



# Nutrition Throughout Pregnancy for Sheep Flocks

**Nutrition can impact productivity of a sheep flock through ewe productivity and through lamb vigor.**



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

Feeding the sheep flock is a critical aspect of sheep production and management. Good nutrition influences the overall health status of the entire flock, as well as the growth performance of lambs. This is particularly important throughout the breeding season and pregnancy. Sheep 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 lambs at birth.

Water is by far the most essential "nutrient" in a sheep's diet. Fresh, clean water should always be available. Stale or dirty water will lead to decreased water intake, which ultimately will decrease feed intake. Decreased feed intake will decrease lamb growth and could impact pregnancy status of ewes. Water tests should be conducted 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. Sheep 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 feed stuffs. The most common feed stuffs to meet the nutrient requirements of sheep for these essential nutrients are discussed mainly as ingredients. However, it is important to bear in mind that the daily requirements of sheep are only for the nutrients, not necessarily every ingredient discussed.

Pasture is an excellent source of nutrients for the sheep flock and is often one of the cheapest sources of feed for most operations. When grazing sheep, there are fundamental objectives that producers should keep in mind to maintain the pregnant ewe's health and meet their nutritional needs. Good quality pastures often meet the nutritional needs of a pregnant ewe, 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 sheep from consuming parasite larva.*

Pasture height is critical for sheep 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 sheep to stay ahead of a parasite's life cycle. For fall grazing, sheep 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 sheep better use all of the residues without wasting them by trampling and fecal contamination.

During the fall of the year, the grazing season can also be extended with stockpiled forages. These pastures have basically been saved for fall grazing by keeping animals off these fields for several months 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 sheep 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 sheep 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 sheep. 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, as 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 ewes. The table below outlines the changing nutrient requirements for protein, energy, and dry matter intake through various production stages for a 150 lb. ewe pregnant with single or twin lambs. Dry matter intake is the amount of feed an animal consumes with all water removed.

|                              | <b>Dry Matter Intake lbs.</b> | <b>Crude Protein lbs.</b> | <b>TDN (energy) lbs.</b> |
|------------------------------|-------------------------------|---------------------------|--------------------------|
| Maintenance                  | 2.60                          | 0.196 (7.5%)              | 1.36 (52.3%)             |
| Late gestation, single lamb  | 3.96                          | 0.343 (8.6%)              | 2.11 (53.1%)             |
| Early Lactation, single lamb | 4.31                          | 0.504 (11.6%)             | 2.22 (51.5%)             |
| Late gestation, twins        | 4.01                          | 0.422 (10.5%)             | 2.66 (66.3%)             |
| Early lactation, twins       | 4.36                          | 0.674 (15.5%)             | 2.88 (66.1%)             |

Table 1. Nutrient Requirements for a 154 lb. Ewe

Source: National Research Council, Nutrient Requirements of Small Ruminants, 2007

Thin ewes, 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 lamb. This can be accomplished with high-quality forage or by supplementing their diet with concentrates (i.e. grains). More information about body condition scoring sheep can be found at the Penn State Extension fact sheet: [Body Condition One More Evaluation Tool](#).

During early gestation, defined as the first 15 weeks of pregnancy, fetal lamb growth is minimal and a ewe's nutritional requirements are similar to her maintenance requirements. Thus, during early gestation, ewes can consume average quality pasture or stored forages. However, nutrition does play a critical role in ensuring embryonic survival. Therefore, a ewe's diet must at least meet requirements in order to ensure adequate nutrients to support placental development. Drawing from the previous example of body condition, a ewe in early gestation should be maintaining body condition, not losing condition. Monitor ewes every two weeks to ensure the 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 ewe should be supplemented to meet the increased nutrition 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 lamb in the first twenty-four hours after birth. Energy consumption during the last third of pregnancy will affect the size and vigor of newborn lambs as well as ewe milk production. Increasing energy consumption will also prevent pregnancy toxemia. Pregnancy toxemia is a condition that occurs when pregnant ewes are using more nutrients than they are consuming, thus they are drawing heavily on body reserves. In general, energy requirements for a ewe carrying a single lamb increase approximately 50% over her maintenance requirements, while energy requirements for a ewe carrying twins increase 75%. Therefore, during the last four weeks of gestation, ewes should consume 59 to 65% TDN, 10.5 To 11.5% crude protein and approximately 3.5 to 4.5 lbs. dry matter.

Due to the increased nutrient requirements during the last four to six weeks of gestation, ewes may not be able to consume a large enough quantity of forage, particularly when carrying more than one lamb. Body capacity becomes an issue as the lambs increase in size and there is less room for the stomach to expand for forage consumption. Therefore, most sheep producers supplement ewes 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 ewe each day, depending on ewe size and genetics. In colder climates and with ewes that often produce triplets, the supplemental feed should be started four to six weeks prior to parturition (birth of the lambs). 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 sheep, 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 varies based on fleece length. The lower critical temperature for a freshly shorn sheep is 50 degrees F, while the lower critical temperature for a sheep with a 2 ½ inch fleece is 28 degrees F. (Source: Sheep Production Handbook). Wind chills also contribute to additional energy needs and should be accounted for when making feeding adjustments.

Fleeced animals can perform very well in cold temperatures. However, energy requirements increase greatly with cold rains (temperatures in the 30s and 40s) and ice. A wet fleece 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.



*A free choice source of forage is one way producers can increase nutrient supply to sheep to account for additional energy required to keep themselves warm during cold weather conditions.*

Sheep are more tolerant of temperature changes than other livestock, due to the insulation value of their wool. Due to varying fleece lengths, it becomes difficult to accurately predict increased energy needs. Many producers provide forages free choice during cold winter months, which allows sheep 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.

While forages and concentrates supply the bulk of the sheep's carbohydrate, protein, and fat requirements, they are often lacking or imbalanced in vitamins and minerals. Because of this, sheep producers should also provide free choice access to a trace nutrient mix formulated for sheep. These mixes contain salt to stimulate intake and contain a combination of minerals and vitamins formulated specifically to meet the micronutrient requirements of sheep. It is important to note that cattle micronutrient supplements often contain toxic levels of the mineral copper and should not be fed to sheep. A

well-balanced sheep mix should be available at all times throughout the year. Failure to supplement these micronutrients results in poor fertility, weak lambs 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 sheep, but also more productive sheep. 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 flock.

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