the past 10 years that we wanted to magically get done. Having a plan, and priorities, helps to keep the planning work and day off manageable. *Don't worry, I bribed several parents to tell my husband (who led the equipment station) about how nice the round baler looked.



Tamara Bacho and Gayle Patterson show students how to plant pumpkin seeds! Each student was able to plant a seed and marked the plant with their names. This fall, they'll be able to come back to Stoll Family Farm and pick their grown pumpkin! There was a special four-legged helper (affectionately known as Steve) who visited the groups throughout the day.

Kids who are engaged are less likely to wander off and do something they shouldn't. A structured tour (vs. self guided) can help with that, even if it takes more of your time.

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"Why bothers" will look different from farm to farm, and that's ok! Keep yours handy to help prioritize and motivate throughout the planning process.

8. Remember your why. If you've ever been to one of my workshops, you'll know I usually do this corny exercise where I ask people to reflect on their "why bother". This involves writing down goals, missions, or reasons for doing what you're doing. Farm tours are no different. Hosting a farm tour is optional. You already have so much going on at the farm, tours usually happen in the middle of planting or harvest season, and you could do about 260 other things besides reminding visitors to not touch the electric fence. We always revisited our why bother to help remind us what success looked like (to us!). Why bothers will look different from farm to farm, and that's ok! The tours might be part of your farm diversifying, they might be a way for you to get your place cleaned up, they might help you build connections with the local community! The day was a success, and I think it was because of the incredible support we had from our family, friends, and school

district along with all of the work and planning that went into it ahead of time. I learned a lot through this process and hope to share it with you in a few more articles and resources. If you're interested in learning more about hosting a farm tour, please don't hesitate to reach out!

This article was written as part of Cornell Cooperative Extension's "Diversifying Your Dairy" initiative. This material is based upon work supported by USDA/NIFA under award number 2021-70027-34693.



← Farm Owner (and SWNYDLFC Team Leader), Katelyn Walley-Stoll, kicks the tour off with a few safety reminders and some sneak peek's into the day's activities.

Abby Luzier from CCE-Cattaraugus, shares information about beef cattle with the students and their parents! →



← It took lots of people to pull off a successful day!

If you're interested in learning more about hosting a farm tour, please don't hesitate to reach out to Katelyn Walley-Stoll by calling 716-640-0522!

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This article was written as part of CCE's "Diversifying Your Dairy" initiative. This material is based upon work supported by USDA/NIFA under award number 2021-70027-34693.

Strategies For Hay Crops 2023

By Joe Lawrence and Kirsten Workman of Cornell University

The 2023 season has been a roller coaster for producing dairy quality hay crops across NYS. With widespread dry conditions throughout much of May, many experienced below average first cutting yields, though there were pockets with reports of average or better yields. There was better news on the quality front, with reports of average to above average forage quality for timely harvested first cutting being fairly uniform across the state.

With continued dry conditions through May for many, second cutting presented more frustration in decision making as yields were quite low but the crop had stagnated and was losing quality, and decisions about second cutting timing were then interrupted by rain. And while the rain was much needed, the patterns in which it was forecasted and came created a great deal of uncertainty around windows of opportunity for cutting. While there are always unknowns, guidelines were to “cut your losses” and harvest the second cutting to allow for the third cut regrowth to capitalize on the new moisture, as the rain would benefit the regrowth more than the stagnant second cutting. At this point, hopefully most have had an opportunity to harvest second cutting. If not, it should be taken as soon as possible.

1. Determine Inventory Needs by Quality for Harvest Timing Decisions:

- If lactating quality feed inventory is still needed, stay the course with intensive cutting schedule and make plans for extra late season cuttings.
- Non-lactating quality inventory needs – with adequate rainfall, overall seasonal yields can be increased with a delayed harvest of one cutting where a three-cut system yields 15 to 25 percent greater than a four cut system. The key to this is timing of the three cuttings and what your forage quality needs are. The strategy for dairies should not be to take three cuts of mediocre quality feed. Rather, the strategy is to take two timely cuttings of higher quality forage and extend the harvest window on the third cut to increase yield. However, this is only advised if forage inventory for non-lactating animals is needed. If lactating quality feed is still needed, then cuttings should be taken in a timelier manner to capture the desired quality. It is often easier to secure lower quality forage to fill inventory gaps than it is to find high quality forage to purchase.

While yields varied for both first and second cutting, for many the combined total yield is lower than desired and presents concerns about adequate inventories. With potential challenges to inventories, it is worth thinking about strategies for the remainder of the season.

Take Inventory

The first step is to measure actual inventories. While we do not know what the rest of the season will bring, estimate yields for future cuttings, and compare this to the needs of your feeding program. Work with farm managers, nutritionists, and other advisors to determine these needs.

Management of Remaining Cuttings

Second cutting still standing the field – Remove this material as soon as weather conditions permit. If quality is expected to be compromised by late cutting, evaluate storage options to separate this feed from higher quality forages so that it can be feed to appropriate groups of animals on the farm.

Continue to follow best management practices for harvest—when inventories are low it can be tempting to “cut corners” in harvest management, but this will often backfire.



2. Cutting Height

- Grass stands – Grass stands need to be cut at approximately four inches to avoid stress and delayed regrowth. Do not be tempted to cut grasses lower to increase yields, this will do more damage to season long yields and quality than the potential short term yield gains from cutting lower.
- Alfalfa stands – Pure alfalfa stands can be cut lower to the ground than grass due to new growth developing from the crown of the plant, unlike grasses which regrow from the cut leaf blade. Consider field conditions, particularly risk of soil contamination on harvest equipment, when determining feasible cutting height.
- Mixed stands – Cutting height will affect the grass in these stands. Consider the proportion of grass and alfalfa in these stands and future viability when determining feasible cutting height.

This year has provided many challenges for harvesting hay crops. Apply these strategies to your operation to get the most from your feed this year.

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Are you interested in more hay management resources? Contact Katelyn Miller at 716-640-2047.

3. Retain Yield and Quality Throughout Harvest Process

- Minimize time from cutting to ensiling as this will minimize respiration losses. Plant respiration after cutting decreases both dry matter (DM) yield and forage quality. The most effective practice to minimize the window from cutting to ensiling is through wide swathing. Guidelines for successful wide swathing show that the swath width needs to be a minimum of 80 percent of the cutter bar width.
- Minimize leaf loss in legumes. Much of the quality in legumes is in the leaf fraction. Harvest activities (tedding, raking, merging, harvesting) when the crop is too dry will increase leaf loss.
- Setup harvest equipment to minimize soil contamination. Consider impacts of forage cutting height and ensure handling equipment (tedders, rakes, merger, harvest pickup heads) are adjusted correctly to pick up windrow without contact with the soil surface.
- Pay attention to the details when storing hay crops. Taking care to preserve the quality of forages is even more important in challenging years. Avoid shrink with proper harvest dry matters, proper density of silos and bales, and cover and wrap adequately. View Managing for quality silage in bunk silos and piles for more information.

