



# Dairy Technical Bulletin

## Can you cut feed costs in times of low milk prices?

Kai Yuan, Ph.D. PAS - QLF Dairy Technical Services Manager

Stephen M. Emanuele Ph.D. PAS - QLF Senior Scientist-Technical Advisor

### Introduction

The low milk prices in 2016 have motivated many dairy producers to cut back on feed costs. Certainly all producers and nutritionists should be evaluating their rations to make sure they are feeding the most cost effective ration. We need to use the best science and management practices in feeding our cows. Even though milk price is low, it is still well above the cost of feed. Feed costs are around 11 to 12 cents per pound of DM, and for each pound of DM consumed by your cows, you will get 1.5 to 2 pounds of milk. If you cut ration cost by 25 cents a cow per day and lose 2 or more pounds of milk it is a losing proposition. A better idea is to fine-tune your feeding program and ration costs in the following areas:

### Are you feeding too much protein?

When excess protein is fed (typically over 18% DM of the ration), the protein is deaminated by rumen microbes to ammonia. When dietary carbohydrates are inadequate to capture the protein, ammonia is absorbed from the rumen and then converted to urea in the liver. The energy costs for detoxifying ammonia into urea represents energy loss and may impair milk production and reproductive efficiency. In addition, excess levels of urea can impair liver function, reproductive activity, and immune system. Overall, feeding excess protein will increase feed costs and provide no beneficial effect on milk production or composition. Diets need to be evaluated to ensure they contain adequate and balanced amounts of amino acids without excess levels of protein. To further optimize the efficiency of protein utilization, supplements that are high in readily fermentable carbohydrates, such as QLF liquid feed supplements, can be fed to enable rumen microbes to capture and synthesize more microbial protein. Cows should also be frequently monitored for milk urea nitrogen to ensure the protein and carbohydrate fractions are balanced.

### Are you feeding too much fat?

Supplemental fats are commonly added to the diet to increase dietary energy density and to support milk production. As cow's milk more, they need more energy and there is a limit on how much starch can be fed. As a rule of thumb, total fat should not exceed 6% of the entire diet. The amount of fat that can actually be included in diets depends on the fat source, DMI, and fiber level of the diet. Many problems can occur when feeding high levels of fat, such as reduced DMI, decreased feed digestibility, and milk fat depression. Interactions with other dietary components are also important in determining the response to various fat supplements. From the cost standpoint, commercial fatty acid supplements are among the most expensive ingredients in the ration, and should be used cautiously or can be replaced by other more economical energy sources especially in times of low milk prices.

Just like all protein or sugar sources are not the same, not all fat supplements are created equal. It is important to know the profile of the fatty acids and their degree of unsaturation. These factors directly affect DMI, rumen metabolism, fat digestibility, and milk component production. Recent research suggested that fat supplements that are high in stearic acid (C18:0) tended to increase body condition, whereas fat supplements that are high in palmitic acid (C16:0) tended to increase milk fat synthesis. A fat supplement containing moderate amounts of palmitic and stearic acid increased both body condition and milk fat synthesis. If fatty acids are unsaturated (such as vegetable and plant oils), they must be biohydrogenated by rumen bacteria so not to be toxic to the



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bacteria. Too much dietary unsaturated fat can easily overwhelm this process causing incomplete ruminal biohydrogenation. When coupled with a high level of dietary starch and inadequate effective fiber, these unsaturated fats can interfere with rumen fermentation, resulting in milk fat depression. In addition, there are significant differences in the rate of fatty acid ruminal availability; for example, distiller's grains, ground soybeans, or oil supplements have a much faster release of fatty acids in the rumen than whole cottonseed and whole roasted soybeans. Generally speaking, supplements that are high in saturated fat (palmitic and stearic acids) do not increase the risk of milk fat depression, however, fatty acids from calcium salts of fatty acids may be available in the rumen and can reduce milk fat.

Overall, the addition of fat to the diet may improve energy balance, milk production, and reproduction. However, feeding fat must be carefully monitored for negative effects on feed intake, milk production, and milk components. QLF liquid sugar supplements can be used to partially replace fat and starch to provide energy without negatively affecting rumen biohydrogenation. Using QLF liquid supplements to partially replace some of the highly expensive rumen-inert fat supplements is an effective strategy to reduce ration costs while providing equivalent amount of energy. Nevertheless, there is some evidence that feeding particular types of fatty acids may improve reproductive efficiency and immune function, and these factors should also be considered when making decisions.

### **Are you feeding enough sugar?**

Numerous studies have shown that dietary sugar supplementation is a feasible way to help increase milk component yields. A meta-analysis by independent scientists was performed on a database of 24 published scientific research trials. The study found that dietary sugar supplementation increased milk fat and protein yields, and the optimal response was observed when total dietary sugar was between 6.75 to 7.5% of DMI. Specifically, cows producing more than 74 pounds of milk had 0.18 pounds increase of milk fat, 0.2 pounds increase of milk protein, and a 4.7 pounds increase of 3.5% fat-corrected milk. With current component pricing, feeding QLF supplements are expected to generate a net profit of 40 to 50 cents per cow per day. Our field experience tells us many dairy herds are feeding too much starch pushing the rumen close to or over the edge that leads to inefficiencies and health concerns, but not feeding enough dietary sugar to optimize rumen fermentation, protein utilization, and fiber digestion.

### **Forages are the most economical feed**

High quality forages provide effective fiber for the cow to maintain rumen health and also provide high quality nutrients to support production. Feeding higher forage diets can provide dairy herds with many long-term benefits, including higher levels of milk components, improved cow health, reduced purchased feed and grain costs, and increased profitability. To improve forage digestibility, proper amounts of sugar should be present in the diet. A recent meta-analysis concluded that when total dietary sugar was between 6.75 to 7.5% DM, cows had the best NDF digestibility, fat-corrected milk yield, and milk efficiency. In other words, cows should be fed between 1.5 and 2.0 lb. of added sugar, which is equivalent to 4 - 5 lb. of most QLF feed supplements.

### **Summary**

In today's tough milk market, dairy producers and nutritionists should re-evaluate their rations to make sure they are feeding the most cost effective diet to optimize income over feed costs. Excess levels of protein, fat, and feed additives may be able to be cut back to save costs and improve productive efficiency. Replacing some of these feed ingredients with dietary liquid sugar supplementation is a feasible way to help improve cow health, and increase milk component yield and value.

Quality Liquid Feeds  
3586 Hwy 23 North  
Dodgeville, WI 53533  
1-800-236-2345  
[www.qlf.com](http://www.qlf.com)

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