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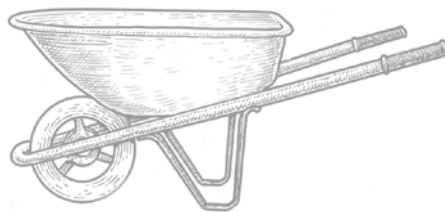
STALL BEDDING

- Pros and cons of different options
- Availability and costs
- Health concerns

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BEDDING BASICS

Even if you are happy with what you have now, it's wise to periodically review—and perhaps reconsider—your bedding options.

Cleaning stalls gives a person time to think. It's the sort of repetitious chore that frees your mind to contemplate your training goals, prioritize your tack wish list, consider names for an expected foal and mull over other questions. It's also a perfect time to reevaluate

your bedding choices.

Chances are, you're using whatever bedding material is readily available in your area and fits your budget. And there's nothing wrong with that, assuming your horse doesn't have any special health needs and the bedding you've chosen is safe. Nonetheless, it's not a bad idea to consider your other options. After all,

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the purpose of bedding may be fairly simple—to cushion and insulate the floor surface—but a variety of factors can determine the best choice for a particular situation.

Beyond availability and cost, the potential for dustiness is always an important consideration, as is the “palatability” of a material—for a variety of reasons, you don’t want bedding that your horse will be tempted to eat. Another variable is absorbency: A highly absorbent material that can capture urine and slow the development of ammonia fumes may be the best choice for horses on high protein diets and/or for horsekeepers with tight mucking schedules.

Weighing these factors can become a little complicated. “The bedding material should be soft, so the horse won’t be reluctant to lie down, and absorbent,” says Brian Nielsen, PhD, of Michigan State

University. “The big question, however, is whether the bedding material is economical—which is more likely to be the case if it’s readily available in your area. Something may be great for bedding but might be too expensive, especially if you have to ship it a long way.”

Cost will largely depend on your location. “In some areas, wood products are fairly inexpensive because sawmills or manufacturing facilities need to get rid of sawdust or shavings,” says Bob Coleman, PhD, the extension specialist at the University of Kentucky. “Situations change sometimes, however, with changes in the economy. If fewer people are building houses and the lumber mills are not making boards, there are fewer byproducts.”

Here’s an overview of common bedding options, along with some observations from experts. With this information, you can spend your



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Straw is the plant stalk left behind after cereal grains are harvested. The hollow stalks are cut, dried and baled.



next stall-cleaning session giving some productive thought to the material you're sorting through.

STRAW

PROS: widely available, aesthetically pleasing

CONS: can be prone to mold if harvested or stored improperly; horses may try to eat it; not very absorbent

Straw is the plant stalk left behind after cereal grains are harvested. The hollow stalks are cut, dried and baled. To produce hay, on the other hand, an entire grass or legume plant, including leaves and seed heads, is cut, dried and baled. The type of straw depends on the plant the stalk was supporting—usually wheat, oats or barley.

In addition to looking

attractive, straw can make a very soft bedding, particularly if it's chopped a second time after harvest. This softness can encourage horses to lie down and get more rest. Straw is also the bedding of choice for foaling, as opposed to wood shavings.

"If you are foaling on shavings or sawdust, the new wet baby gets completely covered with this material and the mare has a harder time licking the foal," Nielsen explains. "This is not an issue with straw."

Straw is, generally speaking, less dusty than wood products, but only if it's harvested and stored correctly. A bale of straw needs to be checked as closely as a bale of hay for signs of moisture and mold. Straw can also be dusty if the grain was harvested with a combine that chopped the stalks into

short lengths that are prone to shattering. One worry is the fact that, while straw is less palatable than hay, many horses will still eat it. Eating straw can lead to problems such as impaction colic or mouth irritation from barbed seed heads that were left on the plant.

"Where I grew up, we used straw," says Coleman. "It's tried and true, and most people know how to deal with it. We were fortunate because we could get wheat straw, which is fairly absorbent and horses rarely eat it. We didn't want to use barley straw because some of the heads at that time had sharp awns that could puncture or get stuck in the mouth. You might be able to find embedded seeds near the incisors, but abscesses back by the cheek teeth would be difficult to

find, and require major dental care to clean up."

Nielsen adds that the absorption capacity of straw isn't great. "If you've cleaned stalls that were bedded with straw, you'll often notice that urine goes down through and pools underneath it," he says.