4. Maintain Crop Nutrition

Nitrogen (N) on grass (through manure or fertilizer) is a staple of sound grass forage management. Typically, early season cuttings are preferred for N applications, but with adequate rainfall additional N on late season cuttings can be beneficial. The Nitrogen guidelines for field crops in NY (2023) states, "For both 3-4 and 4-5 cut systems, apply 75-100 lbs of fertilizer N per acre at green-up, followed by 50-75 lbs of N/acre after first cutting, and 50 lbs N/acre after subsequent cuttings with a maximum of 275 lbs N/acre for 4-5 cut systems. For grass that is not managed intensively (1-2 cut system), this recommendation is reduced to 75 lbs N/acre per year." There may be some unused N from earlier applications during droughty conditions, however it is difficult to quantify this.

Emergency Forages

In extreme circumstances with low inventories and underperforming hay fields, it may warrant early termination of the hay crop to make room for an emergency annual forage.

- August planted oats – Oats planted by mid-August can produce good yields of high-quality forage 45-60 days after planting. For lactating quality, harvest should occur before heading during the boot stage.
- Winter cereal cover crops – planting a winter cereal such as rye or triticale on a fallow field or following corn silage can bolster forage inventories next spring. Planting should occur in early September for best results. See Agronomy Fact Sheet 56 for more specific information on establishing and harvesting winter cereals for forage harvest.



ROBOTIC
MILKING
MANAGEMENT
ON GRASS-BASED
SYSTEMS

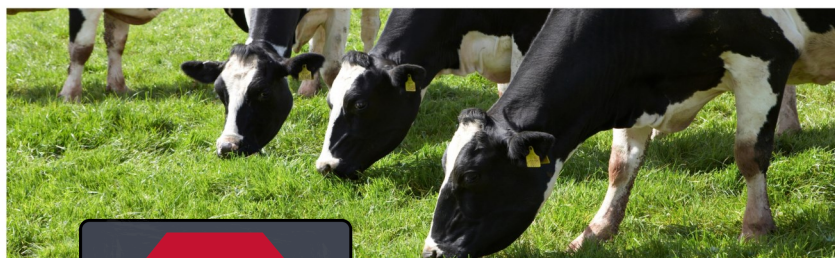
AND

GRAZING
TECHNOLOGY
UPDATE

Cornell Cooperative Extension

SAVE THE
DATE

August 2023



Some important management considerations include calculating your feed inventory, cutting height, harvest efficiency and crop nutrition.

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Save the date for an upcoming webinar all about robotic milking management in grazing systems. We hope to "see" you there!

The Endemic Calf Parasite *Cryptosporidium Parvum* - PSU Extension

Adapted From Original Article By Author Dr. Melissa Cantor and Hayley R. Springer, MS DVM

What is it, and how to identify dehydration in calves with scours?

Cryptosporidium parvum (**Crypto**) is a protozoan species that invades the intestinal lining of calves (Thomson et al., 2017). **Crypto** is problematic because it causes watery diarrhea, dehydration and poor nutrient absorption in calves. It is the leading cause of diarrhea in neonatal calves 7 to 21 days of age (Urie et al., 2018) and the parasite is endemic on farms (Thomson et al., 2017). This article covers the parasitology of *Crypto*, management strategies to reduce pathogen load, and water sanitation strategies for calves.

How *Crypto* infects the calf

The parasite *Crypto* is transmitted via the fecal-oral route when the calf either ingests the oocysts in the feces or the calf consumes contaminated water (Cho and Yoon, 2014). Importantly, a calf can shed the oocysts up to a week after it recovers from diarrhea (Thomson et al., 2017). Once ingested, the oocyst is activated by the pH and temperature in the calf's abomasum and four sporozoites are released (Thomson et al., 2017). *Cryptosporidium parvum* travels to the small intestine of the calf where the infection begins. Here, *Crypto* feeds itself using a special organelle extended into the host cell (Thomson et al., 2017). Because *Crypto* feeds on nutrients that were intended for the calf's intestinal cells, poor nutrient absorption, poor growth, and reduced feed efficiency are typical for calves infected with the disease compared to non-infected peers (Harp and Goff, 1998; Thomson et al., 2017). Unfortunately for the calf, the parasite reproduces in the intestinal lining as well, re-infecting the calf through infection of neighboring cells, and starting the reproductive cycle again (Cho and Yoon, 2014). Thus, calves are susceptible in two ways, through the ingestion of feces shed by infected calves, and through re-infection in the lower gut by the parasite's reproductive cycle. When *Crypto* is shed by an animal, the parasite is enclosed in an inactive, thick-walled oocyst (Harp and Goff, 1998). The oocyst's shell is quite protective for this parasite, making it difficult to kill.

How to prevent *Crypto* infections

Sanitizing pens between groups of calves can help reduce pathogen loads but the type of disinfectant used is notable. **Research has shown that *Crypto* is resistant to chlorine and iodine-based disinfectants (Harp and Goff, 1998).** *Crypto* can also survive in extreme cold and warm temperatures. Boiling water at temperatures of 160 °F for three full minutes is required to destroy the oocysts (Fayer et al., 1996). **Hydrogen peroxide-based disinfectants**

can kill *Crypto*, and a 3% Hydrogen peroxide solution is safe to use around calves (Thomson et al., 2017). Once a calf pen is emptied of soiled bedding, the pen can be sprayed down with a 3% hydrogen peroxide solution. Protective gear should be provided to staff. A hydrogen peroxide solution should be rinsed from metal surfaces after 10 minutes because it is an oxidizer and can cause rust. Allowing the pen to dry before returning calves to a pen is critical.

Crypto requires water to survive, which is why it thrives in humid environments like calf barns, but this can also be used against the organism. The easiest way to manage *Crypto* is to reduce parasite load by frequently removing soiled bedding from infected calf pens, and by cleaning bottles and buckets with very hot water followed by drying. **The key here is to follow the hot water wash with drying because *Crypto* is vulnerable to desiccation, or drying out, when moisture is removed from the environment.** In addition to removal of soiled bedding, the isolation of sick calves away from healthy calves is also an important step in controlling *Crypto*. One tablespoon of diarrhea from a calf with *Cryptosporidium parvum* is enough to infect dozens of other calves if they consume it (Nydam et al., 2001). Having a dedicated, easy to clean area to house sick calves can help reduce the risk of disease transmission to other calves in the barn, regardless of the cause of diarrhea.

