

SMALL RUMINANT TALK

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Central Region

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Goat Kid Development

Rodney Johnson, Livestock Agent, Central Region, and Small Ruminant Program Coordinator, LSU AgCenter

The feeding management of young goats is very critical to your goat enterprise. Most goats in Louisiana are raised for meat or milk. A large percentage of babies are selected and kept for 4-H show purposes. It is very important to understand the physiological changes that a young goat's digestive system goes through in the first few months of life. When ruminants are born, the first three compartments of the stomach are underdeveloped and the stomach functions to that of a monogastric animal such as a pig. As the young ruminant animal grows and begins to consume solid feed, the ruminant stomach is stimulated to develop. These changes affect the types and amounts of feed that young goats can eat and their nutritional requirements.

Milk consumption begins at birth and can last up to 2-3 months. The first milk that a young goat should receive is colostrum. It is the first milk produced by the mother. The antibodies found in colostrum are readily absorbed through the lining of the abomasum during the first 10-12 hours. The colostrum serves as a nutritive source for the newborn, and it contains antibodies to protect the newborn goat until its own immune system begins functioning at about 3 weeks of age. It is a good idea to keep frozen or powdered colostrum on hand for emergency cases.

Milk production of the doe begins to decrease at week 6 of lactation and is quite low by week 12. Young goats will usually nibble on hay or forages in the first week. Young goats tend to nibble on grain mixtures that are fed to lactating does. When the young goats eat solid food, these feeds stay in the rumen and lead to microbial development which is necessary to aid in digestion. The rumen-reticulum begins to develop rapidly, and the ruminant stomach is developed.

Creep feeding is a method of providing feed for the kids only. This is accomplished by fencing around a feeder and using a creep gate that has holes about 5 inches wide by 1 foot high. These holes are small enough so that kids can enter the feeder and adults cannot. Creep feeding will provide extra growth for the kids and prepares them to be weaned. Usually, a feed with at least 16% protein and that is medicated with a coccidiostat is used to creep young goats.

Advantages:

1. It increases pre-weaning weight gain.
2. Creep fed kids will have a greater weight per day of age.
3. Kids will reach a target market weight and can be marketed at younger age.
4. Creep feeding reduces the stress associated with weaning.

Weaning goat kids usually occurs around 12 weeks of age but a lot of producers are weaning at 8-10 weeks. As mentioned earlier, the milk production begins to drop at week 6.

Weaning goats that are exclusively raised by their dams is sometimes easier than weaning bottle-raised kids. Those kids are more likely to be taking in other sources of food and water earlier than bottle-raised kids, because they imitate what they see their own mother doing.

Another important concern is clean fresh water. Water is the cheapest feed ingredient. Water should be kept clean to encourage intake. This usually involves regular cleaning of the waterer. It is important that the area around the waterer not be muddy, as this is a good environment to spread foot rot.

Sometimes it is necessary to bottle feed kids either due to loss of mother or the inability to produce the required amount of milk. Below are some helpful hints to raising bottle babies:

- Try to cross foster kids to another doe.
- If a bottle raised kid is with other kids and does, it may learn to steal sufficient milk.
- Kids can be raised on cow milk replacer, the more expensive goat milk replacer, or, if neither is available, cow milk from the store may be used.
- Kids receive colostrum within 12 hours of birth. (Colostrum is the first milk produced after birth.)
- Colostrum may be milked from another doe that recently kidded or previously frozen.
- A kid should be fed 1 ounce of colostrum per pound of weight at each of three feedings in the first 24 hours. If the kid is too weak to nurse, it is appropriate to provide the colostrum via stomach tube.
- Initially kids can be fed using a baby bottle. Kids can be bottle fed twice a day, although three times a day the first 4 to 6 weeks of life may increase growth rate.
- A calf starter feed with a coccidiostat such as Rumensin and high-quality hay should be made available the 2nd week of life to prevent coccidiosis. After 4 weeks, kids can be limit-fed milk at 1 pint in the morning and again in the afternoon.
- Kids can be weaned after 8 weeks of age if they are consuming 2 ounces of starter per day.