In areas where cereal straw is available, another concern is what kind of bales you can get. Many farmers are no longer making small bales; it's more cost-effective to put up big square bales—and these are hard to handle in a barn. "If you are getting big bales of straw, do you have a way to handle them when they come off the truck? Some barns are using big bales and they've had to rethink their day-to-day management. It takes a big tractor to move them, so you need a plan," Coleman says.

BEDDING FOR BETTER BREATHING

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Beddings of all types have the potential to be dusty. And dust can trigger chronic breathing problems, such as equine asthma (also called heaves). So, what is the best bedding for a horse with a respiratory condition? None at all, because those horses are best kept out of stalls entirely.

The number one recommendation from veterinarians is to keep horses prone to heaves outdoors continually, in the fresh air and well away from all dusts and particulates associated with an indoor barn environment. And the recommendation works—numerous studies have confirmed that living on a pasture is far better for heavy horses than indoor living with any type of bedding, forage or intense management. (The notable exception is horses with

pasture heaves, who are triggered by molds, but these are a minority of cases in very specific, humid southern locales.)

Of course, if a horse with breathing troubles must be kept indoors for any period of time—say, to recover from a serious injury—you’ll want a bedding that is as dust-free as possible. If you can see any lingering dust in a sunbeam after you bed the stall, the material is too dusty for a horse with respiratory troubles. You might have to purchase very expensive, high-quality shavings or straw for just that specific horse or import a bedding that is otherwise hard to find in your area. Your veterinarian can help you locate a suitable bedding. The effort and expense will be worth it to protect your horse’s respiratory health while the rest of him heals.

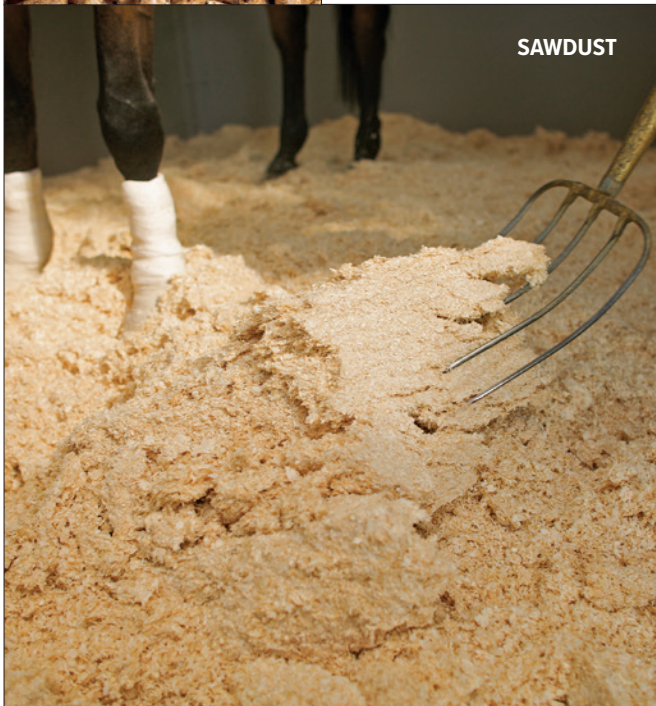
SHAVINGS



PELLETS



SAWDUST



WOOD PRODUCTS

PROS: widely available; more absorbent than straw

CONS: can be dusty; certain types of wood can cause allergic reactions; price can vary depending on local economic conditions

Wood-based beddings tend to perform well. “Wood products have a fair water-holding capacity, maybe a little better than straw, but this depends on how finely it is processed,” says Nielsen. “Sawdust will absorb more than shavings because it has more surface area than shavings.”

While more absorbent, sawdust is dustier than shavings, which can lead to or exacerbate respiratory problems. And certain woods can also be

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downright harmful to horses. “You have to be careful with some wood products because horses may react negatively to them,” says Coleman. “Some of the cedars have a lot of oil and these can cause allergic reactions or be too drying—pulling moisture from hoof horn when horses are standing in these shavings,” he says. “You need to try some of these in small amounts first to see if they will work or not for a certain horse.”

One wood that is dangerous for every horse is black walnut, which can trigger laminitis in a horse who stands on it for even a short period of time. “You need to be aware of the source [of wood products] and be careful that there’s no black walnut in the material. Some people want to know how much black walnut would be safe, and the answer is zero,” says Coleman.

