OKLAHOMA CareerTech

Introduction to Agriscience

Unit 10
The Goat Industry

Student Edition

CIMC

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Unit 10
The Goat Industry

Goats are traditionally used around the world for dairy products, meat and fiber. The goat industry in the United States is much smaller than cattle, pork, or chicken, but goats are still valuable to the economy. While most of the national inventory of goats is for meat production, goats are also raised for milk, hair, targeted grazing, livestock shows, and even as pets. As a relatively easy species to care for and having the capacity to produce multiple products, goats have much to offer as a commercial endeavor.

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OBJECTIVES

1. Discuss the history of the goat industry and its role today.
2. Identify common breeds of goats and their characteristics.
3. Identify consumer products derived from goats.
4. Determine the advantages of goat milk.
5. Discuss the difference between goat fibers.
6. Locate the parts of a goat.

KEY WORDS

buck
cabrito
cashmere
chevre
chevon
doe
homogenized
kidding
kids
mohair
wether

History of the Goat Industry

Goats were one of the first animals domesticated by humans. For several thousand years, goats and the many valuable products derived from them have been a vital resource for humans. In addition to their value as livestock, goats are highly personable and intelligent animals that are also popular as pets.

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The scientific name for the domestic goat is *Capra hircus*. The ancestors of the domestic goat originated in the arid areas of Asia and the Mediterranean. The world's first livestock registry started in Switzerland in the 1600s was for goats. Goats were imported to the New World with the earliest explorers and settlers. Because of their small size and adaptability, they were frequently brought on ship voyages as a source of fresh milk. Many settlers also brought goats with them so they would have livestock for their new farms.

In 1849, Angora goats were first imported to the United States. Angora goats are used to produce mohair fiber and meat. Texas soon became the leading Angora goat producing state in the country. In 1893, goats of a Swiss breed called Toggenburg were the first purebred dairy goats to be imported to the United States. Worldwide, goats are still a vital resource, especially in arid or underdeveloped countries. More people in the world drink goat's milk than cow's milk. In the United States, goats are a small but growing industry that is scattered evenly across the country. While there are some large herds of dairy, meat and fiber goats in this country, many goats are kept in small numbers by families to provide milk and meat for their household.

SAE IDEA:
<u>Entrepreneurship</u>
Raise goats for breeding, show or market.

A WORLDWIDE OKLAHOMA CONNECTION

An Ethiopian woman uses a goat for income and as a source of milk for her children — with an Oklahoma connection. The program to provide goats and training to Ethiopian villagers is one of the many projects of the E (Kika) de la Garza American Institute for Goat Research at Langston University in Langston, Oklahoma.

The Institute's mission is to develop and share information about goat production, with impacts at local, state, regional, national, and international levels. This mission is achieved through research, extension programs, and international activities. The Institute has become well known for its dedication to improving the lives of goat producers throughout the world. Most goats are raised in foreign countries, so the Institute must have strong international ties and impacts. Visiting scholars come from all parts of the world to conduct research projects. Researchers come from many African countries, Europe, Asia, China, Mexico, South America, and the United States. "The presence of these scientists contributes to the international flavor of the Institute and also assists Institute scientists in more fully understanding goat production in foreign lands," says Roger Merkel of the E (Kika) de la Garza Institute for Goat Research.

The Institute's research covers a broad range of areas relating to goats for meat, milk, and/or fiber production. Much of the research deals with dairy goat nutrition and determining nutrient requirements of goats. The Institute continues to focus on the different types of goat industries with the intent of increasing economic return to those involved in the goat industries. The research at the Institute benefits many individuals. "Local goat producers benefit from much of the research conducted at the Institute through the dissemination of knowledge through our extension programs. Research results also benefit producers in other areas of the United States and the world. Of course, scientific exploration also benefits the scientific community through expansion of knowledge and stimulation of further research based upon previous results," says Merkel.

