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Cooperative Extension Service

Farm Update

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AGRICULTURE & NATURAL RESOURCES EDUCATION
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Feeding Distillers Grains

The Green River Distillery in Owensboro has provided livestock producers with an opportunity to receive distillers grains, a by-product of the distillation process, as a feed supplement for the past several years. Many producers are using the product as beef herds are transitioning from pasture-based diets to stored feed, primarily hay, in winter. Each year I receive calls about how to best utilize this resource. Distillers grains can supplement the nutrition of poor-quality hay and extend stored hay supplies. It can be fed to beef cattle as both an energy source and protein supplement. The moisture content, fat levels, and sulfur concentration can limit recommended feeding rates. Supplementation of low-quality fescue hay can be accomplished at rates of 20-30% of the diet dry matter with minimal impact on fiber digestion. Distillers grains are available in several forms, depending on the source. The product available from Green River is called whole stillage. As much water as possible is screened off and the thicker whole stillage goes out as feed.

The dry milling process of distilleries is very similar to traditional feed mills. Grains are received at the plant and finely ground through a hammer mill. The ground grain is sent to a tank, combined with water, and the temperature and pH are increased to an environment for

enzymes to convert the grain starch to smaller sugars. This conversion is known as mashing. The mash temperature is increased to kill off wild yeast and other microorganisms which may decrease the product yield. The mash is then cooled for the enzymes and yeast to metabolize the sugar to alcohol and carbon dioxide during fermentation. This fermented mixture of yeast, alcohol, and spent grain is known as "beer". After the fermentation period, the beer is sent to the distillation area where it is heated, volatilizing the alcohol, and leaving behind spent grains and water known as stillage. Excess water is screened off and the product is available for feeding livestock.

Corn is comprised of two-thirds starch which is easily fermented by yeast to alcohol and carbon dioxide. There is limited utilization of other nutrients in corn in the fermentation process, resulting in a three-fold increase of concentration in the stillage for feed. For example, on a dry matter basis, the average crude protein of corn is near 9%. Corn-based distillers grains are near 30%. Fat increases from 4% to 12% and phosphorus increases from .3% to .9%. The nutrient content of distillers grain classifies these sources as both high protein and high energy alternatives.

The nutrient profile of distillers grains does result in the need for caution. When feeding moderate rates of distillers grains, the mineral supplementation program will need to be modified. The high level of phosphorus will cause an imbalance in the calcium to phosphorus ratio. Using a low to 0% phosphorus mineral supplement that is also 20% or greater in calcium will help achieve a proper calcium to phosphorus ratio. If a mineral of this type is not used, the addition of feed-grade limestone or calcium carbonate is required to balance the calcium to phosphorus ratio. Inclusion rate of limestone is low, and less than 2% of the total diet dry

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matter. Feed-grade limestone is inexpensive, adding little to the overall diet cost. Also, as yeast die off during fermentation the pH level increases. Therefore, it's important to feed sodium bicarbonate to prevent bloat.

In most situations, the level of protein in the distillers grains product eliminates the need for other protein sources. Recent research has demonstrated that diets containing distillers grains perform similarly to diets containing other sources of protein such as soybean meal or urea. Use of soybean meal for lightweight calves and starter feeds to meet individual amino acid requirements may be necessary, but a portion of diet protein can come from distillers grains.

For more information, the Extension publication Distillers Grain Coproducts for Beef Cattle is available at the extension office or online on my webpage at https://daviess.ca.uky.edu/anr. For information on the availability of Green River distillers grains, contact the distillery at (270) 691-9001.

Holiday Closing

The Daviess County Cooperative Extension Office will be closed Wednesday, December 25 through Wednesday, January 1. We will reopen at 8:00 a.m. on Thursday, January 2.