



Microbes and mosquitoes

THE mosquito season continues as crops come off fields and the calendar is turning the page toward fall. Warm, humid days and wet conditions following thunderstorms are still prevalent. Inevitably, with heat and humidity, puddles, or pooling water, mosquitoes and other bugs are thick.

We can pretty easily identify the buggy fall-out with wetter conditions. The gnats swarming and buzzing in our ears or itching and scratching mosquito bites are hard to ignore.

Making the connection

Transitioning from bugs to dairy nutrition, the environment conducive to these winged pests also contributes to greater risk for spoilage microbe outbreaks in feeds. While bug bites are unmistakable, it's usually much tougher to pick up on spoilage microbe outbreaks in feeds.

Spoilage yeast, bacteria, and mold growth often isn't apparent to the naked eye. Instead, a temperature probe, thermal images, or laboratory analyses are needed to uncover the extent of spoilage. The objective of this month's column is to help you recognize conditions that contribute to greater spoilage risk and then take action to benefit your herd.

Address hygiene

Following another eventful growing season, weather patterns continued to ebb and flow, much like the milk prices. From drought to torrential and excessive rainfall, we've experienced it all again this year.

For those farming in overly wet conditions, consider taking proactive measures to keep spoilage bacteria at bay at the same time we're applying bug spray. Before we discuss preventative measures, recall the feed hygiene diamond of risk factors.

Feed hygiene issues are increasingly related to digestive upsets, sluggish performance, milkfat or protein challenges, and feed conversion efficiency missteps. The feed hygiene diamond risk factors to investigate include fungal, nutritional, bacterial, and environmental or management stress components. It is arranged in a diamond shape much like the factors contributing to plant disease outbreaks, which are arranged in a triangle. With the plant disease triangle, each of the three areas need to be conducive to disease outbreaks, whereas with the feed hygiene diamond, typically two or three factors coalesce into on-farm challenges.

The wet conditions we're discussing here fall into the environmental and animal stress base in the diamond. In the food safety and quality assurance world, this is termed water activity. Let's expand on this a bit to understand how humidity, heat, and extracellular water contribute to spoilage outbreaks.

Factors to consider

Water activity relates to water available for biological processes, including spoilage microorganism growth. Food safety labs monitor water activity as a proxy for spoilage. It then makes sense to take this concept back to the farm to

help explain why support calls and discussion about feed hygiene challenges are picking back up in accordance with the wetter climate for many farmers this year.

Beyond extra water activity coming from the environment, wet by-products, added water, or even whey permeate contribute to elevated water activity and potential for microbial growth. That's not to say these ingredients or added moisture aren't a net gain for ration consistency or energy levels; however, we often don't consider potential drawbacks or adding preservative when adding moisture to the ration.

Prevention tips

Having introduced the water activity and spoilage connection, let's transition to discussing options to keep your feed hygienically clean and stable.

Spoilage bacteria, yeast, and mold are prevalent everywhere. It's impossible to cleanse your farm of these organisms, but we can take measures to mitigate their contamination potential by keeping feedbunks, loading equipment, and mixers clean. Pressure washing feed mixing equipment and bunks is key to lowering mold, yeast, or bacterial pressure — just like in our calf barns.

I recommend routinely pressure washing feed mixers, especially when sticky ingredients like whey permeate, molasses, or other wet by-products are mixed in the ration. Thinking back to one dairy's experience years back, they washed about 700 pounds of material out of the mixer with a pressure washer!

Think about the continuous inoculation that can happen with wet, sticky feed in the mixer.

The next control point is identifying the contributing source to yeast or bacterial outbreaks in the total mixed ration (TMR) and treating the spoilage at the source. It may be convenient to add acid or a preservative to the TMR to control spoilage microbe outbreaks, but to add a minimum 2% acid to a TMR, we'd need to add 20 pounds of acid per ton of feed. This gets expensive. However, we can target this same 20 pounds to hot feed in the hours or day before mixing it in the ration. This targeted approach will reduce the microbial outbreak and save some cost associated with spreading the acid across other feeds that don't need the microbial control. The drawback is an extra step or two in the feed mixing process.

If all else fails, we can introduce feed additive technologies to combat spoilage organism havoc in the rumen. There are a litany of options available, and these can be helpful in situations where we need to put our heads down and feed challenged ingredients. If you find yourself in this position, recognize you're not alone. With an uptick in mosquito pressure this past year due to excessive rainfall for many, we're also facing an uphill climb with spoilage yeast, bacteria, and mold pressure. 🐄

The author 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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