# Farm and Barn Maintenance 

## By heather smith thomas ANNE M. EBERHARDT PHOTOS

With spring's arrival, now is the time to plan farm maintenance and improvements on fencing, pastures, and barns. The quality products and services mentioned below can improve efficiency, deliver value, and simply make life easier when working around horses. Prior to purchase, be sure to ask if any of the products qualify for discounts either under NTRA Advantage or equinesavings.com.

## Facilities for Good Horsekeeping

The types of horses you are enclosing will dictate in part your choice of materi-als-whether you need a roomy paddock for mares and foals, a large pasture for a group of horses, a stallion paddock, or a fence for rambunctious yearlings.

Paddocks or pasture fence for mares and foals should be very safe and durable since foals are inquisitive and can easily get into trouble putting a foot or head through the fence. The best fence for foals has some give (so a foal won't be injured if he crashes into it). It should have the bottom board, pole, or wire close to the ground to prevent a baby from rolling out of the pasture if he lies too close to the fence for a nap. An enclosure for weaning must be secure and hazard-free. A stallion paddock should be at least fivefeet high or taller (preferably six to seven feet).

If you have space, use double fencing between pastures, between a pasture and a roadway, or between stallion paddocks to help protect your horses and fences. Double fences with a wide alley between them reduce risk of injury, horses escaping, or spread of disease. A double fence


Many products and services are necessary to provide the right environment for raising horses
should be wide enough to prevent nose-to-nose contact by horses and to allow access with a tractor and mower. The leader in turf and irrigation equipment, Toro ${ }^{\circledR}$ (www.toro.com) and its subsidiary Exmark (www.exmark.com) help customers maintain their pastures, paddocks, and other outdoor landscapes with environmentally responsible solutions. Customers value the company's products for their quality and innovation.

## Building Fences

Fencing costs can be difficult to estimate. Your best source for estimates and options are your state extension specialist or fence suppliers and manufacturers such as Penrod Lumber and Fence Construction Co. (www.penrodfence.com), which has locations in Simpsonville, Ky., and Ocala, Fla. For more than 25 years, the company has provided professional farm fence installation using the finest materials nationwide. Gregg Griffith, president, comments, "...for customers who prefer to do it themselves, we are able to provide a very competitive price, and in most cases, are able to save them money due to our volume purchasing."

Before starting a fence, lay out where it will go, marking the lines with stakes and strings. Make sure you won't run into underground utility lines when digging postholes. You may want to have the property surveyed for a boundary fence even if there is an existing fence; sometimes the original fences were not on the line.

Your choice of posts depends on the type of fence you plan to build. Wire or mesh fencing can be affixed to nearly any type of post. Make sure posts are set properly and well tamped or driven, or the fence will be much less durable. It will also become unsafe because the wires will sag or sections of pole or board panels can be pushed over.

Wood posts should be at least four (preferably six) inches in diameter, and eight feet long. The larger the post, the longer it will last, if well treated. Untreated posts in wet soil may last only three to five years. The entire post should be pressure-treated to the center.
For a pole or board fence, posts are generally set every six to eight feet (from the center of one to the center of the next) so either 12 - or 16 -foot boards or poles can be used. These should be spaced eight inches apart if using four, or 11 inches apart for three. You may want five or six for a stronger, safer fence. A good rule for spacing is that there should either be enough space between poles or boards so a horse can easily get his head out if he sticks it through or so little space that he can never get it through. Boards should be at least an inch thick on pasture fence and at least two inches thick for stallion pens. Standard height for a three-board fence is 48 inches, and 60 inches for a four- or fiveboard fence.

Always attach wires, netting, boards, and rails to the inside of posts so they cannot be popped off if a horse leans or runs into the fence and to make a smooth fence line-horses won't smash their shoulders running along the fence and hitting a post.
To avoid the hazards of right-angle corners, eliminate the corner by running poles or planks across the corner (as from brace post to brace post), so a horse won't get trapped. Some horsemen construct an almost rounded corner by using a series of braces or an additional panel of fence. This makes it safer for horses and easier to mow the whole corner.

Gates should be sturdy and safe. The gap between the gate and the post (on either side) should be small, so a horse or foal cannot get his head or foot caught. Never use wire or netting for a gate.

A gate should be at least as tall as the fence and fastened with a horse-proof latch such as a chain with a snap. Some gates may be handiest with two latches, such as a secure chain that a horse could never unhook and a quick and easy latch for the times you are going in and out a lot. A handy type of latch for those times is one that secures the gate automatically when it swings shut against the gatepost.

