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Oklahoma Cooperative Extension Service • Division of Agricultural Sciences and Natural Resources

Let's Compare Dairy Goats and Cows

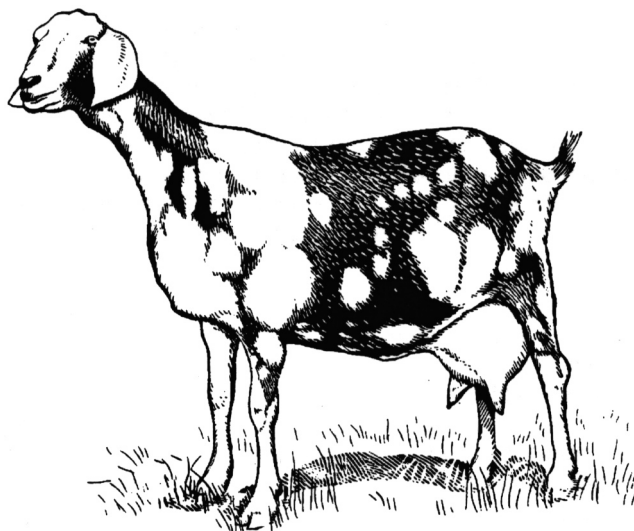
Curtis W. Richardson

Livestock Nutrition Specialist (Emeriti)

Whether you choose a dairy goat or a dairy cow for your 4-H project or your family milk supply will depend on a number of factors, including personal taste, size of your family, the amount of time you have to care for your animals, and the amount of land you have available. Consider these factors when you choose:

- Dairy goats are about one-sixth the size of a cow. This makes them easier to handle, and many people prefer them for this reason. Their size also enables them to be transported in a car to a veterinarian or to a buck for breeding.
- Dairy goats have a somewhat longer productive life than the average cow, about 8 to 10 years, compared to 4 to 6 for the cow.
- Dairy goats can range comfortably on a smaller acreage than a cow.
- Because most goats breed only during the fall and winter months, it is more difficult to plan a steady year-round milk supply with goats than cows.
- Your original investment for a good dairy goat will be less than for a good dairy cow. But as the demand for good blood-lined goats increase, their value goes up. High quality animals are expensive, but whether cow or goat, they pay for themselves by producing more milk for less feed and by giving better quality off-spring, which bring higher prices.
- For their body size, goats are slightly more efficient than cows; it takes less feed for a dairy goat to produce a gallon of milk than it does for a cow to produce a gallon of milk. For every 70 pounds of dairy ration fed to the average goat, she will produce one more gallon of milk than the average cow.
- The total quantity of milk a goat gives each day is considerably less than that produced by a cow. A good dairy goat provides between 6 to 12 pounds of milk a day for about a 305-day lactation. A good dairy cow provides almost five times that amount.

It takes more work to maintain a herd of goats than it does a herd of cows, and the same number of cows will yield more milk. Thus the labor cost per gallon of goat's milk is about twice the labor cost per gallon of cow's milk.



A good doe will provide plenty of fresh milk for a small family if you take care of her. Just how much milk depends on many factors, including the individual. A low producer will give about two quarts of milk a day and dry up after six months. A modest producer will average two quarts of milk a day and produce milk about 10 months of the year. A really good doe will give 1,800 pounds of milk a year, averaging three quarts a day for 10 months. And a "super-goat" produces 5 to 7 quarts a day in her peak, or 2,000 pounds or better a year.

Your milking doe will need the following nourishment to make the most of her potential:

Grain Mixture or Dairy Ration

One pound per day for each 2 quarts of milk she produces. Add another pound for each additional two quarts given daily.

High-Grade Leafy Alfalfa Hay

All she will eat. Alfalfa pellets can be substituted for one-third of the hay if hay is scarce.

Water

All she will drink.

Salt

Offered free access.

Supplements

You may use plant mixtures such as garden produce (carrots, kale, apples, beans, peas, sunflower seeds, potatoes) to supplement the diet in limited amounts. But these should not take the place of the regular ration.

Composition and Characteristics of Goat's Milk

Now let us learn more about the composition and nutritional value of a dairy goat's milk. Tables 1 and 2 illustrate a comparison of the nutrient content of goat's milk to that of other mammals. Table 2 compares specific vitamins found in goat's milk with that of milk from cows and humans. All of these factors will vary depending on the season, diet, and condition of the animal. The figures shown in charts and information about contents of milk should be taken as averages.

Milk Fat

The high proportion of butterfat gives goat milk a greater energy value per unit volume than cow's milk. Fat is a concentrated source of energy and in general, one unit of fat contains 2.5 times more energy than one unit of carbohydrate.

