July 28, 2023 | Volume 4, Issue 2

MARYLAND MILK MOOS

Welcome!

The summer is in full swing and many of us keep watching the weather forecast with the hope of seeing some rain. With field work on everyone's to-do list, make sure to take a minute to be mindful of safety. We're all busy and sometimes it is tempting to cut corners, but don't do it! Always turn equipment off before servicing or inspecting and take care around PTOs. Be aware of your surroundings and people or animals that may be around you. This is especially important if you have children around the farm. Always look twice.

In this issue, we focus on dry cow heat stress, dissecting organic labels for consumers, and summer grazing management. This will be my last issue as editor of Maryland Milk Moos, as I am leaving the University to begin another chapter. I will be passing the newsletter on to our new Dairy Extension Specialist in College Park, Dr. Fabiana Cardoso. She can be reached at 301-405-1401 or cardosof@umd.edu. I have enjoyed putting together this newsletter during my time with University of Maryland Extension.

Educational opportunities that may be of interest are listed on page 10. Additional resources can be found on our extension page: go.umd.edu/dairyextension.

Best Regards,

Sarah Potts
Extension Specialist, Dairy & Beef

Inside This Issue

UNIVERSITY OF MARYLAND EXTENSION

MARYLAND DAIRY

Herd Management

Heat Stress Mitigation is Important for Dry Cows

By Sarah Potts, Ph.D.
Extension Specialist, Dairy & Beef

As the summer heats up, heat stress alleviation is often one of the top things on every dairy producer's mind. Historically, heat stress mitigation strategies have been heavily researched and promoted for lactating cows. Indeed, the economic consequence of heat stress in lactating cows can be substantial because of lost production and fertility. However, recent attention has also been given to the studying the impact of heat stress in dry cows. While the dry cow isn't actively working to contribute to the milk check per se, she is working to prepare herself to do so in the near future, so it is important not to forget about her until she's about to calve in again.

Implications of Heat Stress in Dry Cows

University of Florida researchers estimate that heat stress during the dry period costs the United States dairy industry over $800 million each year. Heat stress occurs when the cow's body is unable to dissipate excess heat through natural physiological or behavioral mechanisms, such as panting, sweating, seeking shade, and reducing feed intake. These

"calves born to cows exposed to heat stress during the dry period… produced 5 pounds less milk per day during both their first and second lactations."

Focal point

- **Heat-stressed dry cows have lower milk production after calving**
- **Heat stress during the dry period negatively affects calf performance**
  - **Reduced immune function**
  - **Reduced growth**
  - **Reduced first and second lactation milk production**
- **At a minimum, provide dry cows with shade and fresh, clean water**
- **Consider using fans or sprinklers for dry cows during very hot weather**

Heat Stress Mitigation is Important for Dry Cows (continued)

behavioral changes, combined with an excessive heat load, alter the cow's physiology and metabolism. The dry period is a time marked by hormonal and metabolic changes to support rapid fetal growth and mammary involution (i.e., remodeling) to support subsequent milk production. Adding heat stress into the mix can have lasting negative impacts on both the cow and the calf.

Researchers at the University of Florida have extensively researched the physiological effects of heat stress in dairy cows, and have focused specifically on heat stress in dry cows. In a recent study, they found that cows who experienced heat stress during the dry period produced significantly (9 pounds) less milk per day during the following lactation than cows who were provided with cooling measures, which included shade, fans, and sprinklers. This response was similar regardless of whether the cows experienced heat stress during the early or late dry period. These researchers also observed that heat stress reduced the length of gestation, or, in other words, caused cows to calve earlier than expected.

More recently, University of Florida researchers have also examined the long-term effects that heat stress during the dry period has on the unborn calf. They showed that calves born to cows who were exposed to heat stress during the dry period have lower birth weights, slower growth rates, and lower weaning weights. They also showed that these calves have reduced immune function, which was likely related to their reduced ability to absorb the antibodies in colostrum. A separate analysis of the performance of calves born to cows exposed to heat stress during the dry period showed that these calves produced 5 pounds less milk per day during both their first and second lactations. Furthermore, these calves were more likely to be culled from the herd sooner than their counterparts and had a shorter productive life by 5 months. Altogether, the annual economic impact of reduced performance and health of heifers born to cows exposed to heat stress during the dry period was estimated to be $4 million in Maryland, $8 million in Virginia, and $33 million in Pennsylvania.

