

## Feedstuff Considerations for Feeding Bulls <sup>1</sup>

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### Introduction

Choosing from the array of feedstuffs available for feeding and developing bulls can be challenging for many beef cattle producers. The feed industry, popular press, and other cattlemen often offer conflicting advice about feedstuffs or their ingredients. Questions arise about the utilization of specific feeds, anti-quality components of some feeds, and the mineral program that is best. In the final analysis, however, there is no single perfect feedstuff for feeding bulls and all feedstuff can have a place in a well-balanced diet.

#### ***"What are good feeds to develop, and manage bulls?"***

Feedstuff selection for feeding bulls should be based upon the necessity of meeting the nutrient requirements of the growing bull and the unit/price of the important nutrients (energy, protein, minerals). For growing bulls, energy limits growth, thus feedstuffs that contain adequate energy concentrations to support the desired level of growth should be considered. In most cases, energy-dense feedstuffs will be some type of cereal grain or co-products (corn, oats, corn gluten feed, dried distillers grains). Fiber-based energy supplying

co-products are also acceptable feed choices (soybean hulls, citrus pulp, wheat middlings). Cattle have been reported to over-consume soybean hulls in self-feeding scenarios, potentially leading to bloat problems and possible death. Self-feeding of any feedstuff without proper management practices in place or knowledge of feed intake patterns should be avoided.

Protein feeds can consist of any of the oilseed meals or selected co-products (soybean meal, cottonseed meal or dried distillers grains, corn gluten feed). The usage of urea in formulated diets or pre-formulated protein supplements may provide an economical source of nitrogen if the diet contains adequate energy. Similarly, the need for roughage in the diet may necessitate the use of medium to good quality forages to support the desired growth level. Feed costs can be lessened by the digestible protein in good quality forages, which can help offset the need for high inclusion levels of costly protein concentrates.

A variety of roughage sources are acceptable as ingredients for bull rations. The selection of any particular roughage option will depend upon the age, bodyweight, and growth requirements of the bull. Common roughage sources include bermudagrass and

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bahiagrass hay. The selection of hay should be based on the performance goals for the bull with the objective of meeting the nutrient requirements. Silage from either corn or sorghum is also a great roughage source for feeding bulls. Silage is particularly useful during the development phase and can be used during the transition phase. Obviously, pasture is a primary choice for roughage in a bull diet. When pasture is utilized a number of issues need to be considered, including adequate pasture forage availability, intake, and quality to meet the feeding goals. An often overlooked consideration in allocating pasture for bulls is the difference in forage intake compared to cows. In some cases, bulls can be 1.5-2.0 times as large as cows. Additionally, developing or reconditioning bulls results in the need for better quality pasture, so bulls may need to be stocked at 1.5 to 3.0 times the land area of a cow. Winter pasture would be a particularly good choice as a forage source in bull rations. Winter pasture is generally high in both crude protein and TDN which can go a long way towards meeting the nutrient requirements for growing and maintenance bulls.

***"What about whole cottonseed and the gossypol issue?"***

Whole cottonseed (WCS) may be the one feed resource that needs to be utilized with a measure of caution for feeding bulls, particularly growing bulls. Velasquez-Pereira et al. (1998) determined that feeding 31 mg of free gossypol/ lb of bodyweight/ day (6 to 14 lbs of WCS) to growing bulls from 6 to 16 months of age resulted in increased sperm abnormalities, decreased sperm production, and adversely affected measured aspects of bull sexual behavior. The use of WCS for young bulls should be limited to 10% or less of the total diet (Boyles, 2008).

When feeding more mature bulls, the use of WCS may be an acceptable feedstuff for the majority of the year. An acceptable recommendation is that bulls are moved off of WCS at least 90 days prior to the initiation of the breeding season, which allows an opportunity for the sperm present in the testes to be turned over. The 90 day removal will allow adequate time for the gossypol to be metabolized and sperm production to occur without the potential negative influence of gossypol. In many production systems,

the cow herd is supplemented with WCS during the breeding season so bulls are exposed to WCS and the effects of gossypol. The level of exposure will be dictated by the level of WCS supplementation and potential level of gossypol consumed by the bulls.

***"What should the mineral program be – Organic or Inorganic?"***

The general answer is yes; both organic and inorganic supplements may be utilized effectively as mineral sources for bull development. Regardless of the choice to include organic sources, the use of a well-balanced mineral and vitamin supplement to meet the bull's requirements is the main management consideration. The uses of organic minerals that may result in the greatest benefit include zinc, selenium, and copper. Arthington et al. (1995) reported increased fertility measures for bulls offered organic zinc, however elevated concentrations of inorganic zinc were just as effective as the organic sources. The authors did indicate that the recommended level of 30 ppm in the diet (NRC, 1996) was likely too low to be of benefit. Selenium is also implicated in sperm viability, quality, and overall reproductive health.

The year-round use of organic minerals for bull production is not necessary. Similar to the overall conditioning period, the use of organic minerals should be limited to the development of yearling bulls and 60-90 days before initiation of the breeding season, which allows for the turnover of sperm that may have been affected by any transient mineral deficiencies. The use of organic mineral supplementation can be continued into the breeding season if the cow herd is also being supplemented with organic mineral sources and it is believed that the bull will consume the mineral. Outside of development, conditioning, or early breeding, the use of organic minerals is unwarranted. What is important is to provide the bulls the same mineral supplementation program that any productive member of the beef herd should have. Ignoring the bull's mineral needs the other 275 days of the year is not sound management and will likely lead to longevity problems for the bull.

## Conclusions

There is no single best feedstuff that will grow, develop, or maintain bulls. Bulls need the appropriate supply of energy, protein, vitamins, and minerals to meet the production goals sought by the producer. Work with a nutritionist if you have questions about the nutrient requirements of your bull. The key is to have a good forage management program. Adequate quantity and acceptable quality forage will go a long way to meet the nutritional requirements of herd bulls. Critical evaluation of all nutritional supplements should be based on the amount of nutrients supplied, the cost to supply the nutrients, and the acceptability of the supplement for the total nutritional program.

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