



Sheep and Goats: Frequently Asked Questions

By Linda Coffey, NCAT
Agriculture Specialist
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This publication offers answers to many common questions about raising and marketing sheep and goats.

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The author with a young goat. Photo: NCAT

Introduction

This publication is designed to offer concise answers to many common questions about raising sheep and goats.

It is not meant to be comprehensive. For in-depth information on any of these questions, we encourage further reading. The *Small Ruminant Toolbox*, available online at <https://attra.ncat.org/ruminant>, contains many helpful materials, including PowerPoint presentations and the *Small Ruminant Resource Manual*. ATTRA's *Small Ruminant Resource List* will direct you to many other helpful materials. Additional sources of information are listed in the Further Resources section at the end of this publication.

Selection/Getting Started

1) How long does a sheep or goat live?

Assuming good health (and good nutrition, and good teeth, and good luck), a sheep or goat female should be productive until she is about 10 years old. If teeth wear quickly, though, older animals will not be able to graze well enough to maintain condition, and then they are susceptible to illness and will not be able to raise kids or lambs very well.

Prime years for a sheep or goat female are typically ages 2 to 7. Rams and bucks sometimes have

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This Shetland ewe, at age 14, still earns her place in the flock. Selecting daughters and sons from an animal with longevity can help build a stronger flock or herd.
Photo: Vicki Lynne, NCAT



Keep in mind the potential value of progeny when deciding how much you can pay for breeding stock.
Photo: Margo Hale, NCAT

Related ATTRA Publications www.attra.ncat.org

An Illustrated Guide to Sheep and Goat Production

Managing Internal Parasites in Sheep and Goats

Sheep: Sustainable and Organic Production

Small Ruminant Resources

Small Ruminant Sustainability Checksheet

Small Ruminant Toolbox

Tools for Managing Internal Parasites in Small Ruminants: Animal Selection

disposition problems as they age and therefore may not be retained as breeders for their full life. Also, to avoid inbreeding, rams may need to be used for only two to three years on a given farm.

2) How much should I pay for a doe? Ewe? Buck? Ram?

Marketing plays a role in this decision because what you can afford to pay depends on the end use of the progeny. Bucks and rams are, genetically, half the herd, and you will want to spend money on a good one because that affects your resulting lamb or kid crop. But if you are selling market kids or lambs for \$2.00 a pound, and you intend to make money on the enterprise, you must keep breeding stock purchases in line with expected returns. Breeding your own replacements is often a good way to build your herd inexpensively, with animals already adapted to your conditions.

Although some females can and do remain productive beyond age 7, normally you can expect to get five years of service from a doe or ewe. Totaling what you can realistically sell from that animal in five years, and subtracting the maintenance cost for those years, will show you what remains for purchasing the animal, for paying other bills, and paying for your labor (profit). This is a helpful exercise to perform before going shopping. Note that you can do the same kind of calculation for the buck or ram by figuring how many kids or lambs the animal might sire before you retire him.

Doe

5 productive years x 2 kids sold per year x \$2.00 per pound x 60 pounds = \$1,200 (Consider her maintenance costs for each year, will she wean twins each year, are you selling higher-value kids, etc.)

Buck

5 productive years x 38 kids sold per year (assuming 25 does, 150% kid crop weaned) x \$2.00 per pound x 60 pounds = \$22,800 (You can see where a good buck, with proven genetics and parasite resistance, is worth more money to your herd.)

Having said that, cheaper is not better if you are buying inferior or unhealthy stock. It is only right that you pay the breeder a fair price for a good-quality animal. Perhaps you might explore ways to get more income from an animal to help offset a larger investment.

3) How many should I buy?

Are you a beginner? Learn with five to 20 animals; buy no more than you can afford to purchase with cash, and certainly no more than you can easily feed on pasture. Sheep and goats multiply quickly, and you will learn many lessons during the first three years. For those who are unsure of their commitment to the enterprise, beginning with stocker animals (weaned lambs or kids) and grazing them on pastures until the late fall is a good way to learn. The problem with raising young animals is that they are more prone to illnesses because their immune systems are not well-developed. See the ATTRA publications listed in the Further Resources section



Start with a few animals. They multiply quickly and you will learn many lessons during the first few years.
Photo: Vicki Lynne, NCAT

for production information, and talk to other farmers as well.

As you learn more about the animals and decide that you do want to continue the enterprise, it is quite easy to expand to larger numbers. Just be careful not to let the flock or herd overgrow the land base because overgrazing is very damaging to the land. ATTRA's pasture publications, listed in the Further Resources section, have more information about grazing, as does the ATTRA tutorial *Managed Grazing*, available at www.attra.ncat.org.

4) How do I know how many animals my land can support?

One way to start answering this question is by asking your local Extension or NRCS agent how many acres it takes on your farm to support one cow. By looking at the Web Soil Survey, soil maps and forage types and density, he or she can arrive at a good initial guess. Convert that number to sheep or goats by figuring five ewes equal one cow, and six or even seven goats equal one cow. Five dairy goats are approximately equivalent to the grazing pressure of a cow. Now, that gives you the upper limit; start with half that number initially and see how it goes. Always remember the impact of rainfall; in a good year, your land will seem relatively productive. If the rains don't come the next year, you may suddenly realize that you are overstocked after all. Selling some stock quickly to protect the land, or buying hay if that is economically feasible, will usually be a smart move.



