

Bedding Options for Livestock and Equine

A comfortable and clean animal is happy, healthy, and fully producing.

Introduction:

In general, bedding for an animal must be comfortable, clean, and absorbent. There are several materials, both organic and inert, that may be used for bedding, and most may be used for all types of livestock. When organic materials are used, ammonia volatilization is reduced, improving the air in the housing facility. Bedding, as with other aspects of livestock management, can be manageable through proper care and attention. In the case of milking, pregnant, nursing, or very young livestock, specific attention to bedding is required. These four categories of animals are the most susceptible to disease. With milking animals, because the udders are in such close contact with the bedding, environmental pathogens, mainly ones that cause mastitis are of major concern. Comfort is another crucial aspect of bedding because discomfort of an animal leads to sores and other ailments. The breed and age of animal, housing, flooring, and population density will dictate the type and amount of bedding needed. For example the foaling season is especially important with equine.

Considerations in choosing bedding:

Labor- How time consuming is the overall management (obtaining the material, dispersing it into areas of use, cleaning, and disposal).

Availability- How feasible is it to obtain material? Are there other uses for the bedding material and will that play a factor into the economics of that specific material? Evaluate source of material to ensure cleanliness.

Expense- Buy bedding at the most economical time, in a particular season, at harvest time or, in the case of sawdust, during the mills busiest period. Purchasing a year's supply of bedding may be economical given a proper storage facility is available.

Manure management system- Does the material chosen fit into your current manure system? If not, can alteration be made to either the system or material chosen? Wood products can create a problem for waste management especially in the case of composting because of their high carbon to nitrogen (C: N) ration.

Type of Use- Consider the situation under which the bedding will be utilized. Is the bedding going to be used for normal day-to-day bedding, bedding for milking or pregnant animals, or for mothers with new born animals?

Five Bedding Characteristics:

Know bedding limitations in order to efficiently and effectively manage it.

Comfort-Materials should contribute to the overall comfort of the animal by providing a dry, cushioned place which encourages resting. A well rested animal will increase its overall productivity.

Moisture Content-Organic matter has better moisture absorption capacity than inorganic material. Moisture directly increases the level of microbial activity in the bedding, leading to harmful levels of environmental pathogens. Moist materials also adhere to animals making the cleaning of the animal more difficult, especially in the case of animals with coarse hair. Turning bedding improves ventilation and can reduce moisture.

Cleanliness- Materials should always remain free of any chemicals, sharp objects, molds, dust, and excess moisture. Clean soiled bedding areas at first sign of trouble.

Develop an environment that simulates the animal's natural habitat.

Inert-Ideally, bedding should not sustain bacterial growth, but organic matter such as straw, wood shavings, and paper byproducts do. Materials should not be palatable to animals. Increased changing of bedding is needed if organic materials are incorporated.

Particle Size-Is a much-overlooked aspect of bedding, but probably the most effective if used properly. Organic matter of smaller particle size will encourage bacterial growth, thus shortening the effectiveness of the bedding materials. Comfort becomes a factor when using inorganic substances such as sand. Large sand particles can cause discomfort and sometimes create wounds, though finer sand can be used successfully. Very fine particles such as sawdust will stick to the skin and teat ends exposing them to higher concentrations of bacteria.

Types of Bedding:

Straw- This soft, dry by-product of small grains is commonly used. It is easy to handle, carbonaceous for a compost pile, and readily available in most areas. Ensure that the straw is not palatable. Mainly check to see that seed is not available for consumption. It has good absorbency.

Hay- Is cut and dried legumes and/or grasses. Most commonly used for feed, poorer quality may be used for bedding purposes. Ensure that the quality is not palatable so animal(s) will not consume it. Never use old hay, as it may give off dust that could result in respiratory damage. Hay is one of the more expensive beddings. It is quite absorbent and once soiled, begins to decompose quickly producing an odor.

Wood Shavings- Have proven to be satisfactory bedding providing comfort and ample absorbency. Shavings must be purchased, so setting up an account with a reputable lumber yard may prove to be economical. When dealing with any outfit it is extremely important to specify its use and make sure it is clean. Be cautious as to the type of wood; some woods, like cherry, can be toxic.

Wood chips- This product is a mixture of bark, sawdust, and post peelings. Wood chips may require less repeated additions, and may be cheaper. However, they provide fairly poor comfort and absorbency. Availability may be an issue. Wood chips create a highly damp environment generating mold and mildew, which promote microbial growth. If showing animals, using wood chips is not advised because when moist, color is emitted and may stain the coat of the animals.

