

Winter Pasture and Paddock Management

Protecting your turnout now can help ensure green pastures later

Winter: The word could call to mind images of toasty fires and delicious hot chocolate—or mucky mud and frozen troughs. (Your perspective all depends on how many consecutive days you've had to thaw gate latches and plow the driveway, right?) With a little pre-season legwork, however, winter at the barn can be much less miserable ... hey, maybe even rather nice. The goal? Keeping outdoor enclosures and other horse-keeping spaces as ice- and mud-free as possible, which will help make way for productive pastures come spring.

Designate Off-Limit Areas

For your horse to enjoy quality grazing in the warm months, minimizing winter

wear-and-tear on your pastures is a must. Wet and frozen pastures must be no-go areas if you want healthy plant growth later.

Deep roots and a strong soil base are crucial for healthy pasture plants. Horse traffic on wet ground both compacts the soil and diminishes water filtration, causing runoff, depriving the plants of winter moisture, and impeding growth. This disruption can also destroy the top soil layer, leading to erosion.

A few other factors contribute to the perfect storm of paddock problems.

"First of all, the grass in the winter is not actively growing. It has to rest," explains Ann Swinker, PhD, professor of equine sciences and horse Extension specialist at Penn State University, in State College. "Grazing in the nongrowing season damages plants down to the crown and tears up the roots. The plants won't recover, and you'll end up with a lot of bare spots and undesirable invasive weeds" taking over those areas.

"Without desirable grasses, legumes, and forages, you'll have a poor-quality pasture," she continues. "You have to manage your pasture like a crop. In the semi-arid climate in the West, you really have to follow the 'take half/leave half' (i.e., percent of plant removed) grazing principle, or you'll reduce the stand or eliminate it;

the pasture stand is then very hard to re-establish. In the Northeast, the climate is a little more forgiving (plenty of rainfall), but you don't want to push it. It's very expensive to renovate and reseed, and the pasture requires significant recovery time while the roots establish."

Other plants besides your desirable pasture grasses go dormant during the winter, too, and certain ones pose health risks after the first hard frost of fall. "There are plants that change chemically when the leaf is disrupted by frost," says Swinker. "Some become toxic—the prime example is wild cherry leaf, but there are also other plants that can change their chemical compounds. For example, the common weed Johnsongrass under certain conditions can develop high nitrates," which, when consumed in large amounts, can cause colic and diarrhea in horses. Here, being familiar with the plants in your pasture is key; your local equine Extension office is a valuable resource.

Meanwhile, pastures in warmer climates look very different. Horses might continue to enjoy winter grazing on areas that farm owners "rested" to make way for dense regrowth in late summer and early fall. "In the South, 'stockpiling' 6 to 8 inches of pasture grass or annual 'small grain' grasses lets horses graze into winter," says Swinker.

Perfect Prep: Overseeding and Fertilizing

Another way to prime pastures before the winter for optimal spring growth is overseeding, which adds other plant species and reintroduces overgrazed desirable plants, says Swinker. This can be expensive (ranging from \$200 to \$600 per acre), so she recommends splitting seed and fertilizer applications into fall and spring to distribute the cost throughout the year.



When pastures are unsuitable for turnout, having all-weather paddocks or runs is useful.

"We recommend overseeding pastures that you want to make more productive," says Krishona Martinson, PhD, associate professor and equine Extension specialist at the University of Minnesota, in Minneapolis. For fall overseeding, be sure you get started early enough that plants have ample moisture to establish before the first frost.

In the fall, "we recommend first grazing the grass very tight—this is the only time we recommend actually overgrazing the pasture; new seedlings need sunlight, and they can't compete with existing forage if it's really tall," Martinson says. "Seeding with a slit-seeder, a no-till drill for pastures, gives good soil-to-seed contact without tearing up the grass you are trying to save."

She suggests keeping horses off the overseeded area, allowing the new seedlings to grow to about 4 to 6 inches before mowing them down to around 3 inches. "Do that cycle two to three times, which simulates grazing and helps roots get established," she says. "Then gradually let horses on the pasture. Horses graze with a lot of force, so if you don't allow roots to establish, they can completely pull new seedlings out of the ground."