Management Strategies

Dairy producers often utilize a variety of heat stress mitigation approaches for lactating cows. However, implementing the same strategies for dry cows can be complex because many producers house dry cows on pasture or in older facilities for practical reasons, which may not provide ideal ventilation or access to electricity. Despite this, there are still measures that can be taken to reduce heat stress in dry cows in these more limited situations.

1. Provide Water. At a minimum, dry cows should be provided with plenty of clean, fresh water. During periods of heat stress, Holstein dry cows will consume between 15-20 gallons of water per day, so it is important that troughs are large enough or refilled often enough to accommodate this demand.

2. Provide Shade. Dry cows should also be provided with access to shade, at least during the heat of the day. Studies show that cows will naturally seek shade and if it's not readily available, they will spend their time trying to find it rather than resting or eating. They may also display other behaviors, such as bunching, which make heat stress worse. They may also congregate and lay in any muddy or moist area available, which includes areas where there is manure build-up. Utilizing trees as a natural source of shade can be effective, as long as the cows don't create a muddy mess. Permanent structures, such as barns, lean-tos, or sheds can also be useful for

Heat Stress Mitigation is Important for Dry Cows (*continued*)

providing shade, but these need to be maintained and monitored for excessive manure build-up. Portable shade structures may also be an option. At the University dairy, we utilize a shade cloth mounted on a running gear for pregnant heifers managed in a rotational grazing system, which allows them to have access to shade in areas of the pasture where there is no permanent or natural shade available (Figure 1).

Figure 1. Portable shade structure at the University of Maryland Clarksville Dairy used in a rotational grazing system for pregnant heifers.

3. Ventilation. If dry cows are housed in barns or sheds, it is important that these facilities have adequate ventilation. This still applies even if the cows only use these facilities for shade during the day. If they spend several hours per day in these locations, ventilation is important. Opening up sides or windows of older barns can provide much needed air flow and help reduce the temperature in the facility. If electricity is available, fans can also help improve ventilation and increase the air speed at the cow-level to improve convective cooling.
4. Evaporative Cooling. This strategy requires access to electricity and water, so it is often difficult to implement unless dry cows are housed in a barn. In order for this strategy to work, there must be enough air movement, usually provided by fans, to facilitate the evaporative process. There also needs to enough water to thoroughly wet the cows. Simply misting the cows will only create a more humid environment, which may make heat stress worse.

In conclusion, heat stress can have substantial, long-lasting impacts on a dry cow and her unborn calf that negatively impact future productivity and profitability. Adopting management strategies to alleviate heat stress during the dry period is essential to mitigate the economic implications of heat stress on the dairy.

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Herd Management

Focal point

- **Organic production standards:**
  1. **Animals must be certified organic**
  2. **Animals must only consume organic feed**
  3. **Animals must have access to the outdoors, with a few exceptions**
  4. **Animals must be on pasture for at least 120 days a year**
  5. **Animals treated with unapproved organic products must be removed from the system**

Organic Dairy Production Standards: Educating the Consumer

Emily Stamper
Extension Intern, UME—Washington County and WMREC

There are a lot of questions and misconceptions when it comes to conventional versus organic milk. The USDA has five main points for milk to be certified as organic. The first is that the cows must be raised under organic standards from at least the last third of gestation. Cows can be bought and raised organic or a herd can be transitioned to organic over no longer than a year's time. A farm cannot continually transition animals over, it must be done all at once. The second standard is that livestock must be fed 100% organic feed. An organic cow's diet is a main part of the organic standard. Feed additives and supplements must be off the National list and only minerals and vitamins that are FDA approved are allowed. Calves must be fed organic milk and organic feed as well. Farmers cannot use milk replacer or medicated grain. The third standard is that cows must have access to the outdoors year round. The land must qualify for organic certification, and you must have a pasture plan. The pasture and feed and bedding must also all be organic. No continuous total confinement indoors is allowed over six months of age. One week is allowed for cows to dry off and three weeks prior to parturition and one week after is also ok. The fourth standard is that cows must be on pasture for the

"...it is important for producers to educate the consumer and for consumers to do their own research to find out for themselves what they are buying."

