Mineral Consumption Helps Avoid Metabolic Issues

For the majority of cattle herds we are entering the calving stage for beef producers. Some early calving herds had to battle difficult weather all over North America. These dramatic weather events stress cows, calves and farmers. Stress events suggest we give extra attention to diet where all nutrients come from for success in calving, lactation and a good start for the calf. Of special interest is mineral/micromineral intake. Management of the farm activities have at their heart actions that predict a good outcome. Observations of the animals will give clues to improvements which can be undertaken. Spend 50% of the management time available looking at animals in the bottom 25% of the herd and the remaining 50% working with the top 75%. The top animals will do well under common management protocols and those animals in the bottom 25% will benefit from the extra attention. Timid eaters, older cows or those that are under an immune challenge will commonly underperform and adjusting rations and stresses can pay dividends.

Recall that cows don't selectively eat to meet their needs nutritionally. They eat to be full and then eat to feel good. Achieving these two states does not indicate they have met their needs for optimal performance or to avoid health problems. If they could eat for their nutritional needs then we would not have to balance rations.

For minerals there is a lot of published material and a consensus can be reached in general terms. The National Research Council reviews controlled studies to produce guidelines for animal specific intake of minerals and publishes numbers we use for ration balancing. These numbers are minimums but animals in a herd follow a normal curve for individual needs. That means some need or want more and some use less. In studies where individual animal intakes are followed there is a big range which does not match sufficiency. When balancing rations there is an average amount forecast to be consumed by the cows in a specific weight range and specific weather conditions. Highline® has two twin screw mixers that are performing well in giving consistent mix qualities in both dairy and beef production units. This gives confidence in mixing small inclusion ingredients into a largely forage based diet.

A common mineral to be aware of is Copper (Cu), with associated minerals Sulphur (S) and Molybdenum (Mo) because they interact with each other. "Ensuring adequate copper supplementation in ruminants is a challenging task due to the complexity of copper metabolism in these animals. The three-way interaction between copper, molybdenum and sulphur (Cu-Mo-S) in the rumen makes ruminants, particularly cattle, very susceptible to suffering from secondary copper deficiency. Paradoxically, excessive copper storage in the liver to prevent deficiency becomes a hazard when ruminants are fed copper-supplemented diets even slightly above requirements."[1] Copper toxicity has been seen in dairy and beef herds in recent years and is on the rise in European herds[1] and while many trace elements have large safety margins copper doesn't. The Cu:Mo ratio (mg/kg DM) can be used to predict the copper deficiency risk. In general, ratios <1 indicate a high risk of copper deficiency and ratios >3 are considered safe, although interpretation of the values can be affected by various factors. Sources of sulphur should be evaluated such as water, and ingredients high in sulphur like Distillers Dried Grains. Using high sulphur ingredients makes more sulphur available for interaction with dietary sources of copper. A good ration balancing program will track these minerals and calculate these ratios for producers. Adding to this scenario is soil type and rainfall amounts which can change dry forage or pasture mineral levels.

Accurate feed tests combined with Highline® equipment that will mix and deliver accurate rations can help avoid over or under feeding minerals critical to good performance. Also helpful is to get some help with interpreting feed test results when balancing ingredients for best cow performance.

1. Copper Supplementation, A Challenge in Cattle Marta López-Alonso and Marta Miranda , Review in Animals 2020, 10, Pp1890

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