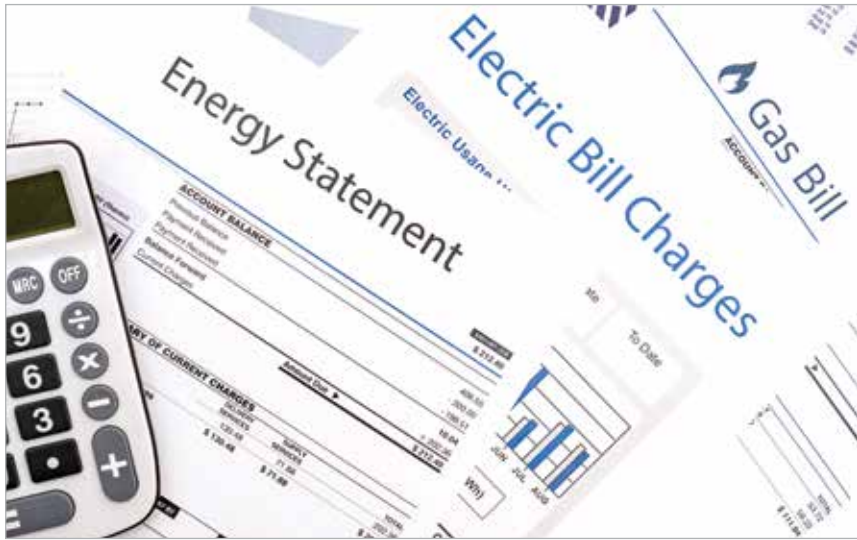




by John Goeser

The energy tax imposed by feeling ill



A FEW weeks ago, I didn't feel all that well and broke with a digestive upset. This happens from time to time unfortunately, and most of you understand the discomfort. Without a clinical diagnosis, I was left speculating if the symptoms could have been due to eating some hygienically challenged food, a mild virus, or stress associated with enrolling our young kids in a new school this fall. In reality, likely two or even all three of these factors contributed to the digestive upset and the several days of lethargy that followed.

One of the lasting symptoms I'd like to drill into with this article is the fatigue that always seems to follow digestive upset or a mild illness. The fatigue you experience following an illness is tied to the energy demand of your immune system. This is an overlooked aspect relative to the initial symptoms of many illnesses.

We tend to remember the severe symptoms, but the energetic tax imposed by your immune system might not be as memorable. The immune system's enhanced energy demand can combine with a reduced appetite and may result in substantial weight or strength loss. I'm sure you might have experienced this phenomenon in your lifetime. Unfortunately, your dairy cows likely have experienced this as well.

Back to the farm

Zeroing in on your dairy herd and discussing cattle health and performance, there are subclinical and clinical illness or digestive upset symptoms that show up too frequently on dairy farms throughout the world. When this happens, we observe herd illness, variation in manure, or any level of digestive upset. Upon more thought, I increasingly wonder what energetic cost is associated with even the most mild symptoms or outbreak.

My friend and colleague Lance Baumgard has dug into the energy tax imposed by an activated immune system with some heavy-hitting research at Iowa State University. Speaking with him the past few years, I've learned that a severely sick dairy cow's immune system can consume up to a kilogram of glucose in as little as 12 hours.

The corn tax

Restating this energy demand differently, consider that 1 kilogram equates to 2.2 pounds, and this is roughly the same amount of energy contained with starch in around 4 pounds of corn grain. This immense energy tax can happen in just 12 hours with a severely sick dairy cow.

While this article isn't intended to address severely sick cows, and

coming back to a mild or subclinical situation like my digestive upset, consider how many pounds of corn grain equivalent are being burned if cows aren't feeling well. Think of how lethargic you feel after a mild illness or digestive upset.

To be candid, I think this is happening with dairy herds more than we recognize. In fact, in my opinion, the next generation in feed conversion efficiency and margin opportunities will be tied to alleviating unproductive energy demands and aiming to improve dairy cow health.

Eliminating unproductive energy draws can partly be achieved by identifying a contributing issue or source, yet all too often, the causative factor(s) remains undiagnosed. Following some variable manure or gastroenteritis, the pen or herd self-cures, leaving the nutrition and veterinary advisers, along with the herd manager and owner, wondering what happened.

Throughout the past five to 10 years, we have been digging into health and nutrition on farms in more depth. Thanks to investigative efforts, we're learning at a rapid pace. Some of the contributing factors to digestive upset and economic losses are becoming more clear. And as it turns out, these contributing factors are similar to those described earlier when I was left speculating about what left me feeling sick and tired for a few days. Was it spoiled food, mild illness, or stress?

Look beyond mycotoxins

To check into the spoiled feed factors, don't rely on what you can see, which was discussed in the October 25, 2016, *Hoard's Dairyman* article, "What you can't see can hurt you" on page 666. While mycotoxins continue to be a hot topic within the industry, other forage and feed contaminants warrant discussion with your veterinarian and nutritionist, too.

Fungal and bacterial contamination may also be contributing to robbing your dairy cows of energy and nutrition. Wild spoilage yeast are an example of fungal contamination

that won't result in severely sick animals. However, these negative yeast may interact with the digestive tract like what happens if you consume spoiled food.

Beyond your nutritionist, bring your veterinarian into the discussion regarding bacterial contamination or viral pathogens and illness. The concepts discussed here represent an intersection between nutritional and veterinary science. We need to lean on one another's expertise to move your herd ahead.

Stress can be a mess

One last consideration in this discussion isn't one that we can exclude from the diet or even vaccinate against. The stress dairy cows endure can substantially impact the herd immune status and contribute to outbreaks and diet energetic inefficiencies. The effect can be thought of like how I felt when my wife and I were considering enrolling our kids in a new school — it took a toll on us physically.

Accordingly, stress is not to be taken lightly. With your dairy herd, stress may be tied into overcrowding, cow comfort, environmental swings, or other management factors that negatively affect cows. Bring this concept up with your veterinarian and herd health team as well, and look for opportunities to alleviate herd stress from dry cows through your high-production pens.

In closing, and to be honest, we have much yet to learn in this veterinary and nutrition space. I recognize there are interacting factors at play that may contribute to an immune response and associated unproductive energy demand. Keep your herd from feeling tired by finding and addressing factors like those discussed here; it will likely benefit your herd's health and your bottom line. 🐄

Goeser is the director of nutritional research and innovation with Rock River Lab Inc., Watertown, Wis., and adjunct assistant professor, dairy science department, University of Wisconsin-Madison.

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