High Feed Prices

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The price of feedstuffs has gone up exponentially the past few months. This has been a double whammy since both the price of corn, predominant energy feed and price of Soybean Meal, major protein feed have increased instead of one or the other. Byproducts feeds have ridden the coat tails of these two staple feeds in most cases and have increased proportionally. The feed commodity market will fluctuate up and down based on estimated planting reports and weather conditions during the planting, growing and harvesting of the crops. The export market will also play a role in the price of these feed commodities. Unfortunately, the outlook for the price of feed to decrease substantially does not look very promising.

Producers are left with few options to reduce feed cost. The first step would be to increase your culling criteria and rate. Take a close look at animals that are poor producers be it milk, meat or wool, older animals, low reproductive performance and remove these animals from the herd or flock. Reducing animal numbers and feeding these animals a properly balanced

diet is much better than reducing the quantity and/or quality of the diet resulting in short term savings but long-term problems with herd or flock productivity.

Next evaluate your forage program for both quality and quantity. Obtain a nutrient analysis of your forage and then work with your nutritionist to determine the supplementation needed to feed a balanced ration. Try to harvest the highest quality stored forage possible and maintain pasture quality through weed and pest control and proper fertilization based on a soil test. The higher the forage quality (protein and energy) the lower the supplementation cost.

For producers wanting to use some by-product feeds in the ration, make sure the by-product is economical and provides the nutrients needed to formulate a balanced ration. Occasionally, a producer will find a by-product that has a price almost too good to be true. Two old adages come to mind for this situation, and they are “buyer beware” and “you get what you pay for”. Some by-products appear to be too high in price but based on the nutrients supplied maybe a bargain. An example would be Dried Distillers Grain (DDG). If the price of DDG is \$334.00 per ton and corn @ \$252.50/ton and soybean meal 48 (SBM) @ \$478.00/ton would this be an economical price for inclusion of DDG into a ration. Dried Distillers Grain is an excellent feed being high in energy and protein. On an as-fed basis DDG has 28% Crude Protein (CP) and 81.8 % TDN. Corn has 8.8% CP and 74.8% TDN and SBM 48 has 48% CP and 78.3% TDN. If you mix a 50:50 blend of corn and SBM 48 the cost would be \$365.25/ton with a CP of 28.4% and TDN of 76.5 TDN. Therefore, 1.0 lb of DDG would have almost the same protein and more TDN than 1.0 lb of the mix of corn and SBM 48 resulting in the DDG being a good buy at \$334.00/ton compared to the corn and SBM mix at \$365.25. Computer software programs are available that work on this same principle of comparing the price of a by-product to the current price of corn and SBM 48 based on the energy and protein content. However, most by-products have limitations as to how much can be used in the ration due to too much of a certain mineral or too much fat. DDG is an example of this since it can have a fairly high level of fat which can interfere with fiber digestion and Sulfur which can interfere with the utilization of other minerals.

High feed prices are here to stay for the foreseeable future. Good herd or flock management, forage management and the use of economical by-product feeds will help producers maintain productivity in their herd or flock economically.

Puberty and Development of Replacement Females for Your Flock or Herd

Ashley Edwards, PhD, Assistant Extension Agent and Coordinator, LSU AgCenter

Defining Puberty

Puberty in females is defined many ways, such as (1) age at first ovulation, (2) age at first estrus or (3) age at which a female can support pregnancy. For production purposes, the age at which a female can support pregnancy is often the most practical definition. To support pregnancy, a doe or ewe should be an appropriate frame size and body composition. She must have also reached a certain metabolic and physiological status to conceive, sustain pregnancy, and support proper fetal development. Average age at puberty for both sheep and goats is 4 to 6 months. However, puberty may occur as late as 12 months of age in both species.

