

Feeding and Housing Dairy Goats

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Sound feeding practices and good housing facilities result in optimum growth and high milk production and contribute to the good health and comfort of dairy goats.

Feeding the dairy goat

When feeding dairy goats, keep these objectives in mind:

- Feed a young animal enough energy for growth, and feed a mature animal enough energy to maintain a fairly constant body weight;
- Provide enough protein, minerals and vitamins in a balanced feeding program to maintain a healthy animal; and
- Offer does enough extra food during gestation and lactation for fetus development and milk production.

Optimum growth, good health and high milk production are the results of sound feeding practices. Dairy goats are not unique in their body requirements; they will respond to good nutritional practices.

Digestible fiber is especially important in dairy goat diets. Too much grain in relation to forage does not foster good ruminant action and is a costly feeding practice.

When feeding, keep minerals and trace mineral salt separate. Always feed them separately. Feed hay in a rack that will not permit wasting. One recommended type of feeder is a keyhole feeder. Do not overlook forage testing as an economical way to feed the correct ration to your herd. Ask your local MU Extension specialist about this program.

Feeding kids and yearlings

Kids are born with no natural protection from disease. The first milk (colostrum) from the mother offers protection and gets the digestive system working. To be most effective, it must be fed before disease-producing organisms enter the mouth and digestive tract.

Wash the fresh doe's udders and teats with warm water. Hand milk half a cup of colostrum and feed it to the kid within 15 minutes of birth. This is the best way to ensure that the newborn receives some milk and to provide it with the most protection from organisms present on the skin of the doe. Complete the first milking and store the

colostrum for later feedings if you elect to hand feed. Otherwise, permit the kid to nurse at its convenience following the first hand feeding.

Clean the feeding utensils immediately after each use. Use the same cleaning procedures you follow for washing milk-handling equipment or your dinner dishes.

Table 1 is a practical milk feeding schedule. Warm the milk to 100 degrees Fahrenheit. Provide extra water at two weeks of age.

Table 1
Milk feeding schedule.

Age	Amount of milk	Times to feed per day
1 to 3 days	4 ounces (1/2 cup)	4 or 5
4 to 14 days	8 to 12 ounces	3 or 4
2 weeks to 3 months	16 ounces	2 or 3
3 to 4 months	16 ounces	2

Milk replacer may be fed from the fourth day; it should contain at least 20 percent protein, 20 percent fat and be free of vegetable products. A lamb or high-quality calf milk replacer is recommended. Provide hay and grain at one to two weeks of age. Wean from milk when grain intake reaches 1/4-pound daily and kids are readily consuming hay.

If diarrhea is a problem, try the following mixture:

- Beef consommé -- 1 can
- Fruit pectin (Sur-Jel) -- 1 package
- Lite salt -- 1 teaspoon
- Baking soda -- 2 teaspoons
- Water -- to 2 quarts

Make sure the solution is thoroughly mixed. Mix a fresh mixture daily and feed in place of milk. Double the rate you were feeding. Feed as soon as you notice diarrhea. Use for 1-1/2 or 2 days, then return to the regular milk diet.

After four to six months of age, the kids may be fed a ration similar to that of the milking herd. Good hay and 1/2 pound of grain per day should provide an ample growth rate. Poor hay may require 1 to 1-1/2 pounds of grain daily.

Feeding the milking herd

If milk production is important, feed maximum amounts of high quality hay balanced with a grain ration containing enough protein, minerals and vitamins to support

production and animal health (Table 2). Grass or legume hays are equally acceptable. As the percentage of legumes is increased, the need for protein in the grain mix is reduced.

Table 2

Hay and grain rations for the milking herd.

Forage fed	Level of protein in grain	Mineral mix to use
Legume or mixed, mostly legume	14 to 16 percent	High phosphorus mixes
Grass or mixed, mostly grass	16 to 18 percent	2:1 Ca:P mixes

To determine the amount of grain to feed, consider level of milk production, amount and quality of forages consumed, appetite and state of fleshing. Thin, high-producing does should have access to all the hay they can eat plus grain to the limit of their appetite. Does in mid-lactation that are in good flesh should have all the hay they will eat plus 1 pound of grain for each 3 pounds milk produced. Late lactation does may not need more than 1 pound of grain for each 5 pounds of milk.

