FARM REPORT

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FROM THE PRESIDENT'S DESK: WHAT'S THE (DRY) MATTER?

Pulling into the farm early in the morning and hearing the cows bellowing is never a great way to start the day. It causes one to ask "what's the matter?". Did the cows get milked last night? Is there an unwanted "visitor"? Did the cows run out of feed? After a quick check of the barn, empty feed bunks confirm that the cows ran out of feed…but why? Oh yeah, it's been raining for the last 2 days and no one changed the silage dry matter values. Oops.

Monitoring dry matter of silages and adjusting the as-fed TMR recipe as needed are critical pieces to optimizing nutrient intake and milk production of our cows. Failure to adjust the dry matter of silages increases the difference between the formulated ration and the ration that is delivered to the cows leading to either wasted feed nutrients or lower than expected milk production. Both of which are costly to the farm. The day-to-day variation in silage dry matter on-farm is a major contributor to errors in providing the formulated ration to cows. These "errors" can be minimized by monitoring silage dry matter routinely. Routinely often means daily or multiple times a week when the silages are stored in bunker silos or drive-over piles exposed to ever changing weather conditions (i.e., sun, rain, snow, and wind). Fortunately, there are several ways that we can determine dry matter values on-farm. Each has their own pros and cons based on my experiences with them (see table). The best method to use is one that is simple, repeatable, and actually gets used.

Currently, our feeders are using a hand-held near infrared reflectance spectrometer (NIR) instrument called the Scio Cup for real-time dry matter adjustments. We have compared the Scio Cup values to our oven and Koster tester dry matter values and generally get good agreement. Similar to our experience, the Scio Cup performed well when evaluated by Cornell researchers. <https://doi.org/10.1002/cft2.20239>. They checked 600 haylage samples ranging from pure alfalfa to pure grass, although most of the samples were from mixed species. Using multiple scans and the mixed silage calibration, they found that samples within a typical dry matter range were within 3.2 percentage units of an oven dry matter value 80% of the time. Rock River Laboratory evaluated over 500 samples of alfalfa silage and corn silage and found the difference between their lab dry matter value and the Scio Cup dry matter to be < 3 units on 80% of the samples. Dairyland Laboratories evaluated corn silage, alfalfa silage, and hay samples and found strong positive relationships for each between lab oven dry matter values and Scio Cup values ($R^2 \geq 0.94$). They pointed out that variation in moisture, particle size, and temperature can affect the accuracy of the NIR prediction of dry

See **DRY MATTER**, Page 3

LONGEVITY OF DAIRY COWS

The longevity of dairy cows has important economic and environmental impacts on dairy farms and is also a topic of consumer interest. Therefore, it's important that farmers and others involved in the dairy industry know and understand what is impacting the longevity of dairy cows, and what we can do to improve it.

Dairy cow longevity is the length of the cow's life from when it is born to when it is removed from the herd or culled. The most common metric of longevity is productive lifespan, which is defined as the time from first calving, when the cow first begins to produce milk, to when the cow is culled. On average, the productive lifespan of a dairy is 3 to 4.5 years, bringing their total lifespan between 4.5 and 6.5 years. Farmers make the decision to cull cows and end their productive lifespan for economic reasons that involve production, reproduction, and health.

In most countries, the length of the productive lifespan has decreased over the years. While this may cause people to think that this is a result of decreased animal health and welfare, researchers from Sweden concluded in a 2023 Journal of Dairy Science article that animal health does not significantly affect longevity, and that culling is largely done due to management decisions. Dr. Albert De Vries from the University of Florida has also concluded that most culling is a result of economic management decisions. Although health problems are still a reason farmers cull cows, the genetics of dairy cows are rapidly increasing, and farmers will often cull cows to make room for the new genetically superior replacement heifer.

