Introducing Meat Goats

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Introduction

For thousands of years, man has raised goats for a multitude of uses. Goats, as a species, are recognized as one of the first farm animals (before cattle and hogs) to be domesticated and used for human consumption. Versatile and hardy, goats thrive in many different environments and provide milk, meat, fiber, and skins for their keepers. In some parts of the world, goats are still kept by nomads to convert sparse vegetation into milk (which can then be made into cheese or yogurt) and meat. Goat skins make a fine leather (think of kid gloves), and the luxury fibers produced by cashmere and Angora goats are made into sumptuous clothes. In fact, goats are the source of many prestigious and expensive products, including goat cheese, cashmere, mohair, and kid leather. And goat meat (chevon), while enjoyed by millions of people around the world, is more expensive than many other meats in the U.S. Nutritional data on chevon shows that 100 grams (a little more than 3.5 ounces) contains only 143 kilocalories (Calories) and 40% less saturated fat than skinless chicken. These valuable products and the adaptability of the goat have made it globally important; data from the United Nations Food and Agriculture Organization (FAO) shows that the world goat population has steadily increased since 1980 recently surpassing one billion head (Figure 1).

For this handbook, we will focus on goats that are raised primarily for meat. Goat meat is a traditional food in many cultures, including Hispanic, Middle Eastern, African, Jewish, and Caribbean. In recent years, the U.S. has seen an increase in immigration, and many of these new residents have a taste and a preference for goat meat. Thus, demand for goat meat continues to grow, and strong prices mean a favorable economic outlook for producing meat goats. In the U.S., USDA/National Agricultural Statistical Service (NASS) reports indicate that total goat population, meat goat population, and numbers of meat goats slaughtered in USDA-inspected plants increased significantly from 1980 to the present (Figures 2 and

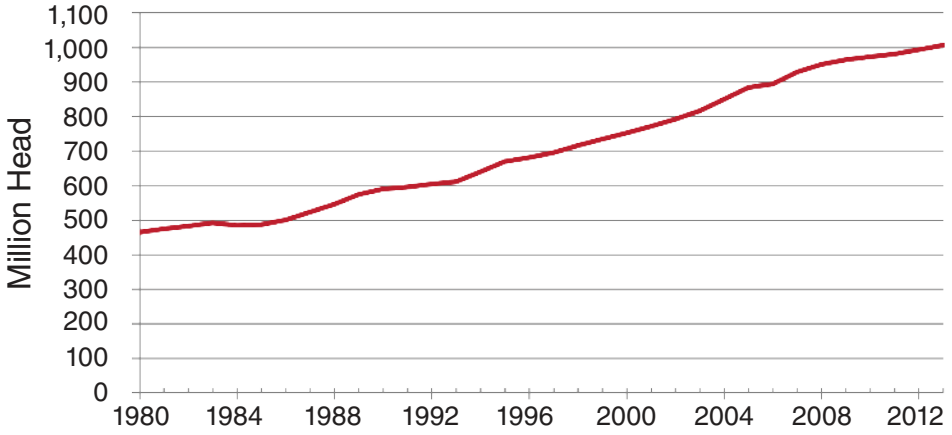

Figure 1. World goat population.
Source: FAO database, 2014.

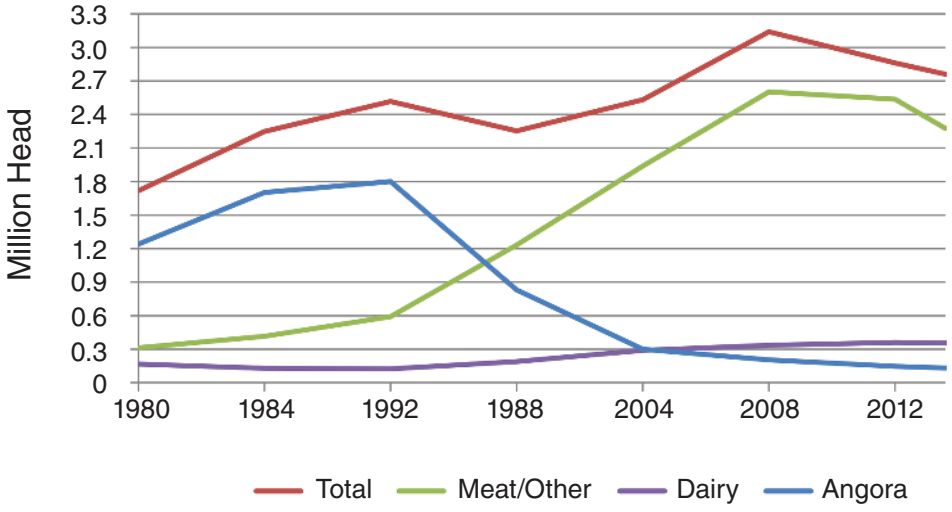

Figure 2. U.S. goat population.
Source: USDA AgCensus data and NASS database, 2014.

3). Also, according to the USDA Foreign Agricultural Service (FAS), the U.S. was a net exporter of goat meat through the late 1980's. Since that time, imports of goat meat have dramatically increased in amount and value with over 19,630 metric tons of goat meat imported in 2014 at a value of $94.7 million (Figure 4).

