



Vet Call

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Table 1: Composition of several common mineral sources

Mineral source	Ca%	P%
Dicalcium phosphate	24	18
Monocalcium phosphate	18	21
Calcium carbonate (limestone)	38	0
Trace mineralized salt	0	0

Magnesium (Mg) — Magnesium deficiency causes 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 should be offered. Because cattle do not like the taste of magnesium oxide, a flavor enhancer, such as dry molasses, should be added to the mineral mix.

Potassium (K) — Forages, especially green forages, provide high amounts of potassium while grains characteristically have low levels. This explains why supplemental potassium has been shown to be beneficial in high-concentrate rations.

Occasionally, feeding badly weathered hay causes potassium deficiency because potassium is leached out when the hay is exposed to the weather prior to or after harvest. In some cases, cows grazing winter forage and stressed, weaned calves have shown positive responses to supplemental potassium.

Meeting macromineral needs

Commercial mineral supplements will meet the needs of most classes of cattle on most operations. In some instances, a custom-mixed mineral supplement should be used to meet the needs of specific ranches.

Minerals can be delivered to cattle either by mixing the minerals into a complete ration or a grain supplement, or by offering the mineral mixture free choice. By mixing minerals into the supplement or complete ration, all the cattle are likely to receive the proper levels of minerals. Self-feeding minerals is satisfactory (and often the only practical method); however, some animals will overconsume a self-fed mineral supplement, while others will eat less than they need.

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Macromineral supplementation for beef cattle

Beef cattle require a number of dietary minerals for normal maintenance, growth and reproduction. Minerals that are required in relatively large amounts are called major or macroelements. The major minerals that commonly need to be provided as supplements in beef cattle diets are sodium, calcium and phosphorus. Magnesium and potassium are major minerals that may need to be provided under certain circumstances. Cattle will require different levels of these minerals based on age, size, sex, stage of production and level of performance.

Mineral profiles

Many common feedstuffs included in beef cattle diets can contribute to a significant portion of the animal's mineral requirements. In general, forages are good sources of calcium, while grains and animal products are fair to good sources of phosphorus.

Mineral profiles of byproduct feeds may be quite different from conventional feedstuffs. Many of the byproduct feeds are high in phosphorus and fairly low in calcium. They may be fairly high in some trace minerals.

Salt — The mineral needed in the greatest amount in beef rations is salt (sodium chloride). Because salt is deficient in most natural feeds, it should be supplemented in all situations. The level of salt needed in the diet can vary depending on the diet, type of cattle and environmental

conditions, but a general rule is to supply 1-2 ounces (oz.) per day. Cattle deficient in salt often eat dirt, manure and urine in an attempt to satisfy their appetites for salt.

Calcium (Ca) and phosphorus (P) — Calcium and phosphorus metabolism are interrelated and often considered together. The calcium content of grass decreases somewhat as the forage matures and becomes dormant, but it often maintains levels that supply dietary needs throughout the year. Phosphorus, however, is leached out. By midwinter, levels are lower than while forages were growing.

In the south central and southeastern parts of the United States (Texas, Oklahoma, the Gulf-Coast states and the southern half

of the Atlantic-Coast states), phosphorous deficiency is a common problem, and supplementation should be a priority. In many other parts of the country, phosphorous deficiencies are seldom identified, and phosphorous supplementation is not needed or can be strategically planned for periods of high demand (late gestation and early lactation).

High levels of phosphorus in the diet in relation to calcium levels can result in a condition known as waterbelly. Waterbelly occurs when small mineral stones, known as urinary calculi, form in the kidneys. These calculi can block normal urination and cause death (particularly in males) when left untreated.

Critical times to ensure that diets contain adequate calcium are during pregnancy (for proper bone growth of the fetus) and during lactation. Excessive mobilization of calcium from the skeletal system to the udder of high-lactating beef and dairy cows can lead to milk fever. Symptoms include muscle stiffness and tremors, extreme weakness, and loss of consciousness.

Calcium requirements change with an animal's age and production status. Nonlactating, pregnant cows require calcium at a level of 0.18% of total dry matter (TDM) intake, while the requirement of lactating cows is 0.27% of TDM intake. Growing and finishing cattle require 0.31% calcium for optimal growth.

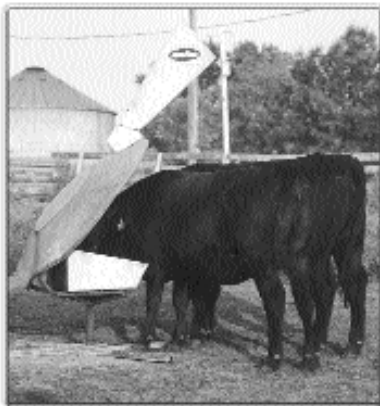


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