Diarrheic calves require supportive care

So now that we have described the parasitology and environmental management of *Crypto*, what can be done to manage it at the calf level? *Crypto* is a difficult species to manage in the calf because there are no effective treatments against it (Brainard et al., 2021). The best solution for calves with an active *Crypto* infection, much like any cause of diarrhea, is supportive care.

An effective supportive care plan for diarrheic calves involves providing rehydration solutions to them either by bottle, subcutaneously, or intravenously (Trefz et al., 2017). The herd veterinarian should work with calf producers to develop a care plan for producers to decide when diarrheic calves require rehydration solutions, and whether additional treatments are warranted. *Cryptosporidium parvum* is also zoonotic, meaning it is infectious to humans. Anyone treating or working with sick calves should always wear gloves, wash hands after calf handling even if wearing gloves, change and wash clothes soiled by calf diarrhea, and wash hands before eating.

Crypto causes watery diarrhea, dehydration, and poor nutrient absorption in calves.

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Calves can shed the oocysts up to a week after it recovers from diarrhea.

A calf with diarrhea always needs access to clean drinking water because dehydration is the leading cause for death in diarrheic calves (Cho and Yoon, 2014). The dehydration status of a calf can be assessed by the following: pulling the skin on the shoulders to assess for elasticity, or skin tent, looking for recession of the eyes into the skull, feeling the calf's extremities for warmth, checking the calf's mucous membranes for dryness, and evaluating the calves for their ability to suckle and response to human presence, or attitude. A diarrheic calf that may not require oral rehydration solutions has tight skin elasticity that bounces back within a second, the eyes are flush with the skull, the ears are warm, the mucous membranes or nose and mouth are wet, the calf has a strong suckle, and the calf is responsive when approached. However, diarrheic calves can lose water quickly, so offering an oral rehydration solution to them is still valuable. A diarrheic calf with mild dehydration has a skin tent of one to two seconds, has at least 1 mm of eye recession, may have dry mucous membranes, and usually has a strong suckle;



Figure 1. Examples of calves with different stages of hydration status. A well hydrated calf (Figure 1 A) has tight skin, is usually responsive to stimuli in their environment such as a human approaching them, and the eyes are flush with the orbit of the skull. A moderately dehydrated calf (Figure 1 B) has a skin tent of three to five seconds, a dry nose, and the eyes are notably recessed at least 2 mm into the orbit of the skull; this calf should receive oral fluids if suckling, or subcutaneous fluids. A severely dehydrated calf requires immediate care (Figure 1 C) and has a prolonged skin tent of greater than five seconds, the eyes are severely recessed into the orbit of the skull, and has cold extremities, a dry nose, and often is unresponsive to their surroundings; this calf requires an intravenous solution to correct metabolic acidosis.

Drinking water can be a reservoir for *Crypto*

Cryptosporidium parvum is also important to control in drinking water because it is zoonotic (Chalmers and Giles, 2010) and infected water sources have caused outbreaks in thousands of people (Chalmers and Giles, 2010). There is limited

mild dehydrated calves need additional fluids, often provided by oral electrolyte solutions (Berchtold, 2009, a). Moderately dehydrated calves have a lingering skin tent of three to five seconds, at least 2 mm eye recession into the skull, and dry mucous membranes. Moderately dehydrated calves often present a weakened suckle and appear slightly depressed. These calves often need subcutaneous or intravenous fluids (Berchtold, 2009,b). Your herd veterinarian can help to decide what type of rehydration products are best for your operation. A severely dehydrated diarrheic calf has severe eye recession in the skull, a prolonged skin tent at the shoulders of six seconds or more (Berchtold, 1999,b), and usually these calves have cold extremities, a dry nose, and appear weak and depressed (Kells et al., 2020). Severely dehydrated calves require immediate intervention to survive (**Figure 1 C**). In summary, calves with *Crypto* experience diarrhea, and the best management strategy is to provide adequate rehydration and continued supportive care to keep diarrheic calves hydrated.

scientific research on the prevalence of crypto oocysts in calf water sources, but contaminated water sources have been identified as a likely source of infection on several operations (Cantor, unpublished). The UV light systems are the most effective sterilizer of water contaminated by *Cryptosporidium parvum* (Lacey, 2001), but this technology requires considerable investment and is not an economically feasible option for many farms.

There are many other options to render *Crypto* inactive in drinking water including boiling for 3 minutes at 160°F, using a filtration system certified to remove cysts from water at an absolute 1 micron rating, or the use of a water purifier such as reverse osmosis (**Figure 2**; CDC, 2023). Water filters are the cheapest option and may be economical for producers offering calves water from one source. There are three types of point-of-use water filters including particle, ion-exchange resin, or activated carbon (National Collaborating Centre for Environmental Health, 2006). Work with your local extension

Continued on next page...

To manage parasites, frequently remove soiled bedding from infected calf pens.

