



Vet Call

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Cow herd mineral supplementation

Beef cattle require a number of dietary minerals for normal health, growth and reproduction. Minerals that are required in relatively large amounts are called major, or macro, minerals. The major minerals that commonly need supplementation in beef cattle diets are sodium (Na, salt), calcium (Ca) and phosphorus (P). Magnesium (Mg) and potassium (K) are major minerals that require supplementation under certain circumstances.

Minerals for a beef diet

Mineral needs will vary in different parts of the country and even within a small geographic area based on the mineral content of the soil and types of plants in the pasture. In addition, mineral needs (particularly calcium and phosphorus) will increase greatly during lactation and somewhat in late gestation.

The mineral needed in the greatest amount in beef diets is salt (sodium chloride (NaCl)). Because salt is deficient in most natural feeds, it should be supplemented in all situations. The level of salt needed can vary depending on the diet, type of cattle and environmental conditions, but a general rule is to supply 1 to 2 ounces (oz.) per day.

Calcium and phosphorus are often considered together. Grass decreases in calcium content somewhat as forage matures and becomes dormant, but it often maintains levels that usually supply dietary needs throughout the year. Phosphorus, however, is leached out of dormant forage, so that by mid-winter levels are lower than while forages are growing. Grains and many byproduct feeds such as wheat millings, soybean products, distillers' grains, and corn gluten feed used to supplement cows on dormant forage have high phosphorus content that will likely provide sufficient levels in the diet.

In the south central and southeastern parts of the United States (Texas and Oklahoma, the Gulf coast states, and the southern half of the Atlantic coast states), phosphorus deficiency is a common problem, and supplementation should be a priority. In many other parts of the country, phosphorus deficiencies are seldom identified and phosphorus supplementation is not needed or can be strategically planned for a period of high demand (late gestation and early lactation).

Deficiency of magnesium (Mg) is identified as a condition known as grass

tetany. Observed most frequently in the early spring, grass tetany results from the consumption of lush forage, which has low levels of magnesium and sodium and has an excess of potassium.

In addition to plant factors, grass tetany is associated with late pregnancy and early lactation due to the movement of calcium, phosphorus and magnesium out of blood circulation and into the udder for milk production. During periods when grass tetany is a danger, a mineral mix with at least 18% magnesium needs to be offered. Because cattle do not like the taste of magnesium oxide, dry molasses or another flavor enhancer should be added to the mineral mix.

Trace minerals

Minerals needed in small amounts are called trace minerals, and in most situations requirements are met with grazed forages or supplemental feedstuff. But deficiencies or imbalances of trace minerals can occur. There are six trace minerals that may be deficient in forage-based diets: copper (Cu), cobalt (Co), iodine (I), selenium (Se), zinc (Zn) and manganese (Mn).

Even though trace minerals are needed in small amounts, cattle grazing on some soil types may be consuming plants that are either deficient in some important trace minerals or have excessive amounts of minerals that will tie up or prevent the proper utilization of other minerals. For example, other minerals, nitrate, sulfate, protein and plant estrogens are known to reduce copper utilization.

The first priority in trace mineral nutrition is to reduce the intake of antagonists in order to minimize the amount of supplemental mineral required. This may be accomplished by changing water sources, rotating pastures so animals are not on pastures with high levels of antagonists for long periods of time, or changing harvested forage sources.

Commercial mineral supplements are

widely available and will meet the needs of most classes of cattle. The amount of each mineral provided by commercial products must be printed on the label. In some situations (due to concentrated feeds used and soil type), no commercial supplement is available to perfectly meet a herd's mineral needs. In these situations, custom mixes can be created. In this circumstance, the supplier of the supplement will work with the producer to provide the proper level of minerals based on analysis of the animal's diet.

Salt and other minerals can be delivered to cattle in several forms. If possible, minerals can be mixed into hand-fed protein or energy supplements so that all cattle are more likely to receive their allotted amount. But, if no supplement is being fed or if it is difficult or impossible to add minerals to the supplement, salt/mineral can be offered free-choice in a loose granular form or as a block or tub (or other solid or semi-solid form).

All free-choice methods of mineral delivery will likely result in some cattle consuming far more and others far less than the desired amount. It has been reported that supplying salt/mineral in a loose form results in the highest intake, but because of loss to wind and weather or because of other convenience factors, a solid or semi-solid form may be more appropriate in some situations. Many commercial protein supplements — whether in a pellet, cake, tub or liquid form — have salt and other minerals added, so additional mineral supplementation is not needed.

Because cows do not have the nutritional wisdom to consume the proper amount of free-choice mineral supplement to meet their dietary requirement or avoid toxicity, it is important to monitor mineral intake. Determining the amount of mineral consumed over several days is necessary in order to know the herd's average consumption. If consumption is too low, feed intake enhancers such as dry molasses, wheat mids, cottonseed meal or flavoring may be added. If consumption is too high, salt may be used to limit intake to desired levels.

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