De Vries created a model published in the Journal of Dairy Science in 2020 that demonstrated the key factors that influence the optimal productive lifespan from an economic perspective. De Vries's model used total herd structure costs that considers replacement cost, lack of maturity cost, aged cow cost, genetic opportunity cost, and calf value opportunity cost. De Vries concluded that the total replacement cost per year decreases with longer productive lifespans. Lack of maturity involves cows that are first through fourth lactation. Cows in their fifth and sixth lactation are most mature and have the highest milk sale minus feed cost. The lack of maturity cost for a herd with an average productive lifespan of 3 years is $330/year compared to $200/year for a herd that has an average productive lifespan of 6 years. Aged cow cost involves older cows that are kept in the herd too long and their milk sale no longer exceeds their feed costs. Keeping older cows also can limit a herd's genetic gain and increase the genetic opportunity cost. Calf opportunity cost is the cost of being able to sell calves rather than raise them. To explain, having a herd with a longer productive lifespan means that there are fewer replacement calves needed. This can create opportunities for farmers to strategically breed certain cows to beef to get that premium price for crossbred dairy-beef calves. Considering these 5 costs, De Vries concluded that the optimal productive lifespan is 5 years or 5 lactations. Keeping a cow for 4 lactations can cost a farm an extra $20/year compared to an extra $3/year for a cow with a productive lifespan of 6 years.

So, what can we do to improve cows' productive lifespan? Researchers from Sweden studied the impact of animal health and farmers' investment decisions on dairy cow longevity. They found that when farmers invested in the size of farm buildings, specifically increasing spaces for cows, the average productive lifespan increased by 39 days. Increasing the calving interval by one month increased the average productive life by 37 days. Decreasing disease during early productive life (26 months after first calving) can also increase longevity. First lactation cows that experience disease early may never reach their full potential and will be culled as a result. Another Swedish study found that herds that had an average age at first calving of 27 and 28 months versus 25 months were 1.1 times more likely to have a shorter productive life. This may have been due to older heifers having a higher risk of difficulties during calving as they get fatter. Dr. Gavin Staley from Diamond V has also done a lot of work on longevity. In one of his presentations he shared some DairyComp 305 codes that you can use to evaluate the difference of milk production by lactation. Using the code "SUM MILK M305 BY LCTGP FOR LACT>0" you will see a breakdown of average milk and average 305 milk by lactation. You will also likely see that it's the cows in their 3rd and greater lactation that are bringing you the most milk, and therefore the most money.

Although the length of dairy cows' productive life has been decreasing it's not due to a decrease in animal welfare and health. Management decisions affecting farm economics is a driver of culling and therefore productive lifespans. Farmers have continued to successfully care for their animals, regardless of productive lifespan. Reevaluating some management practices that affect longevity of dairy cows may reveal some ways to improve farm profitability by increasing productive lifespan and also possibly improve society's views of dairy farming.

— Emily Bourdeau
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FEBRUARY CROP TOPICS

Very little fieldwork is done in February in the Northeastern U.S., but this is a good time to make some plans for the coming season. You should have current soil analyses on all your crop fields — "current" meaning within the past three years, less than that for fields where rapid changes in pH or fertility are underway. All soil testing labs have the ability to accurately determine the fertility status of a soil sample. (Note "soil sample", not "field" since the analysis is reliable only if the sample was taken properly.) The accuracy of soil tests is very high for pH, P, K, Mg and Ca, somewhat less for most micronutrients. A tissue analysis may be a more reliable assay for certain trace minerals, but dairy farmers are less likely to have micronutrient problems because of manure applications. (Manure is a multivitamin.) The two most commonly deficient micronutrients are boron in alfalfa and zinc in corn.

While the reliability of soil analysis is good, the fertilizer recommendations made by the various soil test labs can differ significantly. The more detailed the information included on the soil sample form, the more likely the recommendations will be reliable, but even so I'd suggest that you review the results and recommendations with your crop consultant or Extension crop advisor. Remember to account for any manure applications made after the soil sample was submitted to the lab. I'm not a big fan of manure applications after the ground has thawed in the spring because of the potential for soil compaction, but sometimes the manure pit is full and early-season applications are necessary.

Most farmers have their seed corn ordered before Thanksgiving, but many wait until early spring before ordering forage seeds. There will be shortages of some species, so if you haven't yet ordered forage seed you should do so right away. Supply shortages may mean some changes in forage varieties and perhaps even species. Last year was a disappointing one for grass seed harvest: Tall fescue seed production was down 18% compared to 2022, but supplies should mostly be OK. The total seed production area is projected to be 20% less so there may not be much rebuilding of seed inventories.