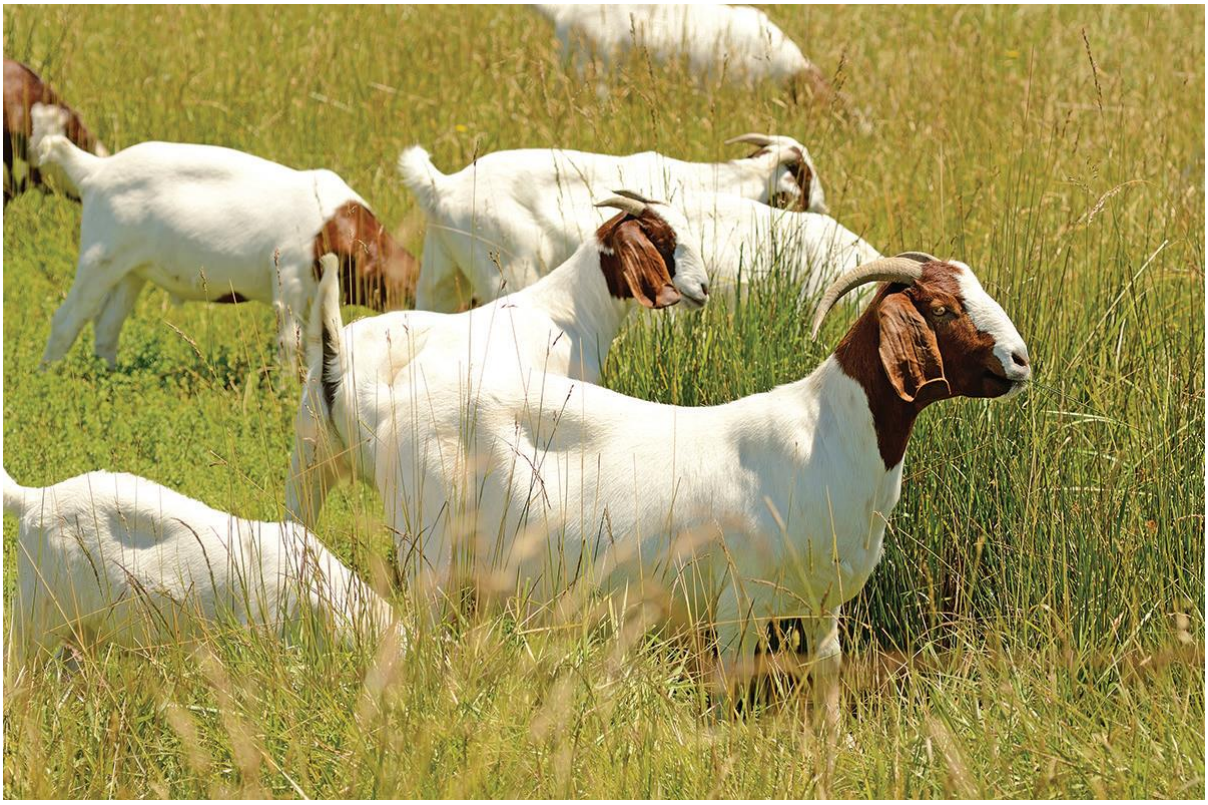
Common Breeds

Goats have been bred to produce several useful products. Some breeds are considered dairy goats, while others are raised primarily for their meat or the fiber from their coats. A few breeds are raised as pets. The meat goat industry in the United States is much larger than the dairy goat industry. One of the most popular meat goats in the United States is the Boer goat, with the breed gaining popularity in the livestock show arena.

Meat Breeds

Boer

The Boer goat is African in origin. As a meat breed, Boers are distinctly heavier and stockier than dairy breeds. A common color pattern is white with a dark-colored head, though solid colors are also seen. Advantages to the Boer as a meat breed include its docile temperament and ability to breed year-round.



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Spanish

Until recently, most meat goats in the United States were a type called Spanish goats. The Spanish goat is not a distinct breed; rather, it is a catch-all name for a type of goat that ran wild in the southern United States and was commonly captured or raised for meat. They are also called brush goats. Because of its feral background, there is little consistency in color or size.

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Myotonic

Another breed of goat sometimes used for meat is called the Tennessee Fainting Goat. This unusual animal is known for “fainting” spells when it is excited or frightened. The goat will suddenly fall over and lie stiffly for several seconds. The condition called myotonia is the result of a recessive gene. The breed is also known as Myotonic goats or Wooden Leg goats.

Photo courtesy of Wikimedia Commons

Kiko

The Kiko goat breed was bred in New Zealand specifically for meat production. The Maori word “kiko” means flesh or meat. The breed was developed by crossbreeding feral goats with Anglo-Nubian, Toggenburn and Saanen bucks, until crossbreeding was closed due to the breed being established in 1986. Kikos were brought to the U.S. in the 1990s.

