



# Ridin' Herd

► by **Rick Rasby**, beef specialist, University of Nebraska

## What information about minerals is on a feed tag?

*Summer is here, and beef cows are grazing pasture. The only item that cows with calves at side should require as supplementation is a mineral-and-vitamin supplement. Being an informed buyer means that the mineral supplemented contains what is needed to balance out the nutrients in high-forage diets. At times, it can be confusing how to determine the intake of specific vitamins and minerals from a supplement. A feed tag will give an indication of the amount that should be consumed daily on a per-cow basis.*

### Vitamins and minerals

Vitamins are expressed in international units (IU). Commonly, vitamin A requirements are expressed as IU, sometimes referred to as USP units. These are the standard units of potency of a biologic, such as a vitamin, as defined by the International Conference for Unification of Formulae. Feed tags will include information on vitamins A, D and E. The B vitamins and vitamin K are synthesized by microbes in the rumen, so these vitamins are not added to supplements.

It may be difficult to determine if cattle are getting enough of a vitamin. The concentration of vitamins on a feed tag are given as IU per pound. If the concentration of vitamin A in a supplement is 8,000 IU per pound, Vitamin A intake can easily be determined.

As an example, if a protein supplement is fed at a rate of 2 pounds (lb.) per head per day, then the amount of vitamin A being ingested by the cow from this protein supplement is 16,000 IU (2 lb. × 8,000 IU per lb. = 16,000 IU). If the cow's vitamin A daily needs are 40,000 IU, the cow is deficient by 24,000 IU. This deficiency could be resolved by some vitamin A from other feeds being consumed or from a vitamin/mineral supplement.

In recent years, vitamin E has taken on new significance in cattle diets. For example, supplementing highly stressed calves with 150-300 IU of vitamin E daily during the receiving period has been beneficial. Vitamin E has also been shown to promote a substantial increase in the shelf life of fresh beef when fed at 500 IU per day for the last 100 days before slaughter.

Vitamin A is a fat-soluble vitamin and can be stored in the liver and other tissues, and mobilized from these tissues and used by the animal when needed. The most common methods of supplying vitamin A include feeding forages that are high in vitamin A activity (carotene), such as green grass or alfalfa and other legume hays; providing vitamin A in mineral mixes offered free-choice; feeding protein supplements; or through injectable vitamin A.

Typically, animals with adequate liver stores need to be on a vitamin-A-deficient diet for several weeks or months before deficiency symptoms are observed.

In baled and stored forages, the vitamin A content is fairly stable for four to six weeks, after which there is a gradual decline. By six months, up to half of the vitamin A may be depleted, and after 1 year, most of the vitamin A is gone in hay or silage.

### Parts and percents

Macrominerals are reported as a percent (%) and microminerals are reported as parts per million (ppm). Ppm can be converted to a percentage by moving the decimal four places to the left. If the feed tag indicates that the micromineral is 140 ppm, to convert this to a

percentage, move the decimal four places to the left so the micromineral is 0.0140%. Also

reported along with the percentage or ppm is a maximum (max) or minimum (min) amount.

Typical macrominerals listed on a feed tag are calcium (Ca), phosphorus (P), sodium (salt, NaCl) and magnesium (Mg). Trace minerals, or microminerals, include copper (Cu), iodine (I), zinc (Zn), selenium (Se), cobalt (Co) and manganese (Mn).

It's not difficult to determine the amount of a mineral that an animal is consuming from the supplement, but it may be

difficult to compare it to the nutrient needs of the animal because you will likely calculate the intake in pounds and the nutrient requirements are in grams (g).

To illustrate this point, let's say a mineral supplement is 12% phosphorous and a cow consumes 4 ounces (oz.) of the supplement daily. The phosphorous requirement for a cow in late gestation is 20 g per day. When the

4 oz. is converted to 0.25 lb. per day and the supplement is 12% phosphorous, then the animal is consuming 0.03 lb. of phosphorous per day from the supplement. There are 454 g per lb. By multiplication, the cow is receiving 13.6 g (0.03 lb. × 454 g per lb.) of phosphorous from the supplement. The cow is deficient 6.4 g daily, but this deficiency will easily be made up from the other feeds, primarily forages, that cow is consuming.

Controlling intake of free-choice minerals at intakes indicated on the label is challenging because mineral intake fluctuates. Monitor mineral intake for several weeks prior to implementing management practices to alter mineral intake. If mineral intake is too high or low, move the mineral feeder either closer to or farther away from the water source and loafing areas.

When cattle are overconsuming mineral, salt is often added to reduce the amount of minerals cattle eat. Salt level has a significant impact on mineral intake and is easily changed to control intake; however, account for the additional salt when determining the correct intake. For example, if a mineral

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with a recommended feeding rate of 4 oz. per day is mixed in a 50:50 ratio with plain white salt, the cattle should consume 8 oz. per day. This would supply the cattle with the targeted amount of 4 oz. of mineral plus 4 oz. of added salt.

Regularly monitor mineral consumption by keeping a record of animal numbers and feeding amounts to combat potential mineral intake problems. Another challenge with free-choice minerals and intake is that some cows will consume more than label

directions, some will consume less than label directions and some will consume about what is indicated on the label, so the average is just about right.

Finally, a common question is: "Do cattle have the nutritional wisdom to consume mineral as needed to meet their requirements?" Research has consistently shown that the only mineral cows have the nutritional wisdom to consume at a level that meets their dietary requirements is salt.

### **Final thoughts**

Feed tags contain a great deal of information. Read the label and follow

feeding directions. Keep records of the amount fed and the number of cows in the pasture consuming the mineral supplement. It is probably a good management practice not to let mineral or salt feeders run out. Mineral supplements can be expensive, so make sure cows are not eating more than they need.



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