Frame Size and Body Condition

Doelings and ewe lambs should not be bred until they have reached 60 to 70% of their mature weight. In addition to proper frame size, they should be at an average body condition score of 2.5 to 3. It is important to realize that these females are still growing. Asking them to continue their growth, maintain pregnancy, and properly develop kids/lambs at the same time is a significant demand.

Nutrient Requirements

Animals consume 2-3% of their body weight daily. Growing animals may be able to consume more if it is offered. The amount of fat deposited influences every metabolic process, in turn influencing production of reproductive hormones. Too little fat cover will delay the onset of puberty, despite adequate frame size and weight. Caution should be taken to prevent them from becoming overly conditioned. Too much fat can lead to kidding and lambing problems.

Some producers develop replacement females by solely utilizing grazed forages. Cool season forages can meet nutrient requirements during early development when lambs/kids are learning to graze. Some warm season forages may meet nutrient requirements after weaning, but lower rates of gain are often seen. Forage samples should be sent for nutrient analysis to gain a better understanding of the nutrients your animals are consuming. Supplementing with grain, such as corn or oats, or a commercially mixed ration has been shown to increase rate of gain and may be necessary to meet nutrient requirements. Grains should be processed to increase their digestibility. Offering a free choice mineral may also be needed to reach the animal's requirements. This can be determined through forage and feed analysis.

Nutrient requirements are based on the breed, age, size, and physiological status of the animal. Factors such as stress and extreme weather can influence nutrient demand, as well. Crude protein requirements can vary from 12-18% and the amount of total digestible nutrients needed ranges from 60-70%. Your local extension agent and veterinarian can help you determine the requirements for your herd or flock.

Environmental Influences

Environmental factors can impact age at puberty in females. Sheep and goats are classified as a seasonally polyestrous species because their sexual receptivity peaks during the fall and winter months. Likewise, the onset of puberty is more commonly seen in fall and winter months. Some sheep and goat breeds are known to breed out of season and continue to display signs of estrus throughout the spring and summer. Puberty in these breeds can also occur in the spring and summer.

Housing females near a mature, intact male has been shown to hasten the onset of puberty in females. This is referred to as the "ram effect" or "buck effect" and works after the females have been isolated from a male for at least three weeks. The distance recommended between males and females during isolation varies. Most sources recommend a minimum of one-mile separation during this isolation period. In mature females, estrus is seen within a few days after exposure to a male. Exposure of doelings or ewe lambs for the onset of puberty may take several days to a week, and not all females will respond. It is important to note that doelings and ewe lambs must be peri-pubertal, or close to puberty, for the buck- or ram-effect to work. It should also be noted that fencing or space between the male and females needs to be secure and prevent breeding.

Herd Health

Herd health protocols can vary based on region. Local veterinarians will be aware of the vaccinations needed to prevent diseases common to your area. Many vaccinations and medications require a prescription, and a working relationship with your veterinarian is essential to maximizing flock/herd management. Producers should work towards having their flock or herd certified as Scrapie-free in the Scrapie Free Flock Certification Program with the United States Department of Agriculture's Animal and Plant Health Inspection Service (USDA-APHIS). More information on obtaining a premise ID, flock ID tags, and submitting samples for testing may be found by searching "National Scrapie Eradication Program" at www.aphis.usda.gov.

Summary

While it is most common to breed ewe lambs and doelings to lamb/kid at 1 year of age, it is important to develop the most realistic strategy for your program. Oftentimes, breeding females to lamb/kid as a 2-year-old may be more practical to ensure proper growth and development of the replacements. Optimizing management plans for replacement females can take time and should be improved each year. Resources such as local extension agents and veterinarians will help determine nutrition and health requirements for your flock or herd.

