



Beef Tips

May 2008

Department of Animal Sciences & Industry

www.asi.ksu.edu/beeftips

Upcoming Events

International Symposium on Beef Cattle Welfare

May 28 - 30, 2008
Manhattan, KS

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Beef Improvement Federation

June 30-July 3, 2008
Calgary, Alberta, CA

www.beefimprovement.org/

K-State Beef Conference

Aug. 7 - 8, 2008
Manhattan, KS

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High Phosphorous costs discourage over feeding

Justin W. Waggoner, beef systems specialist

Feed and grazing costs have been the primary input costs at the forefront of many cattle producers' minds over the past year. However, we can now add mineral supplementation costs to the list of inputs that have increased in price. Cattle mineral costs increased considerably this spring, primarily due to higher phosphorous prices. Global phosphate prices have risen and will likely continue to increase due to greater demand for phosphate in crop fertilizers and higher phosphate production costs.

Mineral supplementation is an important component of cattle nutrition that should not be ignored. Phosphorous, a macromineral required by cattle, is one of the most abundant minerals in the body. Phosphorous is involved in numerous metabolic pathways, and is a required component for cell growth and energy utilization. The phosphorous content of forages is relatively low compared to concentrates, such as corn. Therefore phosphorous is often deficient in cattle consuming forage-based diets and is often one of the first minerals of consideration in developing supplements for grazing cattle.

Historically, the one-size-fits-all approach to mineral supplementation practiced by many cattle producers, in which a common mineral supplement (12% Calcium, 12% Phosphorous) is fed year round in sufficient quantities to meet the mineral needs of cattle under average conditions has worked well. It can be a challenge to formulate the "perfect" mineral supplement because a number of factors, such as stage of production (pregnancy and lactation), diet, and water source influence cattle mineral requirements. Although, the one-size-fits-all approach to mineral

supplementation is simple in terms of management and labor it may also at times result in under or over-supplementation.

For example, consider a 1200 lb pregnant, dry cow, seven months since calving consuming 26 lbs native grass (dry basis) that contains 0.15% phosphorous, plus 2 ounces (57 grams) of a 12% phosphorous mineral supplement. In this scenario the forage provides 17.7 grams of phosphorous and the supplement contributes an additional 6.8 grams of phosphorous to the cow's diet. The total phosphorous consumption of this cow is 24.5 grams per day ($17.7 + 6.8 = 24.5$). The minimum daily phosphorous requirement of a 1200 pound cow seven months since calving is 13 grams per day. Therefore the 24.5 grams of phosphorous consumed exceeds the amount of phosphorous required at this stage of production by 11.5 grams and supplies 188% of the minimum daily phosphorous requirement.

Traditionally, over-supplementation of minerals has been ignored because minerals were relatively inexpensive. As mineral costs increase, over-supplementation can become costly. In addition, over-supplementation of minerals presents an environmental concern for livestock producers. Many confined feeding operations (dairy, pork and beef) have made efforts to more closely match dietary phosphorous with animal requirements to reduce the phosphorous content of manure. Phosphorous excretion in manure is an environmental concern because the inorganic sources of phosphorous often used in supplements are more water soluble than other sources of phosphorous.

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Comparison of placing calves in the feedlot vs. grazing native rangeland

Keith Harmony and John Jaeger, range and forage scientist and beef animal scientist

Extreme volatility and fluctuation has occurred in grain markets the last two seasons. With the current emphasis on renewable fuels, grain ethanol production has driven grain prices rapidly upwards, thus greatly increasing the cost of feed when finishing animals in a feedlot. Alternative feeds, such as distillers byproducts may be able to decrease the cost of feed for animals in the feedlot, but it has also been hypothesized that grazing animals on less costly forages, such as native rangeland or seeded forage crops, before placing in the feedlot would help to add value to animals being placed in the feedlot by increasing size and reducing the time on feed and need for grain for finishing.

