



by John Goeser

Run your butterfat checklist like a shopping list

WHEN heading to the grocery or convenience store to restock the pantry, butter is always on our list. As a kid, I lovingly remember my grandmother at the dairy farm knifing from the pound slab of butter on the counter when feeding us all.

In our family's household these days, we go through 1 to 2 pounds of butter a week, and I know we're not alone. Butter consumption trends have been a positive for our dairy industry, and there's room to gain!

Just like our family's grocery list, lists are critical for dairy farms. In the following discussion, we'll work through a butterfat checklist your dairy can use to evaluate milkfat depression factors prior to the grocery store.

Becoming a hot topic

With warmer temperatures trending for many, milk butterfat concentration and composition is frequently a hot topic. The reason behind this is that, with warmer temperatures, fermented and wet feeds are more likely to come alive with microbial growth and spoil. Based upon experience, milkfat can trend down when the rumen is challenged with spoiled feeds.

Cows also pant, and eating behavior changes during summer months. The rumen buffering capacity changes, and slug feeding contributes to rumen pH dipping lower than is typical during cooler months. The dip in rumen pH is far from clinical acidosis, but even a mild drop in rumen pH is known to shift rumen fatty acid biohydrogenation pathways.

Steering clear of complex rumen metabolism, the take-home point is that milkfat production by dairy cows is a complex process. It involves many pathways and interactions within the rumen, through

the digestive tract, and into the mammary gland.

The checklist

In accordance, there are different areas on the farm to look for contributing factors on the milkfat depression front. A checklist can be helpful, and here are some items to be sure your team covers.

✓ **Monitor the ration digestible starch load.** My colleague Adam Lock often starts and finishes the milkfat depression troubleshooting discussion with starch digestibility and rumen digestible starch load. Rumen digestible starch is a function of the total grain or starch in the diet and the rumen starch digestibility.

As silage and high-moisture corn ferment, the starch availability in the grain improves. There is a sweet spot in regards to the pounds of rumen digestible starch in your ration. So, nutritionists often reduce the total grain in the diet as starch digestibility improves to maintain a sound level of rumen degradable starch.

Ask your nutritionist how he or she balances these factors in your diet, understanding that even the slightest dip in rumen pH can drastically alter how the rumen handles rumen available polyunsaturated fatty acids (PUFAs). We know altered rumen metabolism with these PUFAs can destroy milkfat content.

✓ **Excessive unsaturated fatty acid load.** Beyond rumen degradable starch affecting PUFA metabolism, the next aspect in your diet to check out is the total PUFA level. When cow health is great and your herd's rumens are working efficiently, there is a certain level of PUFA that can be metabolized effectively. However, if rumen metabolism is altered and slowed down, then the PUFA load can contribute to milkfat depression.

The PUFA benchmark for your

herd will be different depending on the time of year and the starch digestibility. Check in with your nutritionist and monitor the total grams in the diet throughout the year. A simple total mixed ration (TMR) nutrition analysis can be helpful to quantify both PUFA level and rumen degradable starch load.

✓ **Inadequate effective fiber.** Dairy cows do not have a forage requirement; in fact, diets as low as 25% forage can yield healthy results. However, there is a functional fiber requirement. This can come from forages and by-product feeds like almond hulls or soy hulls. There has been considerable work in this area, with terms like forage fiber, effective fiber, undigestible fiber (uNDF), and physically effective uNDF being evaluated as benchmarks for rumen health. Ration particle size distribution can also play into evaluation.

Ultimately, cud chewing and rumination are solid determinants for rumen health. Monitor cud chewing percentage or rumination times for your herd and check off this butterfat factor. Also make sure your ration's effective fiber level doesn't vary throughout the day or at the feedbunk.

✓ **Variability in ration delivery timing, consistency, and sorting.** Effective fiber in your ration can fluctuate due to both mixing and sorting factors. Ingredient order when added to the mixer, time spent mixing, and mixer wear are important to monitor. Feed delivery time also needs to be consistent each day.

Changes from one day to the next can contribute to slug feeding and challenged rumen function. I can recall numerous cases where the formulated diet was sound, but the mixing sequence and process was the root issue with milkfat level.

Sorting is also a critical aspect to consistency. The diet moisture con-

tent and stickiness are contributing factors here. A Penn State Particle Separator analysis on the fresh feed and then the refusals later in the day or next morning can identify opportunities.

We also often talk about what percentage of the ration is on the top screen; however, we can go too far on the top screen. Excessively long particles can act like a broom, where cows can brush the total mixed ration from side to side and sort out the feed they like the most. Ideally, the ration shakes out the same from fresh to refusals. Check these factors with your nutritionist or respected industry professionals that specialize in these areas.

✓ **Spoiled feed.** The last checklist item to consider ties into a factor that you likely can't see with your naked eye. Spoiled feed can hamper how rumen bacteria handle the ration. Field experience has highlighted situations where mold and mycotoxins, spoilage yeast, or even contaminant bacteria are found and associated with milkfat challenges. After working through the checklist items above, dig into your TMR's hygienic quality to make sure contaminants aren't wreaking havoc on your butterfat and bottom line.

Consider all the factors

Just like a checklist is helpful to remember all your family's grocery needs, a butterfat checklist will help ensure your feeder, nutritionist, and herd manager have covered the many different nutrition and management areas that can affect butterfat production and your farm's profitability. 🐄

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