Check with local NRCS or Extension agents to get a rough idea of stocking rate for your farm, and begin with fewer than that. Photo: Dave Scott, NCAT

5) What breed is best to buy?

What do you plan to do? Here you need to think about your farm goals. Do you want to sell market lambs or fine wool? Are you interested in conserving rare breeds or in selling meat at the farmers market? For goats, is it meat or milk that is your focus? Some breeds are better suited to a certain purpose than others. Choosing a breed that is well-adapted for the purpose will result in greater profitability and less stress.

Where do you live? Some breeds are well-adapted to a particular climate or region and will not do well elsewhere. For example, Angora goats thrive in the dry areas of the United States but may be very susceptible to parasites if moved to the humid South. Icelandic sheep are a great choice if you want to raise fiber in a cold climate, but heat stress may be a problem for them in the South. Consider the climate that will make the animals comfortable before choosing a breed.

What do other local producers raise? If no one else in your region is raising a particular breed, it may be because that breed does not thrive in your climate. It also might be true that a breed is just not well-known in your area, even though it is perfectly suited. In that case, you might fill a niche and create a demand by educating others about the breed. On the other hand, if no one else in your region is raising a breed, where will you need to go to purchase breeding stock? And who will buy the stock you raise? If you are raising Suffolk sheep and there are lots of 4-H members in your county who want market lambs to show, you have a ready market (assuming you have high-quality, healthy stock). Those same 4-H members



***What are your criteria for animals on your farm?
Consider your marketing plan and your preferences.
Photos: NCAT***

may not be interested in Jacob sheep. Someone who wanted to draw people to the farm and also sell to handspinners would be VERY interested in those Jacob sheep, and not the Suffolks! So consider local availability and demand, along with farm goals and your interest in marketing.

What are your criteria for animals on your farm? This is related to the idea of the breed meeting your goals but takes it a little farther: let's say I have decided my main focus is to raise lambs for meat. I will sell live lambs. And I want them to weigh 100 pounds in 120 to 150 days. A well-fed Suffolk might fit the bill; they are known for fast growth. On the other hand, let's say I want animals that are parasite-resistant, hardy, and able to breed out of season. I also am interested in conserving a rare breed. Those criteria steer me away from the Suffolk and toward the Gulf Coast Sheep. But now we have to prioritize because they are NOT known for fast growth.

How do you plan to raise and market the offspring? Again, this is an important factor in your decision. Using the comparison between Suffolk and Gulf Coast sheep, you might consider available feed and your personal values and decide that

your farm is best-suited to raising sheep on pasture alone. The hardiness and parasite-resistance of the Gulf Coast breed then may make your decision easy. On the other hand, suppose your customer is a restaurant that wants large lamb chops: the larger breed would be preferred (unless you convince the restaurant of how "cool" it is to conserve a rare breed and encourage genetic diversity!) An ethnic customer might be much happier with the smaller Gulf Coast lamb, available nearly year-round due to out-of-season breeding.

The question of which breed to buy is really impossible to answer without having all the background information. Then you must factor in personal preference; there is no sense in raising a breed you do not personally enjoy, no matter how many fine attributes it has. (For example, I will not raise Lamancha dairy goats because I do not like their ears.)

For many purposes, cross-bred animals will work better; they bring hybrid vigor and improved hardiness, as well as combining two sets of admirable traits. But the main thing to look for in breeding stock is not breed: it is health, local adaptation, and suitability for the market.

6) Should I raise goats or sheep?

The answer depends on:

- Land base (Brushy land works better for goats; pasture works best for sheep.)
- Market (What do your customers want?)
- Personal preference
- Economics (Look at expected profitability for each enterprise.)

Both goats and sheep require similar feeds, fencing, housing and facilities, and health care, including parasite management and predator control. Both produce meat that is desired by



Photo: Joan Burke, ARS



Consider your land base when deciding which animals to raise, as well as marketing plans and personal preferences. Generally, sheep prefer grazing and goats prefer browsing, but they will adapt to what is available. Photos: Robyn Metzger, NCAT

certain ethnic groups and by some health-conscious or environmentally aware consumers (and by some who just know that lamb and goat taste good). Market possibilities center on these groups. Both are generally inexpensive enterprises, and both sheep and goats are quick to mature and to be ready for breeding or market. Both usually will have twins. Both improve pastures by eating under-used forages and depositing manure.

But expect differences in profitability from sheep or goats if you are raising meat animals. Sheep gain more efficiently and are marketed at heavier weights than goats. This means that supplemental feed (if any) is used more effectively by sheep, and the selling price is higher, too. On the other hand, if clearing brush is your goal, goats excel at that task. So, in addition to the questions about land, market, personal preference, and economics, you really have to first identify farm goals.

7) I would raise sheep, but I don't think I can find a shearer.

Sheep shearing is a specialized skill, and it is hard work. Having a good shearer is important if you are selling to handspinners because they don't want "second cuts" (little snibbly bits) in

the fleece. And a careful shearer does not injure the animals, except for the occasional tiny nick, which heals easily.

Because you want a good shearer, it's a good idea to ask your network of sheep producer friends whom they use. It might be possible to pool your animals for shearing to save on set-up fees. If your networks can't help with this, though, see the American Sheep Industry website at www.sheepusa.org for a directory of sheep shearers.