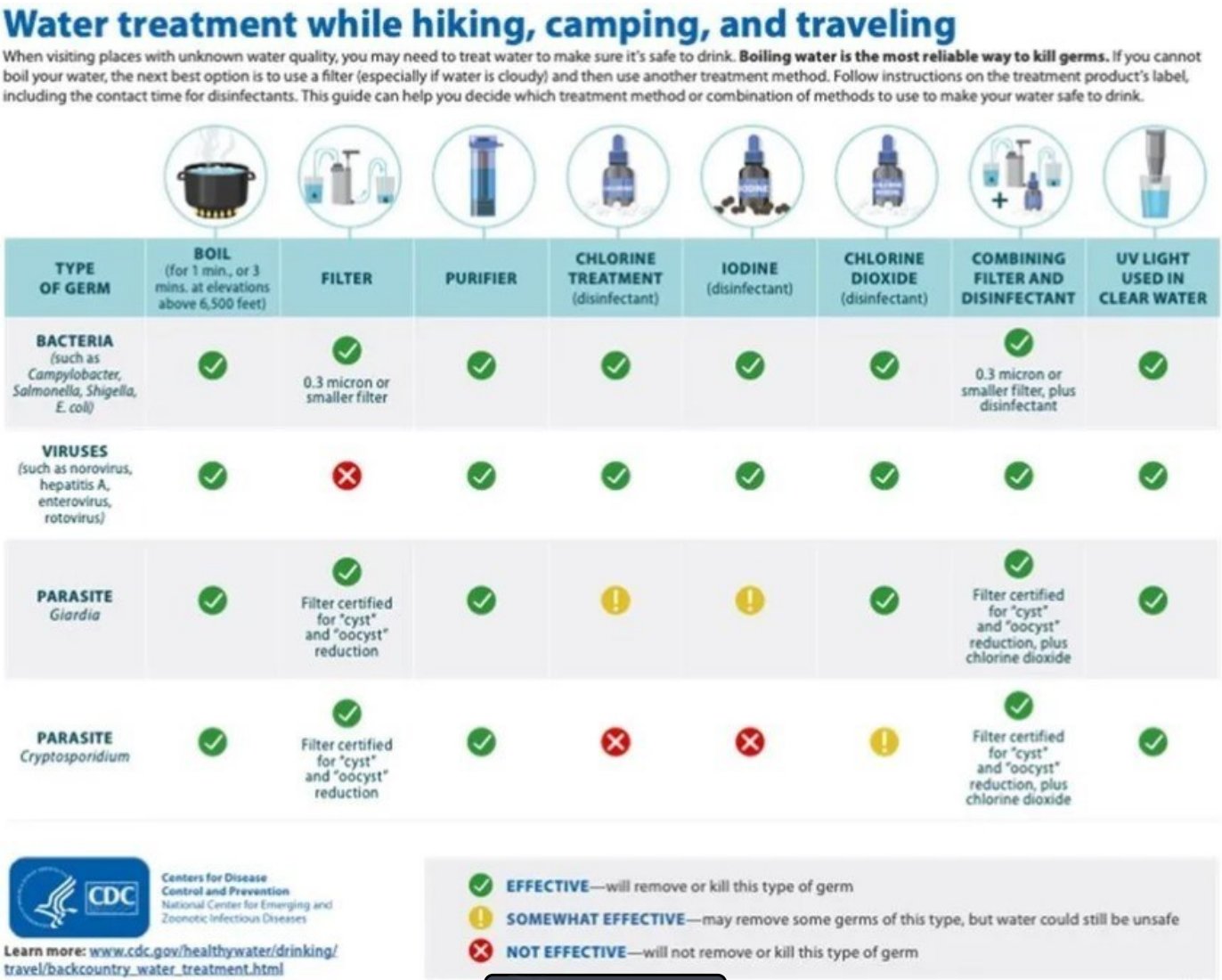
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Sanitizing pens between groups with 3% hydrogen peroxide solution can also help control environment parasite load.

educator to find a filtration system that effectively filters out *Crypto* cysts from the water. Note that faucet-based carbon filtration systems are ineffective against filtering out *Crypto* because the pores are large enough for the small cysts to pass through. Filtering *Crypto* out of calf drinking water is important since this parasite thrives in water as a protozoan species.

In summary, *Crypto* is endemic and compromises calf growth, but the pathogen load can be managed to minimize the number of calves who get sick. Sanitation is key, and calf feeding equipment should be allowed to dry to kill *Crypto*. A frequent barn cleaning schedule is important to manage the pathogen load, including the use of a 3% hydrogen peroxide solution to sanitize hard surfaces, and allowing the pen to dry to break the reproductive cycle of this parasite. Calves sick with *Crypto* excrete large numbers of oocysts in their feces, so isolation of ill calves can reduce the risk of disease transmission. There are no approved therapeutic treatments for *Cryptosporidium parvum* in calves, but working with the herd veterinarian to build a strong supportive care plan can improve calf survival. Finally, if calves in your barn are struggling with *Crypto*, test the water source for this parasite. A water filtration system is a solution that can reduce pathogen load if the water source has a lot of *Cryptosporidium parvum* oocytes. It is also critical to remember that *Crypto* can cause disease in humans so appropriate protective strategies, such as wearing gloves should be used every time a sick calf is handled. ▪

Boiling drinking water for 3 minutes, using a filter ≤ 1 micron rating, or investing in a purifier, are all methods to sterilize water that is contaminated by *Crypto*. Figure reproduced for use from the Department of Health and Human Services, USA



Adding An Insecticide To Your Soybean Herbicide Tank Mix

By Katelyn Miller, Field Crop and Forage Specialist

I was recently asked: if you're going to apply herbicides to your soybeans and know that aphids are present, should you add an insecticide to the tank mix? Mike Stanyard, Field Crop Specialist with the Northwest NY Team, says that there are 3 specific factors to keep in mind.

1. In-season Stress

In-season stressors like drought can help influence early-season spraying decisions. When aphids feed, they remove phloem from the plant which contains water. Various parts of the region have been getting rain, but dry conditions remain for many. Because water is already limited to the plant, spraying early on can help reduce plant stress.

2. Natural Enemy Populations

Take note of natural enemy populations when scouting. Various insects, such as lady beetles, will help slow down populations by feeding on them. If you notice a high density of

natural enemies, consider not adding insecticide to the mix. An application will kill all the unwanted insects, but also all the beneficials. If you know these enemies are present, let them try to reduce populations naturally.

3. Field History

Field history can be a huge factor in making the decision to spray. Buckthorn is a woody shrub that is the overwintering host of soybean aphids, shown in the photo below. If it is present on your field edges, your field is at higher risk of infestation in-season. Fields that are at high risk should consider using a pre-emergence herbicide to prevent aphid colonization. Aphids can be killed before laying eggs when there is an early frost. This can help to reduce populations for the following year. Remember that this past fall, it was mild, so be prepared for higher levels of aphid colonies in your fields this year.



PHOTO CREDIT: New York
Invasive Species

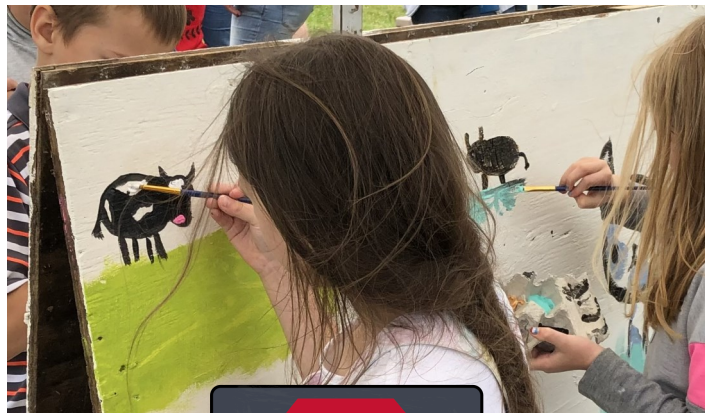


PHOTO CREDIT:
Katelyn Miller

For more information on soybean aphids, visit:
<https://extension.umn.edu/soybean-pest-management/scouting-soybean-aphid#whole-plant-counts-1353560>.