— Ev Thomas
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DRY MATTER, Continued from Page 1

matter. Samples that were too wet or too dry didn't predict as well (e.g. corn silage > 45%, alfalfa silage < 30% or > 55%). Samples that were too cold, especially corn silage, didn't predict as well. Erik Whittaker (Poulin Grain) reminded us in a recent nutrition meeting that in winter months we need to do our dry matters inside and not bunk side to keep the Scio Cup warm and the samples closer to room temperature. These external validations and guidelines give me a lot of confidence in using the handheld instrument on our farm.

	Forced Air Drying Oven	Koster Moisture Tester	Microwave**	Air Fryer	Scio Cup
Cost to buy and maintain	$$$	$$	$	$	$$$
Easy to use (simple)	Yes	Yes	Yes	Yes	Yes
Labor efficient	Yes	Yes	No	Yes	Yes
Time to results	18-48 h	< 1 h	< 15 min	< 1 h	< 5 min
Handles multiple samples	Yes	No	No	No	No
Needs internet access	No	No	No	No	Yes
Accuracy	Excellent	Good	Low	Good	Good

** This is my least favorite method. It is too easy to over dry (i.e., burn) the sample leaving the room and me smelling bad.

Once in a while, we don't have good agreement for dry matter values between our oven method and Scio Cup method or worse yet the cows have either too little or too much feed in front of them at refusal pick-up time. When this happens, there are 3 questions that should be asked:

- Did we get a good representative sample of the silage?
- Did we use the proper method to determine dry matter?
- Did we actually adjust the as-fed TMR recipe with the new dry matter value and adjust the amount of TMR offered?

Please take the time to check silage dry matter. It really does matter.

— Heather Dann
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DON'T CRY OVER SPILLED … ICE CREAM?

The irony that I'm writing this in the midst of winter's coldest weekend yet is not at all lost on me. But it's not often that an article in the Journal of Dairy Science that contains the key word "ice cream" shows up in the latest "articles in press" email.

The beloved frozen treat of ice cream is a commodity that shores up dairy sales in the US. In 2023, the International Dairy Foods Association reported that the average American consumes 20 lbs. (about 4 gallons) of ice cream per year, and ice cream companies contribute roughly $13 billion to the national economy. For numerous reasons there are a large portion of manufactured ice cream products that don't make it to retailers and must be "wasted". They are either fed to pigs (lucky!), spread on fields, or treated as waste. These discarded items still hold a lot of value, and efforts to salvage their compounds to reduce economic and resource loss has gained traction within the dairy foods sector. Some of these compounds include lactose, carbohydrates, sugar, protein, and milk fat. Milk fat, especially, is of interest, and several methods have been evaluated to extract and repurpose milk fat from wasted ice cream. The waste ice cream can either be churned similarly to butter to extract the fat, or certain enzymes can be added to destabilize the fats by degrading the proteins on the fat globule surface. Either method results in a recovered co-product that is full of protein, minerals, vitamins, and sugars once the fat is recovered.

Humans and pigs aren't the only living things that might find value in these products. Certain strains of lactic acid bacteria have been shown to produce beneficial fermentation by-products from metabolizing the nutrients available in these co-products. Streptococcus thermophilus and Lactococcus lactis, two common starter cultures for yogurt and cheese production, produce bacteriocins (a naturally-produced antimicrobial compound by certain species that is effective against similar or related strains). Bacteriocins are known to be effective against a wide variety of foodborne pathogens, especially Listeria monocytogenes, and human pathogens such as Streptococcus mutans (the bacteria that comprises dental plaque and can cause cardiovascular issues if it enters the bloodstream). S. thermophilus especially is heat-stable and metabolizes primarily sucrose and lactose, which are two of the most abundant sugars in ice cream. Production and isolation of bacteriocins have potential antimicrobial stewardship application within food production and human health environments. The objective of this study conducted by the Dairy and Functional Foods Research Unit of the USDA-ARS was to determine if either thawed ice cream or extraction process to recover milk fat from the ice cream (enzymatic or churning) best supported growth and production of bacteriocins in the remaining co-product by S. thermophilus and L. lactis.

