

Minerals for the stocker operation

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Beef producers have long heard the importance of trace minerals, and cow-calf producers are often the main segment of the beef industry to take advantage of supplemental trace mineral programs. The importance of a good mineral program for its influence on cow fertility and herd productivity have been known for years, but many producers forget that minerals are just as important for in calf, particularly in their growth and immune response.

Bovine respiratory disease (BRD) is well established as the major source of lost income in the post weaning segment of the beef industry. Producers lose money not only due to death loss, but also due to reduced performance and treatment costs of sick cattle. The immune system of newly received calves is often extremely susceptible, due to both stress from weaning and transportation, and exposure to new diseases during that weaning and transportation process. It has been well established that both of these interact with nutrition, both previous and current.

At least 17 different mineral elements are required for cattle in their diets. These minerals are classified as either macrominerals (major minerals) or microminerals (trace minerals), based on the quantities required in beef cattle diets. Macrominerals are simply required in larger quantities (grams per day) than microminerals (milligrams or micrograms per day). Macrominerals required by beef cattle include calcium, magnesium, phosphorus, potassium, sodium, chlorine, and sulfur. Required microminerals include chromium, cobalt, copper, iodine, iron, manganese, molybdenum, nickel, selenium, and zinc.

The receiving phase offers unique nutritional challenges as compared to other phases of a calf's life. Proper nutritional management during this phase is critical to ensuring success and profitability. These calves are often stressed upon arrival, and will likely have low feed and water intake for several days after arrival. This is important when considering mineral consumption during the receiving period. Table 1 gives an example of how mineral concentrations should be higher when accounting for lower intake of stressed calves during the receiving period.

Minerals can come in a variety of forms for the stocker operation. They may be fed as loose mineral, as part of a complete diet, or separately in a tub form. Deciding which form of mineral to select is highly dependent upon the type of cattle and the operation's needs. Minerals content of forages can vary widely as well depending upon forage quality, soil, location, and time of year.

In addition to the form of mineral provided, it is also important to consider the source of the actual mineral. For example, iron in a packaged mineral supplement may be in the form of iron sulfate, iron carbonate or iron oxide. While all of these sources contain some iron, it is not all available to the animal. Bioavailability rank of these iron sources from most to least available is sulfate, carbonate, and then oxide form. Iron oxide or rust has very little nutritional value. It is very important to read your mineral tag carefully to be sure that the source of mineral provided is available to your cattle.

Finally, a good mineral program is only valuable if your cattle will eat the mineral. Proper management of mineral feeders is key. It is important to monitor intake of mineral to ensure cattle are consuming the recommended amount. It is also extremely important that the mineral supply, particularly for cattle on pasture, does not run out. If supplies run out, cattle are likely to over-consume minerals.

Perhaps the most important take home message from the article is don't forget or skimp on your mineral program. A good mineral program is vital for healthy calves that grow and perform!

For more information about beef cattle production, contact an office of the Mississippi State University Extension Service, and visit msucares.com/livestock/beef.

References:

Galyean, M. L., L. J. Perino, and G. C. Duff. 1999. Interaction of cattle health/immunity and nutrition. *J. Anim. Sci.* 77:1120–1134.

Table 1. Mineral requirements for growing cattle as compared to stressed calves.

	Growing and Finishing Cattle	Stressed Calves
Calcium, %	0.31	0.6-0.8
Magnesium, %	0.10	0.2-0.3
Phosphorus, %	0.21	0.4-0.5
Potassium, %	0.60	1.2-1.4
Sodium, %	0.06-0.08	0.2-0.3
Cobalt, ppm	0.10	0.1-0.2
Copper, ppm	10	10-15
Iodine, ppm	0.50	0.3-0.6
Iron, ppm	100-200	50
Selenium, ppm	0.10	0.10-0.20
Zinc, ppm	75-100	30

¹ Source: NRC, 2000. Adapted from NRC Nutrient Requirements of Beef Cattle, 7th revised edition.