Alternatively, you can raise sheep that do not require shearing. Hair sheep, including Katahdin, Dorper, St. Croix, and Barbados Blackbelly, all shed their hair coat with no need for shearing. You can find research about these sheep presented at the Hair Sheep Conference held in 2005 at www.sheepandgoat.com/HairSheepWorkshop/index.html. You can also visit individual breeds' websites. Owners of Katahdins and St. Croix list internal parasite resistance as another of the appealing traits of hair sheep. Dorper breeders consider excellent muscling to be evident for their sheep.



Sheep shearing is a specialized skill, and it is hard work. Photos: NCAT



If you don't want to deal with once-a-year shearing, consider raising hair sheep.
 Photo: Tracy Mumma, NCAT



Large quantities of wool are often marketed to a wool pool.
 Photo: Dave Scott, NCAT

8) Can I make money with wool?

Knitting and crocheting are popular now, and having natural fibers to sell to handspinners or knitters can help the bottom line. But making money with wool demands three things:

- A good shearer;
- Sheep that produce good fleece that is also clean and free of “vegetable matter” (seeds, hay, leaves, etc.); and
- A niche market—which always takes extra time.

Some people value wool sheep for their natural fibers, prefer the looks and carcass characteristics of woolled sheep, and believe that they grow better. If

the farmers put effort into marketing, woolled sheep can provide another income stream. Lambskins, knitted or woven items, yarn, batts, raw fleece, stuffed animals, felt...for a talented craftsman, wool can significantly help profitability.

Profitability/Marketing

9) Can I make a lot of money with sheep or goats?

Sheep and goats are not get-rich-quick enterprises.

Having said that, historically there has been and there still is continued potential for profit in sheep enterprises. Goats offer their own advantages in vegetation management and are growing in popularity (which usually improves prices). Let's note some advantages of these enterprises.

- Small size and low price for breeding stock = easy investment for a few starter animals
- Animals quickly reach maturity and reproduce, and quickly reach slaughter size on forage alone = quick expansion of herd, quick payback of investment, low cost to produce a saleable animal for market or breeding
- Multiple streams of income and easy combination with other enterprises, especially cattle = balanced risk and improved cash flow and profitability
- Low investment in facilities and equipment = less debt and easier exit should you need to leave the enterprise



Connect with a local spinner's guild to begin learning about the niche wool market.
 Photo: Linda Coffey, NCAT



Keeping fleeces clean will improve the value of the wool.
 Vicki Lynne, NCAT



Profitability is enhanced when animals are prolific. Pay attention to genetics, management, and marketing. Photo: Linda Coffey, NCAT

- Enjoyable animals = personal satisfaction and family involvement

There are also significant disadvantages to sheep and goat enterprises. Here are a few.

- Fencing must be better than a cattle fence; this takes money and work.
- Predators are a consideration, and you must make provision to protect the stock; a good electric fence helps, but livestock guardian dogs (LGDs) are often needed as well. This means another animal to feed, provide health care, and manage; while most LGDs are good, some are not, and this can be a hassle.
- Health care for sheep and goats can be demanding, especially internal parasite management. (Proper stocking rate and nutrition will help this, as will purchasing healthy stock to begin with.)
- Because goats and sheep are small, income from selling market animals is low. This spreads risk and makes them easy to market, but it also means you need to sell a lot of animals to make significant income. You might be clearing \$50 to \$100 a head after paying expenses; if that is your sole income stream from the enterprise, you can see that it will be supplemental income for the farm; not enough to support a family unless numbers are large.
- In some situations, supplemental feed will be needed. You must strike a balance here,

providing good nutrition but keeping costs as low as possible.

Much depends on management and marketing; it is a good idea to work budgets out on paper before starting an enterprise. Enterprises that offer larger incomes also require more expertise, labor, and investment. For example, dairy goats and show and breeding stock tend to have higher incomes but also higher expenses. See the beginning farmer materials for business planning, including tipsheets and presentations, at <https://attra.ncat.org/oasdfr>.

10) How can I sell my sheep or goats?

So many possibilities! Are they purebred, registered breeding stock, or milkers? Advertise in the publications read by your target customers. Use listservs dedicated to your breed or animal, breed associations, and of course local and regional newspapers, Craigslist, and your farm website.

Are they market animals? Think about your customers and reach them where they are: get the word out at the mosque to reach Muslim customers, use the farmers market or Local Harvest (www.localharvest.org), or your state marketing tools (websites are available in many states for listing farm products). Take advantage of pooled or graded sales, local auctions, and Craigslist.

This is a vital question, really, and deserves a lot of thought and effort. Ask at workshops about how other producers are selling their animals and whether or not they are pleased. Be sure to check locally for ideas, and see www.sheep-goatmarketing.info for some very helpful articles. Finally, combining several options can be a good idea. Sell your best lambs and kids as breeding stock or show stock, sell others directly to customers, and sell the remainder at auction.



Selling a grand champion makes it easier to sell stock in the future. Photo: Casey Luther



If you have a large flock, you need a more streamlined way to market your animals, such as an order buyer who will come to your farm. Photo: Dave Scott, NCAT



If you have a few animals for sale, it's easy to find individuals who will come and purchase. Photo: Margo Hale, NCAT

Health

11) What should I do when I bring a new animal home?