Toxic Plants Affecting Small Ruminants

Matt Welborn, DVM, MPH, DACVPM, LSU School of Veterinary Medicine

Introduction

Losses from poisonous plants are somewhat common to the small ruminant populations in Louisiana. No dollar value exists, nor is there data showing frequency of events. But certainly poisonings occur and can be significant to the animal owner (as well as to the animals!).

Toxic plants may be found in pastures, flower beds, wooded areas, hay, silage, seeds from “screenings” included in feed, trash dump sites, or just about anywhere. People sometimes toss leaves, branches, clippings from shrubs, etc. over the fence to their own or their neighbor’s animals. This may result in the unintentional intoxication of sheep and goats (as well as other livestock that consume it).

Most owners have toxic plants on their property yet have never experienced any problems. This may be due to insufficient plants to cause poisoning, animals don’t like/eat them, animals can’t access them, etc. Many people do not recognize common poisonous plants, nor if particular plants growing on their premises have been eaten.

The presence of toxic plants, even if there is evidence of consumption, may not be sufficient to confirm a diagnosis. Much depends on the level of toxicity, the amount consumed and other factors. As well, the absence of toxic plants does not always eliminate from consideration poisoning caused by certain plants. Signs of illness from croton, bracken fern, senecio, oak, locoweed and others may not become apparent for several days, weeks, or even months after the last exposure.

Factors affecting a plant’s toxicity

Many factors play a role in the level of severity of a toxic event. The degree of toxicity of the plant, the condition of the plant and the susceptibility of the animal are just a few factors involved.

Other factors include the following:

Plant factors

Particular species – Some plants in the same family possess different levels of toxicity.

Stage of growth – Some plants are more toxic when young, others when they are mature.

Parts of the plant – Seeds, leaves, roots, etc. may contain differing levels of toxic agents.

Condition – Plants may become more palatable when wilted or dying.

Plant defenses – Palatability, presence of thorns, etc. make plants more or less likely to be eaten.

Animal factors

Species of animal – Goats/Sheep may be more (or less) affected by a particular plant compared to another type of livestock such as cattle or horses.

Age – Lamb/Kids may ingest plants out of curiosity

Body condition – Hungry animals and those in poor body condition may seek out plants they normally would avoid.

The amount of toxin ingested and how rapidly it is consumed often plays a significant role in whether an animal becomes ill.

Feeding/grazing management – The amount of exposure to toxic plants will vary in animals on open range versus poorly maintained pastures versus improved pastures.

Environmental factors – This may determine the availability of plants in a region.

Season – Many plants are not available during winter months (but may be present in hay).

Soil type – Some plants prefer acidic soil conditions, others sandy or loamy soils, etc.

Weather – Some plants prefer dry conditions, whereas others thrive with higher moisture levels.

Shade vs Sun – Certain plants prefer shade, others sunny conditions.

Locations of toxic plants include a variety of settings including:

Pastures, fence lines, ditches/banks, corrals, edge of woods, woods, gardens, swamps, near streams/ponds, ornamental plants in yards and homes, etc.

Potential losses due to poisonous plants include:

Weight loss, decreased production, abortions, reproductive effects, death, additional fencing, altered grazing programs, loss of forage, photosensitization, secondary human intoxication from consumption of milk or meat, veterinary costs, replacement costs, etc.

Preventing toxicoses/losses include but certainly are not limited to the following:

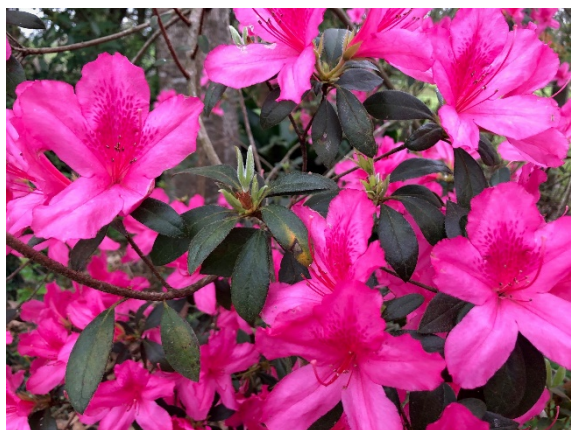
Remove toxic plants from areas where sheep and goats live. Utilize proper grazing management. Don't overcrowd animals. Offer clean, abundant water. Be knowledgeable of toxic plants in your area. Don't allow access to plants treated with herbicides as palatability may improve.