A gate should be wide enough for horses to go through easily without running into the gate or gatepost. Gates between pastures should be well located and wide enough that horses cannot crowd each other and cause injury. Hang a gate on the end that will best facilitate movement of horses in and out of the paddock or pasture. Plan gates so they make your daily tasks easier. Don't leave gates open be-
tween pastures or pens, or horses may run a shoulder or stifle into a gatepost.
It's always better to have the gate a little wide so machinery won't hit the gatepost.

## PASTURE

A pasture should provide high-quality forage to meet a horse's nutritional requirements. A paddock is generally a smaller area, usually an acre or less, used primarily for exercise.

A pasture should be maintained with grass production foremost in mind. Never put more horses in (nor leave them longer)
than the plants can withstand. Health of the forage plants should be the determining factor for pasture management.

The pasture size needed to support a horse will vary depending on climate, soil type, soil fertility, and types of grasses and/or legumes.

Soil tests can determine soil type and fertility. Your county extension agent can help you get your soil tested. Specify that you want to grow horse pasture and need to know the fertilizers or minerals needed to increase your soil's fertility.

For best production, a pasture should contain several types of palatable grass-

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es. A mix of clover or some other hardy legume with the grasses makes excellent pasture. Legumes are higher in protein and also add nitrogen to the soil, increasing fertility.

A pasture with a lot of clover may be detrimental to horses, however. Some types of clover contain dicoumarin, which is toxic. Clover can also cause photosensitization under some circumstances.

A grassy pasture without legumes generally needs nitrogen, while a pasture containing legumes may need phosphorus. Some soils may need potassium. Cow manure or horse manure will provide all of
these crucial plant nutrients. If you don't have a way to spread your composted manure, you may choose to purchase commercial fertilizer.

If you want to reseed to improve your forage plants, ask your county agent which kinds do well in your climate and soil type. The agent can also give advice on soil preparation before planting and on seeding. Grasses are usually planted in fall and legumes in the spring. If planted together, faster-growing legumes tend to shade and crowd out grass plants. Once the plants start to grow, keep horses off that pasture until plants are tall enough

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to bloom the next summer, then graze very lightly that first season.

A healthy stand of grass is the best defense to keep weeds from becoming established.

Spraying or diligent mowing can control weeds. Check with your county agent on herbicides and how to use them, and keep horses off the pasture for two weeks after using herbicide. Spray weeds in the morning after the dew is off but before the wind comes up; you don't want wind currents taking the spray beyond the area you are treating. Learn the life cycle of the plants you are trying to eradicate and hit them when they are most vulnerable.

If you mow a weed patch before the plants mature and go to seed, you keep them from reproducing and spreading. You may have to mow several times during the growing season, but eventually this will weaken and kill the weeds. Pastures kept mowed to six or eight inches can be kept nearly free of weeds while holding the grass to a height at which horses will still eat. For best pasture health, let grass grow to at least four or five inches before you turn horses in. If it becomes much taller, horses won't graze those portions as they prefer younger grass.

Giving pastures periodic rest will increase the total forage production per acre. Uniform grazing increases total forage quality. Plant growth in every pasture should be closely monitored and the horses removed after they have eaten their favorite plants down to about two-inch stubble.

Mow periodically to clip tall mature plants, reducing them to a height of three to four inches. When those regrow, the horses will eat them. But pastures that are never mowed provide less forage.

John Deere (www.deere.com), the official equipment supplier to the equine industry, offers a broad range of mowing equipment, tractors, hay tools, utility vehicles, and implements. Renowned for high quality and performance, John Deere products help equine facilities increase efficiency, lower maintenance costs, and boost profitability. In addition, traditional high resale value of John Deere products contributes to lower overall ownership costs.

## Barn Types

There are basically two types of barnshedrow and center aisle. A shedrow is built with a single row of stalls or two rows of stalls back to back; the fronts open to the outside. A center-aisle barn has two rows of stalls divided by a center aisle.

When building a barn, you'll want to consider cost, durability, the amount of maintenance required for various materials, and fire resistance. Your choice of building material may depend upon cli-
mate, regional preferences, and cost.
Metal buildings can be quickly put up and are often less expensive than wood or concrete structures. They are more fireproof than wood, with less maintenance, but can be cold in winter and hot in summer. They are noisy during rains, hailstorms or winds. They also can be more easily damaged if a horse rubs or kicks the walls.

Wooden structures are expensive to build (materials and labor). The wood must be treated to prevent weathering; inside structures also should be treated to help prevent chewing. Wood barns are more apt to burn quickly.