"If you have a pasture that is very rocky, has a lot of trees, or is really too difficult to get equipment in to seed, we recommend frost seeding," says Martinson. This involves overseeding or broadcast seeding pastures in early spring, when fluctuating frost and thaw conditions cause the ground to expand and contract, allowing seeds to work down into the soil; spring rains then help seeds germinate. "Frost seeding has only about a 20% success rate," she adds. You will be spending a lot of money on seed

for very little benefit. The biggest thing with seeding is good soil-to-seed contact, and you just can't ensure that with frost seeding."

Martinson goes on to say that all newly seeded pastures need about a six-month window when they are not treated with herbicide. "Those newly growing grasses are pretty susceptible to herbicide damage," she says. "Your best bet in that first year is to just rely on mowing until new

plants are fully established."

Fertilizing is heavily dependent on both regional climate and individual pasture health. Have your soil tested to gain a clear picture of how and when to fertilize; soil sample results are good for up to three years, says Martinson.

"Doing a soil test allows you to know what nutrients are needed. Your pasture's nutrients should be balanced, just like your horse's diet," says Swinker, who also recommends applying properly composted manure to help replace organic matter, enhancing soil quality and microbial population (remember that pasture is like a crop and, as such, it removes nutrients from the soil). As an added bonus, composting also kills internal parasite eggs and larvae living in the manure.

Implementing Runs and Drylots

When pastures are unsuitable for turnout or are resting for regrowth, you need a sacrifice area; this all-weather paddock or run is the perfect solution to winter turnout woes.

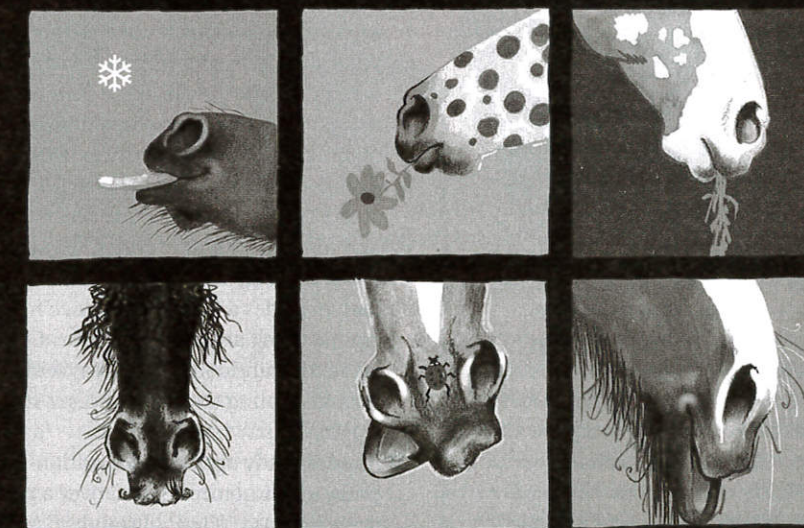
"We always recommend a run off the stalls," says Matthew Johnson, BS, PC, architect and owner of Equine Facility



Don't let your lush paddocks turn into muddy messes—for your horse's sake as well as the ground's.

ALEXANDRA BECKSTETT

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Design, in Portland, Oregon. "It's really the first line in maintenance, ease, and durability. You have an all-weather turnout area that provides a better life for the horse; they can go outside if they choose and have a more social experience. It also gives you that 'stall-plus' area. From there you can feed out to paddocks of varying sizes."

Designing a paddock or run to be all-weather means coming up with appropriate drainage and footing solutions for your setup. Start by choosing a location that drains well, the ideal being high ground with a very gentle slope. Layers of drainage gravel installed beneath the footing you select allow water to seep into the ground naturally. You might also install a drainage pipe that directs water to another location.