Organic Dairy Production Standards: Educating the Consumer (*continued*)

entire grazing season, not less than 120 days. This ensures that at least 30% of feed is from pasture. The final standard is that preventative measures must be taken to take care of sick cows, but if they are treated with products that are not organic-certified, they can no longer be classified as organic. When it comes to antibiotics, farmers cannot withhold treatment. However, they must make a record of it and notify their certifier. They then must segregate the animal and milk it separately. It then gets sold to a non-organic market and the sale is documented. When it comes to parasiticides, biological control methods and non-synthetic controls are allowed. Dewormers are allowed in health care emergencies and cases of acute and dangerously high levels of parasites. This is only allowed when preventative and vet biologics are inadequate to prevent sickness. There is then a 90 day withholding period for lactating cows. No synthetic parasiticides are allowed except Ivermectin, Moxidectin (e.g., Cydectin®), and Fenbendazole (e.g., Safeguard®). When these are used the farmer must make a record and notify the certifier. The animal then gets segregated for 90 days and is milked separately. The milk cannot be used even for feeding calves.

Producers who do the bare minimum to meet these standards and those who exceed the standards are both selling milk that is labeled with the same USDA Organic label. There are different organic terms however. “Organic” means that the product is at least 95% organic. “Made with organic” means that it is at least 70% organic. Anything less than 70% organic may have specific ingredients listed that are identified as organic. This shows consumers that just because they think something is “organic” does not mean that it is all on the same playing field. One producer’s milk might be labeled “organic” but is doing the bare minimum for their herd to be certified, whereas another producer is going above and beyond the standard. This is why it is important for producers to educate the consumer and for consumers to do their own research to find out for themselves what they are buying.

The Forage Corner

Summer Grazing Management Tips

By Amanda Grev, Ph.D.
Extension Specialist, Pasture & Forages

This summer has certainly been hot and dry for many of us, which has reduced productivity of many cool-season perennial grass pastures. As we continue into the traditionally driest, hottest days of summer, there are management practices that can be implemented to maximize plant growth during these hot, dry periods.

It Takes Grass to Grow Grass

The key to having productive pastures is optimizing plant photosynthesis. Think of your pasture as a solar panel where green, growing leaves are energy producers. To maximize production, livestock need to be rotated off of a pasture in a timely fashion to ensure an effective "solar panel" or leaf area is left in the paddock following grazing. Most cool-season forages need at least 3 to 4 inches of post-grazing residual to effectively take advantage of photosynthesis for regrowth. In addition to providing a photosynthetic base for plant regrowth, the leaf material that remains after a grazing bout also shades the soil surface, keeping soil temperatures cooler and helping to reduce soil moisture loss.

Removing leaf matter affects the roots as well, as those roots rely on the leaves to supply energy from

"Leaving half of the leaf area on the plant has minimal impacts to the plant root system, enabling the plant to continue to absorb nutrients and moisture and recover quicker…"

Focal point

- **Leave 3-4 inches of post-grazing residual to enhance regrowth**
- **Providing a rest period allows the plant return to peak productivity more quickly**
- **Length of time required for recovery depends on grazing pressure, plant species, and weather conditions**
- **Plants should be at least 8-10 inches tall before re-grazing**
- **Clipping seed heads post-grazing can help plants remain in a more vegetative state**

Summer Grazing Management Tips (*continued*)

photosynthesis. The amount of live growth occurring below ground is roughly equivalent to the amount of live growth occurring above ground, and research has shown that the amount of above ground forage mass removed impacts root health. Up to 50 percent of the plant can be removed with little to no impact on root growth. With greater than 50 percent removal, root growth slows dramatically, and removing 70 percent or more of the above ground forage mass stops root growth completely. This is where the old rule of thumb “take half, leave half” comes into play. Leaving half of the leaf area on the plant has minimal impacts to the plant root system, enabling the plant to continue to absorb nutrients and moisture and recover quicker following grazing. If the take half, leave half rule is violated and pastures are grazed too low, plant root growth stops and root reserves are used to regrow leaf tissue, diminishing the vigor of the plant root system and the overall productivity of the plant.

Provide a Rest Period

One of the most common mistakes in grazing management is not providing a long enough recovery period for pastures after grazing. Pasture forages require a rest period in order to maintain vigorous production. When a plant is grazed, the loss of leaf material means the plant loses its energy-producing center. The plants’ response is to rebuild that center using stored energy reserves. If the plant is given rest following grazing, new leaves will develop and will replenish this energy supply. Without rest, the plant is not able to replenish its energy supply and will continue to use the remainder of its stored energy to produce new leaves. As energy supplies are depleted, the plant will be unable to maintain production and will eventually die, leading to weak stands, overgrazed pastures, and the invasion of weeds or other non-desirable forages.