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Dairy Breeds

Alpine

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The Alpine, or French Alpine, is a dairy breed that originated in the French Alps. Alpines have no single coat color or pattern and may occur in almost any color. Wattles or small clumps of hair-covered skin may appear on either side at the base of the neck. They are known for their excellent milk production and well-shaped udders. Alpines also adapt well to a wide variety of climates.

Nubian

The Nubian is a popular and easily recognized goat. The breed originated in Africa and was developed in England by crossing the African imports with smaller local goats. The Nubian breed is long-legged with a roman nose, pendulous ears, and a short, sleek hair coat. While any color is acceptable, black, red, or tan are the most common colors. The milk from Nubian goats has a relatively high butter-fat content, though they do not usually give as much milk as other breeds. Because of their larger size, they are sometimes considered a dual-purpose breed that is raised for both milk and meat.

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Toggenburg

The Toggenburg (often called “Togg”) is the oldest known dairy breed, originating in the Swiss Alps. They are small, compact goats, but they are excellent milkers. Color is any shade of brown with distinct white markings on the legs, around the tail, and in stripes down either side of the face.

Bob Davis photo

LaMancha

The LaMancha is an American breed developed in the mid-1900s. While any color is acceptable, a LaMancha goat may look like it has no ears, but instead it has tiny external “gopher” ears. Some LaManchas produce as much or more milk as the Swiss breeds. They are known for their high butterfat milk, long and consistent lactations, hardiness and ability to produce under adverse conditions, and calm temperament.

Bob Davis photo

Saanen and Sable

The Saanen breed is named for the Saanen Valley in Switzerland in which they originated. It is a very popular, high-producing dairy breed. The Saanen is typically white, and colored offspring were once discriminated against until a group of breeders developed the Saanen Breeders Association in which colored Saanens were able to register. Any colored variation of the breed is referred to as a Sable. Saanens (and Sables) are large and big-boned with moderately long, erect ears.

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Oberhasli

The Oberhasli (also called “Ober” or “Obi”) is a Swiss breed. They are of medium size. The color should be chamois, which is a light or dark red-brown, with black on the face, legs, belly, udder, and a dorsal stripe.

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Fiber Breeds

Angora

Angora goats are raised primarily for fiber, with less emphasis on meat. The fiber they produce is called mohair, not Angora. Angora fiber comes from rabbits. The breed originated in Turkey. They are generally smaller than dairy goats. The coat is almost always white and hangs in long curly locks all over the body. The mohair is shorn twice a year, and the average goat produces nearly 11 pounds of mohair in one year.

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Consumer Products

Goats are an extremely useful livestock species, providing us with milk, meat, fiber, hides, and even the companionship of pets. Goat manure is useful as a fertilizer, and slaughter by-products provide materials for the usual array of everyday products such as glue, soap, fertilizer, and cosmetics.

Meat

Currently, the demand for goat meat in the United States is greater than the supply. The demand for ***chevon***, or the meat from an older animal, is focused in the eastern and southwestern United States where there are concentrations of people from cultures that frequently eat chevon, particularly Greek, Muslim, Arabic, and Mexican communities. It is also a part of certain religious and celebratory events, which create peak demand times. About one-third of the chevon consumed in this country is imported.

Goat meat from a very young goat prior to weaning and usually less than 40 pounds live weight is ***cabrito***. Cabrito is commonly used for barbecue.

Despite the demand for goat meat, producers face challenges in marketing their product. Goats are seasonal breeders, and it is difficult to provide the retail market with a consistent supply of meat. Consequently, retail markets are reluctant to stock chevon. There is also little consistency in the meat quality. Lack of retail outlets means that a large proportion of the goat meat in this country is sold through private channels or on-farm sales. Producers do not yet have the advantage of the research and support systems that other segments of the meat industry enjoy.

Dairy

A popular myth is that goat's milk tastes bad. In fact, properly produced goat's milk does not taste any different than whole cow's milk. One difference between cow and goat milk is that goat milk is "naturally homogenized." The fat content in goat milk stays in emulsion and does not separate as readily as cow's milk does. To separate the cream from goat milk, a mechanical separator is used. Any milk product that is made from cow's milk can be made from goat's milk, including cultured products such as yogurt and buttermilk. However, the greater labor involved in extracting the cream means that products made from cream, such as goat butter and ice cream, are not commonly marketed. However, goat milk is often used as an ingredient in soaps.

