Chapter 12
Housing and Corrals

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Introduction to Goat Housing

While goats are very adaptable and were originally wild animals, they have become domesticated by man and have been introduced to weather conditions and factors different than where the species developed. Goats require protection from three stress factors: rain, wind and cold. An animal stressed by any of these conditions can swiftly become seriously ill. Therefore, whether raising goats for brush control, meat production, dairy purposes or show animals, shelter is necessary. This chapter will discuss various options for housing.

Open Housing

When building a new structure for housing goats, the least expensive option and easiest to build would be what is commonly referred to as a three-sided shed. This type of building should have the open side facing away from prevailing winter winds. The open side may even be enclosed except for door openings if desired. Examples of open housing options are shown in Figures 12-1 and 12-2.

The roof should be sloped to drain runoff to the rear of the structure, and should be situated where drainage is not a problem. Such sheds designed specifically for goats commonly measure 5 to 6 feet tall at the front, with the rear measuring 3 to 4 feet tall. This low height will help hold the body heat lower down to the ground at the goat's level. Length and depth of the structure can vary, depending on the number of animals it is designed to shelter. Mature goats in open housing systems will need 10 to 15 square feet of bedding space per animal.

Figure 12-1. Open housing example.

Figure 12-2. Open housing shed with corrals.

While the floor is often only the natural soil, three to four inches of wheat straw or poor-quality hay can be added for bedding. Some sources recommend allowing a manure pack to accumulate in the winter, providing a heat source as the lower layers decompose.

Such structures frequently are built of treated wood posts, lumber and corrugated sheet iron, although welded pipe frames, heavy sheet metal, plywood or almost any other material can be utilized. Remember that untreated wood will decay through time, and goats will gnaw at certain types of wood, slowly destroying the structure. Painting will preserve lumber and plywood, but some paints contain chemicals which are harmful to goats.

Confinement Housing

If intending to completely enclose your goats, other factors must be considered. As the complexity increases, so will the maintenance and building expenses. Construction materials may vary, rang-

Figure 12-3. Confinement housing example.

ing from using or modifying an existing structure, as seen in Figure 12-3 or building a simple barn to an elaborate facility. Floors may be of dirt, wood or concrete. Regardless of the type of construction or the materials involved, there are several necessities that must be included in the structure.

Windows or artificial lighting must be provided. Most sources recommend 1 to 2 square feet of window space per animal to prevent health problems.

A healthy goat needs fresh air, but a draft can create respiratory problems. Ventilation fans should be designed to circulate air from the floor in the winter and from the ceiling in the summer. They also should be capable of moving 150 to 200 cubic feet of air per minute in the summer and 20 cubic feet per minute in the winter.

The structure should provide each animal with sufficient space. In complete confinement, a mature goat needs 20 square feet of floor space. An additional 25 square feet of space should be available in a separate exercise yard. Be sure to allow for the space taken up by feed and water troughs.

Additional heating normally is not required if dry bedding is available and there are no drafts. Dirt floors need 3 to 4 inches of wheat straw, poor quality hay or a similar material. Concrete floors should contain 5 to 6 inches of bedding. Drainage of urine and removal of manure must also be provided on concrete floors.

Insulation can be added to prevent warm air inside the barn from condensing on cold walls. Such condensation can increase frequency of colds and other respiratory problems. If insulation is used, it is important to remember to cover it with plywood or a similar product to prevent consumption by the goats.

Kidding Pens

Many goat producers prefer to have their does give birth in kidding pens, both for protection from predators and to provide easier monitoring for kidding problems. This also allows for monitoring the post-natal health of does and newborn kids. Pens may be easily constructed in either open or confinement housing, from a wide variety of materials.

Kidding pens are available from several sources in the form of pipe and wire panels, which may be joined together. They may also be made from cutting wire panels to the desired dimensions, built of lumber, chain link or any other material commonly used for goat corrals. Panels may be joined together by wire, hog rings or, if frequently taken apart and moved, duct tape (which is much the same color as wire panels and may be cut with a knife for removal). Examples of kidding pens are shown in Figures 12-4 and 12-5.

Heavily pregnant does are usually less likely to attempt to jump or climb out of pens, but do not rely on this when considering dimensions. Kidding pens should be a minimum of 48 inches high. Premanufactured panels are available which, vary from 5 feet to as much as 10 feet long. Kidding pens should be a minimum of 5 feet long and 5 feet wide or 6 feet long and 4 feet wide. Does with single births may be kept for a short time in the smaller pens, but those with multiple kids should be placed in pens up to as much as 40 or 50 square feet. Bedding of hay, straw or wood shavings is recommended.