Lactose

The lactose content of goat's milk is slightly lower than cow's milk. Lactose is a milk sugar and is the carbohydrate nutrient in milk. Since some people have difficulty digesting the lactose in milk, goat milk is less likely to cause this problem than cow's milk. For yogurt making, the low lactose of goat milk gives a less acidic and more palatable product than cow's milk with no need for fruit or flavoring.

Protein

There is no important difference in cow's milk and goat's milk protein composition. But the physical characteristics of the curd that these proteins formed under the action of rennin (the principal enzyme secreted by the newborn stomach) is significant. Generally, the softer the curd, the more easily it is digested. The curd of cow's milk is harder than the curd of goat's milk. Size also has something to do with its digestibility—and the curd of cow's milk is large and dissolves more slowly. The finer curd of goat's milk dissolves more rapidly. This means that for some people with digestive difficulties, goat's milk may be more easily digested.

Minerals

Goat's milk generally contains more calcium, phosphorus, chlorine, magnesium, and potassium than cow's milk or human milk. The amount of phosphorus in goat's milk helps people living on a diet of root plants, fruits, and green vegetables.

Table 2. Average Vitamin Content of Goat, Cow, and Human Milk

Vitamin	Cow	Goat	Human
Vitamin A ₁	1560.0	2074.0	1898.0
Vitamin D	—	23.7	22.0
Thiamine (B ₁)	.44	0.40	0.16
Riboflavin (B ₂)	1.75	1.84	0.36
Nicotinic Acid	0.94	1.87	1.47
Vitamin B ₁₂	0.0043	0.0006	0.0003
Ascorbic Acid (Vit. C)	21.1	15.0	43.0

¹Vitamin A expressed at International Units/liter; all others as mg/liter

Data from: Parkash, S. and Jenness, R. 1968. The Composition and Characteristics of Goats' Milk: A Review. Dairy Science Abstracts. 30 (2):67.

It also contributes to the higher buffering capacity of goat milk, which makes it valuable in treating stomach ulcers. The high chloride content may have some bearing on its laxative properties.

Vitamins

For the adult milk-drinkers, goat's milk provides approximately twice the Vitamin A obtained from cow's milk. Vitamin B is concerned with nervous control. The human need of this vitamin is thought to increase with the intake of sugar and other carbohydrates; there is some evidence also that it plays a part in protein digestion and metabolism. Goat's milk is 50 percent richer in Vitamin B than cow's milk and four times as rich as human milk. Goat's milk is very high in riboflavin (Vitamin B₂), which affects growth. Vitamin C and D are not present sufficiently in either cow's milk or goat's milk, and any child that is bottle-fed will need supplements.

Breed Differences

The composition of goat milk varies both within and between breeds, just as it does with cows. Milk from the Saanen and Toggenburg breeds resembles milk of Holstein cows in percentage of water, lactose, fat, protein, and ash, although it is subject to greater variation with the advance of lactation than Holstein or Jersey cow milk.

Toggenburgs are often known as the "Guernsey" of the goat family because of the quantity of milk they produce. Nubians produce less daily milk poundage than other breeds in general, but their milk is higher in butterfat content.

Various values have been reported for each of the nutrients in goat milk, probably as a result of analyzing milk from a single breed or herd or with the techniques used. But, like cow's milk, goat's milk is a healthful and nutritious food.

Table 1. Average Composition of Milks of Various Mammals^a

Species	Water	Fat	Protein	Lactose	Ash	Nonfat Solids	Total Solids
Goat	87.00	4.25	3.52	4.27	0.86	8.75	13.00
Cow	87.20	3.70	3.50	4.90	0.70	9.10	12.80
Ewe	80.71	7.90	5.23	4.81	0.90	11.39	19.29
Human	87.43	3.75	1.63	6.98	0.21	8.82	12.75

^aData from: Fundamentals of Dairy Chemistry, page 6. Ed.: Webb B. H. and Johnson, A. H. 1965. The AUI Publishing Co., Inc. Westport, Connecticut



Keeping Milk Sweet and Clean

Some people believe that goat's milk does not keep sweet as long as cow's milk. Tests show this is not true. The keeping quality depends on the conditions under which it is produced and handled.