Of 12 vanilla ice cream samples, growth of and bacteriocin production by both S. thermophilus and L. lactis were best supported in co-products from churned waste ice cream, which was more cost-effective and sustainable than enzymatic extraction methods. Bacteriocins generated in the wasted ice cream fed to pigs could act as an antimicrobial alternative, and could easily be incorporated as a functional ingredient into other animal feeds, used as therapeutics, or employed as natural food preservatives. There is also interest in determining if fermentation reduces the amount of known allergens in certain waste dairy products. While further study is definitely needed to determine if other factors inhibit or support fermentation conditions (such as other ice cream flavors and storage conditions of the waste ice cream), these initial results may sweeten the path forward to another life for wasted ice cream products.

— Cari Reynolds
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A NEW STARTER FERTLIZER

The product is "RhizoSorb 8-39-0", a dry granular starter fertilizer. Because in 2024 it will mostly be sold in the Corn Belt, for now this is primarily a "heads-up", a suggestion to look for more information as it becomes available. RhizoSorb is embedded into the fertilizer granule during production, and the fertilizer can be used similar to MAP (13-52-0), often in a complete N-P-K blend. The company, Phospholutions, has been doing both small-scale and field-size trials for 5 years and plans a commercial launch this spring. As of this writing it's registered in every state except California and Maryland.

RhizoSorb 8-39-0 is reported to result in a 50% increase in P uptake, which can mean a 33% reduction in the application rate. The company claims a 20% increase in return on investment, primarily due to higher crop yield. The product may be more popular where high rates of starter P are needed. This would suggest that cash crop farms would have more use for it than would dairy farms, most of which have a highly positive P balance. Which may be why the marketing focus is on the Corn Belt this year. However, any starter fertilizer which results in a similar yield with a lower P application rate is good for the environment, and therefore worth serious consideration.

— E.T.

IMPLICATIONS FOR THE INNOVATIVE FEED ACT IN THE HOUSE & SENATE

A bill that has been introduced in both the House and Senate is set to amend the Federal Food, Drug, and Cosmetic Act. This bill, if passed, would allow a pathway for the regulation of zootechnical animal food substances. Currently, feeds and feed additives are approved for use in animal diets if they fall within one of two categories. Currently, the options for approval are animal feed additives or drugs. Animal feed additives must show evidence that they supply nutrients, add aroma/flavor, aid stability, or alter a food's characteristics. These are typically registered and acknowledged under the Association of American Feed Control Officials (AAFCO) or Generally Recognized As Safe (GRAS). The other option, drugs, is described as something that is intended to cure, treat, prevent, or mitigate disease. The drug pathway can be a lengthy and costly process.

A Zootechnical pathway, as described in the bill above, would allow for a third option for feeds or feed additives to enter the diets of animals. The bill describes a Zootechnical animal food substance as something that is added to food or drinking water of animals and is intended to 1. Affect the byproducts of the digestive process of an animal, or 2. Reduce the presence of foodborne pathogens, or 3. Affect the structure or function of the body of the animal, other than by providing a nutritive value, by altering the animals gastrointestinal tract microbiome. This feed additive must achieve these effects solely within the gastrointestinal tract of the animal.

Under the current framework of the FDA there isn't an option to claim that a product can reduce methane. However, if this bill is adopted a pathway for such claims, pending their ability to prove that claim, would be an option for getting more products on the market. Although this is a promising avenue for implementing various feed additives to curtail methane emissions, safety should be our top concern with data to support the utility of these additives. Other countries around the world have already implemented such pathways for feed additive claims and this would allow us to keep pace.

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RECLAIMING THE "S" WORD

Recently I had a conversation with a group of coworkers about how we all define sustainability. It's a word that's been overused, stretched, manipulated, and commandeered since the concept of global climate change became common knowledge. In this conversation it was pointed out that nowadays consumers might think that the sustainable option when grocery shopping is the one with the most extra labels added. The narrative thus far is that the organic, regenerative, hydroponic, free-range tomato must be inherently more sustainable than the tomato with no extra verbiage. I was frustrated during this conversation: the "S" word had been coopted in this way, to such a degree that agricultural professionals still debate its most basic meaning. To me, a food item is only sustainable if it is accessible to consumers.