Besides producing a highly-sought-after meat, goats serve another important function. They can put land to better use by grazing and browsing plants that would otherwise go to waste. By grazing and browsing a targeted area, goats make meat out of unwanted vegetation and also prevent those plants from taking over the area. For example, if left alone multiflora rose can soon dominate a field, choking out grasses, legumes, and other forage plants. Goats can browse the thorny multiflora rose allowing grasses and legumes to compete, eventually converting the field back to usuable pasture. All over the country, people are using sheep and goats to control invasive, noxious weeds in a cost-effective and environmentally friendly manner with ample opportunity and need for more. Therefore,

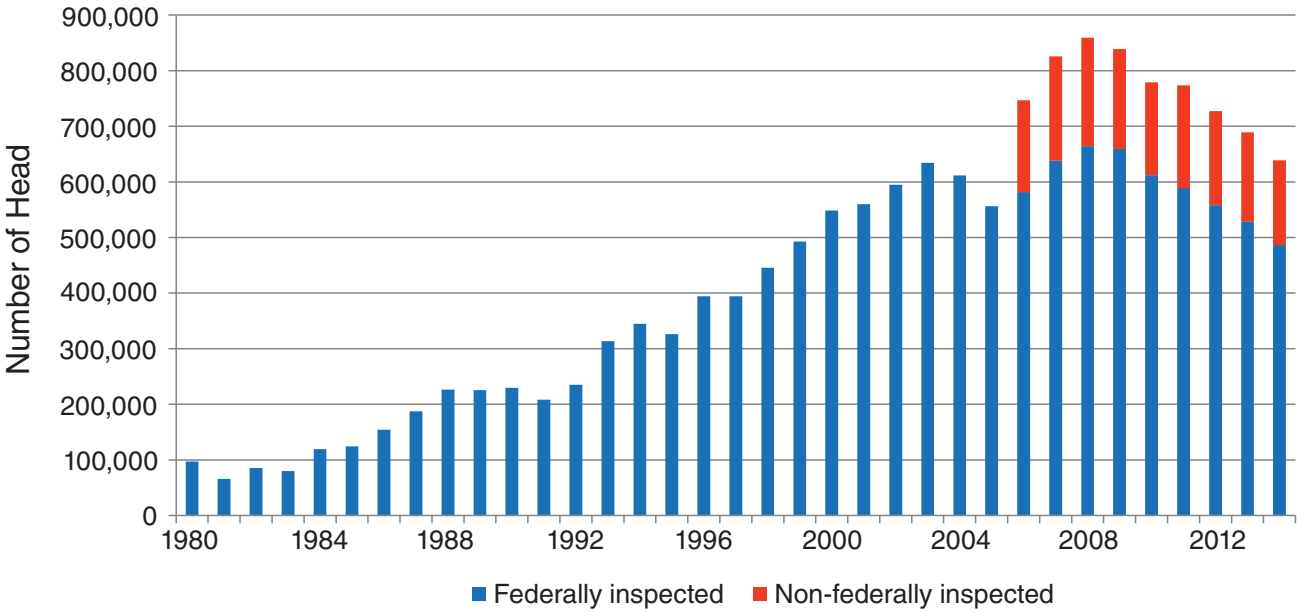

Figure 3. Number of goats slaughtered in USDA-inspected (blue bars) and in non-federally inspected facilities (red bars, shown when data available).
Source: USDA NASS database, 2015.

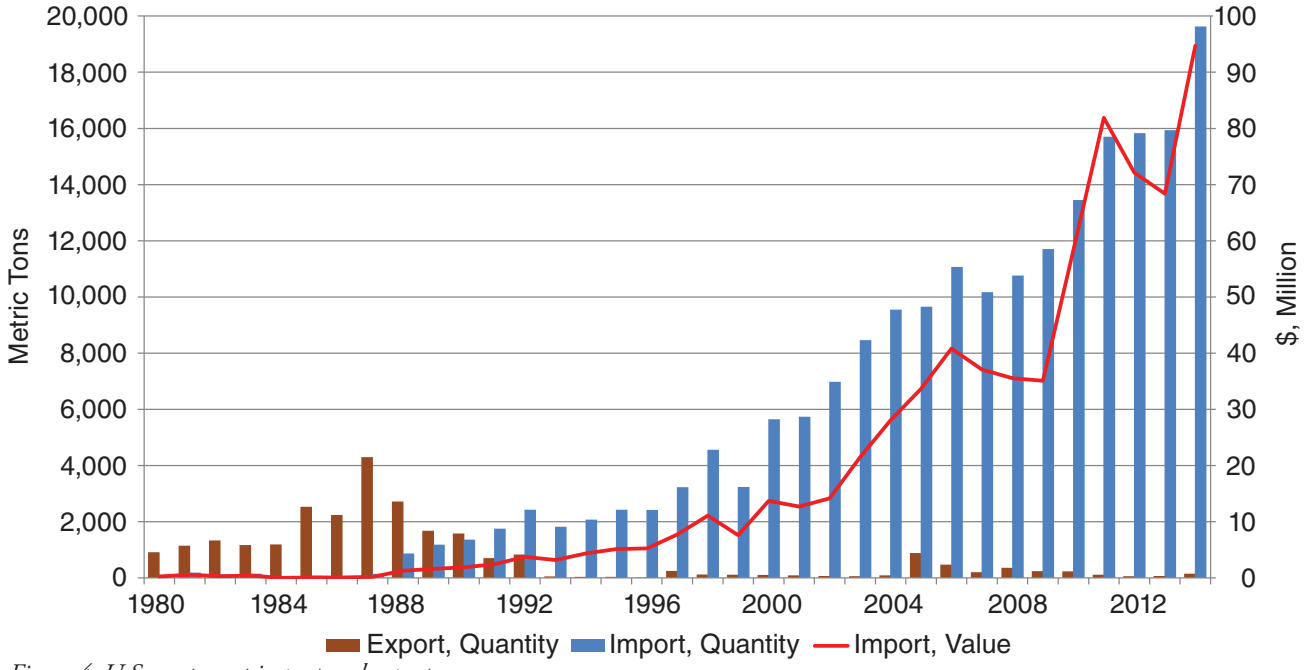

Figure 4. U.S. goat meat import and export.
Source: USDA FAS database, 2015.