While sawdust and shavings are the most popular wood bedding products, pellets are also an option says Jenifer Nadeau, PhD, an equine extension specialist at the University of Connecticut, who states that for a while in her area, some horse owners were using wood pellets and liked them because they are very absorbent, “but now they are much more expensive—since they have become popular for heating homes in pellet stoves.”

Coleman agrees that

pelleted wood products, when available, can make good bedding. “Horse owners like pellets because you can get away with less material. After they get moist and start to expand, you end up with more volume. A shovelful of pellets might turn into two and a half shovelfuls of expanded pellets. Some people put down a few pellets and sprinkle them with a little water so they’ll expand. They don’t get the pellets very wet, so they will still absorb moisture from urine and manure in the stall.”

There may be differences in various pellets, in terms of hardwood or softwoods. “Some of the pellets used in heating stoves may be hardwood whereas most of the bedding pellets tend to be a softwood, but for bedding you can use either,” Coleman explains. “It is important, however, to know the source, and the kind of wood, to make sure you never end up with any black walnut wood.”

How much wood product beddings cost depends on many factors, including wider economic activity in your area. “When there is a lot of construction/building going on, there are more wood products available and prices are lower because they are produced in higher quantities. When construction is down they become higher priced and harder to find,” says Nadeau.



DISPOSAL OF DIRTY BEDDING

A layer of fresh, clean bedding in a stall eventually ends up as a pile of not-so-fresh bedding. What you do with it after that can be quite the quandary.

Dirty, uncomposted bedding spread directly onto fields not only has the potential to distribute parasite eggs all over your horse’s grazing space, but the bedding material itself can kill the pasture grasses.

Fully composted bedding is safe and even beneficial to spread on your fields, but different materials compost at different rates.

“The fertility value of the end product is definitely a consideration in bedding choice if you are composting, along with how long the material takes to break down to where you can spread it on

your pastures,” says Jenifer Nadeau, PhD, an equine extension specialist at the University of Connecticut.

“Straight manure breaks down fairly rapidly because it has an almost perfect carbon and nitrogen ratio,” says Nadeau, “but when you add more carbon (from plant material like straw or wood) it takes much longer to break down. Paper products, like shredded newspaper or cardboard, and straw tend to break down faster than wood, and sawdust breaks down faster than wood chips.”

Fully composted bedding is dark and fluffy, has no smell, holds moisture and is perfect for conditioning soil and growing plants. You can spread composted bedding back onto your pastures or

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invite local gardeners or landscapers to pick it up for free. You might even be able to sell it.

If you don't want to compost and spread used bedding on your property, you'll need to find a way to have it removed. There are companies who will haul away dirty bedding for composting or use in other industries, others remove it to a landfill. Some of these companies may leave dumpsters, while others scoop up your pile themselves.

Your local jurisdiction may have regulations regarding manure disposal, as well as resources for getting that done. The best place to turn for help is your local agriculture extension agent.



PAPER PRODUCTS

PROS: absorbent; unpalatable to horses

CONS: may require more frequent mucking; difficult to move with a wheelbarrow

Paper has several properties that can make for good bedding. "Some people use cardboard waste from manufacturing plants that cut out cardboard boxes," says Coleman. "Small pieces can make nice bedding, and it's absorbent, and the horses won't eat it."

Nonetheless, he says, "You don't see paper bedding used much anymore. Part of the reason is that it was hard to deal with. If you take it out in

a wheelbarrow and a breeze comes up, it might blow all over. Sourcing was also a problem unless you were close to a place to get it."

Shredded newspapers have always had mixed reviews. "An argument against [news]paper is that it tends to get wet fairly quickly," says Nielsen. "When you first put it in a stall it can look very good, but after it gets wet it is soggy and darker, and the printing ink can make a light-colored horse look dirty."

Despite its drawbacks, Nielsen says he has met some people who love paper bedding. "I think it depends on how deep you are bedding a stall, how often you are changing it, etc. Some people have discovered techniques that work well."

PEAT MOSS

PROS: highly absorbent; low palatability for horses

CONS: expensive; difficult to find in the necessary quantities

You might be more familiar with it in a gardening setting, but peat moss—the dead, fibrous material that forms when mosses decompose in bogs—is also sometimes used as bedding for horses. There are definitely advantages to it: A little goes a long way, it's extremely absorbent and horses generally won't eat it. Peat moss is hard to find in many areas, however, and can be very expensive. "You may only be able to get it at a garden center," says Nadeau.

