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Shelter Needs for Small Livestock

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Arizona has a diverse set of climate conditions that change throughout the year. In summer, one part of the state may be over 100° F and at the same time it may be 70° F in another part of the state. The same is true in winter with temperatures ranging from 80° F to below freezing. Due to these temperature differences, it is hard to give consistent calendar-based specifications on shelter needs for small livestock (sheep, goats, swine, alpaca and llamas) applicable throughout the state. Additionally, it is important to note that animals at different stages of life or with illnesses may have unique shelter needs. Reach out to your local Veterinarian and/or Cooperative Extension agent if you have any questions about these requirements.

First and foremost, check your community, city, or county zoning rules regarding any necessary permits or guidelines for shelter construction. For those animals without special needs, we can break down the requirements by general needs and different weather conditions.

General Needs

Sturdy – The shelter should be able to withstand weather conditions and animal inflicted damage to the structure. Consider wind strength and direction, any potential snow load, and what type of animals will be housed. Structures made of steel will be costlier, but more sturdy. Lumber is generally cheaper but could break down over time from sun damage. Additionally, some livestock species (especially horses) are prone to chew on wooden structures, shortening the lifespan and potentially harming the animal.

Space – Provide enough space for the animal to be able to stand up, lay down, turn around and stretch out. The State of Arizona Department of Agriculture notes this equates to approximately four times the animal's size (AZDA, 2024).

For organic small livestock producers, the implementation of the Organic Livestock and Poultry Standards (OLPS) in January 2025 require that shelters "must allow for animals to move, stretch and express natural behaviors over a 24-hour period", "have unrestricted outdoor access year-round", and adds the requirement for pigs to have access to rooting materials (AMS, 2024).

Protection – The shelter should protect livestock from predators, rain, snow, sun, and other issues. Large stock have fewer predation issues and generally don't need as much protection as smaller stock. Small stock may require a fully enclosed shelter to prevent predator losses, especially in the case of chickens, rabbits and young lambs and kids.

High Wind Areas

Ensure the structure is built well enough to withstand high winds and wind gusts, if your area is prone to these. During construction, the use of lumber or steel posts sunk in the ground 2 to 3 feet deep for stabilization, along with solid lumber or steel to build the structure is recommended. Also, consider using heavy duty steel tie downs on the structure if your area is prone to dust devils or other windstorms. The use of pallets, plastic and light materials is not recommended in wind prone areas. While lower-cost lighter construction materials and structures may seem more attractive, the longevity of the structure will be less. Plastic in particular is prone to UV damage and tends to break down fairly quickly in Arizona's sunny climate.

The Natural Resource Conservation Service (NRCS) recommends using a "V" or "semicircular" fronted shelter in high wind areas (Fig.1). This design feature may be incorporated in a shelter to reduce wind stress on the shelter itself.

While wind impact reduction is important, be sure to remember livestock comfort is a priority and ensure they have access to fresh air and outdoor space.

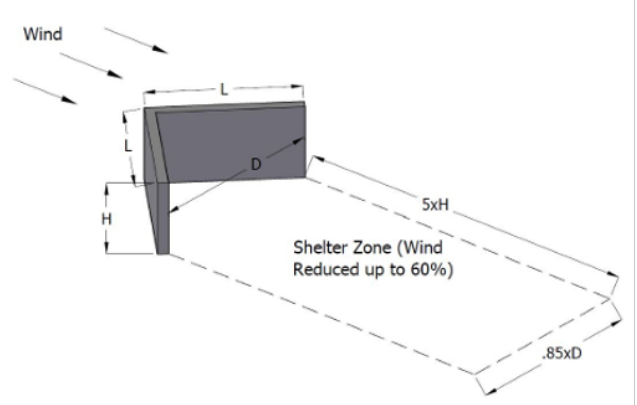

Figure 1. NRCS guideline for reduced wind and snowdrift (NRCS)

Table 1. Natural Resource Conservation Service standards for minimal livestock shade requirements

Animal Type	Area (square feet per head)	Height (feet)
Dairy	40	10
Beef 400lb calf	15	10
Beef 800lb feeders	20	10
Beef cows	30	10
Horse	50	12
Swine, pigs, or goats	10	7
Poultry	3	7

High Heat Areas

Heat stress is detrimental to livestock and can cause a wide variety of health issues. A shelter should provide both shade (Table 1) and allow for any cooling winds to move throughout the shelter. If there is access to electricity or solar power by the shelter, fans, placed where the animals cannot interfere or access them, may help with cooling. Keep all bedding and dust away from electrical components to avoid fire danger. Pigs should have access to water and mud for wallowing.

Shade structures, with or without sides, should be oriented in the north-to-south direction to provide the maximum amount of shade throughout the day. The roof should be slightly pitched to allow water runoff (1 foot of drop for every 25 feet of roofline). Pitch the roof so water runs downslope away from the structure, and not towards the opening of the shelter if it has sides.

Fully or mostly enclosed structures, such as chicken coops, should be built with ventilation in mind. A roof turbine, soffit or gable vents, or high windows can allow heat to escape. Floor level vents or openings allow cooler air to replace warm air and allow for proper ventilation and circulation of air. The smaller the enclosure is, the more important it becomes to monitor the temperature and encourage ventilation.

Trees and natural vegetation can provide shade for livestock as well but should be tall or large enough to provide adequate shade for the animals (Figure 2).

Cold Temperatures

Extremely cold temperatures (below 0° F) are rare in most of Arizona, however, temperatures in higher elevations can routinely drop below 32° F. Most livestock that live year-round in the higher elevations have developed winter fur or insulation by the time the cold temperatures roll around. Even with extra winter fur or insulation, there is still a need for shelter options for your livestock to get out of the wind chill or bad weather events. Solid structures with at least three sides will allow the animal to choose to take shelter as needed. Build your shelter with the prevailing winds for your area in mind. Similarly, be thoughtful when selecting places to build shelters in areas prone to flooding or excessive mud. If four-sided shelters are used, ensure animals have access to fresh air, clean and dry bedding, and avoid the use of heaters to reduce fire hazards. Proper ventilation is still needed in winter to prevent the buildup of ammonia and moisture, while minimizing drafts that could chill animals.

If snow is present, winds can cause snow to drift around and into open shelters. This can be reduced by designing and locating the shelter to minimize wind and snow impacts.

Figure 2. Photo: Maryland Small Ruminant Page

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