Goats convert plant material into a valuable product.

producers of meat goats should consider the grazing ability of their goats as another economic benefit. (See the "Targeted Grazing for Vegetation Management" chapter in this manual for more information.)

As you start studying this section you will come across some terms that will be helpful for you to know. Below are some terms that are used in this section:

1. Buck - A mature male goat, also called a billy.
2. Doe- A mature female goat, also called a nanny.
3. Kid - A goat less than 1 year old. Males between 6 months and 1 year may be called "bucklings" while females are called "doelings."
4. Wether - A castrated male.
5. Fiber - Fleece taken from goats.
6. Mohair - Fiber produced by the Angora goat.
7. Cashmere - A superfine "down" fiber that grows as the undercoat on almost any goat except Angora goats. The mean fiber diameter of cashmere is 18.5 microns or less (about one-fourth the diameter of a human hair).
8. Grazing - A term that applies to how animals eat grasses and forbs (broad leafed plants, including legumes and most weeds).
9. Browsing - A term that applies to how wildlife, sheep, and goats eat vegetation from trees and shrubs.
10. Multispecies grazing, also known as co-grazing or mixed grazing - Grazing by two or more species such as cattle and goats on the same land unit, either at the same time or sequentially.
11. Gestation - A period of time for fetus development from conception to birth (5 months for goats and sheep).
12. Fetus - Unborn young.
13. Parasite- An organism that lives on or within another animal (host), benefiting at the host's expense.

Why Raise Goats?

The two major uses of meat goats, meat and land management, have been mentioned. Of course, there are other animals that make meat and can use otherwise wasted plants. So, what is special about goats, in comparison to cattle, for example?

Strong market/ethnic demand

As previously stated, there is a strong demand for goat meat. Many immigrants would rather eat goat meat than any other kind of meat. This presents an opportunity for American farmers and ranchers, as there is a lot of room to expand the goat producing community. USDA/FAS reports that imports of chevon have gradually increased since 1990 (Figure 4).

Small size

Goats are an attractive enterprise for many people who may be intimidated by larger animals. Goats are small and safer to work around than cattle, and because of their size and ease of handling there is no need for expensive working facilities or head gates, squeeze chutes, and other equipment essential in cattle ranching.

Low cost (to buy and raise)

Meat goats are one of the least expensive livestock enterprises to start-up, because they do not require much capital to purchase or for buying feed. It is feasible to sell kids off grass and avoid purchased feed because they are marketed at a young age and do not need to be overwintered. Also, as stated above, facilities are less costly than for cattle.

Better use of diverse and unused forages

Because goats prefer to browse (eat brush or vines) rather than graze grasses, they are complementary to cattle or horses in grazing situations. Using more than one species to graze an area is called "multispecies grazing," and in nature helps maintain plant species balance and ecological stability in an area. Modern farming practices have tended to limit the kinds of animals on a specific piece of land, and this encourages less useful plants to dominate an area. For example, on a pasture used by cattle alone shrubs and vines may increase because cattle do not graze those plants consistently. Adding goats to the pasture will result in more meat being produced on that land because the goats and cattle will be turning different forages into meat and more meat means more income per acre.

Another benefit of goats grazing plants that cattle avoid is that goats can prevent weeds and brush from taking over an area. The brush that a goat eats is converted into money by way of meat. Since it won't be necessary to use chemical, mechanical, or other means to control the brushy plants, the goats will also save you money. Besides

the financial benefits, goats are a much safer tool to use on weeds. Many people develop sensitivity to chemicals after years of exposure; using goats to accomplish the goal is much better for the environment and for those people living in the area.

Prolific breeders and early maturity

For some livestock enterprises (such as cattle), it takes years to build a herd because of the length of time for those animals to reach puberty and their low reproductive rate. However, goat herds build much faster because goats can give birth to their first kid at 1 year of age. Also, while the first-time kidders are likely to have single births, most does will have twins thereafter. Therefore, herd numbers grow rapidly and a producer can increase his herd by five-fold (or more) in 5 years.

Better cash flow and quicker return on investment

Not only do goats reproduce well, they also reach market size very quickly. Gestation is 5 months (compared to 9 months for cattle), and the kids may be sold at weaning, about 4 months after birth, or held a bit longer on pasture. In any case, the kid crop should be ready to market less than a year after the breeding date. This means that the initial investment can be recouped quickly and cash flow is more favorable than for cattle enterprises.

Goats are agile and can reach high branches.

Goats combine well with cattle enterprises

Adding goats to a cattle farm at the rate of one or two does per cow can result in a 25% greater return per acre, due to more pounds of meat produced. In addition, the goats will control brush so that cattle pastures are dominated by grasses and clover, with no need for spraying expensive chemicals to stop invasive weeds and brush. Cattle make it safer for goats to be on pasture because the larger size of cattle and their presence help deter predation. In addition, cattle help break internal parasite cycles because they do not share parasites with the goats. In contrast with sheep, goats can use the same mineral mix as cattle because both goats and cattle can tolerate higher doses of copper than sheep. For all these reasons, goats and cattle are compatible in the same pasture.