In a 2011 consensus statement the USDA defined four tangible goals for agricultural sustainability. The goals include:

- satisfying human food, feed, and fiber needs
- enhancing environmental quality and resource base
- sustaining the economic viability of agriculture
- enhancing the quality of life for farmers, farm workers, and society.

It's a daunting list. On the individual producer level, farmers must contend with trying to achieve environmental soundness while maintaining a viable business on top of all of the responsibilities that come with being a farmer. On the consumer end, shoppers are asked to discern which products are produced with environmental sustainability in mind, while still being tasty and most importantly, affordable. In preparation for writing this article, I looked at past Farm Report articles dealing with sustainability. In 2015, my predecessor Melissa Woolpert, then a graduate student studying Food Systems at UVM, pondered the role of sustainability in the dairy industry. She accurately pointed out that many people struggle with verbalizing what sustainability means, but that they know it's a good thing. Now, almost ten years later, I believe it is our responsibility to try to accurately define sustainability in a way that serves the whole food system, from the producer to the consumer.

The truth is that the word "sustainable" existed long before the climate crisis. Sustainable simply means the ability to maintain at a certain level without undue compromise. Activists, scholars, and professionals who incorrectly use the term to define a small section of available food only cause the goal of sustainability to shrink farther away. Within the larger agriculture industry, we need to think thoughtfully about how we use the term, and what we're qualifying as sustainable. Greenwashing, or falsely claiming environmental responsibility for profit, only hurts dairy producers and consumers in the long run. Using the S word correctly is vital to the wellbeing of the dairy industry.

I had a conversation a while back with a friend who had attended a sustainability coaching session for extension agents. I asked her what she learned, and she replied, half joking, that she hadn't learned much because all of the examples of sustainability that were provided were practices that she already saw farmers implement. In her mind, a conventional dairy farmer is already acting sustainably because it makes the best business sense. Of course, you want your fields to be productive for years to come. Of course, you want a herd with well performing genetics. Of course, you want a customer base that's going to continue drinking milk. This was an eye-opening discussion for me. What if we framed conversations about sustainability in terms of lifting and expanding on preexisting sustainability practices rather than making sustainability a goal only to be dreamt of?

— Bridget Craig
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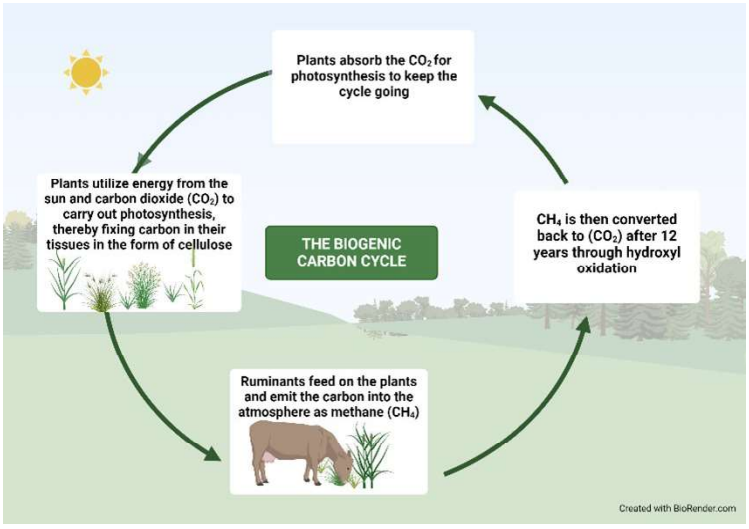
THE BIOGENIC CARBON CYCLE (Greenhouse Gas Emission Terminologies)



The biogenic carbon cycle is a natural process that describes how carbon is recycled in the environment between plants, animals (ruminants), and the soil. The bulk of ruminant feeds are plant materials (e.g. forages) which are high in cellulose. Cellulose is a structural carbohydrate found in all plant tissues, and it's the major component of plant cell walls which gives them rigidity. It is made up of multiple glucose units that are joined together by β-1,4-glycosidic bonds which makes it resistant to breakdown by other digestive enzymes, except cellulase. Humans and other monogastric animals are unable to digest cellulose because of the absence of cellulase in their gut, but ruminants can break down cellulose through the action of cellulolytic microbes in the rumen, and use the energy created for their physiological processes, and for meat, milk, and wool production. Most of the energy generated in ruminants comes from cellulose fermentation in the rumen, and a benefit of this is that this carbon source does not compete for human edible food but generates a very high-quality food source for humans.

