

Facilities and Equipment for Commercial Meat Goat Production

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Housing

Goats are very adaptive animals and do not require fancy or expensive housing. They need protection from the basic elements. When it rains or snows, they will seek shelter. Goats can tolerate cold weather, but should not remain cold and wet for long periods of time. During the summer months, it is important to provide a shady area with adequate air circulation and to control flies.

Natural shade and windbreaks will protect meat goats during much of the year. The primary need for housing is during kidding, especially if kidding occurs during cold weather. A dry, draft free area is needed. Does can kid in large community pens. Some producers use kidding (mothering) pens or jugs to separate does and their litters. Kidding pens should be approximately 4 ft. x 5 ft.; one pen is needed for every 10 does in the herd. In mild weather, it may not be necessary to jug does; does can kid on a clean, well-rested pasture.

Oftentimes, existing buildings can be utilized to house meat goats, store hay and equipment. Producers can make almost any housing system work. Confinement housing, which can be completely enclosed as needed, is popular in cold climates and for human comfort and convenience. Confinement housing allows close supervision of animals, but is more expensive than most other types of housing. Goats in confinement require 20 square feet of space, plus an additional 30 square feet for exercise, if pasture is not available.

Three-sided or open-sided shelters are suitable in most situations. The open side should face away from prevailing winds, the roof should be sloped to repel rain, and there should be adequate drainage around the building. Goats require 10 to 15 square feet of space in open housing. Buck housing can be simple, but must be strong. Taller, sturdier fences are needed to keep bucks away from does in heat.

Movable sheds, polydomes, calf hutches, quonset huts, and straw buildings can be used to shelter small numbers of animals. Hoop or greenhouse structures offer an alternative to traditional livestock housing. In these structures, semi-circular tubular steel provides structural support to a covering of either polyethylene or fabric. The appeal of hoop structures is the lower cost of materials and construction.

Dirt or stone floors are preferred to concrete. Pens should be bedded with 3 to 4 inches of straw or other absorbent material (poor quality hay, wood shavings, sawdust, shredded newspaper, peanut hulls, or sand), 5 to 6 inches if the floor is concrete. In the winter, the manure pack should be allowed to build up, as the decomposing layers provide a source of heat. Buildings with expanded metal floors have been used successfully to feed goats. Less space is generally required per animal.

Building plans for livestock housing are available at most county extension offices.

Manure handling. Goat housing should be designed with manure handling in mind. Removing manure with a front end or skid loader will save labor. Unprotected piles of manure should not be stored in places where runoff may occur. It may be advisable to cover manure piles with tarps. Composting animal waste reduces odors and fly problems. Composted manure is an excellent soil amendment. A manure spreader is desirable for distributing animal wastes over large pastures and crop fields. Keeping animals outside in their natural environment will greatly reduce manure handling requirements.

Ventilation. Ventilation is an important aspect of animal housing, particularly closed housing. Poor ventilation can be detrimental to animal health and performance. Harmful gases and dust can cause respiratory problems, while temperature extremes can reduce animal and human productivity.

The purpose of ventilation is to provide the desired amount of fresh air, without drafts, to all parts of the shelter; to maintain temperatures within desired limits; to maintain relative humidity within desired limits; and to maintain ammonia levels below specified levels.

Ventilation can be natural (cold housing) or mechanical (warm housing). Natural ventilation systems move air through adjustable and fixed openings, such as vents, windows and doors. Mechanical ventilation systems incorporate fans, controls, and air inlets and/or outlets.

Fencing

The importance of good fences cannot be overstated. A properly built fence stands for as long as it is needed, keeps goats where they belong, and provides protection from dogs and other predators. Fencing can also protect trees, shrubs and other sensitive areas from destruction. In a meat goat enterprise, fencing is often the biggest capital expense, especially if all new fence must be erected.

Goat producers need to be concerned with three types of fences: 1) exterior (boundary or perimeter); 2) interior (cross or subdivision); and 3) barn lot (or corral). Perimeter fences are usually permanent and intended to last for many years with minimal repairs. They should be constructed of high quality materials. Predator control should be a primary consideration. Interior fences may be permanent or temporary. Barn lots or corrals need to be built to withstand greater animal pressure. There are differing opinions as to what is the "best" type of fencing for goats. Some producers may choose to use different fence types in different situations.

Woven wire. Woven wire or "field fence" is the conventional goat fence. It consists of horizontal lines of smooth wire held apart by vertical wires called "stays". The spacing of the wires generally gets wider as the fence gets taller. Some manufacturers offer special "goat net" containing vertical stays 10 to 12 inches apart, rather than the more common 6 or 8 inches. The larger openings help horned goats get their heads out.