Sawdust- Employment is dependent on availability. As new technologies arise, wood byproducts like sawdust

are being utilized for other products such as pellets for stoves. It is recommended that the sawdust be kiln-dried to ensure cleanliness and absorbability. Cleaning is fairly easy with this highly absorbent material because soiled spots tend to clump making the disposal easier. When working with sawdust, more attention must be given to the health aspect. Particularly in the case of dairying livestock, the small particles of sawdust tend to stick with great ease to udders, encouraging the growth of mastitis causing bacteria.

Sand- This inert material harbors less microbial growth than most organic materials. Sand probably would get a golden star for comfort. Due to its nature, an animal's body is able to conform directly to the material, allowing for an excellent place to rest. Be cautious of the particle size as large particles may cause bruising and abrasions on animals. Although sand is comfortable, it does not absorb well, causing problems of excrement build up on the floor. The disposal of soiled sand has proven to be a great task.

Newspaper- Is abundantly available in some areas, is cost competitive with traditional bedding materials, suitable for all livestock, highly absorbent, long lasting, sterile, dust and weed-free, rapidly decomposes in soil, and is easily incorporated into a manure management system. On an environmental level, utilizing newspaper allows for reduction of landfill space and farm land that would have been used to grow a crop for bedding. Obtaining newspaper may be done by purchasing it ready-made or from a source, such as a recycling center, where the farmer would then need to process it themselves. According to several University of Wisconsin studies, chopped newspaper contains the same, if not slightly less, populations of environmental pathogens, compared to other organic materials. It is recommended that the back third of the stall be cleaned thoroughly every 24 hours, if not more frequently, depending on overall stall conditions. There is no real risk of toxic contamination from the newspaper to animal. The use of heavy contaminants, such as lead, has been significantly reduced since 1985. There have been no known cases of milk or meat contamination from newspaper, although additional research could be required to address this issue. With that said, inquire from the source in which the newspaper is obtained about the type of ink used.

Other-Because bedding is usually a byproduct of a particular industry, check with local industries to see if their byproduct is a safe alternative to the current bedding used. You may want to consult both a veterinarian and livestock professional prior to implementation. Examples of alternative sources

include but are not limited to: corn stubble, cardboard, peanut hulls, and tobacco stems.

Manage Bedding:

Storage

In order to gain the most out of bedding, store it in a dry place, preferably above ground level. This will also help to ensure that your bedding is free of mold, dust, and excess moisture.

Applying and Grooming

Change bedding frequently to decrease bacteria levels. The most heavily contaminated areas are located at the front of the stalls, where the teats most often come in contact. These areas should receive the most attention when cleaning and changing bedding. Although frequent changing of bedding may seem costly, in the long run it will greatly help to decrease bacterial growth.

Alley Cleaning

Concerning lowering bacterial counts, proper care of alley ways is very important. Alley way bacterial counts are attributed to contaminated bedding and therefore care should be given to changing bedding. Keep bedding away from potential messy areas, such as feeding and watering. Keep a manure pile outside of the housing facility, as such piles harbor parasites and flies.

Concentration of Animals

The greater the number of animals you have in a given space, the greater the traffic in and out of stalls, and the more quickly bedding is contaminated with manure, moisture, and bacteria.

Bacteria Levels

Ventilation, barn design, frequent bedding changing/cleaning, proper stall management, as well as weather, influence bacteria levels and the prevalence of environmental mastitis and other illnesses. Bedding materials, especially those that are organic materials, are hosts for environmental pathogens. Because they are in close proximity to udders, bedding materials are considered a substantial source of teat-end exposure to such pathogens. Any bedding material, even sand, if it's not properly managed, can support the growth of harmful microorganisms. Liming may help to increase the pH, killing off acid loving bacteria. Applying dolomitic or pulverized, not agricultural lime which can be harmful to the animals, after a stall has been completely cleaned, will help control bacteria.

Equipment

The processing of bedding materials can be done on the farm using equipment which the farmer already uses, for example, forage harvesters, bale choppers, and tub grinders. Alterations may be needed based on the

material and volume needed. Some other common machines, like a wood chipper, can be less expensive and generate more volume in a short period of time, proving more appropriate for smaller farm operations.