Cellulose is formed in plants when they generate energy through the process of photosynthesis. During this process, they absorb carbon dioxide (CO_2) from the atmosphere, use the carbon to form cellulose which is stored in their roots, leaves, and stems, which is a means by which they fix carbon within their tissues, and then release the oxygen (O_2) back into the atmosphere. Ruminant animals then feed on these plants, ferment them in their rumen to yield volatile fatty acids which are channeled for various functions in their system, and then use the carbon from the CO_2 (a by-product of enteric fermentation of the plant materials) to form methane (CH_4), which is released into the atmosphere. The CH_4 emitted stays in the atmosphere for about 12 years after which it is converted back to CO_2 and water (H_2O) through a process known as hydroxyl oxidation. The CO_2 is then reabsorbed by plants during photosynthesis to form cellulose, and so the cycle continues.

The global carbon cycle illustrates the movement of carbon between all the sources from which it is generated (fossil fuels, oceans, the atmosphere, humans, etc.), and how it is stored, while the biogenic carbon cycle focuses on the recycling of carbon from biological sources (e.g., plants). The rate/amount of carbon released from other sources like fossil fuels outpaces the ability of other systems in the global cycle to sequester the same equivalent of carbon, but the biogenic carbon cycle is a faster process with a shorter time span, hence, it has a better potential for carbon sequestration and greenhouse gas emission mitigation. The biogenic carbon cycle also illustrates that the CH_4 emitted by cows and other ruminant animals does not necessarily add new carbon into the atmosphere, but it is recycled due to the unique ability of ruminants to breakdown cellulose.

One question that arises from this is how biogenic carbon can be accounted for when considering the quantification of greenhouse gas emissions into the atmosphere as part of efforts to address global warming and climate change. A second question: If we can capture more carbon and produce less CH_4 because of the mechanism of the biogenic cycle, i.e., if we get very good at minimizing carbon release into the atmosphere in the form of CH_4, while our forage crops still absorb CO_2 from the atmosphere for cellulose production, is that creating a net negative carbon cycle?

— Gift Omoruyi
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WHAT'S HAPPENING ON THE FARM

Winter is finally here! After an unusually warm December we welcomed the colder weather and snow. The cows are doing well, averaging 95 lbs. with 4.1% fat and 3.2% protein, as well as 112,000 SCC. Knock on wood, we have had minimal cases of pneumonia this year compared to last year. We have had some issues with our pre-fresh and fresh diets, leading to more fresh cow illness. However, working with our nutritionist we changed the diet and figured most of it out. We've started moving our fresh cows out of the fresh pen earlier and moving them to the high diet pen around 10 DIM, when we used to move them 15-20 DIM. We were overcrowded in our fresh pens, which was also part of the issue. This has seemed to help limit the fresh cow illnesses.

We want to wish our Young Stock Herdsman, Bethann Buskey a happy retirement after 21 years of hard work and dedication! She has devoted hundreds of hours working at Miner Institute. Bethann has saved many calves here, from taking extra time with the slow drinkers, or keeping smaller calves on milk longer to help them grow. Bethann knows the calves in and out. Raising calves is a very important job on a dairy and Bethann has done a tremendous job. In her time at Miner, Bethann has fed more than 7,000 calves! She has fed calves milk in pack pens, to hutches, and now to individual hutches within a barn. We have also expanded from raising heifers in two different places to four different barns. Bethann has been here through it all! We wish her the best of luck and a happy retirement!

P.S. We are still looking to hire our next Young Stock Herdsman, a great opportunity to join our team.
See page 5 for job details.

— Rebecca Sprang
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BEST WISHES IN RETIREMENT, BETHANN!

