WRINKLE
A NEW UNDERSTANDING IN NUTRITION
DakotaGold
Issue 20180013

Research Challenges the Perception of DDGS & Milk Fat Depression

RESEARCH SUMMARY

Some dairy producers and nutritionists perceive that feeding DDGS to lactating dairy cows reduces milk fat production. However, a review of published research shows that with proper formulation, we can feed DDGS to dairy cows and still have optimal milk performance.

BACKGROUND

Several years ago, researchers proposed the Biohydrogenation Theory as a way to explain why some higher-fat ingredients tend to cause milk fat depression. According to the Biohydrogenation Theory, if we feed certain unsaturated fatty acids, rumen microbes modify those fatty acids and convert to saturated forms. This biohydrogenation process results in the formation of unique fatty acid intermediates which negatively affect milk fat production.

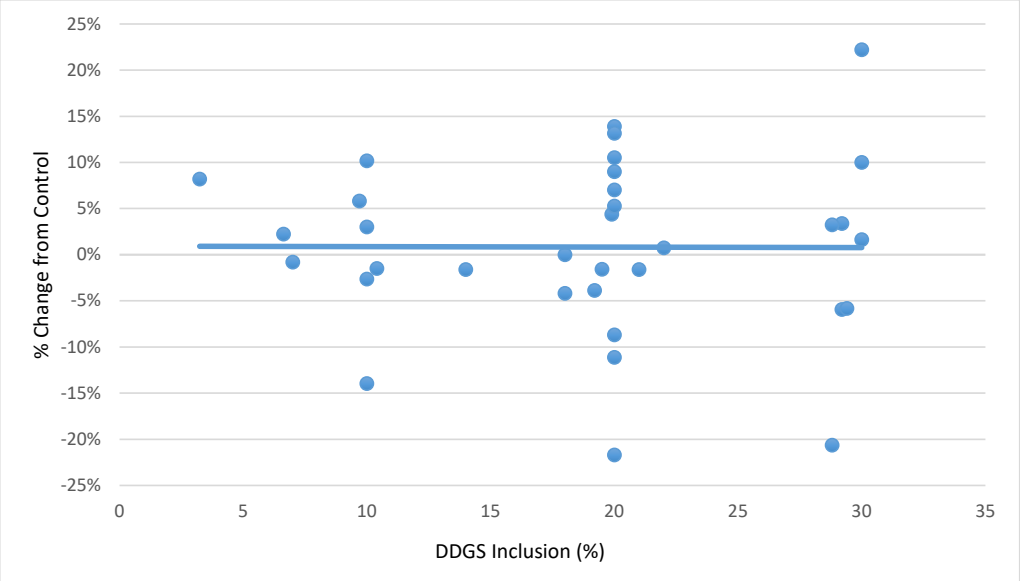
This theory suggests that feeding ingredients such as DDGS which contain greater concentrations of unsaturated fats can make dairy cows more susceptible to milk fat depression. To examine this relationship and challenge this perception, we reviewed several articles from the Journal of Dairy Science which compared dairy cow performance when feeding DDGS or no DDGS.

RESULTS

We used 34 different treatments covering a span of publication dates from 2006 to 2018, collecting information which included DDGS inclusion in the diet, fat content of the DDGS, and milk fat yield.

Figure 1 (below) shows the comparison between DDGS inclusion and percent change in milk fat production. We calculated the percent change in milk fat by comparing the yield of milk fat between the control and treatment diets. A positive change indicates that feeding DDGS increased milk fat yield compared to the control diet.

