

July ADSA Meeting Recap

Every year the American Dairy Science Association holds national technical meetings. This year the meeting was held in sunny Florida in July! This newsletter will be a short recap of one presentation on rumen adaptation to diet changes with a couple of practical application ideas.

Very often research follows this pattern: New data confirms and clarifies old data, rather than uncovering new scientific ideas. Rumen changes as measured by fermentation have consistently shown that there are some pretty rapid shifts in fermentation during the first 24 hours after a diet change. However, it takes an additional 5 or 6 days before fermentation is “back to normal”. Very little data shows a quicker adjustment, or a time frame of longer than about 14 days. “Back to normal” really means a stable rumen environment based on the new diet. This information has been reported for decades.

More recent work has looked at specific microbial shifts in the rumen, and what each population does. The 6-7 days observed for rumen fermentation change is due to microbial population changes. While this seems quite obvious, without the science it was only an educated guess. Due to limited space I won't go into the details of the big flaw in this supporting science. Suffice it to say that MOST of the data is with rumen fermenters (in the lab) which have two biases. First, it is very difficult to maintain many of the rumen microbes in culture. One paper

has reported that less than 10% of the species of rumen bugs actually survive in cultures. The second bias is that during incubation in the lab no absorption of nutrients occurs.



» Practical Application

Diet Changes - Taking the science from the past showing 6 to 7 days for fermentation to return to normal and current science that shows the same period for microbial adaptation indicates that diet changes should ideally occur gradually over about 7 days. Small changes over this time period will more closely match the changes in the rumen. Taking longer than 7 days is not supported in the data.

Milk Fat Depression (MFD) – During one presentation at the meetings a short sentence was given on diet-induced MFD. The one where cows are healthy, yet fermentation pattern is altered. The other two reasons for fat depression would be poor diet formulation resulting in acidosis or a mechanical issue affecting milk samples.

During a talk about cow comfort the speaker said “Diet induced MFD wont fix itself.” This really stood out. I have had some of these cases where we try a little more hay, maybe more hulls. Sometimes it works, but not always. This quote reminded me of a conversation at the large herd conference in Reno in March. A technical service nutritionist for a bypass fat company suggested that feeding 0.5 lbs of potassium carbonate fixed diet-induced MFD. I had other conversations during the FL meeting with consultants, retired professors, and company representatives and have incorporated their thoughts into my approach on addressing diet-induced MFD.

1. If you don't want to make any diet changes feed 0.5 lbs of potassium carbonate for about a week. Within a couple of days you should start seeing a consistent increase in fat test. This will raise costs about 35 cents. So it better work. If fat test doesn't start to move, then more than likely there is a physical problem with equipment (like an agitator not working).
2. The alternative approach would be to add 0.25 lbs of potassium carbonate for about a week. This lower feed rate should be combined with “dramatic” diet changes – as the fat depression won't fix itself. Lower the amount and rate of fermentable CHO in the diet. Lower dietary fat. Add more fiber that gets eaten (not sorted against). Some other items that will be operation specific may include lowering, dropping, or perhaps leave alone Rumensin. You may want to use or increase amount of direct-fed microbial. This approach will raise cost about 18 cents. Again, this will have to be put into context of fat test improvement and possible return.



» Three Stories

Herd A. Holsteins. High production, 3X herd. Diets are generally high corn silage. “Never” great fat test, but had slipped to 3.32% on weekly average. We tried a couple minor edits, to no avail. Approach we then took was no change in Rumensin, big drop in fermentable carbohydrates (starch from 27% to about 23%), fed 0.25 lbs potassium carbonate, and added extra yeast. On paper diet costs increased about 22 cents. Within 6-7 days gained over 0.10 in fat test. After about 16 days milk flow was not different with fat test 3.53% and protein had gone up about 0.08%.

Herd B. Jerseys. In 2013 and 2014 the bottom for fat test was observed in late July at about 4.58%. In late May/early June of 2015 fat test was about 4.45. Approach on this herd was to implement feeding 0.25 lbs of potassium carbonate, dropped Rumensin, and made minor diet edits. No change in fat test during first 5 days. Made big diet changes a couple of days later. Fat test began to move. In about 3 weeks we were back to the same average observed during the previous summers.

Herd C. Holsteins. Production is about 90 lbs for the year. “Never” a great testing herd, especially in summer which is similar to Herd A. This year we dropped a little lower, a little faster than expected. Milk fat was in the low 3.3% range by mid-May. I suggested they start feeding potassium carbonate at

the quarter pound rate with quarter pound taken out of bakery. This small diet change, with a lower amount of potassium carbonate was to see if cost could be controlled while only making a small diet change. On paper this amounted to higher feed cost of 18 cents. After 14 days I got the creamery report and fat was not different, or maybe even a little lower. Before going to the dairy for a monthly appointment I called the owner to discuss other options. Turns out he had forgotten to order the potassium carbonate. Got it ordered. Within about a week fat was headed up. After about 2 weeks the 5 day average was 3.47. This would be typical for this herd, this time of year.

» Does it Pay?

We are challenged to accurately predict responses to diet changes or inclusion of a product. There are a couple of tools available to use as either a prediction of increased income or as a review after the fact. A spreadsheet can be made using your milk check stub. Alternatively, dairies in a FMMO can use the on-line tool milkpay.com. In the 3 herds mentioned above the return on investment ranged from 1.5 – 2.8 to 1. Not huge returns but in these herds it was consistently positive. Using a milk price calculator is a good tool going into an intervention, as well as a great review tool after the fact.

» Summary

Diet-induced milk fat depression can happen any time of year. This is different than the seasonal drop in components observed every year (see December 2013 Pine Creek Report for this topic). The correction for diet-induced MFD is to change rumen fermentation. Experience shows that small changes to the diet take too long. It is hard to make blanket recommendations as each situation is unique. However, bigger changes, accepting additional cost, and

use of a milk pricing tool need to be considered for a quick turn around.

While this Quote of the month doesn't apply to MFD, I found it profound and wanted to include it this month.

“Freedom makes a huge requirement of every human being. With freedom comes responsibility. For the person who is unwilling to grow up, the person who does not want to carry his own weight, this is a frightening prospect.”

—Eleanor Roosevelt



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