The following plants are not listed in any particular order of importance. They are a few among many the author feels are important to sheep, goats and other livestock in Louisiana.

Azalea (*Rhododendron spp*)

Azaleas are a very popular ornamental throughout Louisiana and a common cause of illness particularly in goats. They are evergreen shrubs with white, pink or red flowers typically seen in the spring. All parts of the plant are toxic, but the leaves contain the most toxin. The toxins are alkaloids that affect the heart and intestinal system. Only a small amount of leaves is necessary to cause severe signs. Approximately 2-5 ounces of leaves is enough to intoxicate a 100-pound goat or sheep.

Clinical signs include weakness, salivation (drooling), diarrhea, slow heart rate, regurgitation of rumen contents and death. Treatment involves binding the toxins with activated charcoal, anti-inflammatories, IV fluids and certain cardiac specific drugs if available. Animals may die even with treatment.



Privet (*Ligustrum spp.*)

There are numerous species of privet, most originating in Asia that have naturalized in the United States. They are evergreen trees/shrubs. One, *Ligustrum sinense*, is known as Privet Hedge or Little Leaf Ligustrum and is considered an invasive species in some states. It can create large thickets and produces toxic leaves and seeds. Clinical signs would include colic, vomiting and diarrhea and treatment would be symptomatic.



Lantana (*Lantana camara*)

Lantana is a perennial herb with hairy, square stems and oval, serrated leaves. Flowers grow in clusters and vary from white to yellow and orange to red, often mixed. The fruits are small (4-5mm), round, juicy and green turning to black as they mature. Lantana is often planted as an ornamental but has become naturalized in the southern portions of Louisiana along the Gulf Coast.

The toxins, lantadenes, are found primarily in the leaves and consumption of 3-5 ounces for a 100-pound animal could be lethal. Damage to the liver and the intestinal tract cause signs of weakness, bloody diarrhea, and possibly death in 3-4 days. Chronic poisoning is more common and develops over several weeks also resulting in liver disease with jaundice and damage to the skin known as photosensitization.

Treatment consists of antibiotics, providing shade and supportive efforts. Activated charcoal or mineral oil may be of benefit early in the course.



Oak (*Quercus spp.*)

With 60 or more species in North America, oaks come in a variety of shapes and sizes ranging from small shrubs to massive trees. Most are deciduous, but some retain their leaves year around. Their fruit (acorns) exist as a one-seeded nut. Goats

are often seen eating oak leaves with seemingly few problems and deer thrive while eating oak leaves and acorns during winter months. Deer have special enzymes in their saliva that bind the toxins, making them resistant. Goats, although not to the same degree as deer, have the same enzymes allowing them to safely eat more than other livestock. However, this doesn't mean they are totally immune to the effects of oak.

Tannins are the poisonous agent in oak leaves and acorns. Sheep would need to consume a significant amount of acorns/leaves usually over a period of several days for disease to occur. The tannins are irritants to the gastrointestinal tract and upon absorption, cause kidney disease.

Signs begin after several days of ingestion. Constipation may be noticed early, but diarrhea, often bloody or tarry will develop. Anorexia, depression, frequent urinations, dehydration and weakness soon follow. Animals may grind their teeth and stand with a tucked abdomen. The amount of kidney damage is the main factor between life and death and animals may require weeks to fully recover. Treatment is symptomatic and maintaining hydration is important.