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Goat cheese is called ***chevre***. It has seen a gain in popularity in recent years, particularly in the gourmet market. There are many varieties of goat cheese, and nearly every country in the world has its own versions. In the United States, chevre is generally known as a soft, white cheese with a mild tangy flavor.

Fiber

The most common type of fiber taken from goats is the wool-like mohair provided by the Angora breed. Mohair is like sheep's wool, but it lacks wool's crimp. Mohair is used to make all types of clothing, from dresses to coats, as well as upholstery and carpets. The other type of fiber taken from goats is cashmere. Cashmere can be harvested from almost any goat, except Angoras. The fiber grows as a soft winter undercoat and is usually harvested by shearing before it is shed. Most of the cashmere sold today comes from goats in Middle Eastern countries, such as Afghanistan, or from Australia or New Zealand. The leather from goat skin is used for making many high-fashion items such as gloves, clothes, and the like. Pelts can also be used as rugs or throws.

Hill Shepard Farm photo

Goat Milk

Goat milk is considered by many to be a healthy alternative to cow milk. It is more easily digested and is often given to those who are ill or suffering from digestive maladies such as gastric ulcers. It is not usually a successful substitute for those who are lactose intolerant or have milk allergies since goat milk contains essentially the same components that cause these problems.

Nutrition

Goat milk has a slightly different nutritional profile than cow milk. It is whiter in color because it does not contain the beta carotene that cow milk does. It is also naturally ***homogenized*** due in part to the smaller fat globules in goat milk. This is one factor that makes goat milk easier to digest. In addition, the protein in goat milk has a slightly different chemical make-up. This accounts for some of the digestibility and the lack of fat separation, as well as a different action during curd formation.

SAE IDEA:
<u>Exploratory</u>
Conduct a local survey on the perceptions of goat products.

Compared to cow milk, goat milk is higher in vitamins A and B-6, thiamin, niacin, and overall mineral content. But goat milk is lower in riboflavin, vitamin B-12, and folic acid. Neither goat milk nor cow milk has significant amounts of some important nutrients such as zinc and iron.

SAE IDEA:
Placement
Work for a goat producer.

Quality

All dairies must abide by certain regulations for safety, whether they are cow dairies or goat dairies. Governmental regulations require dairies to produce milk that is, above all, safe to drink. This means that milk must not be contaminated by harmful substances such as disease-causing organisms, bacteria, or antibiotic residues.

Goat milk, like cow milk, must be pasteurized before being offered for sale. In addition, the fat content of the milk must follow regulatory guidelines for labeling as whole, low-fat, skim, and so forth. Besides producing safe milk, goat dairies also strive to produce milk that tastes good. Herd management and hygiene are vital factors for both the safety and the taste of milk. The composition of the fat in goat milk makes it more susceptible than cow milk in picking up off-flavors. Therefore, some herd management guidelines that prevent this from happening include:

- Keeping the herd healthy.
- Keeping bucks away from the milking does, because the buck's odor will be picked up in the milk, creating an off-flavor.
- Avoiding strong-flavored feeds that would create objectionable flavors in milk, such as wild onion, wild garlic, and silage. If silage is used as a feed, it should not be given within five hours prior to milking.
- Avoiding the use of certain chemicals, such as pesticides, in areas where dairy goats are kept.
- Preventing contamination of milk during milking or milk transfer.

Using Goats to Control Weeds and Brush

Goats make excellent weed eaters! If given a chance, goats will eat thistles and many other plants that are often avoided by most grazing animals. When pastured with cattle or sheep, goats will usually eat the weeds and not compete for the desirable grasses. Given that many ranchers are looking for ways to reduce the use of herbicides and other chemicals, goats can provide an environmentally friendly solution to a weed problem.

Goat Fibers

Two types of fiber are produced by goats—mohair and cashmere. ***Mohair***, produced by Angora goats, is the more common. ***Cashmere***, taken from a goat's undercoat, is a valuable fiber, but it is not produced in the United States in very large commercial quantities. Most cashmere is imported from other countries. Notice in the table that an animal produces much less cashmere fiber than mohair fiber. Also, cashmere fibers are finer, which makes it much softer to touch than mohair.

