



by John Goeser

## Clostridia isn't the only feed bacteria concern

WHEN dry matter intake and animal performance are depressed and feed cleanliness is in question, we nearly always begin troubleshooting by checking mold and yeast counts. This has been a sound approach to look for fungal contamination.



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The testing process checks for many different mold and yeast species by growing feed born fungi in petri dishes. Skilled laboratory technicians can also identify a limited number of mold species with a microscope.

Beyond fungal growth, the next step for farmers and nutritionists is to verify mycotoxin loads with specific tests. Clostridia counts have also gained attention as a gauge for bacterial contamination.

Clostridia species can be a health concern. That said, focusing only on these bacteria is akin to focusing on just one of your costs per hundredweight, such as semen costs, when scrutinizing your financial performance. There are other costs that should also be considered to assess total financial performance, and similarly, there are other bacterial families that warrant evaluation to better assess preventable bacterial contamination.

### Beyond clostridia

Over the past 20-plus years, silage researchers have evaluated mold, yeast, clostridium, and enterobacteria levels to assess

feed preservation efficiency and cleanliness. We can learn from their approach by adding enterobacteria tests to our feed hygiene investigations. Enterobacteriaceae is a family of gram negative bacteria, with over 210 recognized species including salmonella, *E. coli*, *Shigella*, and Klebsiella to name a few. Silage scientists recognize that enterobacteria counts are mostly undesirable.

In dairy nutrition, we've mostly ignored bacterial contamination factors beyond clostridia, but we should think like veterinarians in looking deeper into bacteria. We are at a point in dairy feeding where we are merging veterinary and nutritional science.

We will only see this important relationship grow and develop further. There are cases where dairy farms experience gut health issues in spite of low mold, yeast, or clostridia total mixed ration (TMR) levels. In these cases, there can be other bacterial factors at play as well.

### Testing TMR levels

In 2018, we sought to explore other bacterial contamination in TMR in a collaborative effort. We adapted a food safety kit (3M Petrifilm kit for food hygiene) meant to assess Enterobacteriaceae contamination, and we tried it out with commercial dairy TMRs.

This approach has been used for forages before, but we wanted to grasp how it worked with high producing dairy TMRs.

We also sought to understand the variation that exists on farms, determine reasonable goals, and then consider what factors may be related to bacterial counts. With survey results in hand, we deter-

mined that an achievable goal for Enterobacteriaceae may be around 100 to 200 colony forming units (CFU) per gram (g) of TMR. Commercial dairy results from May 2018 through September 2019 are shown in Figure 1, with a red line demonstrating the achievable goal.

### It impacts cows

As with other feed hygiene measures, like yeast or mycotoxins, one contaminant factor alone often doesn't indicate a concern for your herd. Healthy cows and rumens can combat some challenges. However, when feed hygiene issues compound, cows are more likely to suffer with digestive upset or depressed feed conversions.

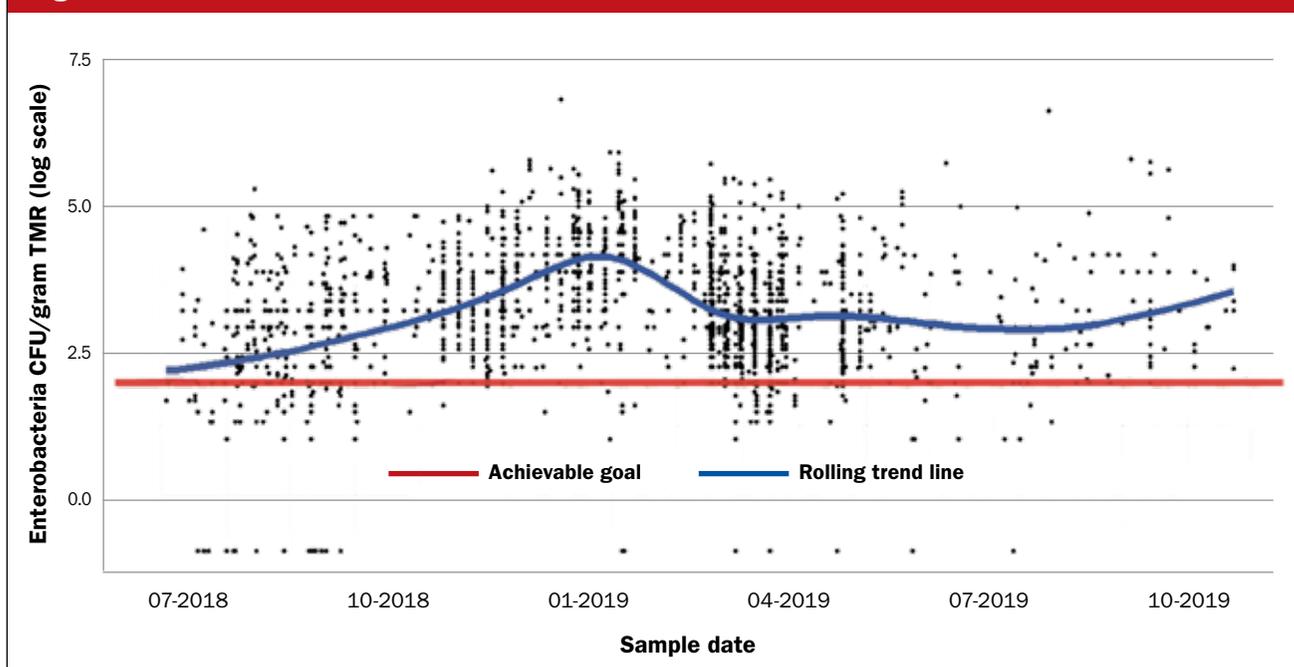
Spending on mycotoxin binders may be useless when the major issues at play are bacterial or wild yeast growth. Also, don't assume contamination comes strictly from forages. Start with your TMR and work backward in the feed delivery and mixing process to find improved hygiene opportunities for your herd.

Recognize contamination points during feed mixing, delivery, and pushups. Watch out for pooled water near feedbunks and adulteration from birds. If the contamination point is identified, take steps to avoid or eliminate it. If contamination has already occurred or is inevitable, other research-backed nutrition strategies or additives meant to combat bacterial challenges may be warranted.

Consult with your nutritionist and veterinarian about the potential economic impact and to better understand the repercussions contaminant bacteria may have on your farm. 🐮

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Figure 1: Enterobacteria in TMR



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