Acids and peptides were added with the starch, MCP increased by a factor of seven (coefficient 0.062) and efficiency improved (coefficient -0.79) over starch alone. The combination of sugar with the source of ammonia, amino acids and peptides increased MCP by a factor of three (coefficients 0.148 versus 0.495) over sugar alone, and the reason was eight times greater than the combination with starch. The sugar combination increased efficiency tenfold over the starch combination (coefficient 9.7).

When molasses is added to a dairy diet replacing starch, it will speed up the microbial growth rate, which increases the microbial requirement for ammonia, amino acids and peptides. Thus, diets adequate in RDP prior to molasses addition may not be adequate with molasses (Emanuele, 2004).

Summary

Feeding supplemental sugar has been shown to increase milk fat yield and milk fat content and decrease rumen ammonia. This potentially results from the increased rumen microbial production and butyrate production. Increasing rumen ammonia utilization exacerbates nitrogen loss to the environment.

Sugars are not just fast starch; they differ from other carbohydrates in their effects on animal performance. Ratios containing the proper level and balance of sugar and starch give optimum production. When supplementing sugar, adequate effective fiber is essential for good rumen function, and RDP must be available to meet microbial needs. Nitrogen and carbohydrate nutrition can be monitored using milk urea or plasma urea nitrogen.

Lactating dairy cattle can and do sort total mixed rations (Shaver, 2002; Clark, 2004; Endres et al., 2005). An additional benefit of using liquid molasses or a molasses-based liquid supplement as the source of sugar is their effect on sorting reduction (Shaver, 2002; Clark, 2004).

References


Clark, P. 2004. Effect of added wet molasses-based liquid feed or water on selective consumption of TMR diets by dairy cattle. Personal communication.


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