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"Stocker Cents" article

Common Corn Questions and Answers

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With record corn acreage likely being planted across the U.S. this year, corn prices and corn supplies are a hot topic this year. Elevated feed prices and tight hay supplies reaffirm that nutritional programs should be carefully planned this year to ensure cost-effective calf performance. While many stocker operations focus on forage-based nutritional programs, commodity feedstuffs are often used in receiving diets and for supplemental feeding programs. Cost of gain is influenced by feed prices trends and yet remains essential to profitability in stocker operations. Many stocker operators and cow-calf producers raise similar questions regarding corn and other feed ingredients in beef cattle diets. Answers to two of these questions are addressed in this article.

"How concerned should I be about aflatoxin levels in corn and corn by-products for beef cattle diets?"
Aflatoxin is a naturally occurring mycotoxin that is produced from two species of *Aspergillus* mold (*flavus* and *parasiticus*). When grains are grown under stressful conditions such as high temperatures and drought the presence of *A. flavus* is common and widespread. Favorable conditions for growth of *Aspergillus* in the field are high temperatures (80-100 °F) and high relative humidity (85%), conditions common in Mississippi.

Corn with aflatoxin contamination can be used for ethanol production. By-products and co-products from the dry-milling ethanol distilling process will be contaminated with aflatoxin if the corn used for this process is contaminated. Funneling aflatoxin contaminated corn into ethanol plants that produce co-products intended for livestock feed, such as dried distillers grains, is not a good option if the co-products are intended to be marketed for livestock feeding purposes. **Aflatoxins do not accumulate in the ethanol but will be concentrated in the distiller's grains co-product.** In wet-milling processing to produce sweeteners, aflatoxins concentrate in the gluten co-products such as corn gluten feed. **A rough estimate is that aflatoxin levels in these co-products will be three to four times those in whole corn.** Therefore, processors may not accept corn with aflatoxin if their co-product markets are sensitive to aflatoxin levels, such as dairy feed.

The Food and Drug Administration of the United States (FDA) has established action levels in parts per billion (ppb) of aflatoxin present in animal feed to protect human and animal health, Table 1 (USDA, GIPSA, FGIS Aflatoxin Handbook, 2006). This FDA action level of 20 ppb for aflatoxins in corn in interstate commerce is the level at which federal agencies may take action, including seizure of the corn or prohibition of its sale. Elevators do not accept corn with 20 ppb or more of aflatoxin unless they have a known alternative use. The present standard of practice for corn purchasing for ethanol plants

in some states is a maximum 10 ppb aflatoxin to ensure safe levels for dairy and immature animals.

Table 1. FDA Aflatoxin Action Levels in Animal Feed

20 ppb	For corn and other grains intended for immature animals (including immature poultry) and for dairy animals, or when its destination is not known;
20 ppb	For animal feeds, other than corn or cottonseed meal;
100 ppb	For corn and other grains intended for breeding beef cattle, breeding swine, or mature poultry;
200 ppb	For corn and other grains intended for finishing swine of 100 pounds or greater;
300 ppb	For corn and other grains intended for finishing (i.e., feedlot) beef cattle and for cottonseed meal intended for beef cattle, swine or poultry.

Aflatoxin-contaminated grain may be used locally for animal feed, under the guidelines shown in Table 1. Livestock producers may be willing to purchase contaminated corn if it is below 200 to 300 ppb. There will probably be a discount to the price received for the corn, but there may not be other viable options for marketing the corn. Producers should always obtain a good estimate of the aflatoxin level in a feed of concern so that informed feeding decisions can be made.

“When corn is expensive, what feeds can I substitute to maintain calf performance?”

Corn is generally considered the “gold standard” energy supplement for beef cattle diets. It typically analyzes approximately 90% total digestible nutrients on a dry matter basis. The crude protein content of corn may average 9% in this region; however, nutrient content can vary from one feed source or supply to the next. A nutrient analysis of the feed in question is needed to determine actual nutrient values for more precise mixed feed formulation.

By-product feedstuffs that can serve as “energy feeds’ to replace corn include soybean hulls, wheat middlings, hominy feed, rice bran, and citrus pulp. Whole cottonseed, corn gluten feed, and dried distillers grains are high protein feeds that also provide high energy levels. There are advantages and disadvantages to corn and each of these alternative feedstuffs. Feed comparisons should consider price per unit of total digestible nutrients and crude protein supplied by the feedstuff, moisture content of the feed, storage and handling considerations, and feeding limitations.

As a high starch feedstuff, corn feeding can be associated with acidosis and founder if not managed properly in a nutritional program. Many of the feed substitutes for corn have similar or other feeding limitations. High fat levels in whole cottonseed and rice bran, for example, limit the practical feeding levels for these two feedstuffs. Effective fiber levels in the entire diet and desired cattle performance levels are other factors that

will influence choice and combinations of feedstuffs use in stocker cattle nutritional programs.

The Mississippi Commodity Feed Source Directory is an online listing of feed manufacturers, brokers, and dealers available at *msucares.com/livestock/beef/feedsources.html* that can be a useful resource for stocker operators. Links to current feed price information is available on this website as well. For more information on stocker cattle production, contact your local Extension office.