ENERGY

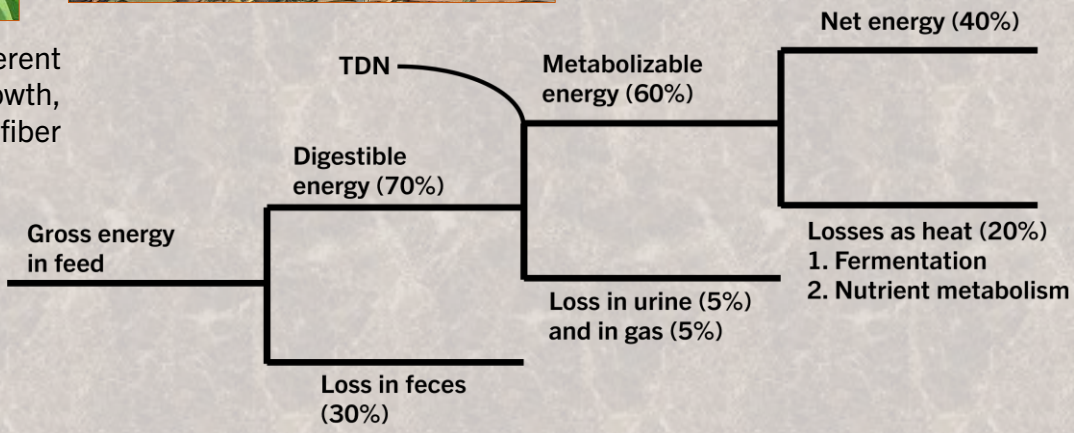
the most limiting nutrient

Energy (TDN) is the most limiting nutrient, consumed in the greatest quantity by sheep and goats. Ruminants break down the nutrients in feedstuffs via microbial fermentation in their rumen. The process involves breaking down complex carbohydrates into simpler sugars and then into volatile fatty acids (VFAs; acetate, propionate, and butyrate), which are absorbed through the rumen wall into the blood stream and used by the animal for energy.

Carbohydrates are the main source of energy. They are found abundantly in grains and forages. Cereal grains like corn, barley, and wheat provide the most energy. Though lower in dry matter, corn silage is another high energy feed. By-products, such as soybean hulls and corn gluten feed are examples of high-fiber feeds that provide significant energy. Forages, while not as high in energy, usually provide most of the energy in the diet of sheep and goats because they are usually consumed in the greatest quantity.

While it is not their main purpose, proteins can also be converted to energy, though it is an expensive way to provide energy. However, if a diet is deficient in energy, the protein percentage will need to be increased. Fats (and oils) are not commonly fed to sheep and goats, but they can be added to the diet to provide an energy boost.

Energy is partitioned to meet different needs: maintenance, growth, reproduction, lactation, and fiber growth. Angora goats are unique in that they prioritize fiber growth. Immune response to parasite infection draws resources away from other functions.



Energy is measured using total digestible nutrients (TDN), digestible energy (DE), metabolizable energy (ME), and net energy (NE). While TDN is most used when formulating diets for sheep/goats, ME and NE are more precise.

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