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Mineral Nutrition Considerations for the Beef Herd

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Minerals are often overlooked in a herd nutritional program. Although minerals are needed as a very small percentage of dietary nutrients, they are very important in beef cattle nutritional programs. Cattle growth and reproductive performance can be compromised if a good mineral program is not in place. Appropriate mineral intake is also essential for proper bone development, immune function, muscle contractions, and nervous system function.

What does a mineral tag tell you?

Though the amount of information on a mineral tag may seem overwhelming at first, the tag contains valuable information about a mineral mix. There are several common sections on most mineral tags.

- 1) **Product name** – When a single number is present in the product name, the number represents the phosphorus content. For example, “Pro 8” would contain 8% phosphorus. When two numbers are present in the name, the first number typically represents the calcium content, while the second number represents the phosphorus content. In most cases, if the calcium to phosphorus ratio is higher than 3:1, cattle will have to eat an excessive amount to get the phosphorus they need. Phosphorus is usually the most expensive component of a mineral supplement. Phosphorus is also very important in beef cattle diets, particularly when grazing low quality pastures. Instead of purchasing a supplement based on price alone, try to buy a reasonably priced supplement that provides adequate levels of phosphorus and other important minerals.
- 2) **Approved animals** – This indicates which species and classes of livestock for which the product is intended.
- 3) **Drug claim** – Some labels have a section that describes the purpose of any drugs in the product. Consider whether or not the drug is needed and if it is the right time of year to use it. For instance, it may not be worthwhile to include fly control compounds in a mineral mix outside of fly season.
- 4) **Active drug ingredient statement** – This tells the name of the drug and the level added to the product.
- 5) **Guaranteed analysis** – This lists the amounts of individual minerals in the supplement. These levels can be compared to cattle requirements to determine if the product matches up well with animal needs. Make sure the mineral supplement contains adequate levels of major minerals (calcium, phosphorus, magnesium, potassium, sodium, chlorine, sulfur) and trace minerals (iron, manganese, copper, selenium, zinc, iodine, cobalt, molybdenum).
- 6) **Ingredients** – This lists product ingredients in order from the highest to lowest amounts. Look for specific ingredients. While copper oxide is not an ideal copper source, copper sulfate and copper chloride are typically better copper sources. As a general rule, the bioavailability (nutritional value) of inorganic mineral sources follows this order: sulfates = chlorides > carbonates > oxides.

- 7) **Feeding directions** – This lists expected intake, feeding instructions, and the length of any required withdrawal times for specific livestock classes.
- 8) **Caution** – This warning indicates potential problems, such as feeding an ionophore to horses, a high copper level to sheep, or selenium levels over legal limits.

Mineral feeding problems and solutions

Excessive intake is a potential problem with mineral supplements and can result in unnecessary expense. Cattle will sometimes overeat a mineral when they are first exposed to it but then drop mineral intake to appropriate levels after an adjustment period. Also, if cattle are allowed to run out of mineral, they may overcompensate consumption when it is put out again. If intake does not drop to recommended levels after a month of feeding a continuous supply of mineral supplement, try adding salt to the mineral mix or moving the mineral feeder farther away from water sources.

Inadequate mineral intake, on the other hand, can be addressed by adding protein meal or dry molasses to the mineral mix or by moving the mineral feeder closer to a water source or area where cattle congregate. Make sure that salt is not provided separately from a free-choice mineral supplement, since cattle may go to the salt and avoid the complete mineral mix. Changing mineral mixes is another option that can sometimes correct excessive or inadequate mineral consumption.

Many mineral supplements will cake and harden when allowed to get wet, causing mineral intake to drop. Magnesium supplements are particularly prone to this problem. Using covered feeders that protect from rain can help minimize mineral hardening. There are also some commercial mineral supplements available that are designed to better withstand rain damage and wind losses. It is a good idea to check the mineral supply at least weekly. Hardened mineral should be broken up as much as possible. Checking the mineral supply on a regular basis is also important in monitoring consumption and making sure that cattle do not run out of supplement.

Vitamins are usually not a problem in beef cattle grazing green pastures. However, vitamin A and E supplementation may be necessary when feeding hay. Vitamin A is the vitamin most likely to be deficient in beef cattle diets. Most commercial mineral mixes have vitamins A, D, and E added at sufficient levels. Check the mineral tag to be sure. Keep in mind that vitamins can degrade over time, so supplements purchased and stored for several months before being used may not supply adequate vitamin levels.

Mineral imbalances can trigger nutritional disorders such as grass tetany, white muscle disease, and milk fever in cattle. It is important to be alert for “red flags” in animal behavior and appearance to catch a problem early and minimize losses. Veterinarians should be familiar with mineral-related disorders common in the local area and can assist with prevention and treatment programs. Reduced cattle performance from mineral imbalances is preventable with a good mineral nutrition program. For more information on mineral nutrition, contact your local Extension office.