Woven wire has the disadvantages of being expensive and difficult to install over hilly terrain. A four foot high woven wire fence, with one to two strands of barbed or electric wire along the top of the fence makes an excellent perimeter fence for goats. A strand of barbed wire along the bottom of the fence will serve as a "rust" wire and extend the life of the fence. An electric scare wire at shoulder height of the goat will reduce animal pressure and further extend the life of the fence. Another offset wire, approximately 7 inches up from the ground, will help deter coyote predation.

High-tensile, woven wire fences are more expensive, but do not sag or stretch as readily as standard woven wire. They are more resistant to rust and are considerably lighter in weight.

Board. Board fences, commonplace on many horse farms, are generally not suitable as either interior or exterior fences for meat goats unless the boards are close together or strands of wire are placed between boards. Otherwise, kids and dogs can get through the gaps. Moreover, while board fences can be very aesthetic, they are much more expensive to construct and usually require costly upkeep.

High-tensile, smooth wire, electric. Probably, the most effective and economical goat fence is a smooth wire, high-tensile electric fence, so called "smooth wire" because the wires aren't barbed and "high-tensile" because it is constructed of high tensile wire that can be strung extremely taut without breaking. Due to the

greater tensile strength of the strands, high-tensile wire can be pulled tighter than standard electrified wire, which tends to sag over time.

High tensile, electric fences require strong corners and end braces. Five, six or seven 12 ½ gauge high-tensile wires are recommended for goats. The bottom wires of the fence should be more closely spaced than the top. Wire spacings of approximately 6, 5, 5, 8 and 10 inches are common. In areas where there is relatively even rainfall and some green vegetation most of the year, it is recommended that all wires be hot. Ground return wires are recommended where there is low rainfall, stony and dry soil conditions or where the ground is frequently frozen or snow covered. It's a good idea to install switches so that wires can be grounded when the grass is tall or other situations warrant.

The charger (or energizer) is the "heart" of the electric fence system. It converts main or battery power into a high voltage pulse or "shock" as felt by the animal when it touches the fence. In the past, electric fence chargers shorted out easily. Today's chargers are low impedance, meaning they are designed to effectively shock though vegetation and other foreign materials touching the fence. A 4,000 volt charger is sufficient for goats. The number of joules needed depends on the length of the fence, the number of electrified wires and the severity of conditions. A joule is the amount of energy released per pulse. As a general rule, 1 joule will power 6 miles of single fence wire; 4.5 joules is usually adequate for 20 to 50 acres. Lightning strikes can damage energizers. Surge protectors and lightning arrestors are recommended to minimize energizer damage.

Poor grounding is the leading cause of electric fence failures. An electric fence must be properly grounded so that the pulse can complete its circuit and give the animal an effective shock. It is important to follow manufacturer's instructions for grounding electric fences. A minimum of three ground rods should be used for each energizer. It is estimated that 80% of electric fences in the U.S. are improperly grounded.

An electric fence is a psychological barrier rather than a physical one. Animals must be trained to respect electric fence. Once trained, they should respect the fence even if it is off for any reason. A voltmeter measures the charge the fence delivers and is an inexpensive but useful tool for trouble shooting electric fence problems.

Electrifying one or more wires in a conventional non-electric fence will prevent stock from pushing through the fence. New fences will last almost twice as long if they have electrified offset wires attached to them. All single offset wires should be set at two thirds the height of the animal to be controlled. An electrified scare wire approximately 7 inches up and 5 to 7 inches away from the fence will give a coyote a strong shock and keep him from returning.

Temporary fences, also electric, go hand-in-hand with improved grazing management. There are various materials available for temporary electric fencing: light weight smooth wire, polywire, polytape, rope and flexible netting. Wind-up and reel systems are easy to move and install. Temporary electric fencing has the advantage in that it can be moved when weed pressure becomes too great on the fence. Cost and ease of use are the primary considerations when selecting temporary fence materials.

Non-electric high-tensile fence. A non-electric, high-tensile fence is constructed of the same materials as the electrified version, but more wire is needed since the strands are spaced closer together. Since the fence posts have to support more wire, more fence posts are also needed. A non-electric high-tensile fence is more expensive because of the additional wires and posts, though you save money by not buying an energizer.

Other. Mesh wire and galvanized livestock panels are desirable for barn lots and other high stress areas, but are generally too expensive for enclosing large sections of land. Board fences and woven wire with small

openings are also suitable for barn lots. Chainlink fences are effective, but very expensive. Barbed wire and electric fences should not be used in high traffic areas. Fences in barn lots or pens need to be higher than those in pastures, as the goats will challenge them more.

