

# Nutrients required by sheep and goats

A nutrient is a chemical substance in feed that sheep/goats need for life, growth, reproduction, and maintenance. They need to consume so much of each nutrient daily. The five essential nutrient categories are water, energy, protein, minerals, and vitamins. Fiber is also important for maintaining a healthy rumen. Deficiencies in any of these nutrients can be problematic.



Nutrient requirements are based on the animal's size, age, activity, and physiological state and have been established for sheep/goats by the National Research Council (NRC).

## WATER

Water is the most important nutrient for all living things. It is also the cheapest and most frequently neglected. A deficiency of water will result in death quicker than any other nutrient. While sheep/goats can get water from various sources (including feed and snow) it is recommended that they always have access to clean, fresh (unfrozen) water.

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## ENERGY

Energy (calories: fats and carbohydrates) is usually the most limiting nutrient in sheep/goat diets. It is consumed in the largest quantity. The energy content (TDN) of feedstuffs varies considerably. For sheep/goats, most requirements are met with good quality pasture or hay, with grains and other supplements used to increase energy levels when necessary.

2

## PROTEIN

Protein (CP) is needed in lesser quantities than energy but is no less important for health and production. Protein is a more expensive feed ingredient than energy, so it shouldn't be overfed. Protein requirements are highest for lactating females (especially parlor-milked) and growing lambs/kids. Sheep/goats utilize both dietary and microbial protein.

3

## MINERALS

Sheep/goats require fifteen minerals in their diets. Microminerals (e.g., selenium, zinc, and copper) are required in lesser amounts (g or ppm) than macrominerals (e.g., salt and calcium and phosphorus) but are no less important. In addition to amounts, ratios are also important. The ideal ratio of calcium to phosphorus in sheep/goat diets is 2:1. A copper: molybdenum ratio between 6:1 and 10:1 will help to prevent copper toxicity, especially in sheep.

4

## VITAMINS

Sheep/goats have requirements for fat- and water-soluble vitamins. Some vitamins are manufactured in the rumen (B vitamins and K); thus, do not usually need to be added to the diet. Green feeds are good sources of vitamins A-D-E. Vitamin C is synthesized in the tissues.

5

## FIBER

Fiber is the indigestible components of plants found primarily in their cell walls. Fiber helps to maintain a healthy rumen and prevent digestive upsets, such as acidosis. It is recommended that all sheep/goats have long stem forage (fiber) in their diets. In fact, forage-first diets are usually best.

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