

## **Alternative Feedstuffs and Changing Co-products: Feedlot Cattle**

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For the past decade, the amount of ethanol fuel produced from corn each year has increased dramatically. This increase in ethanol production increases the demand for corn to be used as fuel and decreases its supply for livestock feed. The increasing ethanol production also increases the supply of corn co-products, feeds produced in the conversion of corn to ethanol. Traditionally co-products have been included in beef feedlot rations to decrease costs. The increasing supply of co-products and decreasing supply of corn due to ethanol production have made co-products an economically attractive energy source for cattle producers leading to their higher inclusion in diets.

For example, distillers grains with solubles (DGS) have been an important, low cost protein source for feedlot producers for over 3 decades. In the last 5 years, demand for DGS has increased as the cost of corn has made them an economically attractive source of energy. Using DGS as an energy source has presented 3 major challenges. **#1 Protein:** The “traditional” DGS diet may have contained approximately 25% DGS on a dry matter basis (DMB) and supplied approximately 14.3% CP (DMB) to the diet. Last year, however, it was not uncommon to see feedlot diets that included 50% DGS, increasing dietary protein to roughly 19% (DMB). The shift to use DGS as an energy source has some researchers questioning the long term ramifications of feeding so much excess protein, not only on the environment, but also on the animal. **#2 Fat:** Another challenge with using DGS as an energy source has been the fat content. Feeding fat in excess reduces fiber digestibility and cattle performance. Some DGS may contain as much as 10 to 12% fat (DMB). Fiber content in feedlot diets is often low and high fat DGS have not proven to be as big of a concern as once thought. In fact, it is now believed that the fat in DGS works well to supply energy to feedlot cattle and may be the reason that DGS has 10 to 20% more energy than corn when fed at 40% of the diet (DMB). However, fat represents another avenue of income for ethanol companies and this past year, many plants began de-oiling their co-products. Reduced fat will mean reduced feed energy for cattle producers who used DGS as an energy source. **#3 Sulfur:** The 3<sup>rd</sup> major issue with feeding DGS as an energy source has been sulfur content. Unfortunately, due to the use of sulfuric acid in the production of ethanol, this one may not be an easy fix. Some new investigations have looked at using phosphoric acid in place of sulfuric, but the efficiency of ethanol production using this technique has not been good

enough for it to become an industry standard. That said, most plants will have a sulfur value on their DGS, but that value may vary within plants and between plants. The typical range of sulfur in DGS can be anywhere from 0.35 to 1.00% (DMB). The moral of this story is to test your DGS and/or ask for the plants analysis of their DGS. Two important considerations with DGS are cost and availability. The cost of DGS follows the cost of corn. As corn price increases, price of DGS increases. In August of 2012, the drought in the Midwest had driven the cost of corn so high, that several ethanol plants were no longer running. Availability of DGS became a serious issue.

Another co-product gaining popularity in the industry is corn stover. Over the past few years, there has been a tremendous effort to increase the use of corn stover for feedlot cattle by increasing its feeding value. The most popular technique to do this has been treating corn stover with 5% calcium oxide (CaO). This treatment process does require some equipment and labor, despite this, it is gaining popularity. This process involves grinding the corn stover, wetting it to 50% dry matter, and then adding 5% CaO (DMB). The “treated” corn stover must sit for at least 1 week before feeding to allow the chemical reaction to be effective. An emerging term, corn replacement feed, uses 20% treated corn stover and 40% wet DGS to “replace” 60% of the corn in a traditional feedlot diet. Results have been somewhat variable.

Because of the 2012 drought in the Midwest, many producers in the region harvested corn silage instead of corn. Corn silage can be an excellent feed, especially for growing cattle. Cattle can be fed ad libitum silage with supplemental protein and minerals. Calves that are 600 to 700 lbs can eat enough silage to gain about 3 lbs per day if they are fed for ad libitum intakes. When cattle reach 800 lbs, more of the energy in silage will be used for their increased maintenance needs so gains will likely drop to 2 or 2.5 lbs when fed for ad libitum intakes.

Although diets high in co-product inclusion have become normal for cattle feeders, this year high inclusions of silage may be the best ration option. If you have corn silage, it will be cheaper to have cattle at 2 to 2.5 lbs gain per day with corn silage than to buy corn and co-products in this market. In this feed environment, the bottom line is options. Cattle can be adapted to a number of different diets. In this environment our feedlot cattle rations should be based on cost of gain and availability of feeds.