

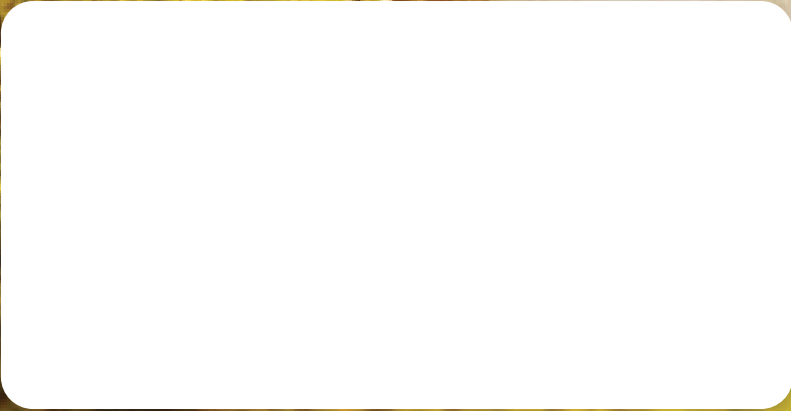
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SMALL RUMINANT EDITOR
November 2023



SINCE



1929

BASIC NUTRITION OF SMALL RUMINANTS

Feed is the single largest cost associated with raising small ruminants, typically accounting for 60% or more of total production costs. Nutrition exerts a very large influence on reproduction, milk production, and lamb and kid growth. Late-gestation and lactation are the most critical periods for ewe and doe nutrition, with lactation placing the highest nutritional demands on ewes/does.

NUTRITION LEVEL LARGELY DETERMINES GROWTH RATE IN LAMBS AND KIDS

Lambs and kids with higher growth potential have higher nutritional needs, especially with regards to protein. Animals receiving inadequate diets are more prone to disease and will fail to reach their genetic potential.

Small ruminants require energy, protein, vitamins, minerals, fiber, and water. Energy (calories) is usually the most limiting nutrient, whereas protein is the most expensive. Deficiencies, excesses, and imbalances of vitamins and minerals can limit animal performance and lead to various health problems. Fiber (bulk) is necessary to maintain a healthy rumen environment and prevent digestive upsets. Water is the cheapest feed ingredient, yet often the most neglected.

Many factors affect the nutritional requirements of small ruminants: maintenance, growth, pregnancy, lactation, fiber production, activity, and environment.

As a general rule of thumb, sheep and goats will consume 2 to 4 percent of their body weight on a dry matter basis in feed.

The exact percentage varies according to the size (weight) of the animal, with smaller animals needing a higher intake (percentage-wise) to maintain their weight. Maintenance requirements increase as the level of the animals' activity increases. For example, a sheep or goat that has to travel a farther distance for feed and water will have higher maintenance requirements than animals in a feed lot. Environmental conditions also affect maintenance requirements. In cold and severe weather, sheep and goats require more feed to maintain body heat. The added stresses of pregnancy, lactation, and growth further increases nutrient requirements.

A sheep or goat's nutritional requirement can be met by feeding a variety of feed stuffs. Feed ingredients can substitute for one another so long as the animals' nutritional requirements are being met. Small ruminant feeding programs should take into account animal requirements, feed availability, and costs of nutrients.

PASTURE, FORBS, AND BROWSE NUTRIENTS

Pasture, forbs, and browse are usually the primary and most economical source of nutrients for sheep and goats, and in some cases, pasture is all small ruminants need to meet their nutritional requirements.

- Pasture tends to be high in energy and protein when it is in a vegetative state. However, it can have high moisture content, and sometimes it may be difficult for high-producing animals to eat enough grass to meet their nutrient requirements. As pasture plants mature, palatability and digestibility decline, thus it is important to rotate pastures to keep plants in a vegetative state.
- During the early part of the grazing season, browse (woody plants, vines and brush) and forbs (weeds) tend to be higher in protein and energy than ordinary pasture.

SHEEP ARE EXCELLENT WEED EATERS

Goats are natural browsers and have the unique ability to select plants when they are at their most nutritious state. Sheep and goats that browse have fewer problems with internal parasites.