Feed a grain ration formulated for a milk-producing ruminant (dairy cows). Rolled or cracked grain is more palatable than ground grain. Because of palatability problems, urea **is not** recommended. Some commercial cow feeds may contain byproduct ingredients unpalatable to goats. Wet molasses is more palatable than dry molasses. Beer or citrus pulp is a valuable source of fiber, especially if the available hay is of low quality. Table 3 lists some palatable and nutritious rations your local miller could mix.

Table 3

Sample grain rations.

Ingredient	Level of protein in finished mix (pounds)			
	14 percent	16 percent	18 percent	20 percent
Cracked or rolled corn	38 (pounds)	33	27 (pounds)	22 (pounds)
Rolled oats	20	20	20	20
Soybean oil meal (44 percent)	19	24	30	35
Beet or citrus pulp	10	10	10	10
Molasses	10	10	10	10
Trace mineral salt	1.0	1.0	1.0	1.0
Dicalcium phosphate	1.8	1.8	1.8	1.8
Magnesium oxide	0.2	0.2	0.2	0.2

Add a vitamin premix that will provide 1,000 units of vitamin A, 500 units of vitamin D and 3 units of vitamin E per pound of grain.

Weeds and browse are not a necessary part of a goat's diet. Good pasture is a valuable source of summer feed. Vegetable tops and parings may be used as an "extra;" do not depend on them as a sole source of forage.

Water is critical to good health and high milk production. A clean water source should be available at all times. If the water is warmed during cold weather, goats will consume more.

Feeding dry does

If the doe is not thin, reduce the amount of grain to 1/2 to 1 pound per day. Feed her all the forage she will eat. Hay fed during the dry period may be of lower quality, but if so, the grain ration should contain additional protein. Browse, leaves and weeds are often useful to recondition the stomach. If the dry ration differs from the milking ration, be sure to change to the milking forage and grain ration two weeks before the doe freshens.

Feeding the buck

For convenience, you may feed the buck the same grain fed the milking herd. Most bucks do not need more than a pound of grain per day plus forages. Don't let them grow fat. Adjust grain upward or downward accordingly. Always feed full forage.

Housing dairy goats

Housing for dairy goats does not have to be elaborate, but it must satisfy the health and comfort of the animals. There are five requirements of good housing for goats:

- The building should be adequately ventilated but not drafty;
- The walls and ceiling should be free from condensation;
- The bedded area should be relatively dry and clean;
- The hay, grain and water receptacles must be well built and located so that feed is not wasted or contaminated; and
- The facilities should provide easy access to the animals and require a minimum amount of labor.

Temperature

The comfort zone for dairy goats is between 55 and 70 degrees Fahrenheit. Non-sweating animals are much less sensitive to declining temperatures than to rising temperatures. Milk production, feed consumption and comfort are not affected by temperatures between 0 and 55 degrees Fahrenheit, but temperatures over 80 degrees Fahrenheit seriously reduce feed intake and milk output. Therefore, the object is not how to keep the goats warm in winter, but how to keep them cool in summer.

Ventilation

The movement of air, either by mechanical or natural means, to remove heat, moisture and odors is a necessary part of a housing plan. Most pneumonia problems with dairy goats can be traced to inadequate ventilation. Wet walls and ceilings are the result of improper ventilation, poor insulation or a combination of the two.

The rate of air movement is influenced by the amount of animal heat produced and the temperature you wish to maintain in the building. Additional heat and insulation may be required to keep the stable air fresh and to prevent water pipes from freezing in the winter. An air inlet system also must be provided for good air distribution. Ventilation entails more than installing a fan to move some air.

Proper ventilation during the summer may require moving 150 to 200 cubic feet of air per minute per animal. Winter weather may reduce the amount of air to be exhausted to as little as 20 cubic feet per goat. Contact your local MU Extension specialist for assistance in planning the right ventilation system. With proper ventilation, you are protecting the animals, the building and the quality of milk produced.

Light

Windows are essential in a closed barn. They permit sunlight for warmth and drying and provide a source of vitamin D for the animals. Well-lighted barns usually are kept cleaner. In summer, open windows are important for air movement.

Housing for young stock and the milking herd

There are two housing systems often used for dairy goats:

- Loose housing, where the animals run loose in a pen or shed
- Stall barns, where each animal is confined in a small box stall or tie stall

Loose housing is an old system with many desirable features. With plenty of bedding, the manure pack for a goat herd can be kept fairly clean and dry. Heat produced within the pack makes a warm bed. There is ample exercise area and an opportunity for the goats to move around.