RECIPE REPORT

During the winter, there is nothing better than a warm, cozy meal. This creamy garlic parmesan risotto is the perfect side to elevate any dish this winter. While risotto requires a little more work than your classic minute rice, the rich and creamy flavors from butter and parmesan cheese make it all worth it. We paired our risotto with pan-seared sirloin steak and, of course, a glass of milk.

—Taylor Turney and Emily Bourdeau

Creamy Garlic Parmesan Risotto

Ingredients

- ½ white onion, finely diced
- 4 cloves of garlic, minced
- 1 TBSP olive oil
- 1 TBSP butter
- 4 cups chicken stock
- ¼ cup of dry white wine (or 3 TBSP lemon juice)
- 1 cup arborio rice
- 1 cup of freshly grated Parmesan cheese
- Optional: heavy cream

Instructions

1. Heat stock in a pot and keep warm.
2. Cook onions in butter and oil in a large skillet over medium heat until tender, then add garlic. Allow to cook for another minute.
3. Add rice to skillet and toss to coat rice with the oil.
4. Add the white wine to the rice and stir until it is absorbed.
5. Add 1 ladle full of the warming stock and stir it in until it absorbs. Repeat this step until you have used almost all the stock. Approximately 15-25 minutes.
6. When adding the last ladle of stock, let it absorb halfway and then add the parmesan cheese.
7. Let everything absorb until thick and creamy. (Optional: if you feel your risotto is not as creamy as you would like, add a few splashes of heavy cream, and allow that to absorb.)
8. Serve and sprinkle with extra parmesan.

EQUIDAY 2024: THREE PART SERIES

PART ONE: Thursday, March 14, 2024 at 6:00PM will kick off our series with Palmer Veterinary Clinic associate, Dr. Victoria Vendetta, speaking on Senior Horse Care.

P**ART TWO: Saturday, March 16, 2024 from 9:30AM-12:30PM.** The first speaker, Stephanie Lockhart-Hayes will introduce the up-and-coming discipline of Working Equitation (W.E.). Our second speaker will be Dr. Alyson Waring-Scott of Excelsior Equine Bodywork to discuss something we will all encounter at some point in our time with horses – a sore back.

PART THREE: Mary Ann Simonds, equine behaviorist, life-coach, clinician and author of the new book, A Horse By Nature, will present via ZOOM from her home base in Wellington, Florida on **Tuesday, March 19, 2024 at 6:00PM** Eastern Standard Time.

Visit **www.whminer.org** for more information.

TIME TO REGISTER:
VT DAIRY PRODUCERS CONFERENCE
FEBRUARY 20, 2024
@ Doubletree by Hilton South Burlington, VT

To register for the conference:
https://vtdairyconference.com/registration/

https://www.eventbrite.com/e/2024-vermont-dairy-producers-conference-tickets-781354862427?aff=oddtdtcreator

or contact Louise Waterman, LWalshWaterman@gmail.com or 802-373-3352

Conference Agenda:

8:00 am Registration Opens
8:00-9:00 am Visit Sponsor Exhibits and Breakfast Refreshments
9:00-9:05 am Welcome – John Clark
9:05-10:05 am Dr. Richard Stup – Dairy Producer Panel: How to Practically Manage Key Issues in Dairy Operations (Sponsored by Cargill Animal Nutrition)
10:05-11:05 am Dr. Dave Barbano & Dr. MaryAnne Drake – The Key to the Consumer Kingdom: Flavor Still Rules Protein Beverage Innovation (Sponsored by Nutrien Ag Solutions)
11:05-11:35 am Break
11:35 am-12:20 pm Elaine Froese – Finding Fairness in Farm Transition (Part 1) (Sponsored by Feedworks USA)
12:20-1:20 pm Lunch
1:20-1:35 pm 2023 Vermont Milk Quality Awards Presented by the Vermont Dairy Industry Association
1:35-1:45 pm Sponsor Recognition and Announcements
1:45-2:30 pm Elaine Froese – Finding Fairness in Farm Transition (Part 2) (Sponsored by Feedworks USA)
2:30-2:40 pm Remarks by Governor Phil Scott (Tentative)
2:40-3:10 pm Break
3:10-4:00 pm Dr. Mark Thomas, DVM – Strategic Approaches for Optimizing Dairy Management to Enhance Herd Profitability (Sponsored by Phoenix Feeds and Nutrition)
4:00-4:10 pm Door Prizes and Adjourn

Pre-registration fee for academia (other than students) is $50 by February 12.
Registration after February 12 is $85.

