

# TECHNICAL BULLETIN

## DAIRY



### IS SORTING A CONTRIBUTOR TO LOW MILK FAT AND REDUCED PROFITABILITY ON YOUR FARM?

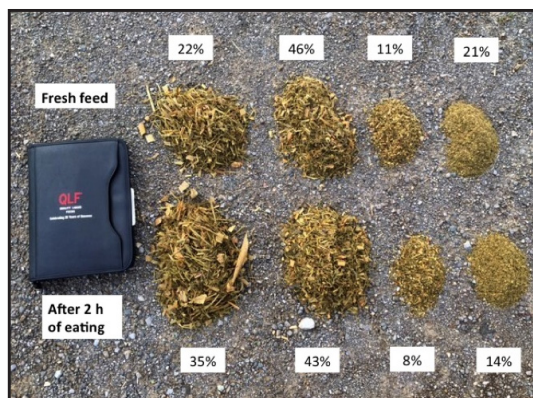
In July 2016, we visited a dairy farm in Michigan to help troubleshoot low milk fat issues. This herd has 200 milking cows, 90 lbs./cow/d milk yield, 3.2% fat, and 2.9% protein. In today's tough milk market, a good milk fat content is especially important to milk income. By using *MilkPay.com*, we showed the dairy producer that if his cows can increase milk fat by 0.3%, his milk income can increase by over \$50,000 per year. On a 1000-cow dairy herd, that 0.3% unit difference would be worth over \$250,000 per year.

After studying his ration, there were several risk factors contributing to low milk fat, including: 1) a high starch content with large amounts of high moisture corn in the ration. 2) large amounts of unsaturated fatty acids in the ration. 3) dietary NDF is on the lower side of the recommended guidelines, and there were variations in manure consistency, indicating that cows sorted the diet.

It is often said that there are four radically different rations for a group of cows: the ration that is formulated by a nutritionist, the ration that is fed, the ration that is eaten by the cows, and the ration which is digested. If sorting is a big issue in this herd, then many of the cows are likely to consume excessive amounts of starch and unsaturated fat, and sorting against long fibers would further exacerbate milk fat depression.

To do a quick and dirty evaluation on sorting, we took a few sets of samples. As shown in the photo below, the sample next to the cows represents the feed that had been sorted for 2 hours by the cows. The other sample represents the "fresh" feed that cows hadn't reached and sorted.

After shaking the samples through Penn State Shaker Box (see photo below). We found that after 2 h of eating, there was much more feed on the top screen (35 vs. 22%) and much less feed on the bottom pan (14% vs. 21%), a sign of sorting. Note the percentage of the feed on the top screen seems to be very high, and this could be due to that a lot of water was added to TMR and feed might be hard to shake out thoroughly.



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Another issue with the ration was that there were too many long particles on the top screen compared to the standard guidelines, which should be 2 to 8%. Apparently, these effective fibers were sorted out by some of these cows on the farm. Lack of effective fiber consumption and excessive intake of grain likely contributed to low milk fat of these cows.

	<b>Shaker Box Guidelines</b>	<b>This farm: Fresh Feed</b>	<b>This farm: After 2 h of eating</b>	<b>This farm: Sorting rate</b>
	TMR (%of total weight)			
<b>Upper Sieve</b>	2 to 8	22	35	159%
<b>Middle Sieve</b>	30 to 50	46	43	96%
<b>Lower Sieve</b>	30 to 50	11	8	73%
<b>Bottom Pan</b>	<20	21	14	67%

Excessive amounts of sorting likely contributed to the low milk fat test on this farm. **What can we do to reduce sorting?** The dairy producer probably needs to reduce the chopping length of forages. Increasing feed mixing time and improving mixing procedure will help as well. In addition, adding molasses-based liquid feed can help reduce sorting. According to a recent published work in *Journal of Dairy Science* (2012.95:2648-2655) by Dr. Trevor Devries at University of Guelph, adding a molasses-based liquid feed supplement to a TMR reduced sorting, and increased dry matter intake, milk fat yield, and energy-corrected milk yield.

Last summer, a group of interns evaluated dairy cow sorting behavior in Wisconsin. The project was led by Paul Dyk from QLF. They collected data from 78 farms representing nearly 100,000 cows. One aspect they evaluated was the effect of types of liquid in ration on sorting behavior. As shown in the table below, cows supplemented with molasses had the greatest reduction in sorting compared with other liquid types. Note values greater than 100 indicate sorting against those particles.

<b>Screen</b>	<i>Type of Liquid in Ration</i>			
	<b>None</b>	<b>Molasses</b>	<b>Water</b>	<b>Whey</b>
<b>Upper Sieve</b>	130	101	111	124
<b>Middle Sieve</b>	101	103	101	97
<b>Lower Sieve</b>	98	97	101	90
<b>Bottom Pan</b>	92	97	98	94

Here are our few suggestions to improve the low milk fat issue on this farm:

1. Reduce the amount of rumen unsaturated fatty acids load (RUFAL) in the ration. A general goal is for less than 500 g of RUFAL per day.
2. Reduce highly fermentable starch sources, and use molasses-based liquid feeds to replace some of the high moisture corn.
3. Push up feeds more to stimulate meal frequency and consistent rumen fermentation.
4. Chop the very long forages shorter and mix the TMR more thoroughly to leave less long particles on the top sieve of the shaker box, and may shift those particles to middle sieve.
5. Use QLF high quality liquid molasses-based supplements to help reduce sorting.

With further refinement of nutritional and management strategies, including feeding cows a QLF liquid feed product, the dairy producer has seen steadily increase of milk fat and protein percents. Within a month, this herd has increased milk fat to 3.7% and milk protein to 3.22%. This case study is a testimonial that QLF liquid products and QLF people can help dairy producers address on-farm bottleneck issues and help dairy producers increase profitability.