Methods

In 2006 and 2007, 40 Angus and Angus cross steers in each of two treatments were either placed directly in the feedlot or placed on native shortgrass rangeland for summer grazing prior to being placed in the feedlot. Two replications of 20 steers were used for each treatment each year. Steers placed directly in the feedlot the first week of May were fed an ad libitum diet which consisted of finely rolled milo and ensiled forage sorghum. Steers on shortgrass rangeland dominated by blue grama, buffalograss, and western wheatgrass grazed at a stocking rate of 3.5 acres per steer for 150 days from the first week of May to the first week of October.

Steers were all fed to an endpoint of 0.40 inches of backfat, and slaughter weight, carcass weight, yield grade, quality grade, and ribeye area were recorded at the time of slaughter. Steers were weighed prior to grazing and feedlot placement in May, again when grazing animals were moved from rangeland to the feedlot, and at slaughter. Feedlot only animals were harvested in early or mid-November, while steers from the rangeland treatment were harvested in mid- to late March.

Total feed consumed in the feedlot, prices of products purchased at the first of the month, market values of products sold, and other measures of costs and returns were recorded and placed in budget worksheets created by KSU Ag Economists to determine returns over total costs.

Scenarios were also analyzed in which the price of market animals for treatments was equal, the price of grain for treatments was equal, and one in which the price of market animals and the price of grain was equal for both treatments.

Results and Discussion

Actual Values

Prices of grain product and of market animal product varied greatly between treatments and between years. Grain prices for the feedlot only treatment ranged from \$2.02 to 3.58 during the two years, while market animal prices were \$0.8604 in 2006 and \$0.9207 in 2007. Grain prices for the steers coming off rangeland varied from \$3.12 to 4.98, while market steer prices were \$0.9829 and \$0.9308 for 2006 and 2007 steers. Pasture rental rates remained at \$18.00 per acre for the rangeland treatment in both 2006 and 2007 and was included in the rangeland fixed costs.

Animals from the rangeland treatment were heavier at the time of slaughter in both years, and gained 280 and 159 pounds per head on grass prior to entering the feedlot in 2006 and 2007 respectively (Table 1). Carcass weights were also greater for the rangeland treatment, by 68 pounds and 94 pounds in 2006 and 2007 respectively. Days on feed was less for the rangeland treatment group, but grain intake during finishing for each group was similar at 70.5 and 70.9 bushels per head for the feedlot only and rangeland groups, respectively. No other animal characteristics were statistically different between the two treatments. Using actual values, budgets showed that steers in the feedlot only treatment lost \$12.10 per head averaged over both years, while steers grazing rangeland before entering the feedlot lost \$25.74 per head more than the feedlot only treatment when averaged over both years.

Simulated Values

In simulated budgets, market prices of steers and/or grain were used from the feedlot treatment and applied to the rangeland treatment. When budgets were analyzed using the same market price for both treatments of animals, animals from the grazing treatment lost nearly \$110.00 per head

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more than the feedlot only group (Table 2). When budgets were analyzed using the same average grain prices, animals from the grazing treatment returned just over \$42.00 per head, or \$12.08 per acre, more than the feedlot only treatment when averaged over both years. When using the same market animal and feed grain price for both groups, the rangeland only treatment lost \$42.00 per head more than the feedlot treatment averaged over both years.

Conclusion

Market volatility and sharply increasing grain price has made retaining ownership of calves rather unpredictable. Under the market conditions of this study, grazing animals on rangeland was not beneficial as grain prices continued to increase while animals grazed, thus increasing feeding cost the later animals moved into the feedlot. Until grain prices stabilize and end their rapid increase, growing calves larger on grass will have little benefit. When grain and fat cattle prices both stabilize, cattle on grass still need to perform to potential to add to overall product value.