Maintaining flexibility in your system will allow you to balance the length of the rest period with the plant growth rate and is fundamental to successful grazing management. How long recovery takes will depend on a number of things, including the plant species, grazing pressure, and the time of year. As we get hotter and drier, grass growth rates will slow down and the days of rest required may be much longer than that required during the spring when rapid growth is occurring. Regardless, the rest period must be long enough to allow the plants to recover and grow back to a practical grazing height before livestock are allowed to graze again; for most grasses, this height falls in the 8 to 10 inch range.

Figure 1. Heifers waiting to be moved into a new cool-season paddock in the grazing system at the University Dairy in June.

Summer Grazing Management Tips (*continued*)

To accommodate for this longer rest period, the rotation speed between paddocks will have to slow down. The basic rule is: when pastures are growing fast, rotate fast; when pastures are growing slowly, rotate slowly. Remember that the goal of the rest is to allow young green leaves to maximize photosynthesis.

Don't Ignore Seed Heads

A plant that is producing seed heads is undergoing reproductive growth and not putting energy into leafy growth or tiller production. Clipping seed heads from these grasses will allow the plant to return to leafy or vegetative growth, which will increase forage quality and result in more total forage being produced over the course of the season. Clipping will also serve the added benefit of helping to control weed populations.

Seed heads can also be an indication of uneven grazing patterns in your pasture. If selective grazing is occurring, some plants are likely being overgrazed while others not enough. If this is happening, consider adding more divisions or paddocks into your pasture system. This means you will be grazing your animals on smaller areas, increasing the stocking density. A greater stocking density will reduce the amount of selective grazing that occurs, increasing forage utilization and reducing the need for pasture clipping.

While we can't control how hot or dry summer will get, we can strategically manage the grass we have to help keep summer paddocks productive and growing.

Figure 2. Pregnant heifers grazing cool-season pastures at the University Dairy in July.

Events & Announcements

- **Mid-Atlantic Women in Agriculture Wednesday Webinar:** Smart Actions for Mental Health – August 9th @12 pm. Visit https://extension.umd.edu/news-events/events/event/7493/wednesday-webinars-smart-actions-mental-health for more information and to register.

- **Pasture Management Seminar** — August 9th @ 5:30 pm, Berkley Farms, Darlington, MD. Visit https://extension.umd.edu/news-events/events/event/7683/pasture-management-seminar for more information and to register.

- **Pasture Walk**—August 21st @ 6:00 pm, Leaning Pine Farms, Mount Savage, MD. Visit https://extension.umd.edu/news-events/events/event/7601/pasture-walk-leaning-pine-farm for more information.

- **Mid-Atlantic Women in Agriculture Wednesday Webinar:** Agricultural Taxes – September 13th @12 pm. Visit https://extension.umd.edu/news-events/events/event/7494/wednesday-webinar-agricultural-taxes for more information and to register.

- **Mid-Atlantic Women in Agriculture Wednesday Webinar:** Estate Planning – October 11th @12 pm. Visit https://extension.umd.edu/news-events/events/event/7495/wednesday-webinars-estate-planning for more information and to register.

Maryland Milk Moos is published quarterly by the University of Maryland Extension. It is written and edited by Sarah Potts, Ph.D. Dairy and Beef Specialist, at the Western Maryland Research & Education Center (WMREC), 18330 Keedysville Road, Keedysville, MD, tel. (301) 432-2767 x324; fax (301) 432-4089; e-mail: sbpotts@umd.edu or Susan Barnes, Administrative Assistant, sbarnes6@umd.edu. The cost of receiving the newsletter by mail is $5 per year, payable to the University of Maryland. The newsletter can be accessed for free on the Internet at https://go.umd.edu/dairyextension. Subscribers to the newsletter listserv will receive an e-mail message when a new newsletter has been posted to the web. To subscribe, send an e-mail message to sbpotts@umd.edu or complete the form located at: https://docs.google.com/forms/d/e/1FAIpQLSfFtFKvgPWkApUzIRkOIxa_RTvw6iJgcF2ByrutYj50C1VfTg/viewform. Comments and suggestions regarding the newsletter are always welcome. References to commercial products or trade names are made with the understanding that no discrimination is intended and no endorsement by University of Maryland Extension is implied. Articles and photographs may be reprinted with permission.