Any time you purchase animals, a quarantine period of at least two weeks is recommended. This gives some time for illness to show up, and you can treat the new animals without exposing your established herd. This also allows time for you to treat the new ones for internal parasite infection, and check to be sure your dewormer was effective. If the new animals are carrying internal parasites that are resistant to your dewormer, you will need to use a different dewormer or a combination of two dewormers; if that does not work, take that animal back to the sale barn before it has a chance to populate your farm with parasites that are not going to be killed by dewormers.

12) I've heard that a sick sheep is a dead sheep. Is that true?

Well, no. But it is true that sheep can be stoic and don't show they are sick until they are VERY sick.

Symptoms of Illness

1. All eyes and ears directed to the shepherd when she is with sheep. A ewe who is not attentive may be sick.
2. Is one animal lagging behind? It's sick.
3. Sheep run to a new pasture. The one who is walking may be sick.
4. Lambs love to have lamb races in the early evening. Watch for those who don't join in. Goat kids are playful, too, when they are healthy.
5. Are you supplementing feed? If a sheep or goat is uninterested, take notice; they are probably sick.

Then, if the manager doesn't respond, the sheep may not be able to recover on its own.

But if you observe the subtle symptoms of illness (see box) and take action to support the animal by lowering stress, improving nutrition, medicating, or obtaining veterinary care when necessary, most sheep will prove to be resilient.

Prevention of illness is key to raising sheep and goats. How do you prevent illness?

- Purchase healthy stock and then keep a closed herd if possible.
- Provide adequate nutrition for every class of animal and every stage of production.
- "Adequate nutrition" must include plenty of forage, clean water, and salt and minerals. At some stages when pasture is not vegetative, adequate nutrition will include some supplementary feed (for energy or protein or both).
- Administer appropriate vaccinations for your area. Almost everyone will want to give Clostridium CD&T to prevent overeating disease and tetanus. Practice low-stress handling, particularly when high-stress events such as weaning are occurring. (And there are lower-stress ways to wean, such as fence-line weaning.)
- Maintain good sanitation. Use clean water troughs and feed troughs; provide clean and dry lounging areas.
- Use good grazing management, with attention to the health of the pasture AND of the animal. Do not allow animals back on a pasture until the pasture has fully recovered, and use cattle or horses or hay-making to break internal parasite cycles. See ATTRA's *Tools for Managing Internal Parasites in Sheep and Goats: Pasture Management*.



All eyes and ears directed to the shepherd is a sign of normal health. Photo: Robyn Metzger, NCAT



Plenty of clean water helps keep animals healthy.
Photo: Dave Scott, NCAT



Photo: Tracy Mumma, NCAT

- Pay attention to routine care, such as hoof trimming and shearing, as needed.
- Maintain proper stocking pressure on the farm. Dr. Pugh (author of *Sheep and Goat Medicine*) recommends that you stock to fit forage production for the year; that is, if you are not able to produce all the forage needed for the year on your own farm, then you have too many small ruminants.
- Retain hardy animals in the flock or herd and cull weaker individuals.
- *Rigorously cull any animals that harbor high levels of parasites.*
- Pay special attention to internal parasite management. ATTRA's *Managing Internal Parasites in Sheep and Goats* and related

titles will be informative on this important subject. https://attra.ncat.org/attra-pub/livestock/livestock.html#sheep_goat

13) Do we need to deworm our animals every month?

No, and you shouldn't. A reasonable goal is to deworm less than three times a year, and to deworm only those animals that need it. You can reach that goal by selecting the strongest animals and providing good management to them. If your animals require more frequent deworming, then you have a problem with your animals, your management, or both. See the Further Resources section for a list of ATTRA publications on managing internal parasites. The website for the American Consortium for Small Ruminant Parasite Control (www.acsrpc.org) will be very educational as well, as will the chapter in the Langston University online certification course, www.luresext.edu/goats/training/parasites.html.



The FAMACHA method is an excellent tool for diagnosing anemia. See ATTRA publications for more on the subject. Photo: Photo: Robyn Metzger, NCAT



Bottle jaw is a sign of internal parasitism. Photo: J.M. Luginbuhl, NCSU

14) My animals are not anemic, but they are not doing well. They have messy behinds, and they are looking thin. What is wrong?

Two possibilities come to mind. Is it spring, and are the animals grazing lush spring pasture? That will cause runny manure, and sometimes the animals will actually lose condition as the forages run through too fast for absorption. Offering hay should help this, and sometimes a small amount of grain will also improve the situation. This is a short-term problem; do watch sheep for signs that they need messy wool trimmed, though, as there is danger from maggots if flies infect the wet wool.

Another possibility, in any season but especially in wet weather, is coccidiosis. This is more likely to affect young animals. Take it seriously, as it can cause permanent damage to intestines, resulting in “poor doers,” and it is contagious.

Other internal parasites can also cause diarrhea, and in older animals it is likely an internal parasite problem but not coccidiosis. A fecal examination will help sort this out; consult your veterinarian. For more information, refer to the ATTRA publication *Coccidiosis: Prevention, Symptoms, and Treatment in Sheep, Goats and Calves*. <https://attra.ncat.org/attra-pub/summaries/summary.php?pub=483>



Notice the posture, the dirty tail, the emaciated condition, the rough hair coat. In addition, look at energy levels and attention and herd behavior, as stated in the answer for question #12. Photo: J.M. Luginbuhl, NCSU

15) I bought some animals at the sale barn, but now they are limping. What should I do?