Brick, cinderblock, concrete, or stone buildings can be pleasantly cool in summer, but damp and cold in winter, needing ventilation to prevent dampness and humidity. These structures can be costly to build, but are very fireproof and quite safe in strong winds. Concrete block barns can be painted, stuccoed, or faced with wood, natural stone, or plastic or vinyl siding.
A good choice for such is Farm Paint's Barn and Fence Paint, which is a fade resistant $100 \%$ acrylic paint fortified with UV inhibitors for lasting durability. Easily applied by spray brush or roller, this paint features one coat coverage. It also is environmentally friendly and its dry surface is safe around livestock. According to Lori Douglass, national sales manager for Farm Paint (www.farmpaint.com) in Lexington, Ky., "FarmPaint offers the finest in agricultural coatings for your farm and great customer service."

Another type of construction is siding over a wood frame. The siding may be made of metal, wood, brick, or plywood.

Vinyl siding can be used on both the exterior and interior of barns. It is easy to keep clean and needs very little maintenance. Sheds and shelters can be constructed entirely of tongue-and-groove PVC boards; they are durable and may show very little wear or aging even after 15 or 20 years.

Windows and skylights can make any barn lighter, saving electricity and making a more acceptable environment for horses. Ultraviolet light in sunshine kills many airborne viruses and bacteria, and some parasite eggs and larvae. If you install skylights, use plastic or UV light translucent glass, which allows more ultraviolet rays to come through.

Insulation is important for cold weather but also can help a barn in summer, lowering internal temperature by 5 to 10 degrees.
A barn roof can be constructed of metal, shingles or shakes, asphalt, or other materials. Metal is usually quickest and easiest and less expensive and more maintenancefree than most other types of roofing. You can incorporate translucent fiberglass sections in a metal roof to let in more light. The disadvantages to a metal roof are heat during hot, sunny weather, noise during a storm, risk of hail damage, and drips of moisture on the inside from condensation, unless you add insulation with a moisture barrier. Metal roofs may leak around the screws that hold them on.

If you get a lot of rain, install rain gutters and down spouts to handle the flow off the roof.

Wooden shakes or shingles are expensive and labor intensive. They are a fire hazard and also cannot be used on rela-


Stalls should be large enough to house horses comfortably


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tively flat roofs; water will not run off well enough for them to dry. The advantage to wooden roofing is its insulating qualitywarm in winter, cool in summer-and no condensation inside the barn. Barrel tiles and slate, sometimes used on barn roofs (more fireproof), are also very expensive.

Asphalt shingles and rolled roofing (installed over plywood sheeting) are durable, some types lasting 20 years or more. These are less expensive than wooden shingles, fairly easy to install, and less noisy than metal, with better insulating quality. This type of roofing can be easily damaged, however, by extremely hot temperatures, wind, or ice build-up.

To protect your roof and extend its life, you might want to consider a roof-coating system such as Uniflex ${ }^{\circledR}$ which SherwinWilliams (www.sherwin-williams.com) sells. Uniflex ${ }^{\circledR}$ reduces under-the-roof temperatures and lowers roof surface temperatures, which in turn minimizes roof expansion and contraction and conforms to Energy Star requirements. It is available for a variety of substrates including metal, asphalt, and single ply (rolled) roofing.

Roof shape makes a big difference in a barn's ventilation. There should be about six inches of roof rise for every 12 inches of roof width—a roof pitch of six to 12 . This allows good run-off of moisture and gives more attic area for insulation.

The steeper the roof, the better the ventilation. Ridge vents along a roof peak can allow for air circulation without letting in rain.

## Barn Stalls

Bigger is better, especially if stalls must be used for foaling. A 12 by 12 box stall works for most horses, but a foaling stall should be at least 14 by 14, preferably 14 by 16 or even larger.

A stall should be large enough that the horse has plenty of space to lie down. If the stall is too small, the horse will be stirring manure into the bedding or hay every time he moves. An extra-large stall may be needed for a foaling mare. It's handy to have a double stall divided by a moveable partition. You can use it as two stalls or as one large one.

Ceilings should be at least eight feet high


Maintaining high-quality pastures and sturdy fences keeps horses safe and healthy
(nine and a half feet high is better) for safe headroom. Stall partitions and fronts can be wood, concrete blocks, or prefabricated materials. Wood should be two inches thick for adequate strength. The front of a stall is usually solid up to five feet, with spaced planks or bars above that to allow ventilation.
Stall walls should be smooth. If the basic barn structure is metal, concrete, or masonry, line the stall interior with wood at least five feet high to prevent injury to feet and legs if a horse kicks the wall. Run the wallboards vertically; the shorter span will be stronger than a 10 - to 14 -foot horizontal stall board and won't give way as easily when kicked or pressed.

