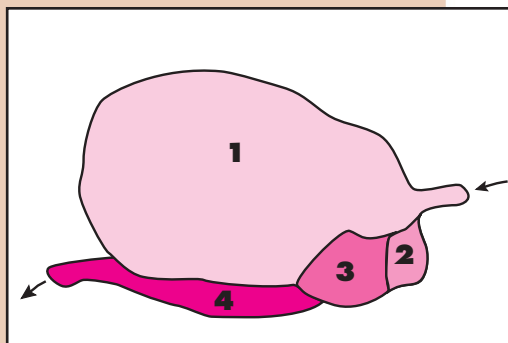


Goat Nutrition & Feeding



1-RUMEN 2-RETICULUM
3-OMASUM 4-ABOMASUM

Ruminant Stomach

Goats are ruminants and thus have a digestive system that includes a complex four-compartment stomach. This type of digestive system enables goats to utilize a wide variety of feedstuffs including grains, protein supplements, hay, silage, pasture, browse and non-protein nitrogen sources such as urea. The four compartments are the (1) rumen, (2) reticulum, (3) omasum and (4) abomasum.

The first two compartments, the rumen and reticulum are quite large with a capacity of 3 to 6 gallons. This is where the fermentation of feedstuffs consumed by goats takes place. The rumen and reticulum contain billions of bacteria and protozoa that partially digest the feed and allow the goat to utilize forages and browse for energy and protein. These microbes produce by-products in the form of volatile fatty acids (acetic, butyric & propionic) that the goat uses for energy, high quality microbial protein and B-vitamins that help meet the animal's nutrient requirements. Further digestion and absorption of nutrients continues in the omasum. From the omasum, feed enters the abomasum or "true stomach" where digestion is similar to human's, utilizing enzymes and hydrochloric acid for further breakdown of feeds. Food next passes into the small intestine where digestion continues with mechanical, chemical and enzymatic activity. The majority of sugars, amino acids, vitamins and minerals are absorbed in the small intestine. Ingesta passing out of the small intestine is watery - a major function of the large intestine is to reabsorb water. Remaining undigested feed, microbial cells, secretions and abraded tissues pass through the rectum and are excreted. This entire digestive process allows goats to utilize feeds, particularly high fiber roughages and browse, to produce meat, milk, and hair efficiently and competitively.

Though goats are ruminants and also herbivores (plant eaters), like sheep, cattle and deer, they do not eat the same types of plants. Cattle and sheep graze more grass and weeds, deer are more browsers eating leaves and buds from woody plants. Goats are classified as intermediate feeders because they eat a combination of grasses, browse and forbs. There are even differences in feeding behavior between goat breeds. Spanish breeds are more efficient browsers than Angora goats because they are taller and can reach higher browse and have less hair to get caught in branches. These different feeding behaviors affect animal performance and how and when goats should be fed supplemental feeds. Further, the type of production system (meat, milk or hair) and location of the enterprise dramatically effects nutrient requirements.

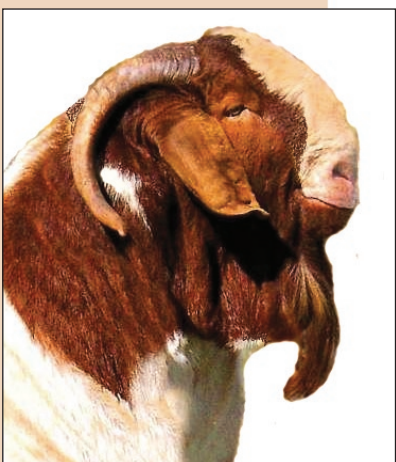
Feeding & Forages

Regardless of the type of goats raised you will want to base your feeding program on forages (roughages, pasture, range, and browse). Forages are economical and will maintain proper rumen function resulting in improved health and profitability. Grains, proteins, mineral & vitamin supplements are used to provide nutrients required by the animal but not supplied by the roughage.





Supplements will increase the cost of the ration and care should be taken to ensure correct supplementation. Simply put – the ration needs to be balanced! If goats are grazing or fed a TMR in confinement, an honest attempt needs to be made to feed a balanced diet. A forage analysis is recommended to determine which nutrients need to be supplemented. As milk production or daily gain increase the amount of energy and protein needs to be increased by feeding grains such as corn or wheat, and protein sources like soybean meal or cottonseed meal. However, there are metabolic problems associated with feeding too much energy from highly fermentable grains, and economic concerns when feeding high levels of supplemental protein.



Research has shown that it is beneficial to maximize rumen fermentation. By optimizing microbial fermentation, you increase the amount of energy the animal can derive from the forages fed plus you produce more microbial protein, peptides and amino acids for absorption in the small intestine. One way to maximize rumen fermentation is by feeding Goat 20 N. Goat 20 N is a unique supplement that not only supplies protein, mineral and vitamins but, increases the total amount of energy goats get from every pound of feed consumed. Goat 20 N provides fermentable carbohydrates that optimize rumen fermentation – fueling rumen microbes to maximize the digestion of the rest of the diet. By providing these “safe” but fermentable carbohydrates and increasing microbial digestion, more microbial protein is produced providing the highest quality amino acids for milk, hair, meat production, and reproduction.

Vitamins & Minerals

Forage type and quality along with production demands determine what minerals and vitamins need to be supplemented. Minerals are utilized throughout the body for bone formation, tissue growth, maintenance, reproduction, milk & hair production, muscular activity, digestion and hormone and enzyme synthesis. All the essential minerals must be provided in adequate amounts for optimal performance. Macro minerals required are: calcium, phosphorus, sodium and chloride, potassium, sulfur and magnesium. Minerals required in smaller amounts or traces are: cobalt, copper, iodine, iron, manganese, selenium and zinc.



Vitamins are used in the body for activating biochemical functions such as mineral metabolism, energy transfer and blood clotting. Vitamins are classified as either fat soluble or water soluble. The B-vitamins or water-soluble vitamins are usually synthesized in sufficient quantities by the rumen microbes to meet requirements. The fat soluble vitamins are Vitamin A, D, E and K and may be deficient due to the quality of the forages fed, lack of exposure to the sun and high levels of production. Goat 20 N is an excellent source of many of the minerals and vitamins typically required by goats.

Feeding goats for optimal performance and profitability can be accomplished with sound nutrition. Forage analysis, ration balancing and proper use of supplements like Goat 20 N will improve feed utilization and animal performance.