



# Ridin' Herd

► by Rick Rasby, Extension beef specialist, University of Nebraska

## Summer mineral considerations

*Feed costs are the major costs in producing a weaned calf. The beef cattle industry has recently experienced its greatest profits per cow in history. However, in the last two to three years those returns have been reduced by 60% to 70%, even though five-weight weaned calves in the fall have sold in the \$125-per-hundredweight (cwt.) range. Feed costs, labor costs, fuel costs and machinery costs have contributed to the increase in cow costs. Mineral costs, especially phosphorus (P) costs, are expected to increase substantially this year. Mineral costs are not a major cost compared to other costs such as harvested feed costs, but as producers strive to remain competitive in a climate where costs continue to increase, they will need to push the pencil on every management decision.*

### Salt

The one mineral that should always be supplied to cows free-choice is salt. Range cows will consume 0.05 pounds (lb.) to 0.1 lb. per cow per day. At these rates, a cow will consume 20 lb. to 30 lb. of salt per year. Some would say that salt is the

only nutrient cows have the nutritional wisdom to consume at a level to meet their requirements.

### Magnesium

Magnesium oxide (MgO) is the most common form of supplemental magnesium (Mg) used to prevent grass tetany. If your cattle graze pastures where they have experienced grass tetany, magnesium oxide supplementation is necessary.

Magnesium oxide is not very palatable and has been characterized as having a bitter taste. Livestock are often unwilling to consume it at recommended levels, making free-choice supplementation of magnesium oxide to grazing cattle sometimes a challenge. Feed companies have remedied some of the intake concerns by adding intake stimulants to get consumption to levels necessary to combat grass tetany. Grass tetany mineral can be expensive, so getting intake to the recommended levels is important.

Grass tetany occurs in cattle most frequently in the early spring. Grass tetany, also termed hypomagnesemia, simply means a deficiency in magnesium. Prolonged magnesium deficiency results in excessive urination and erratic and nervous behavior (also called grass staggers). Grass tetany results from the consumption of lush forage, which has low levels of magnesium. The apparent depression in magnesium levels results from the high water content of rapidly growing plants. If left untreated, death can occur within several hours.

In northern regions where producers feed more harvested forages, winter tetany

can occur. Many grass hays and cereal grain hays can be low in magnesium (<0.15%) and high in potassium (K). When magnesium levels in hay fall below 0.12%, cattle may become vulnerable to magnesium deficiency. In addition, if calcium (Ca) levels are low and potassium levels are high in these feed sources, winter tetany can result.

Drought conditions often result in increased use of hays and crop-residue alternatives. Drought-stressed forages typically are higher in potassium, which also contributes to the condition. Feeding a mineral supplement high in magnesium should prevent problems associated with grass or winter tetany.

Finally, forages prone to causing grass tetany are deficient in magnesium and sodium (Na) and have an excess of potassium. Sodium is involved in transporting magnesium into cells, so it is critical to maintain adequate sodium (sodium can be supplied from salt) to facilitate proper magnesium utilization. Excess potassium consumption interferes with magnesium absorption from the gut, thus further exacerbating the condition of low dietary magnesium. In areas where grass tetany is prevalent, it is critical to consider dietary magnesium intake but also dietary levels of sodium and potassium.

### Mineral programs

After salt and supplementation of magnesium oxide in grass tetany areas, mineral supplementation programs can vary. Soil's mineral profiles affect the mineral profile in forage and, therefore, affect the minerals that need to be supplemented. Also, forage maturity affects mineral composition. The 1996 *Nutrient Requirements of Beef Cattle* published by the National Research Council (often called the NRC guidelines) suggests there are at least 17 minerals required by beef cattle. There are minerals that interact with one another and, therefore, affect their utilization, and these need to be factored into a supplementation strategy.

Phosphorus is a required mineral by beef cattle and is one of the most expensive minerals in a mineral supplement. So how much phosphorus supplementation is needed for cows grazing pasture this



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summer? Phosphorus needs for beef cows are affected by milk production and forage type. High-milk females require more compared with average- to low-milk females.

The 1996 NRC guidelines indicate that phosphorus needs average about 22 grams (g) per day for the first six months postcalving, with a range from 25 g per day to 18 g per day for a 1,200-lb. female whose peak milk production is 18 lb. per day. If, on a dry-matter (DM) basis, she consumes 2.5% of her body weight during June grazing, 2.3% in August and 2.1% in October; and if summer range is 0.17%, 0.16% and 0.15% phosphorus in June, August and October, how much phosphorus is needed from the mineral supplement?

In June, she's getting 23 g per day from the forage, so if she eats 2 ounces (oz.) of a 6% phosphorus mineral supplement it would supply another 3.4 g [pounds

supplement (2 oz. ÷ 16 oz. = 0.125 lb.) × 454 (grams per pound conversion) × 0.06 phosphorus (6%) = 3.4 g] of phosphorus, which meets her phosphorus requirement.

In August let's assume that the average dam is five months postcalving and she needs 19 g to 20 g per day phosphorus. Calculations based on intake and phosphorus content of the forage indicate she is getting 20 g per day from the forage (1,200-lb. cow × 0.023 × 0.0016 × 454 g per lb. = 20 g per day).

In October, milk production has declined substantially, and warm-season range quality is also declining. The cow needs 17 g to 18 g of phosphorus per day. If she is consuming 2.1% of her body weight and the forage is 0.15% phosphorus, she is getting 17 g per day from the forage.

#### **Final thought**

Minerals are important for beef cows.

Overfeeding them is not economical. Phosphorus is an expensive component of a mineral program. In my example, supplementation of phosphorus through the breeding season for cows grazing warm-season pasture in Nebraska seems needed. After that, it is hard to pencil in. Contact your state beef specialist to see if they have mineral profiles of common grasses in pastures in your state and then do the calculations.



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**Editor's Note:** "Ridin' Herd" is a monthly column written by Rick Rasby, professor of animal science at the University of Nebraska. The column focuses on beef nutrition and its effects on performance and profitability.