Nutrition Throughout Pregnancy for Meat Goat Does

Feeding the meat goat herd is a critical aspect of meat goat production and management. Good nutrition influences the overall health status of the entire herd, as well as the growth performance of kids.

Nutrition throughout pregnancy is critical to produce healthy and vigorous kids. Photo courtesy of Diana Fisher

Nutrition is particularly important throughout the breeding season and pregnancy. Goats need to eat a balanced diet in order to be healthy and productive.

Proper nutrition starts with the six classes of nutrients. These six classes of nutrients include water, carbohydrates, lipids (fats), protein, vitamins, and minerals. The proper balance of these nutrients can be achieved with a wide range of feed ingredients. A well-balanced diet during pregnancy will help ensure embryo survival and can also lead to healthy and vigorous kids at birth.

Water is a critical nutrient that is often overlooked by producers. Water should be clean and fresh at all times.

Water is often referred to as the most "forgotten nutrient" in animal diets. Fresh, clean water should always be available to goats in any stage of life but is critical for the pregnant doe. Stale or dirty water will lead to decreased water intake, which ultimately will decrease feed intake. Decreased feed intake will decrease kid growth and could impact pregnancy status of does. Producers should test water periodically. Water can impact the absorption of another essential class of nutrients, minerals. Water concentrations of sulfur and other potentially toxic minerals should be evaluated. Inadequate water intake can cause dehydration and impact an animal’s ability to excrete waste. Be sure to plan for increased water intake when the temperature is above 70 degrees F and during very cold temperatures. Goats normally consume between one half to one and a half gallons of water per day depending on the temperature and humidity, and their body size and production status.

The other five nutrients, carbohydrates, fat, protein, minerals, and vitamins, as stated previously are met through a variety of feedstuffs. The most common feedstuffs fed to meet the nutrient requirements of goats for these essential nutrients are discussed mainly as ingredients. However, it is important to bear in mind that the daily requirements of goats are only for the nutrients, not necessarily every ingredient discussed.

Pasture is an excellent source of nutrients for the goat herd and is often one of the cheapest sources of feed for most operations. When grazing goats, there are fundamental
objectives that producers should keep in mind to maintain pregnant doe health and meet her nutritional needs. Good quality pastures often meet the nutritional needs of a pregnant doe, but she may need supplemented with concentrates as she enters late gestation.

Pasture should be maintained at four inches in height or taller to help prevent goats from consuming parasite larva.

Pasture height is critical for goat health to prevent infections with internal parasites. Most parasite larva can be found in the first two inches of forage growth. Therefore, pasture forages should be maintained at four inches or higher to prevent infection. Pastures can also be rotated every four to six days, or less, to allow grazing goats to stay ahead of a parasite’s life cycle. For fall grazing, goats can be rotated through crop residues or through hay fields. This will provide a “clean” pasture area with no parasite larva present while still providing adequate nutrition. For crop residue fields, be sure to subdivide the fields, using temporary fencing, so that goats better use all of the residues without wasting them by trampling and fecal contamination.

Goats can also browse brushy areas for their forage needs. This not only provides high quality feed but can also serve to clean up brush that is overtaking grazing areas. Goats consume the leaves and twigs on these plants, which weakens the plants due to the plant’s inability to photosynthesize sugars that the plant needs to grow. Eventually this kills the woody plant.

During the fall of the year, the grazing season can be extended with stockpiled forages. Stockpiling forages essentially involves pastures that been saved, by keeping animals off these fields for several months, for fall grazing and allowing forages to regrow. Begin stockpiling forages around the middle of August to the first of September to be grazed in November and December. The quality of fall forage should meet the nutritional needs of goats during early and mid-gestation. Keep in mind that although tall fescue is the most common plant species used for stockpiling, this plant species is not very palatable for goats until after a hard frost. Other grass species can work well for stockpiling but will not retain their nutrient concentrations as far into the winter season as tall fescue.

Regardless of when and where you graze, the forage quality must meet the nutrient requirements of the goats. Forages in a growing vegetative state, without any seed heads, are better quality and contain more protein and carbohydrates to supply energy. Producers should clip seed heads to keep the forages in this vegetative state throughout the grazing season because forage growth will slow when maturity is reached, and seed heads develop.

If adequate quantity and quality of forage is not available to graze, average quality to high quality hay should meet the nutritional needs of pregnant does. The table below outlines the changing nutrient requirements for protein, energy, and dry matter intake through various production stages for a 150 lb. doe pregnant with a single or twin kids. Dry matter intake is the amount of feed an animal consumes with all water removed.