These factors play into making the decision to add an insecticide to the tank mix, but it's also important to highlight scouting factors that will impact it as well. Let's review some scouting tidbits:

- Scout for aphids every week. Development is fastest when temperatures are between 70°F and mid 80's. Under ideal conditions, there can be as many as 18 populations per year, making it important to scout frequently to keep ahead of populations.
- Ants will feed on the honeydew produced by aphids. If you see ants on plants, then you know there are aphids present.
- Remember to scout the young, fuzzy leaves on a plant. These leaves are the most susceptible to feeding. Typically, you will find aphids on the underside of the leaves, so make sure to check both sides of the leaf.
- The action threshold for aphids is 250 per plant. If 80% of the plants you pulled meet this threshold, then you should act. This threshold gives you approximately 7 days to treat the field before populations reach the economic threshold of 500 aphids per plant.



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When you go to spray herbicides on your soybeans this year, keep these factors in mind to decide if you're going to add insecticide to the tank mix.

For more information on how to scout for soybean aphids, call Katelyn Miller at 716-640-2047.

Dairy Market Watch

June 2023



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
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
Nov 22	\$3.37	\$2.53	\$27.34	\$24.67	\$21.01	\$23.30	\$23.12	\$2.11	\$23.72	\$2.71	\$2.04
Dec 22	\$3.15	\$2.65	\$25.83	\$23.11	\$20.50	\$22.12	\$21.91	\$1.41	\$22.51	\$2.01	\$1.94
Jan 23	\$2.77	\$2.80	\$25.66	\$21.61	\$19.43	\$20.01	\$20.71	\$1.28	\$21.31	\$1.88	\$1.84
Feb 23	\$2.71	\$2.36	\$24.03	\$20.83	\$17.78	\$18.86	\$19.60	\$1.82	\$20.20	\$2.42	\$1.74
Mar 23	\$2.73	\$2.41	\$22.24	\$19.52	\$18.10	\$18.38	\$18.78	\$0.68	\$19.38	\$1.28	\$1.67
Apr 23	\$2.70	\$2.56	\$22.10	\$19.20	\$18.52	\$17.95	\$18.62	\$0.10	\$19.22	\$0.70	\$1.66
May 23	\$2.75	\$1.80	\$22.82	\$19.11	\$16.11	\$18.10	\$18.31	\$2.20	\$18.91	\$2.80	\$1.63

May Utilization (Northeast): Class I = 27.6%; Class II = 24.3%; Class III = 28.7%; Class IV = 19.4%.
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 90, Report 25, June 23rd, 2023)

Dry Products: Dry dairy commodities remain, for the most part, under bearish pressure throughout the country. Low/medium heat and high heat nonfat dry milk (NDM) prices were steady to lower in all regions. Availability is more of a concern for processors than buyers, as buyers remain hesitant to take on more volumes outside of near term needs. Lactose prices were steady, as demand remains subdued. The whey protein concentrate 34% price range is unchanged, but some spot sales are moving at lower prices within that range. Dry whole milk and casein prices held steady this week.

Cheese: Milk volumes are available for Class III production throughout all regions. Cheesemakers in the Northeast say production steady, while contacts in the West say production is strong to steady. Cheese barrel inventories are tighter than blocks in the West, though stakeholders say loads of barrels and blocks are available to meet current demand. In the Northeast, cheese inventories are unchanged.

Butter: Cream volumes are steady in the East and West. Eastern butter makers report strong demand for cream from ice cream makers but say that demand is lighter compared to previous years. Butter makers in the East and West are operating strong schedules. Some manufacturers in the East are operating seven days a week. Inventories in the region are ample, and some regional butter makers are freezing butter.

Fluid Milk: Temperatures nearing or over 100 degrees in parts of the South and West are depressing milk output. Eastern contacts say milk availability ranges from steady to slowly declining, where temperatures are more mild at the onset of summer. Class I demand, however, is aligned throughout most of the country with lighter bottling pulls from school districts nationwide.

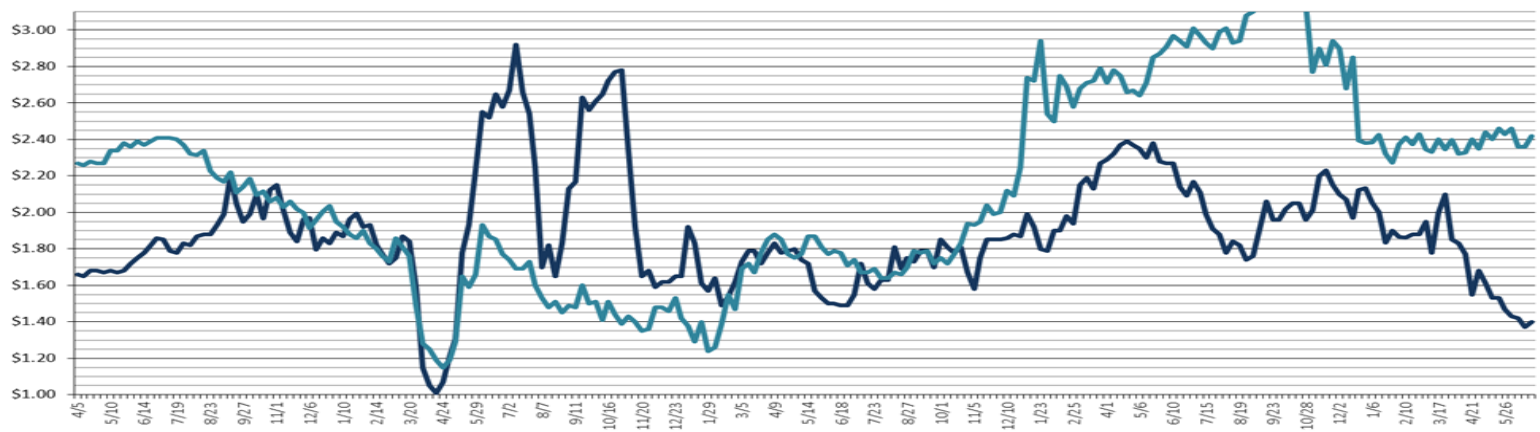
Friday CME Cash Prices					
Dates	5/26	6/2	6/9	6/16	6/23
Butter	\$2.43	\$2.46	\$2.36	\$2.36	\$2.42
Cheese (40# Blocks)	\$1.47	\$1.43	\$1.42	\$1.37	\$1.40

May's Albany \$/gallon to the farmer was \$1.63, a continued decline in the time of already tight profitability margins with signs that it'll keep going lower.