One of the reasons NOT to buy breeding stock at the sale barn is that they are exposed to stress and diseases while there and may carry contagious organisms to your farm and to healthy animals at your farm. Also, some animals were taken to the sale barn in the first place because they had problems: they were fence-jumpers, or they were poor mothers, or they had frequent or chronic health problems. (Of course, any animals coming onto your farm from outside sources—whether a sale barn or a breeder—might be carrying some disease.)

Remember that any time you purchase animals, a quarantine period of at least two weeks is recommended. This gives some time for illness to show up, and you can treat the new animals without exposing your established herd.

When limping is the symptom, most likely footrot or footscald is the problem. Immediately isolate the animals and examine their hooves; trim and look for pockets. If it is footrot, you will see pockets and notice a foul smell. The goal is to expose those pockets and then treat the hoof. See www.sheep101.info/201/hoofcare.html for photos and helpful information about hoof care and about foot rot. See also <http://pubs.ext.vt.edu/410/410-028/410-028.html>, for the article “Control, Treatment, and Elimination of Foot Rot from Sheep” by Dee Whittier and Steven Umberger, Virginia State Extension. Another publication covering this subject is *Foot Rot and Foot Scald in Goats & Sheep* by Maria Leite-Browning, found at www.aces.edu/pubs/docs/U/UNP-0087/. ATTRA has a video showing how to trim hooves: www.youtube.com/watch?v=6ffU_cBjlsk&feature=youtu.be.

Note that if there is only one animal limping, it may be a minor problem; perhaps a clogged duct between the toes or a stone or stick caught in them. Don’t ignore limping, though; you can give relief for the pain and can prevent more animals being affected (in the case of footrot). Footrot is a very serious disease and is difficult to eradicate in many cases.

Remember that any time you purchase animals, a quarantine period of at least two weeks is recommended. This gives some time for illness to show up, and you can treat the new animals without exposing your established herd.

Nutrition, Grazing, and Related Issues

16) How do I know what plants are poisonous to my animals?

It has been said that all plants are toxic to some degree; even some forage plants that are excellent feed most of the season can be dangerous in some situations (for example, Johnsongrass after a frost). To add to the confusion, there are lists of plants said to be poisonous that your animals may eat with no ill effects. Plant identification can be tricky, and common names are not always consistent among regions. It is not possible to eliminate every plant that might be dangerous. And many plants that are toxic can be eaten in small quantities.

How do you know what plants are poisonous? Begin with your local Extension service and NRCS agent; ask what plants in your region are likely to cause problems, and learn to identify those plants. There are many websites that list poisonous plants; some are well-illustrated, and some have practical indexes that are searchable by species affected. Having a good field guide helps with identification and provides Latin names to help eliminate confusion. The Maryland Sheep and Goat website has a page dedicated to poisonous plants, and many on-line manuals are collected on that page. You can browse them until you find the one that is most helpful to you, based on regional applicability or the organization of the site. One that I like is the “Poisonous Range Plants of Temperate North America” from the online *Merck Vet Manual* (see www.merckvet-manual.com/mvm/htm/bc/ttox04.htm). This is organized by both scientific and common names, includes a thumbnail photo (click to enlarge), a description of habitat and distribution, affected animals, important characteristics (to help in identification), toxic principle and effects, and comments and treatments. You can see all this at a glance, and the plants are arranged by “dangerous season”; so you can scroll down and browse the whole list of plants likely to cause trouble now. By reading the symptoms, you can get an idea of what is causing trouble for your animals. Many other sites require you to click individually on a common name or a Latin name, and it takes quite a bit of time to sort through the possibilities. Still, a field guide that can go out to the pasture

with you is really nice to have. Ask your state Extension and NRCS forage specialists for recommendations.

Now, the better question is, how do I prevent poisonings? The Merck guide mentioned previously gives practical suggestions for avoiding poisonings by various plants. It can be helpful to read more on behavior for a better understanding of how animals get feedback from substances contained in plants. Some plants are so toxic that the animals will be dead before feedback can work. Here are some principles to keep in mind.

- Dilution—if the animal has plenty of other forage in it, then the toxin is less likely to be fatal.
- Desperation—related to dilution; an animal that is not desperate is less likely to eat the bitter-tasting forages. So, be sure to provide enough good-quality forage that the animal is not feeling starved.
- Dam—the animals learn from their mother what is good to graze. If your female animals have grown up on your farm or at least very near, they will often know what to avoid and will teach their offspring.
- Down—limbs that fall during a storm may be dangerous to your animals, as some leaves are not safe to browse when they are wilted. Animals will not know to avoid wild cherry or peach trees; patrol your pastures after a storm and be alert to those kinds of trees. Also, don’t give prunings from your yard to your animals, as some ornamental plants are toxic.
- Drought—because forage may be in short supply, your animals may be hungry and may eat plants they normally wouldn’t (see desperation); and some plants also become dangerous because of drought.
- Diversity—where animals have lots of choice, they will be able to dilute toxins and fill up without resorting to eating poisonous forage.
- Don’t force—animals may not graze all plants in an area. They may be avoiding a weed with good reason. Be willing to clip or to spot-treat weeds that are not being grazed.

In nearly 40 years of grazing sheep and goats, I have had only one loss due to suspected poisoning. That was from perilla mint, and death

How do you know what plants are poisonous? Begin with your local Extension service and NRCS agent; ask what plants in your region are likely to cause problems, and learn to identify those plants.

was quick; the other sheep grazing that pasture showed no symptoms at all. We continue to have patches of perilla mint on the farm (though we have attempted to control it since that loss). Others who have had more losses might give stronger warnings; do ask others in your area about their experiences with poisoning.