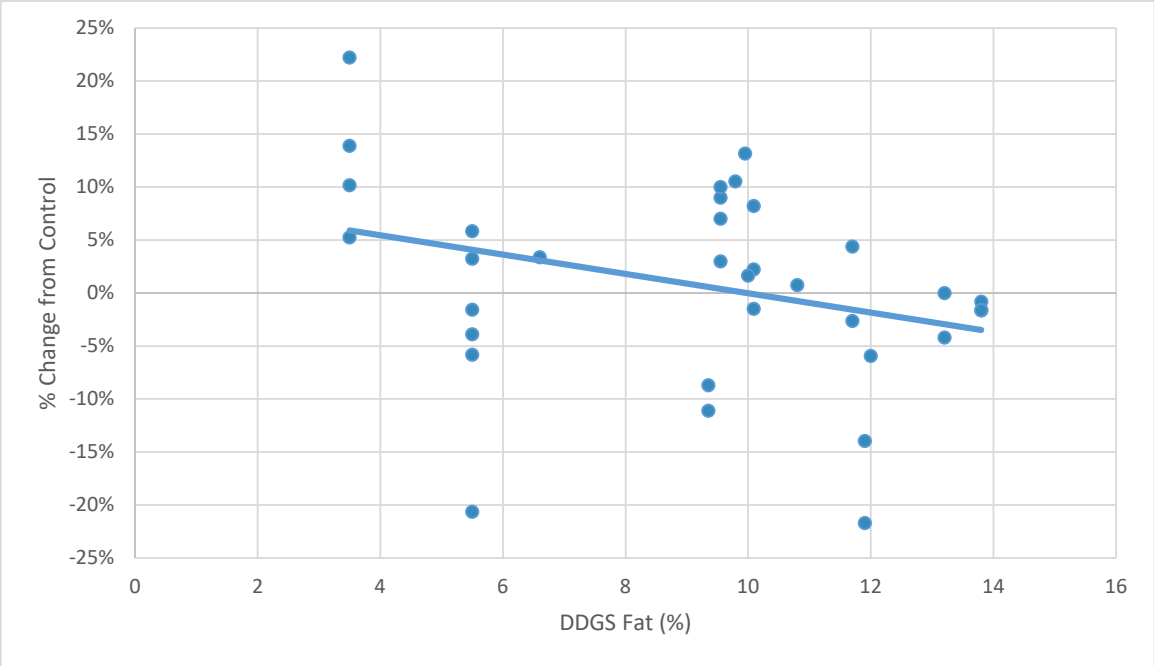
Figure 1. Effect of DDGS inclusion on milk fat compared with a control diet



*These results are not a guarantee of nutritional value, as laboratory results are influenced by factors beyond the control of POET Nutrition.

Figure 2 uses the same data, but compares the fat content of the DDGS and the response in milk fat production.

Figure 2. Effect of DDGS fat content on milk fat compared with a control diet



DISCUSSION AND CONCLUSION

Figure 1 shows that those diets which fed greater inclusions of DDGS did not have a response (positive or negative) on milk fat production. Interestingly, it appears that as DDGS inclusion increases, variability in milk fat response also increases. We can explain this because as DDGS comprises a greater part of the diet, changes in DDGS quality also have a greater impact on performance. This also demonstrates the importance of a consistent source of DDGS such as Dakota Gold. Differences between actual and formulated nutrient values of ingredients can significantly impact animal performance when we feed those ingredients at greater inclusions.

The data in Figure 2 does support the hypothesis that DDGS with greater fat content negatively affects milk fat production to a greater degree than DDGS with lower fat content. The majority of the treatments that fed a DDGS with a fat content greater than 10% resulted in a negative change compared with the control diets. However, similar to Figure 1, we still see variability in milk fat response.

In conclusion, this small data set challenges the perception that feeding DDGS will negatively affect milk fat production. However, the increased variability in milk fat response when feeding greater DDGS inclusions also demonstrates why nutritionists need to accurately characterize the DDGS. This data also shows how the evolution of the ethanol industry towards greater fat removal has improved DDGS value for dairy cattle.

Please be sure to look at the feed libraries for both AMTS and NDS to get the latest nutritional profile for Dakota Gold DDGS.

*These results are not a guarantee of nutritional value, as laboratory results are influenced by factors beyond the control of POET Nutrition.