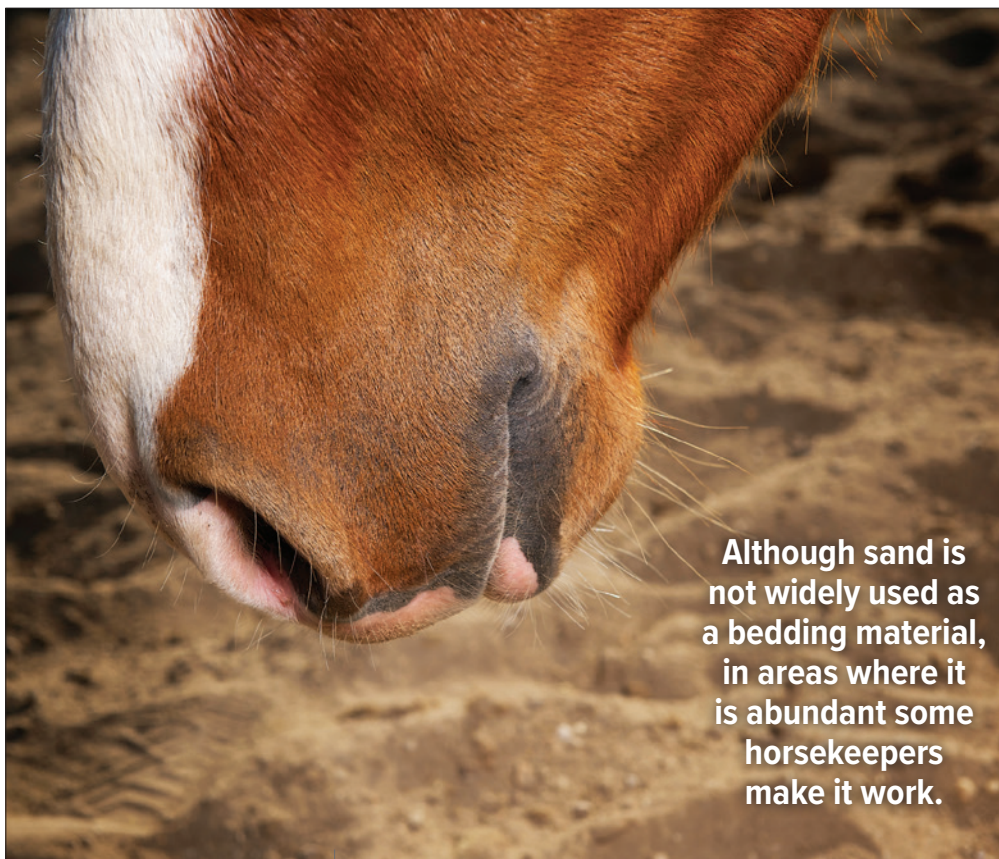
The only time Nielsen has used peat moss as a bedding was for a research project: "The advantages include good absorption, and it's soft and comfortable for the horse. Drawbacks are availability and cost and the fact it's dark-colored. The horse may get dirty. It all depends on your priorities. If you want the stalls to look clean, peat moss would not be your first choice. It's

PEAT MOSS



DUSTY PERIN

WIKIPEDIA



Although sand is not widely used as a bedding material, in areas where it is abundant some horsekeepers make it work.

also harder to sort through and clean because it's hard to tell the feces from the peat moss. If it's your own horse and you are not worried about looks, it might be fine, except for the cost."

The harvesting of peat moss is also somewhat controversial. Extraction of peat requires removing of the living surface of a bog, layers that can take decades to develop.

Critics say the process also releases large amount of carbon dioxide into the atmosphere, contributing to global warming. For these reasons, environmental agencies in Britain are working to phase out the use of peat moss for all gardening by 2030.

SAND

PROS: easy to clean

CONS: not absorbent; can make a horse's coat gritty; not soft; need to feed hay out of racks or pans to reduce ingestion of sand

Although sand is not widely used as a bedding material, in areas where it is abundant some horsekeepers make it work.