17) How much should I feed my sheep (or goats)?

First of all, remember that sheep and goats are ruminants, and forages should be the basis of their diet; think of grain as a supplement, not the main course. Don't forget to provide lots of clean, fresh water: at least a gallon a day per head, and, in some seasons, a lactating animal might need as much as four gallons. Minerals and salt are needed in loose form, so animals will consume enough and not damage their teeth. Goats need copper among their minerals and can use cattle mineral; sheep need copper in their diet, too, but are more likely to accumulate it and have copper toxicity. The upper limit for sheep is 25 parts per million (ppm) in their total diet, so sheep minerals generally do not contain added copper.

All classes of animals can meet their nutritional needs on pasture alone, if the pasture is vegetative. On the other hand, only a mature dry animal can meet its needs for protein and energy on a dead or mature pasture. All other classes will require feed supplements, or they will lose weight on that pasture.

The next step is to ask what forage is available (pasture or hay) and get a good idea of the nutrition available in that forage at its current stage of maturity. Find that information by doing a forage analysis (ask your Extension agent). Remember that maturity is more of a factor than plant species.



On good pasture, these sheep do not need any supplement. Photo: Linda Coffey, NCAT

Next, determine the class of the animal. Weaned 65-pound lamb? Yearling pregnant ewe? Two-year-old dairy doe milking one gallon a day? Mature dry doe? Ewe in early lactation nursing twins? Each of these has different requirements for protein and energy and a different capacity for consuming feed. The Further Resources section lists ATTRA publications that cover nutrition and feeding for sheep, dairy goats, and meat goats in some detail. Other resources for learning about nutrition can be found online at the Maryland Sheep and Goat website (www.sheepandgoat.com), and (for goats) at the Langston University website (www.luresext.edu/goats). That site includes an online calculator; use the producer version (www.luresext.edu/goats/research/nutritionmodule1.htm), and call the experts at Langston for help if you run into trouble. Your local Extension service may also have helpful resources.

Then, look at available feedstuffs. The goal is to provide adequate nutrition for affordable cost. If there are by-products (or co-products) available in your area, you might explore using those to cut cost. The Langston online calculator includes a library of feedstuffs with their nutrient contents listed.

When you arrive at a ration and a feeding plan that you think will work, it can be reassuring to run it by a nutritionist or another producer. The real test comes when you feed it to your stock. And here is where your stockman's eye comes in; you need to watch your animals eat and pay attention to their body condition and any changes in it. Get in the habit of handling your animals as they eat; a gentle hand over their backs can give you a feel of how much cover (fat) is over their bones. A milking ewe will lose weight, and as long



To ensure adequate intake of forage, it may be necessary to supplement with hay. Photo: Vicki Lynne, NCAT

as her lambs look good, are growing well, and are lively, you accept some weight loss on the ewe. But if your late-pregnancy ewes are losing weight, then you'd have to ask why. Is the hay inferior? Hay that is not digestible will fill those sheep up but not provide enough nutrition.

Another good question to answer is whether the animals are eating the amounts that your balanced ration dictates. This is often overlooked.



This Boer doe illustrates proper body condition. After kidding, she should lose weight and be thinner than this, but by next breeding, this moderate condition should be recovered. Photo: Linda Coffey, NCAT



These young dairy doelings need a bit of supplement to keep them growing well so that they can freshen at one year of age. Photo: Linda Coffey, NCAT



Notice body condition. This Boer doe has been overfed and is in an unhealthy state. Photo: Linda Coffey, NCAT

Gain and milk production are directly tied to dry-matter intake. You may balance a ration for a lactating ewe for seven pounds of hay and two pounds of grain per day, but because of her size, she can't eat all of it. She will not produce what you are balancing for. The same thing goes for a weaned animal that you are finishing.

It would be nice to give a pat answer to the question of feeding, but there are too many possibilities and factors that enter into the decision. It is important to note that overeating grains is a danger to the health of sheep and goats; the rumen microorganisms must be protected from too much grain. See ATTRA's *Goat Production Overview* for a simple discussion of this principle.

18) What kind of pasture/hay is best?

Local Extension and NRCS offices have information about what forages are adapted to your area and soils, and it's always good to start with what you have. But here are some principles that may help in thinking about this.

First, think of the grazing animals. Because you want them to eat as much forage as possible, you want palatable forage. But research has shown that diversity encourages more intake. Diverse pastures can be hard to manage effectively because if both warm-season and cool-season plants are on the same pasture, you will wind up favoring one or the other by your management. However, to get good production throughout the grazing season, you will need both warm-season and cool-season plants on your farm. One approach might be to have some pastures for primarily warm-season grasses and legumes, and some for cool-season grasses and legumes. Forbs, sometimes known



Great way to feed hay Photo: Dave Scott, NCAT



Metal hay feeder. Photo: NCAT



Homemade hay feeder. Photo: NCAT

as weeds, can also be nutritious and palatable, so there is no need to be a purist. And if you have a tractor and enough land, annuals such as rye or turnips in a diverse mix of forages can be planted to help extend the grazing season and save money on hay.