SORTING OUT THE CAUSE OF ABNORMAL GROUPING BEHAVIOR

Over this past summer, I spent time in the UK at a large dairy farm with a rotary parlor. Operating a rotary parlor proved efficient for this farm; however, one of the added tasks for staff was moving animals that rode around the parlor multiple times and got themselves sorted with the wrong group. While some animals were easily spotted as imposters (it is difficult for a Holstein to hide out in the Jersey group), others were more difficult to find. So, when an animal meant for an upcoming vet/hoof trimming visit, vaccination, or other intervention came up missing, we'd walk pens scouting out misplaced animals.

The barns stretched long and had fans and open sides all around, allowing the breeze to travel straight through each pen. Though the midday sun created humidity, the often windy weather kept a constant airflow and the temperature in the pens appeared comfortable, at least to me. However, I found myself struck by the behavior of the cows during these afternoon walks. On one side of the pen the cows were often pressed against one another, waiting in line for stalls and standing for what seemed like most of the afternoon. On the other side of the pen were open stalls, a nice breeze, and a full feedbunk - but no cows. Squeezing through the dense pack of animals was nearly impossible, and trying to split up the group proved futile. The cows that we peeled from the back of the hot, stuffy group seemed unwilling to move down into the empty side of the pen and instead returned to their spots at the edge of the cow pile. This happened all over the farm regardless of age, stage of lactation, gestation, or other such differences.

After returning to New York I observed very similar behavior from the cows at Miner Institute. I dug into this topic a bit and learned that "bunching" is a somewhat common and universal problem for indoor-housed cows especially in the summertime. It is thought that rather than cows competing for a shared resource, bunching is an avoidance technique where cows herd away from a perceived environmental threat. But what is this threat, and how can we minimize the behavior?

Multiple factors likely influence bunching behavior, the most researched being ambient temperature. Pasture-based cows tend to group together under shady spots on hot, sunny days. Therefore, though a maladaptive instinct, indoor-housed cows may also tend to bunch when temperatures rise. This is the theory discussed in a research paper by Chopra et al 2023 of the University of Essex, UK. The authors monitored 127 cows using a local positioning sensor system that tracked their locations in the free stall. They observed more bunching as temperatures rose in the barn, specifically over 20ºC (68ºF). This reflects similar works from the Czech Republic where scientists also observed bunching particularly over 20ºC.

Research shows that ambient temperature may influence bunching behavior, but this factor is only one piece of the equation. Facilities like Miner Institute and the UK farm from earlier have heat abatement strategies like fans and ventilation; yet they still experience consistent bunching in the summer months. This could indicate that something else is contributing to this behavior.

El Ashmawy et al 2020 from U.C. Davis suggests that flies can also induce bunching behavior, as cows perceive flies as a threat and may group together to guard against bites. The authors observed that the farms with more flies experienced bunching at higher rates. Meanwhile, a group of scientists from the Netherlands surveyed 31 Dutch farms to determine other possible factors associated with bunching. They found "case" farms where farmers reported observing bunching for at least seven days in one month, and compared them to "control" farms where farmers did not observe bunching. The surveys showed that case farms had constructed new infrastructure, installed fans in the barns, and experienced stray voltage at significantly higher rates than the control farms. Though seemingly random, it's possible that one or more of these considerations are partially responsible for bunching. There are also factors like light intensity, cited multiple times as a possible cause for bunching but with no quantified research to back it up.

Bunching is an interesting phenomenon, and its effect on animal productivity and economics has yet to be determined. Additionally, little is reported about how bunching, which raises body temperature, can exacerbate issues related to heat stress, like decreased pregnancy rates and increased lameness. For now, it may be advantageous to take note of bunching on your farm as it could point to areas of improvement for cow comfort.

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Closing Comment

Some people are very fortunate that stupid doesn't hurt.

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