

## Mineral Fundamentals In The Beef Herd

Beef cattle get a portion of minerals from the forages they consume. However, even with the highest-quality forages, cattle usually require additional mineral supplementation during all times of the year.

Minerals required by cattle are often classified as macro-minerals (required in relatively large amounts and presented as percentages) and trace or micro-minerals which are required in smaller amounts and typically presented as parts per million (ppm). From a practical stand-point, minerals can be divided into a different two groups: those that must be provided in supplemental form and those that are supplied in normal feedstuffs.

Mineral problems in Tennessee beef cattle are most commonly associated with magnesium, potassium (excess interferes with magnesium), copper, sulfur (excess antagonistic to copper and selenium), selenium, phosphorus and calcium.

Sodium and chlorine (salt) are major components in body fluid that control body functions, but rarely cause problems because herd minerals always include sodium chloride.

Calcium is the most abundant mineral in the animal's body and functions as a structural component of bones and teeth.

Phosphorus is usually found in conjunction with calcium in bones and teeth. It is also found in many of the soft body tissues. Phosphorus is essential for normal reproduction in the animal. The ratio of calcium-to-phosphorus in a mineral should not exceed 2:1 unless animals are consuming large quantities of grain.

Copper is for efficient reproduction in cows and to insure immune function young and growing calves. A rough, lifeless hair coat is a typical, observable sign of copper deficiency.

Selenium is a component in muscle tissue and the immune system and is implicated in situations where cows do not shed the afterbirth following calving.

Magnesium is used in enzymes and transmission of nerve impulses. Deficiencies may result in grass tetany. Producers need to switch to a high-magnesium mineral at least 60 days before the beginning of the calving season to help prevent grass tetany.

Recommended minimum levels on mineral feed tags for Beef Cattle<sup>1</sup>

Element	Level
Calcium	10-24%
Phosphorus	5-12%
Magnesium	2%
Magnesium <sup>2</sup>	10-16%
Sulfur <sup>3</sup>	1%
Manganese	2000 ppm
Copper	1750 ppm
Zinc	3000 ppm
Cobalt	20 ppm
Iodine <sup>4</sup>	50 ppm
Selenium <sup>4</sup>	50 ppm

<sup>1</sup>Calculations based on 2 to 4 ounce mineral consumption.

<sup>2</sup>Increase magnesium during periods when cattle are susceptible to grass tetany (see text).

<sup>3</sup>Sulfur is most commonly in excess in Tennessee, and is not required in the supplement.

<sup>4</sup>Food and Drug Administration has legal limitations on the amount of selenium and iodine that may be legally incorporated into mineral supplements.

Additional information on beef cattle nutrition can be obtained by contacting your local Agricultural Extension Service office or from the Extension Animal Science - Beef home page: <http://www.agriculture.utk.edu/ansci/beef/beef.htm>.

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