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Dairy Market Watch is an educational newsletter to help keep dairy producers stay informed of changing market factors affecting the dairy industry.

Weekly Average CME Cash Price - 2019 to Present



Dairy Situation and Outlook - June 21, 2023 by Bob Cropp, Professor Emeritus, University of Wisconsin-Madison

Originally published here: <https://fyi.extension.wisc.edu/kewauneeag/files/2023/05-Dairy-Situation-and-Outlook-June-2023.pdf>

Milk prices continue to fall and to levels not anticipated earlier in the year. Class III was \$18.52 in April, fell to \$16.11 in May and could be below \$16.00 in June. June a year ago it was \$24.33. The last time we saw Class III this low was in 2018 and 2020. In 2018 Class III was in the \$13's for two months and the \$14's for six months. In 2020 Class III was \$13.07 for one month and \$12.14 for one month. Declining cheese and dry whey prices have driven Class III down.

These lower prices are driven by both the level of milk production and demand. There is plenty of milk. May milk production for the U.S. is estimated to be 0.8% higher than a year ago. Milk cow numbers were unchanged from April but were still 20,000 higher than a year ago or 0.3% higher. Milk per cow continues to be suppressed being just 0.5% higher. This level of milk production has stretched milk plant capacity in the Midwest as some plants lack employees to operate at full capacity. Some producers in Minnesota and Wisconsin as a result have been asked to dump milk.

Fluid (beverage) milk continues to run below year ago levels and will drop lower during the summer when schools are out. Butter and cheese sales have been somewhat higher than a year ago, but cheese sales are not at a level to hold up prices. Dairy exports set a record in 2023 with strong cheese exports. But according to the US Dairy Export Council global dairy demand has weakened at the same time competition has increased from Europe and New Zealand. Inflation and the economic slowdown have dampened consumer demand. The volume of dairy exports on a milk solids equivalent basis in April was 13% below a year ago resulting in year-to-date exports down 0.3% from a year ago. Compared to April year ago nonfat dry milk/skim milk powder exports were down 9%, dry whey products exports down 13%, cheese exports down 12% and butterfat exports down 65%.

Milk prices will recover but how much is uncertain.

Milk production will be held in check with low milk prices and still rather high feed prices resulting in unfavorable operating margins. Dairy producers who are enrolled in the Margin Protection Program, the Revenue Protection Program or had earlier protected Class III prices with Class III futures will get some relief from low milk prices.

Slaughter cow prices are favorable so culling of dairy cows is likely to increase. Year-to-date dairy cow slaughter was 4.9% higher than a year ago. Drought is a concern in a large part of the country which could affect the supply of forages, grain and soybeans which would keep feed prices relatively high this fall and winter.

Lower milk prices should give some relief to retail dairy product prices but probably not to the extent of low milk prices. Schools will start to open late summer increasing fluid milk sales. Sales of butter and cheese may show modest growth. Milk production will decline seasonally from June through September. Later this fall buyers of butter and cheese will start to build inventories for the strong sales period of thanksgiving through Christmas. All of this will push milk prices higher.

Dairy exports will end the year lower than a year ago. US dairy prices of cheese, nonfat dry milk and dry whey are competitive on the world market, which are positive for exports and could improve exports later this year.

Current dairy futures show a slow recovery in Class III prices with August reaching \$16, \$17 for September, and October \$18 to December. USDA forecast is less optimistic with Class III averaging just \$15.50 July to September, \$16.30 October to December and averaging \$16.70 for the year compared to 21.96 in 2022. Based on the level of expected milk production, dairy product sales and dairy exports USDA's forecast could well be on the low side. ■

Current dairy futures show a slow price recovery for Class III, which should end the year around \$17-\$18.

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There is plenty of milk on the market with limited demand and stretched processing capacity.

Historical Review Of The U.S. Beef Cattle Industry

By Mark Johnson, Oklahoma State University Extension

How It Started

Although many breeds of cattle are in the United States, none are native to this country. The first cattle were introduced by explorers and settlers from Spain and England centuries ago. For over 200 years the U.S. cattle population was Longhorn based. Open range, the ability of the descendants of Spanish Longhorn cattle to thrive in a feral environment and their meat value eventually created an industry. By the end of the civil war the longhorns had reproduced exponentially and millions of head roamed the open ranges of the U.S.

Shorthorn cattle were first introduced from England to Virginia in 1783. The first herdbook to record ancestry of Shorthorn cattle was established by George Coates in 1822. The American Shorthorn Association was established in 1882. Henry Clay imported Hereford cattle from England to Kentucky in 1817. The American Hereford Association was established in 1881. The American Polled Hereford Association would later become established in 1900. George Grant imported Angus cattle from Scotland to Kansas in 1873 and the American Angus Association was established in 1883. James Davis imported the first Zebu cattle to South Carolina in 1849. Simmental cattle were introduced to the U.S. in 1896 but had little industry impact at that time.

Cattle Drives and the Chisholm Trail

After the civil war, trail drives began and one of the most romanticized eras in our nation's history was born. It was at this time that Americans acquired a taste for beef and the Chisholm Trail was considered to be one of the wonders of the western world. Herds with as many as ten thousand cattle were driven from Texas over the trail to Kansas. The trail acquired its name from Jesse Chisholm, who just before the Civil War had built a trading post in what is now western Oklahoma City. During the Civil War, while many Texans were away fighting for the Confederacy, descendants of the Spanish Longhorn cattle multiplied. By 1866 they were only worth four dollars per head in Texas. In the North and East they could be worth \$40 – 80 per head. In 1866 some herds traveled the Shawnee Trail in eastern Oklahoma, but the woods and the region's rough terrain discouraged trail driving.

In 1867 Joseph McCoy built stockyards on the Kansas-Pacific railroad in Abilene, Kansas. He sent men south to encourage Texas cattlemen to send herds to his stockyards. He also encouraged cattle buyers to come to Abilene, where cattle would be waiting. Drovers followed assorted minor trails through south and central Texas northward to the

Red River crossing and then joined the famous Chisholm Trail. After being driven north along the Chisholm Trail to Abilene, the cattle were shipped east to the beef packers and population centers.