"I worked at one place where they bedded horses on sand," says Nielsen. "There are plusses and minuses. Stall cleaning was very simple and didn't take long; the sand falls right through your

apple-picker fork. A disadvantage is poor water absorption. It may stay a bit wet unless you bring in new sand, but you are really not taking the sand out because you can sift through it so easily. Horses' hair coats can become sandy, and another disadvantage is that it's not very soft for them to lie down on. It tends to pack and get hard," he says. "In some places, it may work because it's available and cost-effective. "Maybe in a dry climate with low humidity it will stay drier."

If you do choose to bed on sand, it's vital to feed hay from pans or mats or racks—never directly off the floor. Otherwise, horses may ingest



RICE HULLS



PEANUT SHELLS

sand as they eat hay, leading to an accumulation in their gut and sand colic.

SHELLS AND SHIVES

PROS: economical if available

CONS: not absorbent; can be hard to find

Even experienced horsekeepers may be unfamiliar with these more unusual, but perfectly acceptable, bedding materials. For instance, hulls, shells or "husks" from nuts and grains can make for a suitable horse bedding, assuming you can find them in a large enough quantity.

"Peanut hulls are used as bedding in some southern regions and seem to work," says Nielsen. "Rice hulls are an option in some areas. Rice hulls tend to stay dry because the moisture goes down through; they don't absorb much. Availability is the biggest factor with these materials." Ground hulls are often used as feed for other livestock, so looking for such a supplier would be a good place to start your search if you wanted to try them.

Also in the "other" category is flax. Popular in Canada and Europe, flax beddings have a limited but growing following in this country. Flax is a food and fiber crop grown primarily in cooler parts of the world. A by-product of flax fiber processing is the "shive," the woody core of the stalk. It has several industrial uses, including loose fill insulation and absorbency products.

As a horse bedding, Coleman says, "people seem to like it because it is fairly absorbent and a small amount does a good job. It can be purchased in bags and is easy to transport." Availability can be an issue, however, and some horse owners report it can be a bit slippery when first laid down.

A stabled horse spends the better part of his day in direct contact with his bedding. It's worth the time, then, to periodically reassess what you're using. Chances are your bedding is still suitable, but you'll never know for sure until you take the time to consider other options. 🍎

STUDYING THE SUBJECT

Although determining the best bedding for your situation may require some trial and error, several scientific studies have yielded interesting information about the attributes of various materials.

- **A 2001 study from Finland** compared wood chips, straw, peat moss, sawdust, shredded newspaper and mixtures of each. "According to that study, peat and peat mixtures had the best ability to absorb ammonia and also had high moisture holding as well as manure fertilization value, but the number of fungi and bacteria were lower in shredded newspaper and wood products," says Jenifer Nadeau, PhD, an equine extension specialist at the University of Connecticut. The researchers also looked at composting times and found that only peat was ready for spreading and plant production after one month of composting.

- **A 2008 study conducted in Germany** showed that gaseous ammonia in barns varied with the type of bedding used. Ammonia, which is created when urine breaks down, can be damaging to human and equine respiratory systems. The researchers found that wheat straw had the highest ammonia production rate at 178 mg per cubic meter, followed by paper cuttings at 162.6 mg

per cubic meter, wood shavings at 155.2, hemp at 144.6, linen at 133.7 and straw pellets at only 60.3 mg per cubic meter.

"They did a companion study looking at airborne dust particles and found straw pellets were also significantly lower in mean particle generation," says Nadeau. "The lowest dust levels were in straw pellets, followed by wood shavings, and then wheat straw."

- **A 1996 study from Canada** examined dust and

ammonia in stalls with different beddings and ventilation rates. "Airborne particles and ammonia were managed under different conditions with high and low ventilation rates," says Nadeau. They used paper and straw as beddings. At both ventilation rates, the overall number of airborne particles was higher with straw than with paper.

"But the study also found that ammonia measurements reflected accumulation over time. In stalls with low ventilation the ammonia levels were significantly higher than with high ventilation, regardless of the bedding type," says Nadeau. This means you can't expect to solve all the problems with bedding type; you also must deal with ventilation issues.

- **Australian researchers** investigated the use of sawdust impregnated with canola oil to reduce dustiness. "That study found reduction in inhalable and respirable airborne particles following addition of canola oil to the bedding," says Nadeau. "The oil would continue to reduce dustiness for a long period of time, whereas dampening the bedding with water would be temporary because water will evaporate. The drawback with oil is that it would also stick to the horse's coat."



DUSTY PERIN