Challenges

Every enterprise has its challenges, and goats are no exception. The main challenges that a goat producer will face are fencing, internal parasites, predation, and lack of knowledge. Detailed information about these topics are included in chapters of this manual. Brief explanations follow.

Fencing

Goats are clever, athletic, and small. These traits make them much harder to keep in a pasture than cattle. Wires must be spaced closer, and gates can have no wide gaps. In most cases, farmers adding goats to their farm will need to adapt and improve their fences. This costs money and time, and is probably the major stumbling block for many farmers who would otherwise like to try raising goats.

For example, more strands of electric wire will be needed to control goats (two to three strands for division fences and at least five strands for perimeter fences, if that is acceptable according to the state fence laws). If barbed wire or woven wire fencing is already in place, it might be necessary to add a strand or two of electric wire to the existing fence. Goats are notorious for escaping through barbed wire, and horned goats often are caught in woven wire. As with any livestock, you'll need a good perimeter fence. Be sure to comply with fence laws in your state, and install a fence that will not allow goats to escape to the road or to a neighbor's garden. Refer to the "Fencing" chapter of this handbook for more about fencing.

Internal parasites

The most common health problem for goats is internal parasite infection. Goats are meant to range over a large area and to eat brushy plants that other species don't like. If goats are raised that way, they will not be exposed to many parasite larvae. Therefore, under natural conditions

Livestock protection is essential.

goats have less need to be resistant to parasites. Perhaps this is why some goats show so little ability to withstand parasite infections when forced to stay in the same area for long periods and graze close to the ground where internal parasite larvae are found.

While goats forced to graze a small area for an extended period of time are more vulnerable to parasites than cattle, the good news is that the internal parasites are species-specific; goat parasites have a bad effect on goats, but they do not harm cattle, and vice versa. This means that by grazing cattle after goats the cattle will remove (by ingesting) goat parasite larvae from the pasture, thus "cleaning" it for the next rotation of goats back to that pasture. One caution: sheep and goats are similar enough that they do share parasites, so grazing them together has no beneficial effect on parasite loads. Refer to the "Internal Parasites" chapter in this handbook to learn more about managing parasites in goats.

Predation

Because of their small size and good taste, goats are vulnerable to predators, primarily coyotes and dogs, but also bears, wolves, bobcats, feral hogs, eagles, and other predators. In heavily populated areas, dogs will likely be the biggest problem. Producers have several options to protect their livestock, including a good fence, guardian animals such as donkeys, llamas, or dogs, penning the animals close to home at night, or some combination of these methods. Detailed information about predation and how to prevent it is included in the "Predator Management for Goat Producers" chapter as well as the chapters on using dogs, donkeys, and llamas as guardian animals.

Lack of knowledge

In addition to the demands of fencing, managing internal parasites, and protecting from predators, some goat producers are challenged by a lack of knowledge about goats. The interest in meat goats has been relatively recent, and many people are new to the business. The learning curve is steep, and help can be difficult to find: many educators have no prior experience or training in the field; veterinarians may not have much experience with goats; and neighboring farmers and ranchers may know little about goats, even if they are very experienced with other kinds of livestock.

The knowledge you gain by reading this handbook and other resources should be complemented by talking to and visiting with farmers, ranchers, and educators with goat experience. Ask questions and find out what you need to know. Try to visit other farms and ranches so you can see how they handle various aspects of the business. Try to figure out whether what they are doing would work for you. Is it practical? Is it cost-effective?

A good place to meet other producers is at field days and seminars. Meeting and talking to other farmers and ranchers is, in many cases, at least as important as the material on the program, and the program information can add to your knowledge tremendously. Ask your cooperative extension agent about any programs planned for your area, and if there are none, you might want to encourage the agent to offer one.

Joining producer groups, such as a state or local meat goat producer group or a breed association, is another way to meet farmers and ranchers and learn from them. Some groups offer cooperative marketing services to their members, and many groups host workshops and field days. It is worth your time to be involved in a good association.

Written materials are available to help with any problems you may encounter. The rest of the chapters in this handbook contain valuable information. Additionally, a partial list of some pertinent information sources is offered in the ATTRA publication, Small Ruminant Resource List (https://attra.ncat.org/attra-pub/livestock/livestock.html#sheep_goat). This is not a complete list but does offer a place to start your search.

Finally, the best teacher of all is experience - your "on-the-job training." The first 2 or 3 years will be especially good at showing you what you don't know; that happens to everybody, so expect it. It's best to begin your education by buying a small, healthy herd (more about that later), so that you can learn without incurring much financial loss. Goats multiply very quickly, and you will soon have a larger herd if things go well. Starting small allows you to learn about normal behavior and health, grazing management, kidding, marketing, and all the other aspects of raising meat goats. When you are comfortable with your small herd and know that your fences work for goats, then you can easily expand into a larger business. Your chances of success are much greater if you learn your lessons before acquiring a large herd.

Production Systems

There are various options for raising meat goats. How you will manage the goats will impact the profitability of the goat enterprise, the demands placed on your family, and the resources needed. The converse is also true; your goals for the goat enterprise and for your whole farm or ranch (which includes your family) and the resources available may determine the method of raising goats.

Extensive - range, pasture, or woods; not handled much

Keeping goats on a large tract of pasture or range land and leaving them to fend for themselves is one time-honored way to raise goats. Under this system, the producer expects the goats to forage for their food and care for their young with no assistance. Goats are very good foragers, and if given access to enough land, they will be able to survive and raise progeny with very little labor or feed cost. On the other hand, this does require a large tract of land, and some form of predator protection must be in place to prevent excessive losses. Because of predation and lack of intervention at kidding time, fewer kids may survive to weaning. This reduces the income from the enterprise, but may be offset by the lower expenses incurred. Goats raised with little human contact (as in this extensive system) will likely be wild.