The kind of forage matters less than how you manage it. To the extent that you can graze your pastures properly, leaving the right amount of residual forage for quick regrowth and good protective soil cover, you can provide good feed for your animals. See rotational grazing books and publications to gain a better understanding of this; many are listed in the *Small Ruminant Resource List*. An excellent resource is the *Managed Grazing* tutorial found

on the ATTRA website at <https://attra.ncat.org/tutorials/grazing/index.php>.

Concerning hay: mixed-grass hay with weeds included, put up before it headed out, will be accepted and enjoyed by most goats and sheep as long as it was cured and stored properly so it is not moldy. Alfalfa or another legume (such as peanut hay in the South) makes a good supplement to boost protein for classes that need it. Milking dairy does are an example of a type of animal that would benefit from this and might warrant the expense.

To save expense on hay, be sure to use a good hay feeder. Giving goats or sheep access to a big bale of good hay with no feeder means they will consider it a very comfortable bed. Finally, don't forget the value of browse for goats.



Goats and sheep relish sericea, and it helps reduce shedding of internal parasite eggs. Photo: J.M. Luginbuhl, NCSU

19) Will sheep or goats eat sericea?

Yes, and it helps with internal parasite control. See ATTRA's *Tools for Managing Internal Parasites: Sericea Lespedeza* for more. You can find it at www.attra.ncat.org.

Facilities and Fences

20) What kind of barn do I need?

For sheep and goats, a three-sided shelter, open on the side away from prevailing winds, will offer enough shelter from cold and rain and provide plenty of ventilation. A completely closed barn will tend to accumulate ammonia and may lead to respiratory diseases. Simple shelters that are easily cleaned are best.

If funds allow a more elaborate setup, it is great to have hay and feed storage and a couple of pens to use for sorting and for lambing or kidding time.

Plans from Midwest Plan Service are included in the *Small Ruminant Resource Manual*. It is even more helpful to visit other farms and see their setups.



Shelters open to one side are best in most climates. Check out prevailing winds in your location to see how to site the shelter. In some areas, open to the south is good; in others, open to the east is much better. Photo: Margo Hale, NCAT



During lambing season, it may be helpful to have a small pen to contain the ewe and her lambs until bonding is successful. This is especially nice in rough weather when an inexperienced ewe has multiple births. Photo: Margo Hale, NCAT



Shelters do not need to be fancy. Photo: NCAT

21) Should I have a working facility?

If by “working facility” you mean some setup that helps you accomplish needed management tasks, such as sorting groups of ewes or does that are close to birthing, vaccinating, deworming, or selecting animals that are ready for market—yes, you should have a working facility. But for small flocks, that can be as simple as a small pen that you crowd with animals and then perform the operation for the whole group, marking with paint sticks as you finish, for example, a vaccination on each animal. When you finish, turn out the whole group and fill the pen again with animals.

For larger operations, it is nice to have more elaborate facilities, either homemade or purchased. Again, before investing a lot in equipment and facilities, it is advisable to visit other farms and see how they are set up to perform management tasks. What do they like about their setup? What do they wish they had? Is there some feature that they never use or that is not worth the money?

Especially for beginning operations, it is smart to keep it simple and cheap. You can always upgrade if the enterprise can afford the investment and the manager thinks it is warranted. It is hard to get the investment back if you need to sell it within a few years.



If you have a large flock or herd, a good working facility will save lots of time and stress. Photo: NCAT

22) What kind of fencing is best for sheep or goats?

Electric fencing works well for goats, and if there are enough strands, it works well for sheep, too. Sheep are coated with insulation, and if they are hungry and there are not enough strands, they will learn to brave the small shock to get into a greener pasture.



Spacing is important for fences. Barbed wire is not a great choice for small ruminants. Photo: NCAT



Goats will enjoy rubbing on fences, unless there is a hot wire to prevent it. Photo: Linda Coffey, NCAT



Poly wire works well for strip grazing, if animals are trained to electric fence and if the fence is moved often enough so that animals don't challenge it. Photo: Linda Coffey, NCAT



For situations that call for flexible and effective fencing, electrified netting is an excellent choice. Photo: Vicki Lynne, NCAT

To improve results with an electric fence, install it correctly and use plenty of ground rods and a powerful charger; we aim for 9,000 volts. Then use a training pen until your animals understand that touching the fence hurts. After that they will avoid the shock (unless, as said earlier, they learn that wool insulates).

For perimeter fences or anywhere you really need a secure fence, woven wire is good. Goats may try to climb it or rub it, so an offset hot wire is nice to have, if possible.

The advantage of high-tensile electric wires showed after the 2009 ice storm in Arkansas. Those stretches of fence where limbs or trees fell on woven wire were very difficult to mend. Where high-tensile was the fence of choice, removing the limbs and then replacing or re-locating the insulators was the main job; the wires sprang back up.

On the other hand, after a lightning strike destroyed the fence charger, it was clear that no

charger means you really have no fence.

Consider ease of use and maintenance, longevity, and flexibility. Dr. Steve Hart of Langston University points out that cost is NOT a primary consideration because labor is much more important than initial material expense. Once again, visiting other farms will show you some ideas you want to try, and some you want to avoid.

Finally, consider the role of fencing in predator control. Electric fencing can help discourage coyotes and stray dogs. Electric netting is especially effective.

Conclusion

Sheep and goats can be profitable and enjoyable additions to your farm. Before bringing sheep and goats to your farm, know your farm goals, learn from experienced producers, investigate potential markets, and learn more from the resources listed below.