HAY

Hay is the primary source of nutrients for small ruminants during the winter or non-grazing season. Hay varies tremendously in quality, and the only way to know the nutritional content is to have the hay analyzed by a forage testing laboratory. Hay tends to be a moderate source of protein and energy for sheep and goats. Legume hays --alfalfa, clover, lespedeza -- tend to be higher in protein, vitamins and minerals, especially calcium, than grass hays. The energy, as well as protein content of hay depends upon the maturity of the forage when it was harvested. Proper curing and storage is also necessary to maintain nutritional quality of hay.



CONCENTRATES

It is often times necessary to feed concentrates to provide the nutrients that forage alone cannot provide. This is particularly true in the case of high-producing animals. There are also times and situations where concentrates are a more economical source of nutrients. Creep feeding and supplemental feeding of lambs and kids has been shown to increase growth weight, but should only be done to the extent that it increases profit.

There are two types of concentrate feeds: Energy and Proteins

- Energy feeds provide more calories but tend to be low in protein (8-11%). They include the cereal grains -corn, barley, wheat, oats, milo, and rye. It is not necessary to process grains for sheep and goats unless the animals are less than six weeks of age due to a lack of a functioning rumen. One of the problems with feeding a lot of cereal grains is that they are high in phosphorus content, but low in calcium. Feeding a diet that is high in phosphorus and low in calcium can cause urinary calculi (kidney stones) in wethers and intact males. The proper calcium to phosphorus ration is 2:1. Inadequate calcium can lead to milk fever (hypocalcemia) in pregnant or lactating ewes/does.
- Protein supplements contain high levels of protein (>15%) and may be of animal or plant origin. They include soybean meal, cottonseed meal, and fish meal. Ruminant-derived meat and bone meal cannot (by law) be fed to other ruminants, including sheep and goats. Protein quantity is generally more important than protein quality (amino acid content) in ruminant livestock since the microorganisms in the rumen manufacture their own body protein. Livestock do not store excess protein; it is burned as energy or eliminated (as nitrogen) by the kidneys. Since parasites often cause blood loss in small ruminants, higher levels of protein in the diet may enable the animal to mount a greater immune response to parasites.

By-product feeds, such as fat, soy hulls, wheat middlings, and broiler litter may contain high levels of various nutrients and can be incorporated into small ruminant diets if they are cost effective. Due to its copper content, it is not recommended that sheep be fed broiler litter for sustained periods of time.

Many feed companies offer “complete” sheep and/or goat feeds --

pelleted or textured -- which are balanced for the needs of the animal in a particular production class. Pelleted rations have an advantage in that the animals cannot sort feed ingredients. While complete sheep feeds have been available for many years, it has only been in recent years that meat goat rations have been introduced to the marketplace. Complete feeds come in 50 or 100 lb. sacks and tend to be much more expensive than home-made concentrate rations.

Augusta Co-op Solution

Augusta, 16% Goat Grower/ Developer Pellet, Medicated, 50 lbs.

A general purpose pelleted feed for growing kids, nannies, and bucks. Also contains Rumensin for the prevention of coccidiosis.



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VITAMINS AND MINERALS

Many minerals are required by small ruminants. The most important are salt, calcium, and phosphorus.

The ratio of calcium to phosphorus should be kept around 2:1 to prevent urinary calculi. Vitamins are needed in small amounts. Small ruminants require vitamins A, D and E, whereas vitamin K and all the B vitamins are manufactured in the rumen. A loose, free choice salt-vitamin-mineral premix should be made available to small ruminants at all times, unless a premix has been incorporated into the grain ration or TMR (total mixed ration). In the very least, ewes and does should be fed pre-choice mineral during late gestation and lactation. High levels of copper can be toxic to sheep.

Goats require a higher level of copper. When sheep and goats are fed together, it is not uncommon to feed a low-copper mineral supplement designed for sheep. This increases the risk for developing copper

deficiencies in kids born to does fed basal diets that are low in copper.