Pastured and rotated - management intensive grazing

For more control of stock and better management of pasture resources, producers may choose to raise goats under management intensive grazing. In this system, pastures are cross-fenced into "paddocks" so that goats can be restricted in an area and moved to fresh pasture every few days (or even more frequently). This rotation allows the producer to allocate feed to the goats depending on their needs, prevent overgrazing of a given area, monitor the intake of the goats, and make frequent observations of the goats' health, growth, and behavior. Goats raised in this way will be tamer, their health problems can be more easily noticed and solved, and feed cost is still minimized, as in the extensive grazing method. Grazing goats in a restricted area helps reduce predator problems, as guardian animals can more effectively patrol a small area, and electric fence can also be used to advantage. However, this method demands more time and attention from the producer, fencing costs are much higher, and the producer must learn how to manage pastures and internal parasites.

Pastured but not rotated

Of course, it is possible to pasture goats without using an intensive grazing system. Some producers choose to take a short cut by keeping the goats on pasture but not rotating them. This saves initial fence costs, time, and labor, and it is easier. However, goats that graze and re-graze the same small area will eventually develop problems with internal parasites. Furthermore, pastures abused by overgrazing will not be as productive. As pastures and animals both decline in health, feed costs go up. Therefore, while this method may seem less expensive and easy, over time it will create its own problems and be less profitable or sustainable.

Dry lot

Some producers forego pasture altogether and keep the goats in a dry lot (where there is no growing forage), feeding them all purchased feeds. This system has many drawbacks. First of all, goats do not convert feed efficiently, and they naturally waste a lot of hay. Feed costs under this system will exceed returns of the kid crop, unless the kids are sold as high priced breeding stock. But, dry lot-raised goats do not know how to graze to maintain themselves economically, and a buyer is likely to be dissatisfied with such expensive to feed animals. This system also demands more labor and time to provide feed and manage manure.

Goats that don't get enough exercise are likely to be overfat, which leads to kidding problems. And goats kept confined are going to have more fights (as bored children do) and become aggressive toward less dominant animals. At feeding time, this may be particularly noticeable, as the dominant goats drive off the timid ones, resulting in overfed bullies and smaller, underfed animals.

In short, from the standpoint of goat behavior and economics, a dry lot system for raising goats is not a viable choice.

Markets and Marketing

Within each of the four production systems introduced above, there may be any of the following six types of meat goat businesses. These businesses are categorized according to the goat markets they address. The production system is how goats are raised, while these business models reflect why goats are raised. Refer to the "Marketing Slaughter Goats and Goat Meat" chapter of this manual for more details.

Meat for ethnic holiday markets

When raising meat goats for ethnic markets, producers time breeding so that kids are the desired size at the proper time to meet holiday demands. This requires knowledge and planning on the part of the producer. What size kids are needed for a certain holiday? How fast will the kids grow? When are the holidays? Producers who go to the trouble to find the answers and produce kids to fill holiday demand will get top dollar for their product.

Help in answering questions about ethnic markets may be found at www.sheepgoatmarketing.info.

Meat for the open market

Meat goats can be sold (usually at a sale barn or livestock auction) at any time, and some producers do not have the interest or time to manage their herd for the holiday markets. They allow breeding to happen when the does are naturally cycling (generally in the fall, as days get shorter). Kidding occurs 5 months after breeding, and the first kids can be sold at weaning, about 14 to 20 weeks later. The producer sells when it is convenient and takes the market price, ignoring opportunities for higher prices. However, in areas with strong ethnic markets, prices can still be strong, and if costs are kept low, the enterprise should be profitable.

Meat for on-farm sale

Producers in areas with large enough ethnic populations may choose to set their own prices and sell animals from their farm premises. This has several advantages, including reduced risk of low prices (since the farmer sets the price) and lower marketing cost (no hauling charges, sale barn commission, or shrink loss). However, it may be inconvenient and disruptive to have buyers come to the farm. It may be difficult to provide a consistent supply of kids for sale. And it can be very time-consuming to sell kids one or two at a time rather than by the truckload.

Some producers who are successful in on-farm sales eventually become brokers, purchasing kids from other farms to resell on the premises. However, this does pose the risk of spreading disease. Another consideration is that some buyers will want to slaughter the kids on the spot. Is this allowed in your state? What requirements must be met to properly dispose of offal (guts, and other non-meat parts of the animal)? Do you need extra farm insurance to cover any possible accidents? For the right family this is a profitable and interesting way to market meat kids. But, it will not be feasible in all areas or for families who are reluctant to give up their privacy. More information about marketing methods is available from www.sheepgoatmarketing.info and the marketing chapter of this handbook.

Goats for brush control

In this business, meat kids are a byproduct of the main enterprise, using goats for land management, such as pasture improvement, noxious weed removal, or to create fire breaks. For example, castrated males (wethers) from a dairy goat operation make excellent foragers and are easy to manage. The goat owner may contract with land owners to provide these services. Goats need to be healthy and good foragers, but the manager needs to pay most attention to the condition of the land (not the goats). Goats may lose body condition if they are forced to overgraze to meet the goals of the landowner, and kids may not grow to their full potential. Many people have been successful in this enterprise, but it is certainly not simple. Goats must be monitored and controlled, water and predator protection must be provided, and the contracts have to benefit both parties. The "Targeted Grazing for Vegetation Management" chapter in this handbook includes more information about this practice.

Goats can reduce or eliminate brush.