Table 1. Animal weights, performance and carcass characteristics

| Item | Feedlot | | Range | |
|--------------------------------|---------|------|-------|------|
| | 2006 | 2007 | 2006 | 2007 |
| Initial weight (lb) | 599 | 583 | 599 | 590 |
| Feedlot weight (lb) | 599 | 583 | 879 | 749 |
| Final weight (lb) | 1309 | 1176 | 1377 | 1270 |
| Carcass weight (lb) | 801 | 726 | 847 | 795 |
| ADG (lb/hd) | 3.65 | 3.41 | 3.11 | 3.50 |
| Grain intake (bu/hd) | 78.5 | 62.6 | 76.9 | 65.0 |
| Feed efficiency (fd/gn) | 6.91 | 7.19 | 9.21 | 8.55 |
| Yield grade | 2.54 | 2.63 | 2.72 | 2.94 |
| Marbling score | 5.20 | 4.65 | 5.29 | 5.55 |
| Ribeye area (in ²) | 13.7 | 12.3 | 13.3 | 12.2 |

Table 2. Animal costs and values for actual conditions and simulations

| Item | Feedlot | | Range | |
|--|---------|---------|---------|---------|
| | 2006 | 2007 | 2006 | 2007 |
| Initial cost (\$) | 739.15 | 726.61 | 737.92 | 735.33 |
| Feedlot cost (\$) | 739.15 | 726.61 | 990.15 | 879.55 |
| Feed cost (\$) | 227.07 | 274.97 | 300.42 | 329.75 |
| Fixed costs (\$) | 113.33 | 113.33 | 196.03 | 196.03 |
| Final value (\$) | 1125.84 | 1092.15 | 1350.01 | 1182.58 |
| Return over total costs after feedlot (\$) | 18.94 | -43.14 | 58.86 | -134.54 |
| Return over total costs after grass (\$) | 18.94 | -43.14 | 73.22 | -33.64 |
| <u>Same Fat Cattle Price</u> | | | | |
| Feed cost (\$) | 227.07 | 274.97 | 300.42 | 329.75 |
| Final value (\$) | 1125.84 | 1092.15 | 1181.76 | 1179.92 |
| Return over total costs after feedlot (\$) | 18.94 | -43.14 | -107.72 | -137.18 |
| <u>Same Milo Price</u> | | | | |
| Feed Cost (\$) | 227.07 | 274.97 | 213.75 | 284.79 |
| Final value (\$) | 1125.84 | 1092.15 | 1350.01 | 1182.58 |
| Return over total costs after feedlot (\$) | 18.94 | -43.14 | 148.46 | -88.07 |
| <u>Same Fat Cattle and Milo Price</u> | | | | |
| Feed Cost (\$) | 227.07 | 274.97 | 213.75 | 284.79 |
| Final value (\$) | 1125.84 | 1092.15 | 1181.76 | 1179.92 |
| Return over total costs after feedlot (\$) | 18.94 | -43.14 | -18.11 | -90.71 |

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Water-soluble phosphorous is more likely to be lost (leaching and runoff) when manure is applied to fields.

Due to the recent increases in phosphorous prices and likelihood that prices of other components of commercially available mineral mixes will increase, a more targeted approach to mineral supplementation that takes into account stage of production and dietary mineral content (determined by a feed test) may become more economical. Cattle producers may also want to consider buying mineral supplements in bulk or having a custom supplement blended, provided the operation is large enough to justify the purchase of larger quantities of mineral. Smaller producers may consider combining an order with a neighbor(s) to increase purchasing power.

BEEF CATTLE INSTITUTE AT K-STATE OFFERING SPECIAL SESSION ON CATTLE WELFARE THROUGH PROPER HANDLING

MANHATTAN -- As part of the International Beef Symposium on Beef Cattle Welfare, offered by the Beef Cattle Institute May 28-30 at Kansas State University, a pre-symposium session will be offered May 28 on cattle welfare through proper cattle handling.

Cattle handling is an important aspect to cattle production. Many producers continually strive to improve handling methods and facilities to decrease the stress of moving cattle in pastures or dry lots.

Dr. Tom Noffsinger, a veterinarian and an independent feedlot, facility design and stockmanship consultant, believes there are five freedoms that must be given to cattle on a daily basis. These are freedom from hunger and thirst, environmental stress, disease, anxiety and injury.

"As an industry we need a spirit of working together, knowing that every step in the production, marketing, transportation and handling episode affects the industry's ability to provide these five freedoms," said Noffsinger, who will lead the pre-symposium session. "This session will create an awareness that will allow the handler to understand the basic of

Eliminating or reducing mineral supplementation is not a viable option in response to increased cost. To do so would create deficiencies that can significantly impact cattle health, reproductive efficiency, and performance. Purchasing mineral in bulk quantities and structuring a mineral supplement program based on cattle requirements and dietary mineral content present cost effective strategies to reduce mineral supplementation costs without compromising cattle health, reproductive efficiency or performance.

