

Nutrient Requirements *for* Goats

Nutrients are chemical substances that are used for body maintenance, growth, pregnancy, reproduction and production of products such as meat, milk and/or hair.

All goats require the same basic nutrients: carbohydrates and fats for energy, protein, minerals, vitamins and water. The diet must contain adequate protein; no other nutrient can substitute for it. However, energy needs may be derived from dietary carbohydrates (starches and/or fiber), fats or excess protein. Maintenance requirements are used for basal metabolism such as maintenance of body temperature and support of vital functions plus physical activity. The daily maintenance requirements may vary from 50 to 100 percent of the total daily nutrient requirements.

The basic nutrients are:

Carbohydrates and fat for energy

Most energy is supplied to the goat as carbohydrates and fats in forages and grains. Energy is essential to supply body heat, activity, growth, reproduction, lactation and fattening. It is most often limiting for production of meat, milk or fibers. To increase meat production and growth of kids, goats may require some amount of grain or concentrate as a supplement to its diet based primarily on forages. If the ration offered to the goats contains an excess of energy, it can be stored in the body of the goat as fat.

Protein

Protein makes up the basic animal tissues of the body. It is vital for growth, milk production, disease resistance, reproduction and general well-being of the goat. The quality of the protein relates to the amino acid content. Protein is the most expensive component in the goat diet. The body of the goat does not store excess protein. Excess protein is broken down and may be used for energy. Therefore, it becomes important to feed just enough to meet the requirements of the goat. The microorganisms in the rumen can convert limited amounts of urea to protein.

Minerals

Goats require minerals for basic body functions and optimum performance. The major minerals are salt (sodium chloride), calcium, phosphorus and magnesium. The ratio of calcium to phosphorus in the diet is important and should be kept about 2:1 except for bucks where urinary calculi can be a problem. Most other minerals required by the goat can be found in good forage and a regular concentrate mixture. Selenium, iodine, copper, zinc, molybdenum and manganese are trace minerals that are most often supplemented in the diet. Usually, a commercial trace mineral and salt is provided to goats as insurance against a deficiency.

Vitamins

Vitamins are needed by the body of the goat in very small amounts to maintain body

functions, acting as a catalyst for routine activities. All B vitamins and vitamin K are formed by the microorganisms in the rumen. Body tissues synthesize vitamin C in quantities that meet body needs. Vitamins A, D and E are usually the only vitamins that need to be supplied in the feed. Animals grazing on fresh, green pasture will usually get all they need of these vitamins. However, if the animals are not on excellent pasture, vitamins A, D and E need to be supplied. As a precaution during the winter months, when feeding hay and stored feed, supplementation of the feed with vitamins A, D and E is necessary and is a good insurance against a deficiency.

Water

Water is the least expensive feed ingredient in most parts of the world. However, a deficiency of water will affect production, growth and the general performance of the goat. Water is important for body functions, transport of nutrients, regulation of body temperature and excretion of wastes. **Goats need fresh, clean water at all times.**

The nutritional requirements for goats are published by the National Research Council, Washington, D.C. The figures in Table 1 should be considered as guidelines in feeding goats. Further research will "fine tune" these guidelines, but they are based on the research now available.

Table 1. Nutrient requirements for meat and fiber producing goats^{1, 2}

Nutrient	Young Goats ³		Does (80 lbs)			Buck (80-120 lbs)
	Weanling (30 lbs)	Yearling (60 lbs)	Dry Pregnant	Lactating		
				Average Milk	High Milk	
Daily Feed, lb (forage + grain)	2.0	3.0	4.5	4.5	5.0	5.0
TDN, %	68	6.5	60	60	65	60
Protein, %	14	12	10	11	14	11
Calcium, %	0.6	0.4	0.4	0.4	0.6	0.4
Phosphorus, %	0.3	0.2	0.2	0.2	0.3	0.2

¹ Nutrient Requirement of Goats. 1981. National Research Council.

² Pinkerton, F. 1989. Feeding Programs for Angora Goats. Bulletin 605. Langston University, OK.

³ Expected weight gain >.44/day.



Goats in browse.



Green grass is one of the best forages for goats.



Wrapped roll bales preserve the quality of the forage.



Goats will generally get most of their nutrients from grazing.