Breeding stock for commercial herds

Because breeding stock is in demand, some producers find it profitable to focus on producing kids for commercial goat herds (purebred or crossbred, registered or not). To be successful, production costs must be kept low, animals must be healthy, and the stock must not only meet the needs of the commercial producer, but also be offered at a fair price. For the long-term success of the business, all the lower quality kids (male and female) should be sold to the meat market, while better quality kids stay in the herd or are sold to other producers. This enterprise requires some advertising and marketing.

Breeding stock for the show ring

The most rarefied goat business is the production of breeding stock for show herds. In this case, stock will be purebred and registered, and success in the show ring will be essential to its reputation. Stock must be "what the judges are looking for," in addition to being healthy; extensive marketing and advertising are necessary. Kids in this herd should be sorted in four ways; for show and sale, for show and building the herd, for sale to a commercial herd, and for sale to the meat market. This business offers the chance for high income, because top end kids get top dollar, but this business demands a lot of time, expertise, marketing, and show ring ability. It also has the highest costs of production. It is a risky business because the market is both fickle and political. Therefore, it is not for the beginner or the faint-hearted.

Each of these businesses has its challenges and opportunities. Each also requires that the producer begin by selecting healthy stock. Learning how to choose stock is the subject of our next section.

Breeds and Breed Characteristics

One of the first decisions needed after deciding to raise goats is which breed or breeds to select. As a beginning goat producer, you need to learn how to identify specific breeds by name, appearance, and general characteristics. Note that the characteristics listed are what the breed is known for, but within each breed there is a great deal of individual variation. For instance, some individuals within a fast growing breed will actually grow more slowly than some individuals of a slow growing breed. Therefore, it is very important to select stock by their individual merits and not simply by the breed.

Although any breed of goat is a meat goat because most end up as meat, there are four major meat goat breeds that are raised in large numbers specifically for the production of meat. These are the Spanish, Boer, Myotonic, and Kiko. Angora and cashmere goats are raised for their luxury fibers, but also provide meat. There are eight breeds of dairy goats common in the U.S.: Alpine, LaMancha, Nigerian Dwarf, Nubian, Oberhasli, Saanen, Sable, and Toggenburg. Any kids not retained for breeding will be used for slaughter or for pets. Some dairy breeds cross well with meat goat breeds; for example, the Nubian breed is used to improve milk production and frame size of meat goats. Pygmy goats are also used for meat. There are some newer meat goat breeds such as the Savanna, Tennessee Meat Goat™, and Texmaster™ (a cross of Tennessee Meat Goat™ and Boer) but currently they have limited animal numbers. Crosses of any of the above species have value in meat production as well.

Spanish

The Spanish breed has developed through natural selection from goats first placed in Texas in the early 1540s by Spanish explorers. Survival of the fittest ensured that the breed became hardy, good foragers, and good mothers. Living in the wild gave an advantage to smaller stock, because they needed less feed. These goats have been referred to as "brush" goats in some regions, because of their use in controlling brush. Some producers have improved the stock by selecting for better muscling, more milk, or other criteria. These improved Spanish goats are much larger and meatier than the average Spanish goat. In terms of productivity, there is a lot of variation in the growth rate of Spanish goats. Selection is key to improving that trait. Producers appreciate Spanish goats for their toughness and their ability to thrive in a low input situation. Spanish goats come in many colors and patterns.

Spanish buck.

Boer

Boer goats were developed in South Africa and are easily recognized by a white body, red head, and large, muscular frame. The breed was first imported into the U.S. from Australia and New Zealand in 1993. Initially, breeding animals were very expensive due to the limited numbers originally imported, but later numbers increased sufficiently so that prices have become more reasonable. Due to their initial scarcity and high demand, some animals kept for breeding purposes should have been culled because they were not hardy. Also, some of the animals were pampered because of high prices at the time and as a consequence some Boer goat individuals in the U.S. are not as hardy as Boer goats raised in South Africa. Boer goats are still in high demand because they grow fast and produce desirable carcasses. Boer goats are the largest of the goat breeds with a mature doe weighing as

Boer buck.

Young Kiko buck.

much as 200 pounds. They have been selected for growth rate and may gain in excess of 0.4 pounds per day under feedlot conditions.

Kiko

The Kiko breed was developed in New Zealand by crossing feral does with Nubian, Toggenberg, and Saanen bucks. Kiko goats are usually white and fairly hardy. Data from a study conducted at Tennessee State University in 2004 indicated that Kikos may be more parasite-resistant than other breeds and have fewer problems with footrot. In that study, Kikos weaned more pounds of kid per doe as compared with Boer goats. However, Boer goats are preferred by buyers at sale barns. For this reason, many breeders will use a Boer buck to mate with Kiko does.

Myotonic

Myotonic goats are often referred to as wooden-leg, stiff-leg, or Tennessee fainting goats. These goats have a recessive gene that makes their muscles lock up when the animal is startled, causing them to fall over ("faint") briefly. The breed is one of the few breeds indigenous to the U.S. The Myotonic goat is heavily muscled in the rump and deep in the chest, but is smaller than the other three major meat breeds. They have good potential for crossbreeding. Since breed numbers are not great, breeding stock may be expensive. The myotonic characteristic makes them easier to keep in fences, but may also make them more susceptible to predators. The Tennessee Meat Goat™ was selected and developed from myotonic stock.

Savanna

The Savanna breed is relatively new to the U.S., having been imported from South Africa in the late 1990s. The breed is a large framed, extremely well-muscled goat with white color containing a few black pigments found on the ears. The body characteristics resemble those of the Boer goat.