On dirt floors, permanent or semi-permanent pens may be added at any time by inserting wood posts or steel T-posts. T-posts have the advantage of being removed with a tractor front-end loader or 3-point lift or use of an automotive jack.

Ideally, in barns with concrete floors, location and size of kidding pens should be considered prior

Figure 12-4. Kidding pen.

Figure 12-5. Kidding pens inside confinement housing.

to construction. If this is not an option, pens may be added by securing one or more sides to the wood or metal supports for the barn (posts, studs, pipe, etc.).

Alternatives

Goats do not require fancy facilities. Other materials and products have been used for housing. Old chicken houses, hog barns, concrete blocks, calf hutches (often seen at dairies) and even railroad boxcars and enclosed semi-trailers (with the undercarriage removed) have been used in designing housing for goats. As long as the shelter provides protection from wind, rain and cold, your goats will probably not get restless (Figure 12-6).

Goat Corrals

In addition to shelter, a goat operation must have facilities for goats to be confined, whether for processing for sale or veterinary care, exercise for show animals, weaning or other management reasons. This will require construction (or adaptation if using existing pens designed for other species) of pens capable of containing goats (Figure 12-7).

Goats have been called the "Houdini" of the animal kingdom. It has been said, if daylight or smoke will pass through a fence, a goat can escape from it. While these are exaggerations, a germ of truth remains: Goats are extremely intelligent and will, on occasion, manage to escape from what appears to be a goat-proof barrier. Regardless of the construction, problems will inevitably arise, but following the "5 P Law" (Prior Planning Prevents Poor Performance)

Figure 12-6. Alternative housing example.

can minimize the stress and inconvenience of wandering goats.

If planning to build completely new facilities, site selection is important. Goat pens should be located on a well-drained location to prevent pooling of rainfall and unsanitary conditions. Wet goats, as discussed elsewhere, are susceptible to a multitude of disease organisms, and confining goats where a mixture of rain and manure has accumulated is a sure recipe for sickness.

Once the problem of location has been resolved, the goat rancher must determine the size and shape of corral needed. Most sources recommend a minimum of 25 square feet of floor or ground space per animal. The shape of the pen should also be considered. If the confinement is to be used for exercise of one or two show animals or meat goats, a long, narrow run may be preferred, due to the fact that an animal will get more exercise in this design than in a square pen with the same area in square feet. If a larger number of animals will be confined, more conventional shapes will be adequate. A word of caution is appropriate here, however. Goats, like all herd animals, will frequently "pile up" in corners,

Figure 12-7. Confinement areas should match the needs of the herd.

which can cause injury to animals and put pressure on fences. For this reason, square corners should be rounded as much as possible by angling the fence line or placing stock panels across existing corners, improving the likelihood that animal movement will continue to flow around the perimeter of the enclosure.

Livestock producers of all species have learned a few rules regarding construction of pens or corrals:

- Purchase quality materials. No fence is any stronger than the weakest link.
- Perform routine maintenance. Swinging gates will sag, net wire and chain-link fence will stretch with repeated pressure, welds will break and lumber will decay.
- Posts should be located outside the pens. While positioning the posts on the inside will make your corrals look more attractive to your neighbors, any pressure from within can push out nails, fence staples or wire clips and disconnect the building materials from the posts, allowing animals to escape.
- Never build to equal the minimum strength, height or size you think you need. Frightened goats, wild animals and even acts of nature can test the construction of the best fence. And even though many sources state that a fence 48 inches high is adequate to contain a goat, there have been countless examples of individual animals which could jump or climb over a 4-foot-tall fence. Also, by building larger facilities than may be needed at the present time, sufficient room is available to comfortably contain more animals if (and when) the herd size increases.
- Take into consideration the type of animal(s) to be confined. Mature bucks, horned animals, and small kids each have different construction requirements.
- Include smaller pens, a loading chute and an alleyway or other area to sort animals for veterinary care, weaning, transportation or other purposes.

Materials

The next factor to consider is the type of material from which to build the pens. There are more types of fencing available than there are breeds of goats. This text will discuss the most common types of fencing used for constructing goat corrals.

Welded wire panels (cattle or hog panels)

Usually sold in 16-foot lengths, these are available in various heights up to 60 inches, although taller ones are available. Depending on the diameter of the wire, dimensions of the panel, and the size of the openings, prices currently range from approximately $17.95 for the light-weight 50-inch by 16-foot cattle panel to as much as $226 per panel for one with 2-inch by 2-inch spacing and measuring 8 feet by 12 feet (2014 data, price quotes FOB J&I Manufacturing, Madill, OK).