It is very unlikely that the same diet can be fed to sheep and goats without risking copper toxicity in the sheep or a copper deficiency in the goats.

WATER

Small ruminants should have access to clean, fresh water at all times. A mature animal will consume between ¾ to 1 ½ gallons of water per day. Water requirements and intake increase greatly during late gestation and during lactation. Water requirements increase substantially when environmental temperatures rise above 70 degrees F and decline with very cold environmental temperatures. An animal's nutrient requirements will increase if it has to consume cold water during cold weather. Rain, dew, and snowfall may dramatically decrease free water intake. Inadequate water intake can cause various health problems. In addition, water and feed intake are positively correlated.

University of Arkansas Cooperative Extension

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ARE YOUR SHEEP CONSUMING ENOUGH CALCIUM?

Minerals are essential to support skeletal and nervous system functions. But, have you balanced your current mineral program lately with the forages and other feeds that your sheep are consuming?

The only way to truly evaluate a mineral program is to start with testing forages and other feeds consumed by the sheep. Nutrient levels can be assessed using wet chemistry analysis or near-infrared (NIR) analysis. Not only do you need to evaluate mineral levels in feed rations, but you should also compare ratios of some nutrients. Calcium levels become particularly important during late gestation. Lambs begin to grow rapidly during the last third of the pregnancy, and the ewe requires more calcium in her diet. Consider a 150-pound ewe's requirements that increase from 2.4 grams per day at maintenance levels to 6.5 grams per day in early gestation and then 8.8 grams per day in late gestation if she is carrying twins.

Many forages will meet nutritional requirements of ewes at maintenance and possibly even through mid-gestation. However, rations may need closer inspection to best balance nutrients for late gestation, lactation (milk production), or for growing lambs. Legumes are much higher in calcium than grasses and could better meet calcium requirements. But simply changing forages is not the answer to better meet nutritional requirements! Keep in mind that the sheep's diet needs balanced with other nutrients as well as protein and energy.

Another major consideration when looking at calcium is the ratio of calcium to phosphorus in the sheep's diet. The recommended ratio of calcium to phosphorus from the Sheep Production Handbook is 2:1, with higher levels tolerable up to 7:1 if the ration contains adequate amounts of phosphorus.

In the instance of a ewe carrying twins in late gestation, calcium levels that are too low can result in hypocalcemia, also called milk fever. Clinical signs include weakness, lack of appetite, muscle tremors and inability to stand. Most shepherds would consider pregnancy toxemia as the issue. However, ewes in good body condition that are consuming adequate levels of energy in their feed should not develop problems with pregnancy toxemia. So, the next consideration should be hypocalcemia. Consult your veterinarian for treatment procedures, which will likely involve administering calcium intravenously to treat the deficiency.

Incorrect calcium to phosphorus ratios can also lead to urinary calculi in rams and wethers. As the calcium to phosphorus ratio approaches 1:1, the incidence of urinary calculi increases greatly. This results when mineral deposits block the urinary tract. Affected sheep have difficulty urinating and often stomp their feet or kick at their belly. This condition is sometimes called water belly because the blocked urinary tract can cause the bladder to rupture and result in death. This issue often affects feedlot lambs but can be prevented by adding ammonium chloride at a rate of 0.5% of the total diet. The ammonium chloride acts by acidifying the urine, which helps to prevent the mineral deposits from developing. A constant supply of clean, fresh water and access to salt also helps to prevent urinary calculi.

In young and rapidly growing animals, calcium works along with phosphorus and vitamin D to produce strong bones. A lamb can develop rickets from deficiencies or imbalances of any of these nutrients, although it is most often caused by phosphorus or vitamin D deficiencies. Rickets appears as swollen ends of the leg bones and lameness. Fractures often occur when lambs suffer from rickets.

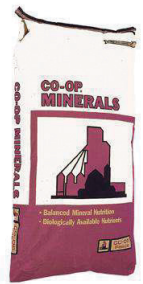
Calcium and the calcium to phosphorus ratio are critical to sheep nutrition, but calcium is just one of many minerals important to the overall health of the flock. Always consult with your local veterinarian or a nutritionist to balance rations. Properly balanced rations can result in improved growth as well as improved reproductive performance within the flock and lead to higher profitability.

