

A Quick Guide to Goat Minerals

BY KATE ESTILL, DVM

Minerals can be divided into two categories: macro minerals including calcium, phosphorus, magnesium, potassium, sodium, and chlorine; and micro minerals including iron, iodine, zinc, copper, and selenium. Goats have different macro and micro mineral requirements than other ruminant species. When selecting a mineral supplement for your herd, choose one made specifically for goats. Supplements made for other species will not provide optimum levels and may even be harmful.

Calcium

ESSENTIAL FOR: Milk production.

FOUND IN: Legumes such as alfalfa and clover.

SYMPTOMS OF DEFICIENCY: Decreased milk production in lactating does. Low calcium can also cause milk fever, a sudden decrease in blood calcium levels associated with kidding or early lactation.

TO SUPPLEMENT: Increase in alfalfa intake or add a mineral supplement such as dicalcium phosphate. Feed heavily pregnant does quality lower-calcium forage, such as grass or grass/alfalfa mix, to increase their ability to mobilize calcium stores. After kidding, improving calcium intake can increase milk production, especially in dairy goats.

NOTES: Non-dairy goats generally meet calcium requirements through grazing or consumption of quality hay. Heavily lactating animals require much more calcium, as it is excreted in milk.

Copper

ESSENTIAL FOR: Health of red blood cells, immune system, and nerve function.

FOUND IN: Varying levels in the soil.

SYMPTOMS OF DEFICIENCY: Poor overall health, anemia, faded hair coat, diarrhea.

SYMPTOMS OF OVERDOSE: Abortion, jaundice, weakness, red urine, pale gums.

TO SUPPLEMENT: It is imperative to understand the soil in your area to ensure appropriate supplementation by loose mineral or bolus. Copper toxicity generally occurs when goats consume mineral supplements or complete feeds made for other species, such as cattle or swine, and often results in death.

NOTES: Copper must be managed in relation to molybdenum, as increases in molybdenum prevent absorption of dietary copper. Molybdenum is often used in hay production to improve green color.

Iodine

ESSENTIAL FOR: Health of thyroid gland and production of its metabolism-controlling hormone.

FOUND IN: DEFICIENT in soil areas such as the mountainous West and Great Lakes regions of the U.S.

SYMPTOMS OF DEFICIENCY: Goiter (swelling) in the neck, poor growth, decreased milk production, reproductive difficulties such as retained placentas.

TO SUPPLEMENT: Offer iodized salt or a complete mineral supplement.

NOTES: Grazing animals, even those being supplemented with iodine, can also suffer deficiency by consumption of goiterogenic plants including soy beans, kale, cabbage, and turnips.

Iron

FOUND IN: Forages.

SYMPTOMS OF DEFICIENCY: Anemia, pale mucous membranes, lethargy, low appetite.

TO SUPPLEMENT: Offer a mineral supplement to goats raised in confinement, especially young kids.

NOTES: Grazing goats rarely have deficiencies unless heavily parasitized.

Magnesium

FOUND IN: Legumes.

SYMPTOMS OF DEFICIENCY: Sudden convulsions, muscle spasms, and death.

TO SUPPLEMENT: Provide appropriate mineral supplementation, especially during springtime.

NOTES: Grass tetany occurs in times of rapid grass growth such as spring, resulting in lower levels of magnesium in the plant. Lactating does are most affected. Areas with high soil concentrations of potassium and nitrogen can also increase risk of hypomagnesemia.



Phosphorus

ESSENTIAL FOR: Thrift.

FOUND IN: Cereal grains such as wheat and oats.

SYMPTOMS OF DEFICIENCY: Poor rate of growth, poor hair coat, decreased fertility. Goat may exhibit pica: abnormal ingestion of items like sticks and rocks.

SYMPTOMS OF OVERDOSE: Urethral stones and obstruction, particularly in male goats.

TO SUPPLEMENT: Balance calcium-to-phosphorus ratio at 1.5-2:1.

NOTES: Phosphorus may be high in forages grown with high-phosphorus fertilizer such as chicken manure. When buying hay, ask what fertilizers were used.

Potassium

FOUND IN: Forages.

SYMPTOMS OF DEFICIENCY: Poor appetite, formation of urinary calculi, and hypocalcemia in lactating goats.

TO SUPPLEMENT: Avoid too many cereal grains, as deficiencies are rare in goats that subsist on forage.

NOTES: Animals experiencing diarrhea also tend to have low potassium, sodium, and chlorine.

Selenium

FOUND IN: Varying levels in the soil.

SYMPTOMS OF DEFICIENCY: Poor growth, ill reproductive health such as retained placentas and metritis. In young kids, it can result in white muscle disease of either cardiac or skeletal muscles.

SYMPTOMS OF OVERDOSE: Loss of hair coat, lameness, diarrhea.

TO SUPPLEMENT: Selenium works closely with vitamin E in the body and, when assessing for deficiency, they must be managed together. Kids showing a “saw-horse” stance respond favorably to supportive care with vitamin E and selenium.

NOTES: White muscle disease is generally fatal in less than 24 hours, despite medical treatment.

Sodium Chloride

FOUND IN: Generally not high in most forages, though legumes tend to have higher levels.

SYMPTOMS OF DEFICIENCY: Decreased growth and pica.

TO SUPPLEMENT: Offer free choice.

NOTES: It is frequently used as carrier to ensure intake of other minerals. Goats tend to eat salt at increased amounts when offered free choice, which — though not harmful — can sometimes result in depressed appetite.

Zinc

ESSENTIAL FOR: Skin growth, as well as male reproduction.

FOUND IN: Cereal grains.

SYMPTOMS OF DEFICIENCY: Dry, flakey skin with poor hair coat and coat growth. Intact males show decreased reproductive activities, smaller testicles, and low sexual drive.

NOTES: Some goats exhibit “zinc responsive dermatitoses,” believed to be an inherited condition in which goats do not appropriately absorb dietary zinc. These goats require increased supplementation.

In Conclusion

Consider a multitude of factors when choosing a mineral supplement for your goats. Research forages and soils in your area then consult with a veterinarian or licensed animal nutritionist for the best nutrition plan. If you are concerned about toxicities or deficiencies, contact your herd veterinarian, who can test concentrations through blood samples or liver biopsy.

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