A complete stall lining is much safer than a few kick rails or boards, since a hoof can sometimes slip between those. Whenever you use wood for a stall interior, cap exposed edges with smooth metal or use a design that eliminates edges and corners that encourage horses to chew the wood. There should be no splinters, nails sticking out, bolt ends, or sharp edges that a horse might bump into. A bucket hook can catch a horse's blanket or injure a horse. Use rounded hardware such as screw eyes if an item must project into the stall. Run your hands along the walls to feel rough spots and sharp projections that you won't notice with your eyes. If a foal will be in the stall, kneel at foal level to make sure there are no projections that might snag his skin or injure his eyes.

The stall door should be at least four and a half feet wide and more than eight feet high (preferably as high as the ceiling). A door too narrow may catch a horse's hip or increase the risk of having a horse squash you when leading him in and out. Make sure stall doors (and barn doors) open easily, swing or slide fully, and are never partially blocked by hay bales or some other obstacle.

Sliding stall doors are safest. Make sure latches, handles, and locks don't protrude and that a clever horse can't open them. Latches should be functional from both sides of the door.
A traditional Dutch door enables a horse to stick his head out when the top part is open, but the door needs space to swing. A sliding door that is half wood and half grillwork is often safer. Some have grillwork that folds down so that when you are in the barn you can let a horse hang his head out into the aisle.
Another option is to use a stall gate or stall front like Jeremy Cobb (765-265-1708) designs. These strong reliable gates and stall fronts with or without a feed hole are made to order from one inch, 16-gauge square metal tubing with custom sizes available.

The top portion of the whole front wall
can be made of pipe or metal bars to enable a horse to see out of the stall. There should be very small spacing between the bars (two inches is best) so a horse can't get a foot or nose through or get his teeth or lower jaw caught when trying to chew. Full-view stall doors and fronts give good ventilation.

The stall floor should be durable, resilient, and easy to keep clean, since a horse living in it may produce up to 50 pounds of manure and more than 10 gallons of urine daily.

Tiles or stall mats can be used over wood or concrete to give more cushion and traction or over clay and dirt floors to keep horses from pawing holes or eating sand and dirt. Rubber pavers, like Pavesafe ${ }^{\mathrm{TM}}$ bricks and wall tiles sold by Dandy Products (www.dandyproducts.net) of Goshen, Ohio, make a safe surface for wash areas, breeding sheds, and aisles. They require a curbing or edge to hold them together unless they are put over a concrete slab that is depressed for a perfect fit. Interlocking rubber pavers that
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look like large bricks are resilient and comfortable, providing good footing even when wet.

Wooden floors can be used for tie stalls but are too slippery for good traction in box stalls. Concrete or paved flooring is easy to clean but can be hard on feet and legs and has little traction. Sand mixed with shavings or sawdust can make a good buffer over concrete, with additional bedding on top. Concrete floors should be sloped toward a drain to remove urine and spilled water. For good drainage, a solid floor can be sloped toward a drain or sloped toward the back of the stall so fluid can drain to the outside of the barn. Usually a three-inch difference between the front and the back wall is sufficient slope.

There are several types of asphalt or blacktop flooring. Some contain large aggregate and sand, making a rough, porous floor with better footing and drainage. Straw bedding works well over asphalt. Any bedding material that packs down too tightly against the asphalt will not allow moisture to pass through.

Popcorn asphalt is relatively inexpensive, somewhat porous for drainage, easy to clean, slightly more forgiving than concrete, and less slippery. It is also less durable than concrete and needs to be replaced every few years. Clay and dirt floors often become uneven due to pawing and barn cleaning, but if the floor is level, a mat can help keep it that way. You can generally use less bedding over a mat than over a bare floor, due to the cushion provided by the mat. The mats themselves are easily cleaned.

Stall mats can be made of rubber, plastic, or a combination of rubber and synthetic materials. If they have a textured surface, they give good traction. The softest rubber has the most cushion but may not wear as well. The denser the rubber, the harder and tougher the mat. Rubber works well over dirt. Clay or dirt should be leveled and compacted, then topped with a four- to six-inch layer of fine gravel and compacted stone dust to make a firm but well-draining base.

Some rubber mats may creep or shift over time, or the edges may curl up. Since the mats are installed in sections (most rubber mats are four by six feet and weigh more than a 100 pounds), gaps between mats or around the stall edge can trap bedding or allow urine to pool beneath the mat if the flooring underneath has poor drainage. The raised edges may trip you or the horse. Much of this problem can be avoided with carefully installed, good quality mats.

The best mats, such as those sold by Linear Rubber Products (www.rubbermats.com), are five-eighths to three-quarters of an inch thick. Genuine rubber, deluxe "Soft Stall" mats are some of the largest in the industry and require only two pieces for stan-dard-sized stalls that minimizes seams. Any custom trimming is no additional charge. These mats are sold at low, factory-direct prices and ship with low, nationwide freight rates.

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