Specific Requirements for Livestock:

Goats and Sheep

Sheep and goats do not respond well to treatment, if they become ill, they usually have a very difficult time recovering and often expire. (Gillespie p 541) Therefore, keep your goats and sheep as clean as possible. Specific bedding is dependent on the flooring type. Concrete floors must have ample bedding to supply a comfortable, non-slip resting place. Other floorings, such as wood, require use of highly absorbent materials like wood shaving to prevent urine soaking into the wood. Most types of bedding are appropriate for both sheep and goats. In the concern of coat cleanliness, particularly for sheep, small particle bedding, such as sawdust, is not recommended.

Pigs

These meat producing animals do not require much bedding. Their housing is simple, either indoors or outdoors. With indoor facilities, slatted floors are often used to allow manure to fall through into a catchment, where the manure is then handled as a liquid. This type of system allows for minimal introduction of parasites via manure. Some bedding is used in indoor pens, especially with farrowing pigs. No bedding is required in confinement housing if slotted floors are used.

Pigs emit a lot of moisture, to help expel this, allow for good ventilation and frequent changing of bedding. If kept during the winter, allow for ample comfortable and warming bedding, for pigs do not tolerate cold temperatures well.

Beef Cows

Comfort is a crucial aspect when providing bedding for cows. Because these animals are so large, a soft cushioned material is needed to provide easing of the impact of dropping to the ground. Cow discomfort can lead to ailments such as sore feet, rubbed necks, and swollen hocks. Straw has traditionally been the most commonly used form of bedding for cows. But, with an every growing market of materials, newspaper and sand seem to be the most popular. Two main factors will affect bedding choice. First, the facility in which the cows are housed will influence the type and longevity of bedding and second, the current manure handling system.

Poultry

Materials such as ground corn cobs, chopped straw,

wood shavings, sawdust, or other previously mentioned bedding types may be used. A deep litter system is commonly exercised; four to eight inches. Stir and add litter as needed to prevent compaction and increase ventilation, although your poultry may already take care of this if you feed scratch on top of the litter pile to allow aeration.

Nesting- nesting materials should be observed on a daily basis. Never allow bedding to become caked over or saturated.

TIP: To avoid unnecessary build up of manure, place either a platform or boxed-in pit underneath the roosting area. Remove as needed.

Horses

Horses may not always lie down to sleep, but that does not mean that bedding requirements are treated differently. With horses, many of the previously mentioned materials may be used, although some are more applicable than others. Sawdust, for example, tends to clog in the hooves, causing irritation or removal of moisture. The most commonly used bedding is wood shavings. Pay attention to the area underneath the feet of horses. These large animals need a cushioned surface to alleviate the stress on their joints. If solid floors are used in areas where horses stand the most, then ample bedding or a rubber mat should be provided to supply the horses with a soft and durable surface. The amount of bedding needed is contingent upon the weight of the horse, type of material, and time of year, and floor surface. The average 12 X 12 stall will require two to four bales of clean fresh bedding per week.

Mucking Out- Begin by scraping the top of the bedding for soiled areas. Place all soiled bedding in a designated pile. Continue to sieve through the bedding because heavier wet bedding will fall to the bottom.

It is recommended that after the initial soiled bedding is removed; the top unsoiled layer of bedding is pushed to one side, allowing all bedding underneath to be exposed. Scoop up all remaining bedding that is wet, usually all, and place in a muck pile. Continue this process until the whole area is clean. At this point, the entire bottom layer of bedding should be removed and lime may be applied, just as you would for livestock. Cover with original top layer of bedding and apply new bedding as needed.

CAUTION: If using bedding derived from wood, make sure it does not contain either oak, which causes hooves to heat up or walnut, which contains toxins that cause allergic reactions in horses.

A Few Tips:

-If using an organic material, especially those derived from wood, kiln dried is preferred over green.

-Never exchange bedding between pens of a newly introduced group of animals and animals already on the farm.

-Facilities that are used for gestating animals should be fully cleaned and new bedding replaced often.

-If using a heat source, be very careful not to allow heat to get too close to bedding, since some bedding such as straw, can be highly flammable.

Resources:

ATTRA-

A whole farm management check list can be accessed at: <http://attra.ncat.org/attra-pub/PDF/ruminantcheck.pdf#xml=http://search.ncat.org/texis/search/pdfhi.txt?query=bedding&pr=ATTRA2&prox=page&rorder=500&prox=500&rdfreq=500&rwfreq=500&rlead=500&rdepth=0&sufs=0&order=r&cq=&id=48b282f07>

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