Gates. A fence is only as good as its gates. All gates should be fitted with goat-proof latches. A simple hook and eye will not fool a goat for very long. The gate should be as high as the fence itself, and there should be no gaps beneath the gate. Some gates will need to be wide enough to drive equipment through.

Working Facility

Working facilities are helpful when performing routine management tasks such as catching, sorting, drenching, vaccinating, hoof trimming, weighing, and loading. Without adequate facilities, these jobs often get delayed or overlooked. A small pen is usually adequate for most small operations, whereas a working facility, complete with pens, gates and chute, is suggested for larger herds.

Understanding how goats think and react to specific situations is helpful in designing working facilities. A working chute (or raceway) for meat goats should be approximately 10 feet long, 4 feet high and 12 inches wide. The sides should be solid. For horned goats, the sides should be tapered with the top nearly twice as wide as the bottom. There should be a crowding (gathering) pen at the entrance to the chute. At the end of the chute, there should be a squeeze chute or head gate for restraining goats and a sorting or cutting gate for sorting goats into different pens. Other components of the system may include a footbath, portable scales, cradle (or tilt/turn table) and loading chute.

Handling equipment can be made from pressure treated lumber or metal. Existing fences, walls and sides of buildings can be incorporated into the system. Buildings can also be used as gathering or holding pens. Building plans for livestock handling facilities are available at most county extension offices.

Several companies specialize in portable handling equipment for sheep and goats. Buying equipment is generally more expensive than making it, but it may pay for itself in the long run. Manufactured equipment is easier to transport, move and assemble. Metal surfaces are safer for livestock and people. Metal gates and panels have alternative uses on the farm. Commercial handling equipment is available in painted steel, galvanized steel and light weight aluminum.

Feeders

Feeders are a necessity for goats. Feeding on the ground results in considerable feed wastage and contributes greatly to the spread of disease, especially internal parasites. If goats are able to stand in their feed or feeders, they will defecate and urinate in the feed. Feeders need to be raised off the ground and constructed in such a way to keep goats out (as much as possible).

There are various designs for grain feeders. V-shaped feeders are easier to clean than feeders with square bottoms. Rubber or metal pans are useful for hand feeding small numbers of goats. Keyhole feeders are popular with dairy goat producers, but may present problems to goats with horns. Feeders that can be hung on the side of the fence, then removed after the goats have finished eating, are especially effective. Some producers have constructed fence line feeders out of PVC pipe.

Hay can be fed in bunks or racks or along a fence line. V-shaped racks with vertical or diagonal slats work best. A toe board will help keep the goats' feet out of the feeder. Round hay bales should be fed in feeders with movable sides or an overhead rack.

There should be enough feeder space for all goats to eat at once – approximately 16 linear inches per doe (8 to 12, if hay is self fed). Young stock require 12 inches of feeder space, 2 to 4 inches if grain or hay is self fed. Ideally, you should be able to access feeders from outside the pen or pasture to prevent being trampled by the goats during feeding.

It's a good idea to hang mineral feeders higher than the goats can reach, then provide a block for them to stand on. Some producers have made mineral feeders from old tires, PVC pipe and plastic garbage cans. If fed outside, a lid is needed to keep the mineral dry.

Building plans for feeders are available at most county extension offices.

Water

Clean, fresh water is a daily necessity for goats. As a general rule of thumb, goats will consume anywhere from ½ to 4 gallons of water per day, depending on their physiological state. Requirements increase greatly during late gestation and lactation. Feed intake is positively correlated with water intake.

Water can be free flowing or provided in buckets, troughs, tubs, stock tanks or automatic waterers. In an open tank drinking system, 1 foot of space is required for each 15 to 25 head. In an automatic watering system, 1 bowl or nipple is generally sufficient for 50 head.

It goes without saying that water sources should be kept clean and free from hay, straw, and fecal matter. Smaller troughs are easier to drain and clean. Water will be more readily consumed during cold weather if the water is ice-free and during hot, humid weather if the water trough is in the shade.

Feed Storage

All feedstuffs – hay, grain, trace mineral salt – need to be kept dry and protected from rodents. Feed must be accessible in all weather conditions, but inaccessible to goats. Moreover, ample feed storage can result in considerable cost savings if feed ingredients can be purchased and stored in bulk on the farm.

Unprotected hay deteriorates in quality. Hay should not be left uncovered. Hay bales should be stored in hay lofts, storage sheds or covered with tarps. Hay and straw bales should not be placed in a barn unless they are thoroughly dry; otherwise there is risk of overheating and fire.

A bulk grain bin can prove to be a good investment, even for the small producer. It enables the producer to accept bulk deliveries of grain or purchase commodities directly from grain producers or dealers at farm gate prices. Salt and minerals and smaller amounts of grain can be stored in barrels, garbage cans or old freezers/refrigerators.