

Beef Logic

by R.A. (Bob) Long



Blood will tell — true or false?

The use of chemical analyses of blood samples is becoming popular among veterinarians and some beef-cattle nutritionists as a method for formulating a mineral supplement. A typical procedure would be to draw blood from six or eight head selected at random from a herd. The chemical analyses of these samples would then be used to formulate a mineral supplement for that ranch.

The accuracy of this method is suspect, at best, and the procedure is often knowingly used as a sales gimmick.

This method is based on the assumption that the mineral content of a blood sample is a reflection of the mineral adequacy of the donor's diet — an untrue assumption. The mineral metabolism of animals is such that the blood level of minerals varies greatly within a herd on the same nutritional program and is even quite variable in the same individual from one hour to the next.

The mineral content of the blood can vary due to age, sex, reproductive status, lactation, stage of lactation, amount of milk produced, how recently the calf nursed, kind of diet, amount of diet consumed, recency of diet consumption and degree of recent physical exertion, to name a few. A few random blood samples reveal little and are without value.

Minerals are complex

Because of the complexity of mineral metabolism, including variation in availability, mineral interrelationships, possible toxicity and effects of chelating agents, exact mineral requirements are not known. For example, the National Research Council subcommittee on beef-cattle nutrition states, "For many of the minerals, information on requirements and quantification of factors that affect requirements is lacking." Therefore, be wary of the mineral salesman who implies complete knowledge of mineral nutrition.

Fortunately, sufficient basic knowledge is available to allow an adequate mineral-nutrition program for beef cattle. A discussion of mineral nutrition logically divides minerals into two categories. Those

needed in greatest quantity are termed "major minerals," while those required in only small amounts are said to be "trace minerals."

Major minerals

The major minerals are sodium, chlorine, calcium and phosphorus. Sodium and chlorine are the elements that make up common salt. Therefore, providing salt to cattle "free choice" as a part of a mineral supplement takes care of the requirement for both sodium and chlorine.

Calcium and phosphorus are required in even greater amounts since they constitute about 70% of the total minerals in the animals body.

The diet cattle receive is key to whether calcium or phosphorus is of concern. All roughages, such as hay, silage and pasture, are high in calcium and low in phosphorus. Cattle on a roughage diet will not have a calcium deficiency but will need a phosphorus supplement. The opposite is true of cattle being fed a concentrate diet composed largely of grain and protein supplement. These feeds are low in calcium and high in phosphorus, so the cattle will need a calcium supplement.

The ratio of calcium to phosphorus is also important. Nutritionists recommend a calcium-to-phosphorus ratio of 2-to-1 in the total diet. Most commercial manufacturers of mineral supplements use this 2-to-1 recommendation as a formula for their products. This is an error. For example, a cow herd on dormant winter native pasture that contains calcium and phosphorus in a wide ratio of 6- or 7-to-1 needs a supplement that is higher in phosphorus than in calcium to permit narrowing the ratio. Therefore, for cattle on high-roughage diets, select a mineral supplement that contains more phosphorus than calcium.

Trace minerals

Among the trace minerals, magnesium, potassium and sulfur are needed in slightly larger quantities than the other trace minerals, which are chromium, cobalt,

copper, fluorine, iron, iodine, manganese, molybdenum, nickel, selenium, silicon and zinc.

All trace minerals, which are needed in small amounts, are usually contained in most common feeds and pastures. The areas that have a specific trace-mineral deficiency are rare. Fortunately, the same trace minerals required by cattle are also required by plants, and an average pasture or crop growing normally contains the trace minerals. However, most people consider it good insurance to use trace-mineralized salt in the mineral supplement.

There is much promotion and advertising of commercial mineral supplements as problem solvers, but cattlemen should remember the limiting factor in the nutrition of most breeding herds is protein or energy, "Hollow belly" is a much more common problem than a mineral deficiency.

When protein and energy requirements are met by feeding commonly used feeds, the mineral content is usually adequate with the exception of phosphorus.

We Welcome Your Input!

Our Beef Improvement section has been expanded to include more information for today's performance-minded breeder. Both "Beef Logic" by Bob Long and the "What's Your Beef?" columns serve as a forum for Angus breeders and industry experts to express their opinions on current issues and topics of breed improvement and performance programs.

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