

## Barns, Stalls, and Three-Sided Sheds: Horse and Cattle

Our topics for this week are:

- Proper shelters for horses and cattle

Barns are 4-sided buildings with a roof used to confine livestock. For some species, especially horses, barns are typically subdivided by stalls for individual animal separation. Three-sided (also called *walk-in, run-in, loafing*) sheds provide free access to a pen or pasture and are sufficient protection from the weather in most climates for livestock and horses. They provide some protection from insects, wind, rain, and sunlight.

There should be no protruding nails, bolts, wires, metal edges, or broken boards in barns, stalls, and sheds for livestock or horses. Flooring must be non-slip. If buildings are made of metal, the construction should include nailing the bottom edge of the metal sheets to base boards to prevent a hoof from getting under the bottom edge of metal sheeting. Feeders should be metal or rubber, not plastic. Wood panels inside barn stalls or in 3-sided sheds should be sealed against moisture for cleaning and sanitation.

A 3-sided shed opening should face south or east, away from winter's prevailing winds in North America. Sheds may be stationary or portable. Stationary sheds should be constructed on an elevated base of dirt or built up with crushed stone covered by bedding, and the pad's surface should slope away from the shed's opening to keep the interior dry. The roof should slope toward the back to help keep the entrance drier. If the shed has electricity, wiring should be in metal conduit to protect it from birds and rodents. The shed should be located away from trees which might come down in a storm and damage the shelter.

## SPECIES NEEDS

### Horses

Horses are herd animals that need more fresh air and exercise than any other domestic animal. When confined to a stall environment, they tend to develop undesirable behaviors (weaving and cribbing) and are at more risk of respiratory, intestinal (impaction colics), and musculoskeletal problems. Most horses are stalled because of anthropomorphism (treating horses as if they were human), lack of exercise space, to protect the hair coat from bleaching by sunlight, or the mane and tail from traumatic hair loss from horse bites and vegetation, i.e., burrs and branches.

Stalls are good for foaling, frequent medical treatments, healing of certain physical injuries, and individual feedings. They are poor means for long term confinement. For the average-sized adult horse stall dimensions should be at least 10 X 10 feet, but 12 X 12 feet is preferable. Being square, they are generally referred to as *box stalls*. The minimum floor space for a donkey is 8 X 8 ft. The ceiling should be a minimum of 9 ft to prevent head injuries, if rearing occurs. Overhead lights should be at least 9 ft high and covered by wire cage or jelly jar (thick glass) cover. Preferably, light covers should be sealed against bugs, dust, and water as fire prevention. Stall doors should be at least 4 ft wide and 7 ft tall. Latches on doors should be able

to be opened with one hand, but unable to be opened by horses. There should be no clutter or protruding structures into an aisle or any other area that horses will be handled or restrained. No halter hooks should be placed on stalls that could scrape, cut, or otherwise injure horses. Stall doors should slide sideways flush with the wall or swing open to the outside for handler safety. Stall doors should never swing into a stall. Horses like to chew wood edges. Wood edges that might be chewed should be protected with metal flashing or corner protection metal. Alleyways inside barns should be at least 10 ft wide.

If a horse can kick through a wall, the results can be catastrophic. Horse stalls and 3-sided sheds must be lined with kickboards at least 4 ft high of rough sawn oak, two layers of 3/4 inch plywood, or 3/4 inch plywood covered by rubber mats.

Healthy horses are very athletic, but their powerful, quick movements can be extremely dangerous to them and to their handlers if the footing is slick. Flooring should be nonslip such as textured concrete, rubber pavers, or rubber matting.

Many barns with stalls for horses are mistakenly built for human comfort with inadequate air flow for horses. Horses urinate about 2-3 gallons of urine per day. Hazardous levels of ammonia can be quickly produced that is injurious to horses and handlers' eyes and lungs. Horses expire about two gallons of water into the air each day. Condensation can be a problem without adequate ventilation.

Inhalation of dust from hay and bedding can also be a problem in stabled horses. Stables should prevent drafts but allow temperatures near that of the outdoors with an abundance of fresh air exchange. Horses prefer temperatures around 40°F. Heating of stalls is usually unnecessary and can be detrimental to horse health. Barns should have at least 8 to 10 air exchanges per hour (all air completely replaced every 6 to 7 minutes). Air movement required is about 2 mph, equal to the sensation of a faint breeze. Removal of wet bedding should be done as often as possible and at least twice per day.