Herds varied in size from 500 to 10,000; however, they usually averaged from 2,500 to 3,000 head. A rancher entrusted his herd to a trail boss, who would hire 10 to 15 cowboys, a cook and wagon, and a wrangler (horse handler) for the 100 to 150 horses. The trail boss would also provision the wagon and plan the drive. On the trail the cattle were watered in the morning, and then they slowly ate their way northward. The cowboys kept them from stopping, turning back, or leaving the herd. The herd would walk about ten miles per day, stopping only to water and eat. At night, the herd would stop at a watering hole and bed down. These herds were less than ten miles apart and were spaced so that each herd could spend the night at a watering point. At the Abilene railhead the trail boss would sell the cattle and horses, pay the cowboys, and return to Texas with the money for the owner, often repeating the trip year after year.

Eventually the Chisholm Trail would stretch eight hundred miles from South Texas to Fort Worth and on through Oklahoma to Kansas. The drives headed for Abilene from 1867 to 1871; later Newton and Wichita, Kansas became the end of the trail. The Cimarron cutoff on the north side of the Cimarron River allowed cattle to be driven to Dodge City, Kansas. From 1883 to 1887 herds headed up the trail to Caldwell, Kansas, making it the last great cow town on the trail.

The biggest cattle trailing years were 1871 and 1873. After 1881 the drives diminished considerably. The range was fenced in the Cherokee Strip after 1884, an 1886 Kansas quarantine law (against Texas fever) prohibited the entry of Texas bovines, and in 1887 a blizzard destroyed most of the range cattle industry. The Land Run of 1889 into the Unassigned Lands opened central Oklahoma to settlement, peopling the plains with farmers, who built fences and towns. These factors ended the trail-drive era. An estimated six million cattle had traveled the Chisholm Trail during its life, giving rise to many cowboy legends that survive to this day. By the end of the 1800s, the plains were being re-populated by the British breeds and the selection trend was for cattle with more muscle thickness.

During the first half of the 20th century a selection trend developed and then intensified toward earlier maturing, smaller framed cattle. In the 1950s, surplus feed

All cattle breeds in the US today have been imported; there are no native breeds of cattle.

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For over 200 years, Longhorns dominated the US cattle market.

grains and consumer demand for grain finished beef led to the advent of the commercial feedlot. “Snorter Dwarfism” was reported in 1951, which is believed to have been the result of intense selection for extremely small frame cattle.

By the 1960s the U.S. was primarily populated by Angus, Hereford and Shorthorn cattle of the small framed, “comprest” variety. Crossbreeding was considered sacrilegious by many cattle breeders. The modern feedlot industry was expanding in response to cheap feed and consumer demand for grain finished beef. The industry was searching for cattle that could be pushed to heavier finished weights without becoming over fat. The carcass yield grading system was adopted in 1965. Charolais cattle had been imported from Mexico in 1936, but the feedlot performance of the Charolais crossbred steer in the 1960s created an awareness of the lean growth potential offered by the Continental European breeds. Simmental cattle were reintroduced, the Limousin breed was imported and a “breeds revolutions” started that would see dozens of breeds imported to the U.S. over the next 15 years. By the end of the 1960s cattle breeders, in all breeds, were selecting for larger framed, leaner, later maturing type. In the 1970s crossbreeding became widespread practice in the commercial cow-calf industry. Intense selection for larger type would continue into the late 1980s.

Genetic Improvement

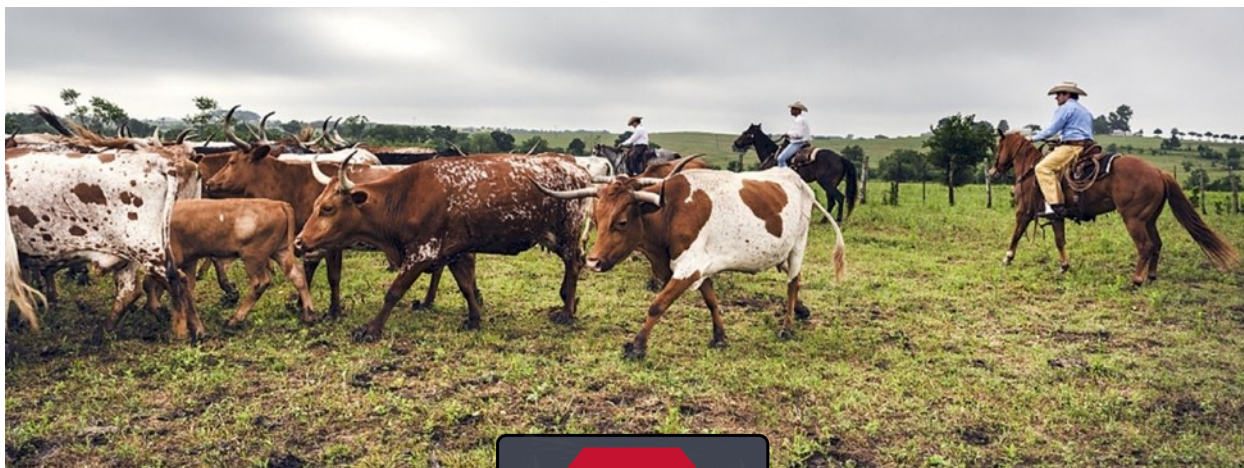
The establishment of the Beef Improvement Federation in 1968 led to standardized performance measures, defined contemporary groups, more extensive record keeping and eventually, the prediction of genetic values. By the 1970s all breed associations started to establish data bases and artificial insemination became more widely utilized in the purebred sector. The first National Sire Summary was published by the American Simmental Association. By the end of the 1980s all major beef breeds were publishing annual sire summaries. Genetic prediction consisted primarily of four basic EPDs: Birth

Weight, Weaning Weight, Yearling Weight and Maternal Milk.

By the end of the 20th century the “breeds revolution” had long been over. Many breeds had lost their identity and/or popularity. The “on-foot” type of all beef breeds was becoming more homogenous. The type of cattle selected for were moderate framed with excellent growth as a result of the selection trend for more muscle and body volume. Successful breeds and purebred seedstock operations capturing the most market share were not only selling cattle but also information about the cattle. Cattle with more documented and better information had more value. The value of purebred cattle was driven by the three criteria: Performance, Pedigree and Visual appraisal of “on foot” type. Over the past 20 years, we have went from publishing hard copies of Sire Summaries once or twice annually to the current capability of generating updated EPDs on a weekly basis. Genetic prediction now consist of approximately 20 trait specific EPDs as well as several selection indices (or \$Values).