Characteristics of Mohair and Cashmere Fibers		
	Mohair	**Cashmere**
Pounds per Year	10.5 pounds	Less than 1 pound
Staple Length	Approximately 6 inches	1 ¼ to 3 inches
Diameter	23-38 microns	Less than 19 microns
Crimp and Luster	Not crimped, high luster	Crimped, low luster

Mohair

Mohair is like coarse sheep's wool in size and strength, but it has a much smoother surface. While wool fibers have a distinct scale, mohair fibers have a much thinner, smoother type of scale. For this reason, mohair lacks the felting properties of wool. Mohair is elastic, has good luster, and takes dye exceptionally well. Finer fiber, taken from young goats, is more valuable than coarser fibers. Angora goats can also be classified according to the type of mohair fiber they grow. B type has a flat lock, which is usually wavy and more bulky. C type grows hair in tight ringlets and is a finer mohair.

Goat selection and genetics are important factors for profitable mohair production. Breeding animals should be chosen for their ability to grow a desirable fleece, as well as for growth, survivability, and efficiency. Proper feeding, health, and cleanliness are also important production considerations. Studies have shown that Angora goats grow better quality fleeces when they have adequate amounts of protein in their diets. Cleanliness of the fleece is important because the value can be severely discounted when there is a large amount of vegetative matter or dirt present. For this reason, some producers fit goats with coats that protect the fleece. Shearing practices will also affect the final value of the fleece.

Mohair fleece is evaluated essentially the same way as wool. Factors contributing to the fleece's value are color, fiber diameter, staple length, tensile strength, fleece yield, number of kemp fibers, and lack of vegetative matter. Mohair is used in both woven and knitted fabrics. These are made into garments, blankets, carpets, upholstery, draperies, and many other items.

Cashmere

SAE IDEA:
<u>Research</u>
Study the difference between the types of goat fiber.

As an extremely soft and luxurious fiber, cashmere is used primarily for sweaters, scarves, socks, and other luxury garments. Cashmere fibers are finer than mohair. The Cashmere goat breed is fairly new to the United States with the first goats being imported in the 1980s from Australia and New Zealand. Although there is an actual Cashmere breed, cashmere fiber can be collected from any breed of goat other than the Angora.