For more information about mineral supplementation see "Questions and Answers on Beef Cattle Nutrition (<http://www.oznet.ksu.edu/library/lvstk2/c733.pdf>) or <http://beef.osu.edu/Neweconomics/ReTkgPho.s.doc>.

prey animals and the power of the handler to effectively communicate with cattle," Noffsinger said.

Also assisting with the session will be Lynn Locatelli, a veterinarian from Benkelman, Neb.; Clint Hoss, who works at a western Nebraska feedlot; and Curt Pate, a Montana rancher and stockman who is internationally recognized as a horse training clinician.

"Proper cattle handling has a powerful impact on the health and performance of our production animals," Locatelli said. "There is a tremendous amount of lost performance that occurs as a consequence of poor handling; it is time to prevent these losses. Proper cattle handling allows cattle to perform at their genetic potential."

Being proactive is the best way to handle the issues at hand, according to Ken Winter, owner-manager of Winter Feed Yard, Dodge City. "I think that seminars and help from people like Dr. Noffsinger and Dr. Locatelli help the industry to do a better job handling cattle.

"...a more targeted approach to mineral supplementation that takes into account stage of production and dietary mineral content may become more economical"

"If you treat cattle with low stress handling, they will do better in all aspects of production,"

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We all need to stay up-to-date on the handling issues," Winter said.

The pre-symposium session will include a presentation and live cattle demonstrations, which will show applications of low stress handling concepts as a dimension of management that enables caregivers to have positive effects on cattle health and performance.

The goal will be to encourage caregivers to understand more about cattle in order to apply handling concepts during calving, new cattle acclimation, processing, pen riding and sick cattle management.

Ed Gough of Lane County Feeders, who uses Noffsinger's cattle-handling methods, said that if stakeholders will approach Noffsinger's techniques with an open mind, they will learn that it is better for the cattle and the handler.

"He also knows from firsthand experience that if you do it right, it will help your bottom line. If you treat cattle with low stress handling, they will do better in all aspects of production," Gough said.

"You get good at Drs. Noffsinger and Locatelli's way of doing things; it is just as efficient and you can get the same amount of work done in the same amount of time," Gough said. "You will treat your cattle and yourself better."

Cow/calf, stocker and feedlot producers are welcome to attend the pre-symposium session and the symposium on the K-State campus. Registration information is available at <http://www.isbcw.beefcattleinstitute.org>

"We're proud to offer this event for our producers and practitioners in Kansas and surrounding states," said Dan Thomson, who leads K-State's Beef Cattle Institute. "We have ranchers from Hawaii and many other states already registered to attend."

"If you are a producer and want a quality learning experience to help your ranch or feedlot, this is the event for you," Thomson said. "We will be offering live demonstrations on how to move cattle on horseback or on foot. We also will have a working facility set up to better demonstrate the dos and don'ts of moving cattle through such facilities."

Statistical evaluation of BRD treatment with tulathromycin (Draxxin[®]) and tilmicosin (Micotil[®])

Researchers at Iowa State University recently reviewed previously published literature to evaluate the comparative efficacy of tulathromycin (Draxxin[®]) and tilmicosin (Micotil[®]) for use in resolving bovine respiratory disease in feedlot cattle. When data from 21 studies were evaluated comparing tilmicosin with tulathromycin, use of tulathromycin resulted in a 50% reduction in the risk of re-treatment for bovine respiratory disease compared with treatment with tilmicosin.

Reference: Wellman, N.G., A.M. O'Connor. Meta-analysis of treatment of cattle with bovine respiratory disease with tulathromycin. J. Vet. Pharmacol. Ther. 2007 Jun; 30(3):234-241.

For more information on research on antimicrobial therapy, contact Dr. Larry Hollis (lhollis@ksu.edu) or Dr. Brad White (bwhite@vet.ksu.edu).