This type of housing, however, presents a few problems. A built-up manure pack, even though dry on the surface, releases a lot of moisture into the barn air. In addition, hay racks should be located off the bedded area to reduce parasite infestations. Watering devices should be placed in an area where spilled water will not mess up the bedded pack.

Many goat owners use a shed or barn that is open on the south or southeast side, thus eliminating the need for mechanical ventilation. These are cold housing facilities that do not require additional heat or insulation and use normal air movement for ventilation.

Goats move freely in or out of the housing area and into the paddock or feeding area. Hay feeders, watering devices, mineral feeders and grain bunks are located on concrete pads some distance from the built-up manure pack.

Housing for the kids and other young stock may be included in the plan for the milking herd. However, young goats must be kept separate from the milking herd. Frequently, the kids are kept in 4-foot-square box stalls with at least one side slatted to permit air movement. Do not make a box stall from plywood with all four walls solid; air movement will not reach the kids. Usually a gated front contains enough openings to allow air drainage. Provide a heat lamp for newborn kids and for kids that are ill. Older kids may be kept in a corner of the stable area inside a pen made from movable hurdles.

Buck housing must be separate and downwind from the milking herd. It does not have to be elaborate and often is no more than a 5- or 6-foot shed with an open side facing the south to give the bucks free access to an exercise lot.

Milking area

The milking area is part of the housing plan, but it should be separated from the stable area. It should have a concrete floor to make cleaning easier, and the milking platform should be 15 to 18 inches higher than the floor to permit easier milking. The platform should allow 18 inches in width and 3-1/2 feet in length for each animal to be tied. The manger should be 6 inches deep and 1 foot wide. If several goats are to be fastened and milked at once, a lever that will open and close the stanchion head locks is helpful.

Some goat owners who keep their milking herds in stall barns milk their animals on a milking stand located in one corner of the stable. Dusty air and flies in the stable, however, may require you to place the milking stand in a separate screened-in facility to guarantee clean milk. A 5-by-8-foot room with a concrete floor and drain is adequate for milking a small herd, but be sure there is plenty of light either from natural sources or electric bulbs.

If the milk is sold to the public or to a processor, there will be state inspection of the operation just as is required for production of Grade A milk from cows. Check with your local health authorities and the state inspector before starting construction.

If the milk is to be used by the family, the degree of sanitation and cleanliness maintained and the size and type of building constructed can be based on the owner's good sense, pride, conscience and finances.

Equip the milk house with a double sink for washing utensils, a hot water heater, refrigeration, a small table or work space, and a rack for drying and storing utensils. At least 50 percent of the milk house should be open floor space with ample room for equipment.

Regardless of the herd size, refrigeration must be available to quickly cool the milk. A household refrigerator may be used, but cold water is more efficient in cooling milk than cold air. The refrigerator or cooler should be large enough to hold a pan of water. The pan should hold enough water to match the amount of milk in the milk bucket. If the herd is big enough and milk production is 5, 10 or more gallons per day, it will be necessary to purchase a water-immersion cooler or a bulk tank for cooling purposes.

Cooling is critical to milk flavor and quality. All milk contains bacteria, some of which comes from the air and the utensils. If milk remains warm for a short period, the bacteria begin to multiply and the quality of milk deteriorates. Therefore, cool milk immediately after milking to a temperature under 40 degrees Fahrenheit and hold it at that temperature until processed and/or consumed.

Plans for building a milking barn and milking stand and for construction of the milk house area are available from your local MU Extension dairy specialist.

Fencing

Fences serve two purposes that make them an important part of a housing plan -- they keep goats in and dogs out. They also keep foraging goats away from your trees and shrubs as well as your neighbor's flower patch.

Set 7-foot posts, either wooden or steel, on 12-foot centers. Then use either a 4-foot-high woven wire fence topped with an electric wire 12 inches above the woven wire or use a completely electric fence. If you use a completely electric fence, place the first wire 12 inches from the ground, then four more wires on 6-inch spacings to a total height of 36 inches. Use insulators on the post to attach the wires. The electric fence works well when weeds, grass and brush are not allowed to touch the wires and short it out or when the ground isn't bone dry during periods of drought. Your local farm supply store can recommend the proper equipment.

In summary, keep the plans as simple and economical as possible. Consider the health of your animals as well as the conveniences a housing facility might offer. Contact your local MU Extension specialist for additional ideas on housing facilities for your dairy goat enterprise.