Myotonic goats.

Savanna buck.

Genemaster™

The Genemaster™ or Texas Genemaster™ is a composite breed based on a foundation of ⅝ Boer and ⅜ Kiko. The breed was developed to combine the muscling attributes of the Boer breed with the vigor, mothering, and browsing ability of the Kiko breed. This composite breed will retain a portion of the original hybrid vigor over several subsequent generations.

Pygmy

Pygmy goats are small goats of African origin. They are considered meat goats but are mainly used as pets. Pygmies are bred to be "cobby" and heavy boned. All body colors are acceptable but breed-specific markings are required.

Angora

Angora goats originated in Turkey and are raised primarily for their luxurious mohair fiber. They work well in a crossbreeding program; however, the value of the mohair clip is lost. Angoras can be raised in cold or

Pygmy buck.

hot climates, but lack hardiness. They have little parasite resistance and do better in dry or open range conditions. Angoras are more likely to have single than twin kids and have a tendency to abort under stress. Their first kidding is generally at 2 years of age rather than as yearlings, resulting in a low lifetime reproductive rate. If there is a good market for mohair and if production costs can be kept low, Angoras can be profitable. Be aware that Angoras must be sheared every 6 months. The breed has a small body, but produces a good quality carcass.

Other breeds and crosses

All goats, except Angoras, produce cashmere to some degree; however, some groups in several goat breeds have been selected for increased cashmere production. The difficulty in processing and selling the fiber has prompted some producers to focus on cashmere goats solely for their meat. Cashmere goats are not a distinct breed; thus, there is considerable variation in body size, shape, color, and productivity.

Dairy goats are used for meat, but dairy kids tend to have more bone and less meat on their frames. Nubians and LaManchas crossbreed well with meat breeds, and the resulting kids grow quickly due to the milk production of the mother and can produce a very good carcass. Other dairy breeds, such as the Saanen, Alpine, Toggenburg, and Oberhasli, may also be used in a crossbreeding program because the improvement in milk production results in a heavier weaned kid. Dairy does are also readily available and affordable in many areas.

Crossbreding programs allow commercial producers to choose desirable traits from two or more breeds and gain increased vigor in the resulting kids (known as "hybrid vigor"). But crossbreeding does not always yield desired outcomes, sometimes blending the less desirable

Angora bucks.

traits of the parents rather than expressing the best. If many breeds are used, uniformity may suffer. Usually, however, crossbreeding results in a stronger and healthier herd that is easier to maintain.

Producers should evaluate individual goats on their own merits and not assume that all animals of a particular breed will fit the breed standard. Selection of superior individuals, whatever the breed, is much wiser than choosing a breed and taking whatever is for sale. In selecting breeding stock, there are several important considerations: the market for kids, your personal preferences, availability of stock that is adapted to management and environment similar to yours, conformation, and most importantly, health. In the next section, we will explore each of these principles.

How to Choose Breeds/ Breeding Stock

The goat producer has to be able to answer the question: What do I want to be doing with my operation in 5 or 10 years? Here are some of the questions to answer before choosing a breed or breeds.

- What is the planned market for the kids or mature goats?
- Which type of meat goat business? Targeting ethnic clientele? On-farm sales? Goats for targeted grazing? Production of breeding stock?
- What is the target body weight of the sale kids or mature goats?
- Do customers prefer a specific color or type?
- How much can you afford to spend for breeding stock?
- What is the expected sale price of the animals you will be selling?

Having answered those questions, you may decide that you want to sell 60 pound kids at the auction barn, where you've heard that buyers prefer the Boer coloration and pay extra for that red head. You think you can receive

$1.75/pound live weight for the kids, and that would gross about $105 per kid. In your area, a big Boer doe costs a lot to maintain, possibly as much as $70 a year, not leaving much profit after the kids are sold. But perhaps you could use a Boer buck on some smaller does such as Spanish, Kiko, or crossbreds, reduce maintenance costs for the doe herd, and still give the buyers red-headed, muscular kids. If half of your does have twins (weaning a 150% kid crop), there should be some modest profit. Of course, this is a hypothetical example, but looking at the economics of what you intend to do will help you realize that you cannot afford very high priced stock for a meat goat enterprise, where meat is the product. Having an idea of the returns will help you be prudent when you purchase stock. Investigate the likely selling price in your area and work out a budget early in your planning process. See the chapter on budgeting in this handbook for help.

Once you have in mind the breed or breeds that should work for your particular meat goat business, the next consideration is personal preference. You can't quantify the benefits, but there is satisfaction in raising a type of animal that you find appealing. If you enjoy the animals, you will feel a pride in producing them and take pleasure in observing and caring for them. This is intangible, but real nevertheless.

Having decided what breeds of goats you like, which breeds are available near you and raised under the same kind of management that you intend to use? This is important because animals that are already adapted to your climate and to your management system will be more productive and healthy than goats that suffer "transplant shock." Goats that have been raised in a dry lot will not be very good at grazing or browsing. If you intend to run an extensive operation and not interfere with the goats' mothering, you will be better served by goats that thrive by themselves. In addition to proximity and management, you have to be practical about price. Sustainable agriculture means that you make some profit, and paying too much for initial stock can mean that there is no profit for several years. It may be wiser to purchase healthy unregistered does and the best bucks you can afford and set about to continually improve the herd. Within a few years, you should have a good herd of does and money in the bank besides.