If shavings are used, dust free, kiln-dried pine shavings should be used for bedding. Oak has tannic acid in it that injures hooves. Walnut has oils that can cause laminitis (inflammation and separation of a layer in the hoof). However, pine sawdust will break down and become dust that can irritate the respiratory system, eyes, and frog of the hoof if adequate stall cleaning and ventilation is not provided. If straw is used, wheat straw preferred for bedding. It drains well and does not dry hooves.

To promote good ventilation, solid stall walls should be avoided. Mesh walls are best for stalls with foals. Fans above stalls which blow existing stall air around the stall do not provide good ventilation if used alone. Effective ventilation pulls air through the stall. Dutch doors allow horses to be confined indoors with their head outdoors for fresh air and socialization, but horses may like them so much that constant leaning on the lower door can weaken the hinges and reinforcing board on brackets are needed. Additional means of providing better ventilation in barns include pot vents, ridge vents, and cupolas.

Grills should be used between stalls or Dutch doors to exercise pens to allow socialization among horses. This is more important for young or insecure horses. Openings between bars or grills should be less than 3 inches. Larger spaces will allow a jaw or hoof to be caught.

As long as other horses are present, tie (also called straight or standing) stalls can be used for short term confinement. These are slightly wider than the width of a horse (at least 4 ft), long enough for a manger at the tie ring end (at least 8 ft), and separated by narrow partitions. As with

box stalls, kick boards should be present and 4 ft tall. Tie stalls are efficient in space and cleaning time. These work well for temporarily containing horses that are turned out most days. Only gentle horses should be tied in tie stalls since the handler must ask the horse to move over in order to slip past the horse after tying or before untying the horse in the tie stall.

It is stressful for a horse to be kept alone. Although almost any other animal is beneficial for companionship, a pony, miniature donkey, or goats are usually the best surrogate herd members for a single horse. If kept in stalls, the companion should be in an adjacent stall with bars between the stalls for the horse to be able to see the companion.

Three-sided sheds for horses must be stationary since they would be easily moved by the strength of horses. The confinement area of a 3-sided shed should be wider than deep to reduce risk of a dominant horse trapping a submissive horse that cannot escape being injured. The open side should be entirely open or, at the minimum, 2/3 open to avoid horses hitting their shoulders trying to get out of the shed. The minimum height for a 3-sided horse shed is 8 ft and the minimum space is 100 sq. ft/horse.

Whenever nails are used for construction or repair, a careful sweep of a magnet on a long handle should be done to retrieve any dropped nails. This is particularly important if using a contractor who is unfamiliar with horses because they tend to be more careless about leaving nails. They do not know that nails are common causes of hoof infections and there is a high risk of tetanus in horses.

### Cattle

Adult beef cattle may require housing for protection from cold weather extremes when ill or calving. Otherwise, they cope well with wide ranges of weather as long as the pasture is well maintained and they have access to shade and protection from the wind and hail.

Dairy cattle are provided shelter in barns as free-stall housing (4 X 8 feet stalls), loose housing (a large area with bedding), stanchion housing (individual stalls while tied or held by head stanchion), or open lots with wind shelters. Free-stall and loose housing cattle are fed in a separate area. Cattle in stanchion housing and open lots have feed provided at the stanchion or in the lot.

Dairy cattle spend 40 to 65% of their time laying down. Bedding material for dairy cattle has a major influence on the health of their udder. Bedding provides cushioning when recumbent, helps preserve body heat, and facilitates cleaning. Bedding should not be palatable or otherwise digestive problems from its ingestion may occur.

Calves that will become replacement heifers are separated from the cow usually within the first three days of life. They are raised in small individual pens with hutches, which resemble large dog houses. The pens are dirt covered with straw. Hutch calves can see, hear, and smell other calves in hutches.

Now, let's recap the key points to remember from today's episode:

- Not all horses need to be stabled, but all horses should not be stabled all the time.
- A high level of ventilation and exercise is important for horses
- Dairy cattle need deep bedding for warmth in cold weather and to reduce injury to their udder.

More information on animal handling is available in my book, *Animal Handling and Physical Restraint* published by CRC Press. It is also available on Amazon and from many other fine book supply sources.

Additional information is available at [www.betteranimalhandling.com](http://www.betteranimalhandling.com)

Don't forget serious injury or death can result from handling and restraining some animals. Safe and effective handling and restraint requires experience and continual practice. Acquisition of the needed skills should be under the supervision of an experienced animal handler.