### Nutrients Requirements for a 154 lb. Doe

<table>
<thead>
<tr>
<th>Stage</th>
<th>Crude Protein</th>
<th>TDN (energy)</th>
<th>Dry Matter Intake</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintenance</td>
<td>0.194 lb.</td>
<td>1.50 lbs.</td>
<td>2.82 lbs.</td>
</tr>
<tr>
<td></td>
<td>(6.9%)</td>
<td>(53%)</td>
<td></td>
</tr>
<tr>
<td>Late gestation, single kid</td>
<td>0.414 lb.</td>
<td>2.18 lbs.</td>
<td>4.11 lbs.</td>
</tr>
<tr>
<td></td>
<td>(10.1%)</td>
<td>(53%)</td>
<td></td>
</tr>
<tr>
<td>Early lactation, single kid</td>
<td>0.400 lb.</td>
<td>2.02 lbs.</td>
<td>3.81 lbs.</td>
</tr>
<tr>
<td></td>
<td>(10.5%)</td>
<td>(53%)</td>
<td></td>
</tr>
<tr>
<td>Last gestation, twins</td>
<td>0.472 lb.</td>
<td>2.46 lbs.</td>
<td>3.70 lbs.</td>
</tr>
<tr>
<td></td>
<td>(12.8%)</td>
<td>(66%)</td>
<td></td>
</tr>
<tr>
<td>Early lactation, twins</td>
<td>0.521 lb.</td>
<td>2.24 lbs.</td>
<td>4.25 lbs.</td>
</tr>
<tr>
<td></td>
<td>(12.2%)</td>
<td>(53%)</td>
<td></td>
</tr>
</tbody>
</table>


Thin does, with body condition scores of less than 3, should gain weight to maintain their pregnancy and target a body condition score of 3 to 4 by the time they kid. This can be accomplished with high quality forage or by supplementing their diet with concentrates (i.e., grains). More information about body condition scoring can be found at "Body Condition: One More Evaluation Tool." This article is written for sheep but can be used as a guideline for body condition scoring goats as well.

During early gestation, defined as the first 15 weeks of pregnancy, fetal kid growth is minimal and a doe’s nutritional requirements are similar to her maintenance requirements. Thus, during early gestation, does can consume average quality pasture or stored forages. However, nutrition does play a critical role in ensuring embryonic survival. Therefore, a doe’s diet must at least meet these maintenance requirements in order to ensure adequate nutrients to support placental...
development. Drawing from the previous example of body condition, a doe in early gestation should be maintaining body condition, not losing condition. Monitor does every two weeks to ensure condition remains adequate.

Much of the fetal growth occurs during the last third of gestation, the four to six-week period at the end of the pregnancy. During this time, the does should be supplemented to meet the increased nutrient demands for the added fetal growth and to allow her to produce adequate quality and quantity of colostrum, the antibody rich milk consumed by the kid in the first twenty-four hours after birth. Energy consumption during the last third of gestation will affect the size and vigor of newborn kids as well as doe milk production. Increasing energy consumption will also prevent pregnancy toxemia. Pregnancy toxemia is a condition that occurs when pregnant does are using more nutrients than they are consuming, thus, they are drawing heavily on body reserves. In general, energy requirements for a doe carrying a single kid increase approximately 50% over her maintenance requirements, while energy requirements for a doe carrying twins increase 75%. Therefore, during the last four weeks of gestation, does should consume 53 to 67% TDN, 10 To 13% crude protein and approximately 3.7 to 4.1 lbs. dry matter.

Due to the increased nutrient requirements during the last four to six weeks of gestation, does may not be able to consume a large enough quantity of forage, particularly when carrying more than one kid. Body capacity becomes an issue as the kids increase in size and there is less room for the stomach to expand for forage consumption. Therefore, most goat producers supplement does with some type of grain in the last trimester to increase energy consumption and, sometimes, protein concentrations in the daily ration. The rate at which producers supplement grain varies from one-half to one pound per doe each day, depending on doe size and genetics. In colder climates, and with does that often produce triplets, the supplemental feed should be started four to six weeks prior to parturition (birth of the kids). Always remember that any ration changes should occur gradually over a period of several days.

During the winter months, producers should increase the amount of feed offered to all goats, regardless of pregnancy status, to compensate for the additional energy the animal needs to keep warm in cold temperatures. The lower critical temperature at which rations should be adjusted is 32 degrees F. However, if the goat’s hair coat is wet, this lower critical temperature rises to 58 degrees F. (Source: Winter Sheep and Goat Feeding Guidelines by Rory Lewandowski, Retired OSU Extension Educator ANR). Energy requirements increase greatly with cold rains (temperatures in the 30’s and 40’s) and ice. A wet hair coat can drain nutrient reserves of an animal. Thus, if possible, bring animals indoors or provide additional shelter in the event of cold rain or ice storms. Wind chills also contribute to additional energy needs and should be accounted for when making feeding adjustments.

It can be very difficult to predict increased dietary needs during the winter. Therefore, many producers provide forages free choice during cold winter months, which allows goats to increase consumption as needed. Producers who hand-feed forages can adjust hay supply based on decreased temperatures and any residual left in the feed bunk between feedings. Forages are key to maintaining body temperature in winter months because fermentation in the rumen makes heat and helps keep animals warm. However, over conditioned (fat) goats and goats carrying multiple kids may not be able to consume adequate amounts of additional forage and would therefore need supplementation with concentrates such as corn.

While forages and concentrates supply the bulk of the goat’s carbohydrate, protein, and fat requirements, they are often lacking or imbalanced in vitamins and minerals. Because of this, goat producers should also provide free choice access to a trace nutrient mix formulated for goats. These mixes contain salt to stimulate intake and contain a combination of minerals and vitamins formulated specifically to meet the micronutrient requirements of goats. A well-balanced goat mix should be available at all times throughout the year. Failure to supplement these micronutrients results in poor fertility, weak kids at birth, reduced milk production, impaired immunity, and can lead to numerous metabolic disorders.

Paying close attention to nutrition throughout the year can lead to not only healthier goats, but also more productive goats. For help with balancing rations, contact a local nutritionist or your local Penn State Extension office to locate an educator who can assist in developing a feeding program for your herd.

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