Advantages: Wire panels can be cut to any desired dimension with bolt cutters or a hack saw. They can be assembled quickly and can be attached to wood posts with fence staples, welded or otherwise attached to pipe posts and horizontal rails, or even clipped onto steel t-posts. For producers who already have corrals for cattle, wire panels are easily added with a minimum of effort to make these facilities appropriate to contain goats. If an existing barbed-wire or net-wire fence already is on site, they may be quickly connected using brass hog rings. This connection will need to be checked on a regular basis, as the rings tend to spread apart when stressed.

They are strong and, being galvanized, resist rust unless placed in contact with the soil. Wire panels are available that are suitable for all types of goats, from small kids to mature bucks.

Disadvantages: If the wrong type of panel is used, goats can occasionally get their heads caught, even if horns have been removed. Small kids may put their heads through panels with openings as small as 4-inch by 4-inch spacing. If animals can get their necks over the top, through time, the top may become bowed down (Figure 12-8) enough for goats to escape. Wire panels do not conform well to irregular terrain, so site selection is important when using them. In addition, goats frequently place their front feet on fence rails, feed troughs, stumps, or other items. Due to this habit, the welds on wire panels may, over a period of time, become broken. This can eventually result in an enlarged opening in which goats may become entrapped or even escape. Also, unless sufficient posts are used, extremely pushy goats such as mature bucks may bend the panels or even cause a section of the fence to lean and eventually collapse. This is most commonly observed in conjunction with steel t-posts in deep, coarse sandy soils. Finally, the ends of the wires protrude slightly and may have sharp corners, which can cause injury to animals and especially the installer.

Figure 12-8. Leaning on a fence can eventually cause it to bow down.

Chain Link Fence

Chain link fence, shown in Figure 12-9 is readily available at most hardware or home-improvement stores and can be found in various heights and lengths. Prices for 50-foot lengths vary from $57 for 48-inch 11 ½-gauge to $189.04 for 60-inch 9-gauge (Lowe's, 2014). Posts, top rails, gates and concrete add to this cost.

Advantages: Chain link has an attractive appearance and also helps prevent access by predators. It is strong and, being galvanized, rust is not a factor. It is suitable for all ages, sexes and breeds.

Disadvantages: Chain link fence is heavy and may be difficult to install. Due to the relatively small diameter of posts for chain link fence, cement is recommended, especially for corners, braces and gate posts, to prevent the fence from leaning. Horned goats occasionally become entangled. Some animals may try to climb chain link. Repeated climbing or rubbing may cause the fence to stretch and bow. Also, many goats have learned to push against the bottom of traditional gates, forcing their way through to escape, while others have discovered how to raise the latch. An extra bottom latch and locks of some form on both latches are highly recommended.

Figure 12-9. Chain link fencing.

Wood Fence

Materials for wood fences can be obtained from many sources. Lumberyards and home-improvement centers carry both treated and un-treated lumber, plywood and posts. Sawmills may provide "rough-cut" hardwood lumber in various dimensions at reasonable prices. Economy-minded producers may even wish to cut posts and poles from their own property.

Advantages: A wood fence can be built with only post-hole diggers, hammer, nails and a saw. No special tools are needed. It can be built to the contour of the terrain. Depending on the desires of the owner, it can be either painted or rustic in appearance. Plywood, commonly available in 4-foot by 8-foot sheets and varying thicknesses, creates a barrier that goats cannot see through, squeeze between or get a foot hold to rear up on, and cannot get a head or leg caught in. Addition of a strand of 4-point barbed wire or electric fence at the bottom can prevent predators from digging under this barrier. Boards also can be spaced in such a manner as to provide secure containment of goats, while denying access to predators.

Disadvantages: Untreated or unpainted lumber decays with time and exposure to the elements. Commercially-treated posts and lumber are available, but many preservatives contain arsenicals or other chemicals, which are toxic if consumed by animals. Paints may also contain toxins. The adhesive which binds the layers of plywood will rapidly deteriorate from rainfall, if not protected by paint or other sealant. Also, goats often will nibble on many varieties of wood, eventually consuming the fence and allowing for escape.

Net Wire or Field Fence

Field fence as shown in Figure 12-10 is purchased on rolls, usually measuring 330 feet. Like wire panels, field fence is available in many heights and with numerous options regarding the size of openings. Currently, a roll of 39-inch sheep and goat fence (the least expensive option) costs $109.17 (J&I Mfg., 2014). Although a confinement pen construct-

Figure 12-10. Net wire or field fencing.

ed solely of this material would not be tall enough to prevent some animals from escape. Woven horse mesh with 2-inch by 4-inch spacing can be found in 100-foot and 200-foot rolls and ranging from 48 to 72 inches tall. V-mesh also is available in 165-feet rolls and with a choice of 50-inch or 58-inch heights.

