



MINERAL SUPPLEMENTATION FOR GRAZING CATTLE

Major portions of the following information are quoted from "Minerals In Animal And Human Nutrition," 1992 by L.R. McDowell.

For grazing cattle, to which concentrate feeds cannot be economically fed, it is often necessary to rely on self-feeding of mineral supplements. Research from warm climate regions suggest that Co, Cu, I, Se and Zn are generally the most important trace minerals to supplement grazing cattle. Often Cu, Zn and Se are provided in insufficient quantities for free-choice mineral mixtures. It is best to formulate free-choice mixtures on the basis of analyses or other available data. However, when no information on mineral status is known, a free-choice complete mineral supplement is warranted. Supplemental minerals are most critical during the wet season when cattle are gaining weight rapidly and energy and protein supplies are adequate. But free-choice mineral supplementation should be supplied year around for greatest economical benefit to producer. Economical return on mineral supplementation is high.

In relation to feeding minerals, a number of "authorities" feel there is no justification for the use of "shotgun" (complete) free-choice mineral mixtures which are designed to cover a wide range of environments and feeding regimens and which contain a margin of safety as an insurance against deficiency. The "authorities" feel that "shotgun" mixtures are economically wasteful and also can be harmful. The present authors are in disagreement with this viewpoint in relation to "shotgun" mixtures for cattle. There is little danger of toxicity or excessive cost in relation to the high probability of increased production rates for cattle from administering a complete "shotgun" free-choice mineral mixture following the guidelines in Table 1. Copper and Se added at recommended levels would be the minerals of most concern for toxicity. However, cattle, contrary to sheep, are much less sensitive to Cu toxicity, and inorganic forms of Se (i.e. sodium selenite) are not well utilized by livestock when administered in excess of the requirements. In conclusion, it is best to formulate free-choice mixtures on the basis of analyses or other available data.

However, when no information on mineral status is known for a given region, a free-choice complete "shotgun" mineral supplement is definitely warranted, following the recommendations given in Table 1.

TABLE 1
Characteristics Of A "Good"
Free-Choice Cattle Mineral Supplement

An acceptable complete cattle mineral supplement should be as follows:

1. Final mixture containing a minimum of 6 to 8 percent total P. In areas where forages are consistently lower than 0.20 percent, mineral supplements in the 8 to 10 percent P range are preferred.
2. Calcium-phosphorus ratio, not substantially over 2:1.
3. Provide a significant proportion (i.e. about 50 percent) of the trace mineral requirements of Co, Cu, I, Mn, Se and Zn. In known trace mineral deficient regions, 100 percent of specific trace minerals should be provided.
4. Composed of high quality mineral salts that provide the best biologically available forms of each mineral element. Avoidance or minimal inclusion of mineral salts containing toxic elements (i.e., phosphates containing high F concentrations).
5. Formulated to be sufficiently palatable to allow adequate consumption in relation to requirements. (Reference Vigortone Timely Topic No. 1033 — Free-Choice Mineral Intake Of Grazing Cattle.)
6. Backed by a reputable manufacturer with quality control guarantees as to accuracy of mineral supplement label.
7. An acceptable particle size which will allow adequate mixing without smaller size particles settling out.
8. Formulated for the area involved, the level of animal productivity, the environment (temperature, humidity, etc.) in which it will be fed and is as economical as possible in providing the mineral elements used.

(continued)

Reproductive Disorders Due to Abnormal Mineral Intake

Mineral Abnormality	Signs
Calcium (Ca) Deficiency	Delayed uterine involution Small corpora lutea Cystic ovaries Retained placenta
Calcium (Ca) Excess	Decreased breeding efficiency Testicular degeneration
Phosphorus (P) Deficiency	Decreased breeding efficiency Testicular degeneration Decreased ovarian activity Small corpora lutea Anestrus Weak or stillborn calves Delayed onset of puberty Depressed fertility
Manganese (Mn) Deficiency	Anestrus Infertility Abortion Calves born with contracted tendons Small ovaries Dystocia
Molybdenum (Mo) Excess	Delayed onset of puberty Anestrus
Copper (Cu) Deficiency	Anestrus Depressed fertility Depressed libido in bulls Testicular degeneration
Cobalt (Co) Deficiency	Infertility, both sexes Delayed onset of puberty Nonfunctional ovaries Abortion Birth of weak calves
Iodine (I) Deficiency	Impaired ovarian activity Anestrus Infertility Retained placenta Embryonic mortality Birth of hairless and/or weak calves Still births Depressed libido in bulls
Iodine (I) Excess	Abortion Calves born with limb deformities
Selenium (Se) Deficiency	Retained placenta Abortion Birth of dead or weak calves
Zinc (Zn) Deficiency	Abnormal estrus Delayed testicular development Small testicles Testicular atrophy

Vigortone recommendations differ somewhat from the recommendations in Table 1. However, there is unanimous agreement that proper mineral supplementation is essential.