Chinese Tallow Tree (*Triadica sebifera*)

This invasive tree originates in China and unfortunately grows extremely well throughout Louisiana and the southeastern U.S. It is a member of the Spurge family of plants. It is unlikely to cause death, but may create some gastrointestinal upset such as salivation, vomiting and diarrhea. Goats tend to readily eat the leaves. Treatment would be symptomatic if needed and likely consist of activated charcoal or mineral oil.



Other plants known to be toxic to sheep and goats include:

Cherry – Choke Cherry and Cherry Laurel
Yellow Jessamine
Boxwood
Oleander
Bracken Fern
Crotalaria

Coffee Senna and Sicklepod
Milkweeds
Elderberry (cyanide)
Cocklebur
Nightshades such as Horse Nettle and Black Nightshade
Johnson grass when it has cyanide or nitrates

In conclusion:

Taking steps to reduce the likelihood your small ruminants will be poisoned by noxious plants falls in line with routine practices. Maintain pastures in good condition by keeping weeds and undesirable plants to a minimum. This not only protects your animals, but also allows the pasture to perform at a higher level of productivity. Additionally, keeping sheep and goats in good body condition will decrease their desire to consume toxic plants. Learn to identify plants where your sheep and goats live. If they are toxic, limit their growth through pasture management. Visit with your extension specialist or veterinarian for additional information.

Results and Judge Feedback from 2021 State Premier Exhibitor Contests

Hannah Devall, Associate Extension Agent, St. Martin Parish 4-H, LSU AgCenter

Brittany Zaunbrecher, Associate Extension Agent, Cameron Parish 4-H, LSU AgCenter

Usually I would start with *the dust has settled*, but I would be remised not to mention that the ice has also melted since the conclusion of our 2021 LSU AgCenter State Livestock Show. We had a total of eleven students complete the Sheep Premier Exhibitor Contest and twenty complete the Goat Premier Exhibitor Contest. No matter the placings, hats off to these students for accomplishing this task on top of all of the twists and turns that the 2021 show season brought upon us.

Results from the 2021 Sheep Premier Exhibitor Contest are as follows:

1st place: Hunter Marshall, Rapides

2nd place: Ali Fontenot, St. Martin

3rd place: Emmerson Lysons, St. Landry

4th place: Alli Roheim, St. Tammany

5th place: Haley Hancock, Bossier

Other participants include: Kyle Deville, St. Landry; Sadie Lear, St. James; Ava Breaux, Vermilion; Eli Coker, Claiborne; Elijah Homan, Iberia; and Emma Grace Winslett, Grant

Results from the 2021 Goat Premier Exhibitor Contest are as follows:

1st place: Alli Roheim- St. Tammany

2nd place: Sophia Parkman- Lincoln

3rd place: Garrett Lirette- Iberville

4th place: Emmerson Lyons- St. Landry

5th place: Saige LeJeune- WBR

Other participants include: Annabelle Pepitone- WBR, Debora Ann Thompson- WBR, Elaina Ruiz- St. James, Emily Tucker-Livingston, Erin Jines- EBR, Grace Pepitone- WBR, Haley Hancock- Bossier, Kylee Triche- Lafourche, Madison Couvillion-Lafayette, Mikayla Wilson- Vernon, Remi Larson- Iberville, Seth Manuel- St. Landry, Shaohannah Martin- Lafayette, Stormie Housend- Vermilion, Zoe Cazayoux- Lafayette

After reviewing the scores and visiting with the judges, students planning to participate in the future are encouraged to review their species project books (available from your local extension office) which is the basis of the written exam as well as some of the skillathon stations. As for the interviews, students are reminded that this is an opportunity to showcase their professional skills such as representing the animal agriculture industry as well as their 4-H project. Students should present themselves in a professional manner and dress appropriately. Looking through information on how to conduct yourself in formal interviews would be beneficial. Judges also highly recommend trying to remember questions asked this year and researching the correct responses to industry questions. It is possible to have questions repeat from year-to-year.

The 2022 show season seems far away now but it's never too early to start preparing!

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