

## Illinois Grazing Manual Fact Sheet

### MISCELLANEOUS

# Minerals



#### General Information

Minerals are needed by cattle for maintenance and growth due to their involvement, including various enzyme systems and chemical reactions that occur in body tissues. They are also needed for bone and teeth formation. The amounts of minerals needed depend on the stage of growth and reproduction of the animal. The only minerals in addition to salt that are needed for beef cows in Illinois are calcium, phosphorus, and deficient trace minerals. Selenium and iodine are often deficient in Illinois' soil and may need to be supplemented. A general guide in determining the need for supplemental calcium (Ca), phosphorus (P) or potassium (K) is given in the following table.

**TABLE 1. MACRO MINERAL LEVELS IN GRAINS AND FORAGES**

	Ca	P	K
Grains	-	+	-
Poor Forages	++	-	++
Good Forages	++	+	++

Ca and P generally adequate in high quality forages. Samples from well-managed pastures, small grains, or brassicas in Illinois document that there is no need for supplemental P or Ca. Some producers feed these minerals for "insurance" to be sure there are no problems. Low quality pastures and crop residues need to be supplemented with Ca and P.

Other minerals, needed in much smaller amounts, are called "trace" minerals. The trace minerals selenium and iodine are deficient in many Midwestern soils and may need to be added to the diet. Selenium deficiency can lead to lowered fertility, white muscle disease, retained placenta, stillbirths, and weak calves that are susceptible to diarrhea and pneumonia. Generally, trace mineral supplementation is cheap and good insurance for preventing problems. Supplementing the cattle diet with a mineral mix that includes all the trace minerals is probably best. Recent research suggests that copper sulfate is more usable than copper oxide, so look for supplements with the sulfate form of copper. Also, magnesium oxide is recommended in spring mineral mixtures to prevent grass tetany.

Vitamin E interacts with selenium in the deficiencies mentioned. It is advisable to have at least 400 IU/lb. of vitamin E in a mineral mix. Vitamin A may be deficient in some feeds. It is advisable that it also be supplemented with at least 80,000 IU/lb. in a mineral mix. These mixtures should not be stored for extended periods because the vitamins can be broken down when mixed with minerals.



### Leaf Removal and Growth

Minimum levels of important minerals in a salt mineral mix for high quality forage diets (assuming 4 oz/day consumption).

- 0-6% Phosphorus
- 10% Calcium
- .003% Selenium
- .01% Iodine
- 400 IU/lb Vit E
- 80,000 IU/lb Vit A

Minimum mineral levels in salt mineral mix for weathered hay, crop residues or poor pastures.

- 10% Phosphorus
- 12% Calcium
- .003% Selenium
- .01% Iodine
- 400 IU/lb Vit E
- 80,000 IU/lb Vit A

Minimum mineral levels in salt mineral mix for corn silage diets.

- 6% Phosphorus
- 20% Calcium
- .003% Selenium
- .01% Iodine
- 400 IU/lb Vit E
- 80,000 IU/lb Vit A

Minimum mineral levels in salt mineral mix for high grain diets.

- 0% Phosphorus
- 25% Calcium
- .003% Selenium
- .01% Iodine
- 400 IU/lb Vit E
- 80,000 IU/lb Vit A

We would also recommend including magnesium oxide to prevent grass tetany (spring and fall) and antibiotics to prevent anaplasmosis and pink eye (summer). There are many excellent commercial mineral mixes available both in a salt mix and alone. Either is acceptable, but be sure that salt is available to supply the animal with sodium. The mineral mixture should be matched to the type of cattle and type of diet you are feeding. Also, be sure that the animals are consuming the recommended amount of the mixture to avoid deficiencies.

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