Reviewing genetic trend information of virtually each breed indicates breeders have been highly successful in putting more sharp angles into the sigmoidal growth curve. Specifically, keeping birth weights down while improving weaning and yearling weights. As well, high heritability carcass traits (Marbling and Ribeye size) have shown a dramatic increase. Improved beef carcass quality attributes, specifically marbling, have been focused on to promote satisfaction in the beef eating experience. The quality of beef has significantly improved over the past two decades.

What is there to learn from this historical review? The beef industry has changed, is changing and will continue to change. Identifying emerging trends, understanding consumer demand, using technology to improve efficiency and keeping your cattle genetically relevant all will be important to the future financial success of your operation.



In the 1970s, artificial insemination became more widely used in purebred markets.

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There are many breeds out there – select the ones that best meet the needs of your operation!

Is It Safe To Eat? Inspecting Poultry For Wholesomeness During Processing

By Amy Barkley, Livestock Specialist

In NYS, we are lucky to have the capacity to process chickens under various inspections and exemptions. Those who take their poultry to be processed at a USDA or 5A facility have the expertise of the processors to remove and dispose of birds and parts that are not fit for sale. However, those of us processing under the 1,000 bird exemption may not be as familiar with the characteristics that indicate that a carcass that should be discarded instead of fed to our families or sold to customers. This article outlines some of the characteristics to identify during processing that render a whole meat bird or its parts unsalable. The reason behind this is to not allow potentially contaminated carcasses into the food system.

There are two types of inspections that we should be doing to all live poultry that is destined for processing. The first is anti-mortem, meaning “before death”, inspection. Birds fit for processing should be bright, alert, and responsive. They shouldn’t show signs of illness and should be able to stand on their own. Birds that have unusual swellings, deep cuts, infections, or distended abdomens are not fit for processing. Other abnormalities listed by the USDA include swelling around the head and eyes, swollen wattles, gasping/sneezing, off-colored faces, diarrhea, skin lesions, and wry necks. These birds should be set aside and processed last, or if they are sick should be treated and allowed to recover before processing or euthanized and either composted, buried, or rendered.

- Breast Blisters are inflammatory, fibrous, fluid-filled, or pus-filled tissues that are identified along the breastbone. If the nodule or affected area is larger than the size of a dime, it needs to be cut out. If the tissue is pus-filled, it needs to be removed regardless of size. Many times these inflamed or fibrous tissues can adhere to the breast bone.
- Bruises that are red or pink in color have usually occurred within 12-24 hours of processing and can be left on the carcass if they are between ½” – 1” in diameter and there are no more than five of them on the carcass. If the bruises are larger than an inch, then only 3 can be left on the carcass.
- Bruises that are green or black are aged bruises that happened several days to a week or two before processing. If they are between ¼” – 1” in diameter, three are allowed on the carcass. If they are larger than 1”, then only two are allowed. Most people find these unsettling and cut them out regardless of size.
- Internal organs with lesions should not be saved for consumption. This includes any pus, tumors, or miscolored organs. If the entire body cavity is filled with tumors or pus, that whole bird should be discarded.
- Parts with fractured bones are OK to consume but are typically trimmed off for aesthetic purposes.
- Sores, scabs, or inflammatory processes that are smaller than ½” can be left on the carcass if there are two or fewer. If those lesions are larger than ½” or there is a cluster of lesions smaller than ½”, then only one can be left on the carcass. If an organ or joint is compromised, then it can be removed and the rest of the carcass can be consumed.
- Parasites can sometimes affect chickens. If an organ or other part of the carcass is infested with parasites, that part of the bird needs to be condemned. If systemic, the whole carcass needs to be condemned.

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Defects in chicken can be removed in many cases, leaving the rest of the meat salvageable.

- Diseases of the leukosis complex can result in tumors within the body cavity. Many times, these are attached to organs. If the tumors are isolated to one organ or tissue, that tissue or organ can be removed and the rest of the bird used. If it is systemic where there are many organs or tissues are affected, the whole bird will need to be removed from the food supply.
- Blood-borne bacterial infections like septicemia can cause the following abnormalities: pinpoint hemorrhages on the heart, liver, kidneys, muscles, and membranes. The liver, spleen, and kidneys can be swollen. The whole carcass may show multiple small hemorrhages (bruises) across the body.
- Airsacculitis is a bacterial infection of the air sacs within the body of the chicken. The air sacs are thin membranes within the body cavity. A bird with this condition will have cheesy or stringy-looking globs or strands on these otherwise thin, clear membranes.

Whole-body parasite infestation, whether current or previously infected.



This photo illustrates two defects on a broiler chicken. Along the breast bone is a breast blister. On the anti-mortem inspection, this presented as hardened skin that moved like there was jelly underneath when manipulated. This is what it looked like post-mortem when the skin was removed. Because of its extensive nature, the chicken was deboned. The second defect is in the leg on the right side of the image. It had pus in the hock joint, so the drumstick and foot were condemned. No inflammatory process or pus was found in the thigh joint. This is a common result of birds going down in the legs. The excess pressure applied to the hocks and breast often result in these two conditions.

Photo Credit: Amy Barkley

There are few defects that require a whole carcass to be condemned.

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A good rule of thumb to remember is that if something on a poultry carcass doesn't look normal, it shouldn't enter the food supply.

For more detailed reading, visit: <https://www.govinfo.gov/content/pkg/CFR-2018-title9-vol2/pdf/CFR-2018-title9-vol2-part381-subpartK.pdf>

For questions on this article or poultry processing in general, you can reach out to Amy at 716-640-0844 or amb544@cornell.edu.

The photos below are of three common issues that we see in broiler chickens: footpad lesions, hock swelling, and breast blisters.



This photo illustrates footpad lesions on an anti-mortem inspection. The foot on the left looks like the skin damage is only on the outermost layer, so it will likely peel in the plucker, but the foot on the right has an injury that goes deep into the flesh. This foot would be condemned post-mortem. Photo credit: Amy Barkley



This photo shows an infected hock joint on a broiler chicken. The joint in the left side of the image shows swelling. When alive, this bird had trouble walking and the affected joint was visibly enlarged and felt liquid-filled. Post-mortem, the joint was cut open to reveal swollen internal structures filled with pus and excessive clear fluid. This drumstick and foot were condemned. Photo Credit: Amy Barkley

If you're processing and something doesn't look right, err on the side of discarding rather than selling or consuming it.

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