This brings up another question: How many goats do you need to buy? In general, you can add one or two does per cow to your cattle farm without any impact on the cattle's pasturage. The kids produced will boost your income, and the does will keep your pastures clear of weeds or brush. Another rule of thumb is that six to eight does are the equivalent of one cow (this depends on the size of the does, as well as the size of the cow). Therefore, if you know that it takes 3 acres to support a cow in your area, and you have 30 acres, you could theoretically have 60 to 80 does on your land. However, if you have never raised goats before, it would be safer to start with a smaller herd and let it multiply over a few years. This will keep your costs low and allow you time to learn about goats while you adapt your system and avoid being overwhelmed or overstocking your land. If you are buying only a small number of goats, you can be more selective about the quality and traits of the animals, and also avoid going into debt.

Consider health and conformation (soundness)

Once you have found goats for sale of the desired type and price, it's time to select the individual animals to take home to your farm. Now you have to consider conformation and health. Health is the critical component, but conformation is also an important factor. To begin, look at the entire herd. Do they walk well? Do they appear lively and vigorous? Are they in proper flesh, not too fat or too thin? Are their coats shiny and their bodies smooth, not lumpy with abscesses? Are they grazing or kept in a pen with free-choice hay? Your overall first impressions are valuable. If the herd appears to be healthy, your chances of getting healthy animals are much better.

Having gained a sense of the overall quality of the herd, now examine the individuals that are for sale. You are looking at their conformation and the physical appearances of health. For raising meat kids, you don't need show quality does. You should select does that are sound and ready to be productive. Good conformation (soundness) means:

- Sound feet and legs.
- Good body capacity (deep and wide, to handle forages and hold twin kids).
- Correctly aligned bite, with lower incisors meeting the upper dental pad, not overshot or undershot.
- Good teat structure, with the correct number of functional teats (two).
- Sound udder, with no signs of mastitis.
- Good teeth.

Goats that are sound in these areas should be able to range widely for forages, to bite and chew and digest those forages well, and to carry and feed kids. In addition to passing these tests, though, the goats you select must be healthy. Some visual indicators of good health are:

- No limping.
- Alertness, lively appearance.
- No lumps or abscesses, especially on the neck or shoulder area.
- Moderate condition, not too fat or too thin.
- Smooth, shiny coat.

Symptoms/observed characteristics (What you see:)	Possible diseases indicated (What you may get:)
Limping	footrot, CAE, mastitis, injury
Dull, depressed appearance	pneumonia, internal parasites, bacterial infection
Lumps, abscesses	caseous lymphadenitis (CL), injection site abscesses, other causes
Very thin	internal parasites, CAE, Johne's disease, bad teeth (or may just have finished raising triplets, or had a hard winter with insufficient feed)
Very fat	may have breeding problems, failure to kid or may have been grossly overfed
"Scruffy" appearance	parasites (internal or external), malnourished, or other causes
Diarrhea, pale membranes, bottle jaw, "poor"	internal parasites or coccidiosis
Runny eyes, blindness	pinkeye, inverted eyelids (entropion)
Misshapen udder	mastitis (present or previous)
Note: This is only a starting point as you learn about diseases that can affect goats. More information on diseases and their signs and symptoms can be found in Thomas Thedford's Goat Health Handbook (ISBN-13: 978-1573600019) that contains a more detailed diagnostic chart, the herd health chapters in this handbook, other goat health texts, and from your veterinarian.	

- Pink mucous membranes, including inside lower eyelid.
- Normal feces; round pellets, no diarrhea.
- No nasal discharge.

Disease status

Of course, there are diseases (such as caprine arthritis encephalitis - CAE) that may not be apparent. But if the seller's herd matches the above description, your odds of purchasing a healthy animal are very good. The reverse is also true; if the seller's herd includes animals that are limping, emaciated, "dull," have abscesses, or appear "poor," chances are that the animal you buy will be carrying a disease, even if that disease is not obvious in that particular animal.

Because transmissible diseases (including internal parasites) may not be apparent in an individual, observing the condition of the herd of origin is important. This is one reason why it is better to purchase animals on the farm, rather than at an auction. Also, sale barns receive a lot of unhealthy and otherwise unsuitable animals. They are the dumping grounds for goats that do not thrive, have contagious diseases, are terrible mothers or incorrigible jumpers, non-breeders, or poor milkers. If you shop for breeding stock at the sale barn, you may very well be bringing home diseases to infect the rest of your herd, or be bringing home animals that are unproductive and therefore unprofitable. If you are lucky enough to find some good stock at the sale barn, by the time those good animals have mingled with the unhealthy ones in the barn, suffered the stress of shipping and sale, and tracked through an environment where many unhealthy animals have been, their immune systems may be overwhelmed. There really are no bargains at sale barns, even if they are cheap.

Take someone who knows about goats with you when you go shopping. This will help you be objective when looking for potential problems. It is also helpful to educate yourself about diseases and their treatments (or lack of treatments) before you go. Understanding the consequences of a particular disease in your herd will help you understand the risks and the costs of buying a disease. This may mean that you offer to pay for some testing to screen for a disease that you are particularly anxious to avoid.

Another chapter will contain in-depth information about goat diseases. However, because learning to recognize health and disease is an important part of selecting stock, the accompanying chart of symptoms and the diseases they can indicate will be useful.

Summary: Deciding to Raise Goats

The meat goat business is growing, fueled by strong ethnic demand for the meat. Understanding the possibilities, advantages, and challenges of raising goats will help ensure the profitability of your enterprise. Selecting healthy, sound breeding stock will add to the enjoyment and profitability of the enterprise. Visiting farmers, consulting veterinarians and educators, reading print and Web resources, and reading this handbook will enhance your chances for success.