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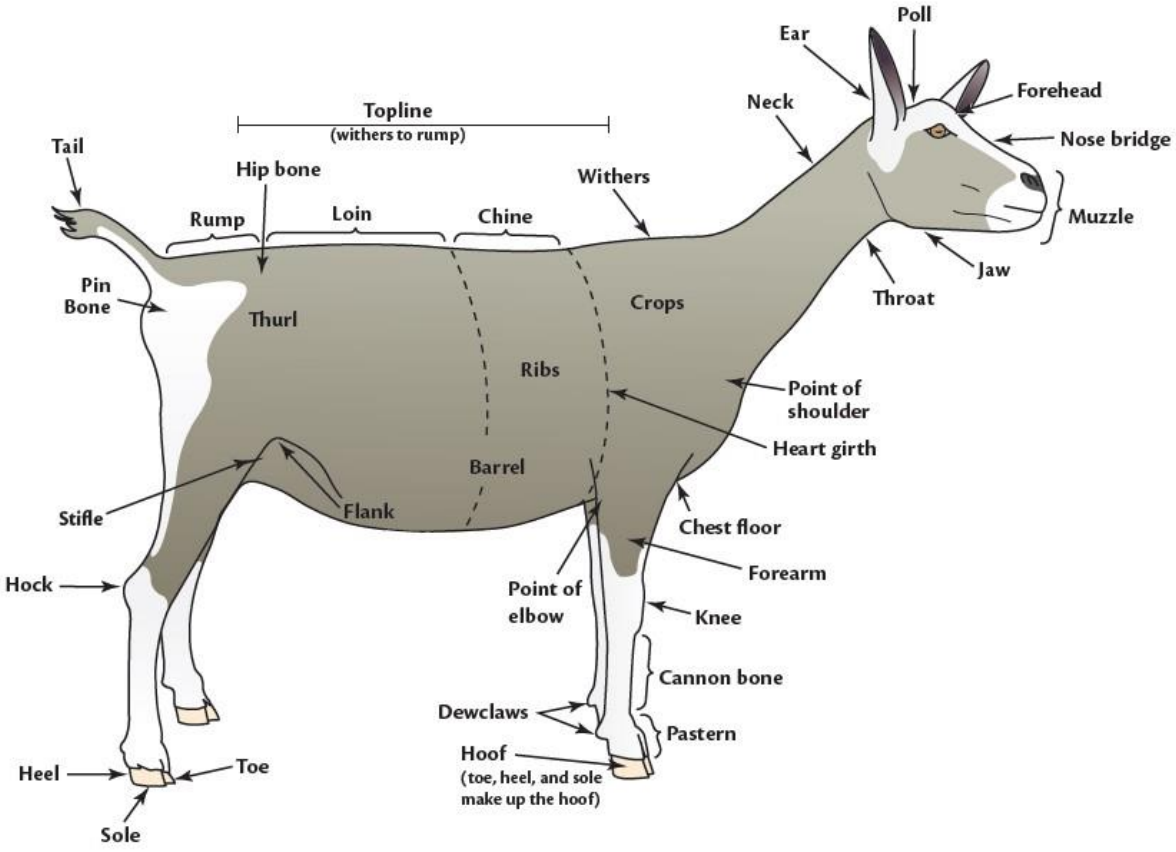
Cashmere is crimped, low in luster, and less than 19 microns in diameter. Length is between 1-1/4 and 3 inches. The cashmere fibers must be separated from the goat's coarse outer coat, or guard hairs. Cashmere occurs in any color, including brown, gray, and white, although a fleece is more valuable if it is a single color rather than mixed. The quality of the cashmere fiber is determined by color, crimp (more crimp is desirable), diameter (finer is desirable), and length. Staple length determines how the cashmere will be used. Shorter fibers are used for woven fabrics, and longer fibers are used for knitted fabrics. The goat's undercoat grows in response to changes in day length, preparing it for cold weather. The cashmere will begin to fall out if it is not harvested in the early part of the year.

While cashmere in some places is harvested by hand combing, in the United States the goat is generally sheared and the cashmere is separated from the guard hairs by machine. Only a few ounces of cashmere fiber are produced by a goat each year.

Parts of a Goat

Goats are like other livestock in their body parts; however, there are differences between a meat goat and a dairy goat. A meat goat is viewed for its ability to produce meat, so parts such as the loin and rump are more important than they are on a dairy goat. On the other hand, a dairy goat is looked at for her ability to produce milk, so teat placement and udder attachments are important parts.

A ***doe***, or female goat, must first give birth in order to produce milk. The term for giving birth for goats is ***kidding*** and offspring are called ***kids***. Once the doe has given birth and weaned the kids from nursing, the producer may choose to either castrate the male goats making them ***wethers*** or leave them as ***bucks***, uncastrated males.



UNIT SUMMARY

As one of the first animals to be domesticated by humans, goats have been a valuable food and fiber resource for humans. Goat breeds can be commonly separated into meat, dairy, and fiber breeds; however, some breeds serve multiple purposes. Although the popularity of goat products is less than that of beef, swine, or chicken, there is a demand in ethnic populations for particularly meat and dairy products. Goat milk is different than cow's milk in characteristics such as color, chemical make-up, and nutrition. The two types of fiber collected from goats (mohair and cashmere) are not produced in large quantities in the United States and are often imported from other countries. As the goat industry continues to gain popularity in the United States, the uses and products will also begin to grow.

UNIT REVIEW

1. Where did the ancestors of the domestic goat originate?
2. Where is the largest concentration of goat herds in the United States?
3. What is the most common meat goat breed?
4. Name the three uses of goats in which the species can be divided.
5. Describe three goat breeds and their uses.
6. What is the difference between chevon and cabrito?
7. What challenges do producers face in marketing their goat meat?
8. Why is goat milk whiter in color compared to cow milk?
9. Explain why goat milk is said to be a healthy alternative to cow milk.
10. Compare the nutrition of goat milk to cow milk.
11. What breed of goat produces mohair?
12. Does the Angora goat produce Angora fiber? Explain.
13. Compare mohair and cashmere fibers.
14. How much cashmere is produced by one goat each year?
15. How are a dairy goat and meat goat different in important parts?