Advantages: When properly installed, field fence adapts to the contour of the terrain. Properly selected varieties help deny access to predators and prevent exit by goats. It is available at most farm centers, building material suppliers and home-improvement stores. Galvanized fencing resists rust. It can be used with pipe or wood corners and brace posts can be either wood posts or steel t-posts. Field fence can be utilized in combination with electric fence or barbed wire to resolve special problems such as confining mature bucks in isolation. It can also be added to an existing barbed wire fence simply by stretching it tightly from the corners or stretch posts, attaching to the posts with clips, wire or staples and securing to the barbed wire with hog rings.

Disadvantages: As with wire panels and chain-link fencing, goats can get their heads and/or horns caught in field fence, especially if no attention is paid to the dimensions of the openings in the mesh. Special efforts must be made to adapt field fence to irregular terrains. Due to weight and awkward dimensions, it requires two people (or great innovation) to build field fence.

Barbed wire

Barbed wire is readily available from almost any farm center, building supply or hardware store. Like other materials, it is galvanized and resistant to rust. It comes in 440-yard rolls, in either 2-or 4-point varieties. It is available in diameters of 12 ½ gauge, 13 ½-gauge and gaucho (small diameter which should not be overtightened).

Advantages: Availability and ease of construction are the primary reasons for use. With correct spacing of wires, a predator-resistant barrier can be built. It can be attached to almost any type of post. It readily conforms to almost any terrain. Existing barbed-wire fences can be adapted for goats by using small-diameter "stays" of wood, metal, plastic or other materials placed closely together and attached to the barbed wire with wire, fence staples, or other methods to prevent goats from escaping.

Disadvantages: Barbed wire has sharply-pointed barbs at regular intervals along the full length of each strand in a fence. While these discourage goats and other livestock from attempting to escape or push against the fence, the barbs can cause severe injury to both animals and people, especially during construction. Attaching either twisted wire or wood stays to prevent escape by goats is hard work and time-consuming.

Electric fence

Electric fencing has been used successfully for holding animals of almost all species. It can be either temporary or permanent, and may be constructed with high-tensile wire, light electric-fence wire, wide, flat poly tape, or twisted plastic rope/wire combination. (Figure 12-11)

Depending upon the location and the needs or desires of the rancher, chargers are available, which are powered by batteries, solar energy or by plugging into an electrical outlet. Some sources recommend chargers that will supply 4,500 volts of electrical current for goat fences (the same sources suggest 2,500 volts for cattle fence). A properly-operating ground connection and good insulators are vital to success with electric fence.

Advantages: Electrical fence is easily installed. It does not require tremendous tension because the animals do not push against a properly-operating electric fence. Predators develop a great respect for an electric fence. Insulators are available for wood posts, steel t-posts, or almost any other type of support for the wires. In addition, posts can be purchased that are of non-conductive materials. Electrified wires can be placed below and between existing strands of barbed wire, or placed a few inches inside other materials to prevent climbing or pushing.

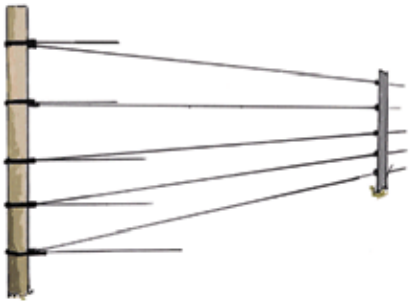

Figure 12-11. Electric fence.

Disadvantages: Electric fence can be disabled by contact with weeds, fallen limbs, lightning or other interference, and goats will quickly discover the lack of current and escape. Drought can disable all but the deepest of ground contacts. Deer or other wild animals may occasionally come into contact with electric fence. Their panicked reaction can tear down even the sturdiest fence. On occasion, the owner or members of the family may accidentally contact the electric fence. While not fatal, this can disrupt the harmony associated with farm life.

Other options

Other methods and materials for containing goats are available. This chapter has only attempted to describe the most common alternatives. Goat ranchers have successfully used the choices described, or combinations of these options, successfully for generations. Failure to include a type of goat corral in this manual is not intended to imply that it is inadequate or defective. Materials and designs for goat pens should only be limited by imagination and budget. Proper research and planning are the keys to successfully containing the goats.