Good goat milk does not have any stronger flavor than good cow's milk. If your milk has a strange or strong taste, check the following points:

- Keep the buck (male goat) in separate quarters. Male goats have a distinctive odor, which can be imparted to the milk if they are kept close by or with the does. (Does, however, are almost odorless.) All conscientious goat breeders keep the buck in separate quarters at least 50 feet from the milking doe. (If you have only a small herd, you may not wish to keep a buck.)
- Make sure your animal is healthy. Your does should be sleek-looking, appear alert, without abscesses or growths. If she seems ill or listless or there is any question about her health, have her checked by a veterinarian and have the milk tested.
- Check your shelter. Poorly ventilated barns, not generally well kept, can affect the milk flavor. A milking doe should be kept in a clean, dry area with clean hay and an exercise yard of some type.
- Keep milking conditions sanitary. This means the goat, the building, and the utensils. The animal should be clipped, particularly in the udder area to prevent loose hairs, dust, or dirt from getting into the milk during milking. (During late fall and winter, you may wish to just clip the udder area; goats are thin-skinned and need the thicker winter hair coat for protection from cold.)

Before milking, wash and disinfect both the udder area and the milker's hands and arms. Set aside a special milking area not in the regular quarters if at all possible. This minimizes dust from alfalfa, dirt, and hay, which can get into the milk. A separate building or walled area is ideal.

Thoroughly wash and sanitize all utensils after each milking and keep them in a clean place. Bacteria develop rapidly in equipment, which has not been thoroughly cleaned. The bacteria will cause a breakdown in the milk, resulting in quick spoilage. A malty flavor can develop from improperly cleaned equipment. Metallic flavors can be picked up from old or exposed copper equipment, milk cans, or lids. Old tin-plated equipment, which has begun to wear can cause an oxidation process, which results in a tallow-like flavor.

- Refrigerate milk quickly after milking. Milk may develop an acid or coarse taste as a result of bacterial growth. A rancid flavor can also result from extreme agitation of warm raw milk in the presence of air (foaming). If milk is left in a glass container in the sun, even for a short time, it may develop a rancid taste resembling stale fat. Ideally, it should be carefully strained and stored in seamless aluminum, stainless steel, or glass containers. Plastic may impart an unwanted flavor. After milking, place the milk immediately in a milk cooler or refrigeration unit.

Use your fresh milk within a few days. If it is held too long at low temperatures, it may develop a sour taste. This is caused by a change in lactose (milk-sugar), which results primarily in the development of lactic acid.

- During the latter part of the lactation of some does, the milk may begin to develop a flavor. If the doe normally has good-tasting milk and there is no reason for a change in taste—that is her food, quarters, and health have remained stable—this may be a reason. However, a doe whose milk is poor tasting while still milking strong should be checked. Occasionally, but very rarely, an animal is found with poor-tasting milk. This trait does run in a few families of the Toggenburg breed. But the large majority of poor-tasting milk results from other factors.

If You are Considering Purchasing Goat Milk...

If you do not wish to buy a goat, but wish to purchase goat milk, contact one of the local goat clubs and ask for the names of people who sell goat milk. They usually know who has dairy goat herds.

Call the owner and ask to visit the animals in their quarters. If possible, arrive at milking time and watch the entire process to see how efficiently it is handled. Ask to taste the milk. Most goat owners are more than willing to have you watch and taste. Ask how often the herd is tested for TB and Brucellosis. It should be a minimum of once a year.

Ask about arrangements for transporting milk. Most goat owners store milk in gallon glass containers and ask only that you bring one in exchange. If you are transporting the milk some distance, you may wish to use a thermos or ice chest of some type. If you do, be sure it is thoroughly washed and rinsed before and after it has been used. It is a good idea to use a disinfectant to keep any plastic from absorbing milk odors. Ask the goat owner for the name of a disinfectant and where you can purchase it.

More information on dairy goats, is available at the Oklahoma State University Extension Center in your county. Ask for a copy of the 4-H publication no. 158 The Dairy Goat Manual.

Goat Associations

National

American Dairy Goat Association.
P.O. Box 186
Spindale, North Carolina 28160.

State/Area

Green Country Dairy Goat Association
Wanda Chappelle, Secretary
Rt 1 Box 1487
Locust Grove, OK 74352
(918) 479-8900

Green Country Dairy Goat Association
Contact: Hughlene Dunn
Rt 1 Box 408-1
Chelsea, OK 74016
(918) 789-3547

Langston University Cooperative Extension 4-H Office
Dorothy Wilson, 4-H Program Leader
PO Box 970
Langston, OK 73050
E-mail: Wilson@luresext.com

Oil Capitol Dairy Goat Association
Doris Walker
PO Box 1291
Henryetta, OK 74437
(918) 652-7301

Red Plains Dairy Goat Association
Mary Segal, Secretary/Treasurer
Rt 1 Box 3355
Clinton, OK 73601
(405) 323-5561
E-mail: segalm@swosu.edu

Texas Dairy Goat Producers Association
Patsy Trigg, Treasurer
Rt 1 Box 8
Bastrop, TX 78602
(512) 321-3800

Supply Houses*

American Supply House
Box 1114
Columbia, MO 65201

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