Further Resources

ATTRA Publications

An Illustrated Guide to Sheep and Goat Production
Integrated Parasite Management for Livestock
Dairy Goats: Sustainable Production
Dairy Sheep
Direct Marketing Lamb: A Pathway
Evaluating a Rural Enterprise
Goats: Sustainable Production Overview
Pasture, Rangeland, and Grazing Management
Pastures: Sustainable Management
Managing Internal Parasites in Sheep and Goats
Managing Internal Parasites: Success Stories
Meat Goats: Sustainable Production
Multispecies Grazing
Paddock Design, Fencing, and Water Systems for Controlled Grazing
Predator Control for Sustainable & Organic Livestock
Putting a Hand on Them: How to Tell When Your Lamb is Finished
Rotational Grazing
Ruminant Nutrition for Graziers
Sheep: Organic and Sustainable Production
Small Ruminant Resources
Small Ruminant Sustainability Checksheet

Tips for:

Managing Internal Parasites
Preventing Internal Parasites
Treating Internal Parasites
Working with a Veterinarian

Tips for Marketing Sheep and Goat Products:

Dairy
Fiber
Live Animals
Meat
Vegetation Management

Tipsheet:

Living Conditions, Facilities and Handling for Organic Livestock
Organic Approach to Animal Health
Organic Cattle, Sheep, and Goats for Dairy
Organic Cattle, Sheep and Goats for Meat Production
Organic Management of Internal and External Parasites

Tools for Managing Internal Parasites in Small Ruminants:

Animal Selection
Copper Wire Particles
Pasture Management
Sericea Lespedeza

Working with your Meat Processor

ATTRA Tutorials and Videos

Small Ruminant Course

<https://attra.ncat.org/oasdf>

This course has narrated PowerPoints, short video clips—including one on hoof trimming—and tipsheets on marketing sheep and goats. Business planning resources are also provided.

Small Ruminant Toolbox

<https://attra.ncat.org/ruminant>

The toolbox includes the Small Ruminant Resource Manual; the Tennessee Master Meat Goat Producers Manual; and PowerPoint presentations from NCAT, Susan Schoenian of the University of Maryland, and the Tennessee Master Meat Goat Producers Program. These materials may be accessed online or purchased in a jumpdrive format.

Managed Grazing Tutorial

<https://attra.ncat.org/tutorials/grazing/index.php>

The tutorial offers lessons that will help you manage your soils, forages, and livestock in a way that benefits the whole farm.

Livestock Videos

<https://attra.ncat.org/video/#Livestock>

Videos related to livestock and grazing.

Websites and Online Courses

American Consortium for Small Ruminant Parasite Control, www.acsrpc.org

Visit this website to learn everything you need to know about managing internal parasites in sheep, goats, and camelids. Many helpful articles and videos are listed, and new articles are added frequently.

American Sheep Industry Association, www.sheepusa.org

This website allows access to the Sheep and Goat Research Journal, workshop proceedings, the Targeted Grazing Manual, and much more.

E (Kika) de la Garza American Institute for Goat Research at Langston University, www.luresext.edu/goats

Among the offerings on this rich site are an online course for meat goat producers, a ration-balancing program for all classes of goats, tutorials for doing fecal egg counts and body condition scoring, and the proceedings from years of Langston Goat Field Days, held annually the last Saturday in April.

eXtension Goats Community of Practice, www.extension.org/pages/Goats_Community_of_Practice

This site offers resources as well as the opportunity to ask questions online.

Maryland Small Ruminant Page, www.sheepandgoat.com

This site is a go-to page to find information about raising and marketing sheep and goats. Sign up for the free email newsletter, too.

Books

The Fleece & Fiber Sourcebook. 2011. By Deborah Robson and Carol Ekarius. Storey Publishing, North Adams, MA. 438 p.

This amazing book is a wealth of information about fibers from many animals. It is interesting and beautiful: if you plan to make fiber a part of your business, this book will help you understand more about what you are selling and how to improve.

Storey's Guide to Raising Sheep, Fourth Edition. 2009. By Paula Simmons and Carol Ekarius. Storey Publishing, LLC., Pownal, VT. 400 p.

This book is a very useful resource covering many aspects of raising and marketing sheep and their products. Enjoyable to read and helpful to both beginners and experienced producers.

Southern Forages. 2002. By D.M. Ball, C. S. Hoveland, and G.D. Lacefield. Potash & Phosphate Institute (PPI). Norcross, Georgia. 322 p.

Order from:

Potash & Phosphate Institute (PPI)

655 Engineering Drive, Suite 110

Norcross, Georgia 30092-2837

Phone: 770-825-8082

E-mail: circulation@ppi-far.org

This handy book includes color photos to help in forage identification, as well as a very readable and useful treatment of forage programs, options in forages, establishing and managing the grazing of forages, minimizing stored feed requirements, poisonous plants, and much more. A chapter on forage quality is followed by a chapter on the nutrient requirements of livestock. All keepers of grazing livestock in the South will benefit from reading and using this book. Features slick paper, compact size, readable font, lots of graphics and tables and photos.

Turning Wool into a Cottage Industry. 1991. By Paula Simmons. Storey Books, Pownal, VT. 188 p.

This book is a big help to those who want to use fiber.

Sheep and Goats: Frequently Asked Questions

By Linda Coffey, NCAT Agriculture Specialist

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