Penn State Extension

Augusta Co-op Solution

Co-op Supreme Goat Mineral, 25 lbs.

Co-op Supreme Goat Mineral provides vitamin and mineral supplementation for meat goats on pasture or other forage-based diets. Contains zinc, organic copper, selenium, vitamin E, and a minimum of 11% calcium.



SKU - 96216

PASTURE IMPROVEMENTS CAN TAKE PLACE IN THE WINTER

Frost seeding is a method that allows pasture improvements to take place at the end of winter when temperatures drop below freezing at night and rise above freezing during the day.

A key to any plant growing from a seed involves that seed touching the soil. Farmers call this seed to soil contact. During late winter, temperatures often drop below freezing. This causes the soil to freeze and look like the nooks and crannies of a honeycomb. Farmers spread seeds that land in the valleys of those honeycombs during early morning hours. Then, temperatures must rise above freezing that day so that the soil thaws and covers the seeds. Thus, frost seeding results in good seed to soil contact.

If you think back to last fall, that farmer allowed animals to closely graze that field or mowed them late in the season. Removing this extra vegetation helps to expose the soil so that the seed reaches the ground more easily. Fields with a thick layer of vegetation often do not frost seed well because the seeds do not reach the ground. The short plant height for the existing plants also reduces competition to the seedlings because the seedlings have better access to sunlight. Farmers will also mow or graze the field when plants grow to six to eight inches tall so that once again the sunlight reaches the new seedlings.

Not all plant seeds work well for frost seeding. Farmers who want to improve their pastures with this method mostly use seeds from legume plants. These plants have heavier seeds that settle better into the honeycombed soils. Legumes include plants such as alfalfa, red or white clover and birdsfoot trefoil. Research has demonstrated that red clover has the highest success rate with frost seeding.

Grass seeds traditionally do not work well for frost seeding. The seeds tend to be lighter in weight and may include a structure called an awn, which is a small stiff bristle on the end of a seed. These two factors often prevent the seed from becoming well covered by the soil once it thaws. However, farmers can overcome this problem by using a chain drag or lightly running over the field with a disc.

Why would a farmer want to frost seed a legume into a pasture? The answer is that legumes can help to “feed” the pasture grasses. Legume roots have nodules on them that take nitrogen from the air and “fix” them into the soil. This nitrogen is then available to feed other plants growing nearby. A pasture with 30% of the plants comprised of legumes and 70% of grasses makes a good combination to feed the animals and for the legumes to feed the grasses.

Another reason to frost seed a legume into a pasture is to thicken up a pasture stand. Over time, some plants begin to die out. This can be due to the age of the plant, insects, disease or overgrazing. Regardless of the reason, frost seeding can improve both forage quality and yield. This can then lead to faster growing animals, higher milk production, or even a greater likelihood for sheep or goats to produce twins.

Successful seedings always start with a soil test. Optimum fertility greatly increases the likelihood of seedling survival. Many farmers take soil samples in the fall so that if the soil pH needs adjusted, lime can be added to the field that same fall. Farmers take soil samples every three years to determine fertilizer rates to maintain optimum fertility in the soils. The soil test makes recommendations based on the type of crop growing in the field and the expected crop yield.

Frost seeding can be a very effective and economical method to improve pastures. It can improve both the quality and the quantity of forage produced in the pasture. Farmers who manage soil fertility and take steps to encourage good seed to soil contact can expect good results.

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Blue Ridge Community College – Plecker Center
1 College Ln. | Weyers Cave, VA 24486

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RSVP required to Allison Bagley

ABagley@AugustaCoop.com. Dinner will be provided.

Please note: Road to the Ring will be hosted at a NEW location this year.

BLACK FRIDAY SALE

Friday & Saturday, November 3-4

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(540) 885-1265 x 253 or SAlger@AugustaCoop.com

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5TH ANNUAL

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