A run with these features stays durable as long as you are mucking it properly, says Johnson. "In the paddocks, we generally have a mix of all-weather sacrifice areas and grass," he says, "so that as you rotate the herd through, you have the best grass growth with minimal erosion and damage."

A buffer area of grass and shrubs filters runoff from sacrifice areas to avoid contaminating nearby surface water (streams, ponds, etc.). "In some states, a green buffer that catches nutrient runoff from corrals is mandatory by state regulations," says Swinker.

A Helping Hand

You don't have to fly solo in your efforts to keep your farm in great shape over the winter. "In certain states, the NRCS (USDA's Natural Resources Conservation Service) has money available to cost-share projects, such as installing automatic waterers in pastures to encourage rotational grazing or creating a hard-surface, covered manure storage area," says Ann Swinker, PhD, professor of equine sciences and horse Extension specialist at Penn State University, in State College. "This is designed to encourage people to use best management practices to keep pastures green for environmental stewardship." Explore details of this program online at nrcs.usda.gov. —Natalie DeFee Mendik



Install all-weather footing such as crushed stone around high-traffic areas to prevent mud issues.

All-Weather Footing

Be sure to top off the well-draining base layers in your paddocks, runs, and high-traffic zones with all-weather footing. Options suiting various budgets run the gamut from crushed stone traffic pads to geotextile fabrics and stabilization grids.

"Mud management as a whole covers the spectrum, from pretty basic to the more expensive and also more durable," says Johnson, outlining pros and cons of different scenarios:

- At the simplest level, scraping away grass and mud before applying a layer of crushed rock, sand, or hogfuel is an inexpensive route, but over time it deteriorates and turns to mud as the footing mixes in with the soil.
- A permeable geotextile fabric sheet isolates soil from the footing material on top of it. Nonwoven feltlike fabrics are your best option for horses, as woven fabrics are slick if the horse penetrates the material. Heavier-weight fabrics are more durable but more expensive. Compacted gravel over geotextiles creates a hardened surface for heavy horse and machinery traffic zones, while softer footing, such as sand and hog fuel, provides a forgiving surface for equine living areas such as runs. Cover geotextile fabric in living areas with enough footing to prevent horses from ripping or pawing the fabric.
- A more costly option, stabilization grids, are structures placed over a rock drainage base. The gold standard in all-weather techniques, stabilization grids protect the drainage layer while creating a foundation for the footing layer; in addition to spreading the horse and machinery weight over a wider area, reducing soil compaction. Commonly used at gates, around water sources, and along traffic alleys, some grids can also be left exposed without a surface layer.

Most farms opt for a mixed approach, with different footing types serving different locations on the property, such as compacted rock at water sources and sand over crushed drain rock in runs.

Whatever system(s) you choose, keeping areas manure-free is key to long-term viability. Good horse keeping protects both your horse and your property investment.

"We've seen a lot of success stories with high-traffic pads," says Martinson, which combine a variety of the approaches described. "Essentially, you remove the top 8 inches of soil; put in a sloped drain tube (that drains into the buffer or filtering area) if the location has poor drainage; lay down landscape fabric, which keeps layers separated while allowing moisture to move through; then add a series of coarse rock, followed by another layer of landscape fabric, followed by some finer pea gravel or stone dust. We recommend this basic high-traffic pad anywhere you have a mud issue, such as in lanes going to pastures, around gates and waterers, and where you feed hay. It can be expensive, so we recommend it in problem areas."

Take-Home Message

You can find detailed instructions for constructing appropriate hardened surfaces and buffer zones, as well as personalized pasture management programs, through county Natural Resources Conservation Services, Conservation districts, and county/university equine Extension programs. With good management techniques, you and your horses can stave off the mud monster while making way for a beautiful, green spring. 🐾

ABOUT THE AUTHOR

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Deciphering Your Feed Tag, Part 3: Senior Horses

In the final installment of our series, learn what nutrients are in your senior horse's feed and why his body needs them

As the years pass, we see shifts—both subtle and dramatic—that remind us our horses are aging. Backs sway, muscles atrophy, metabolisms slow or speed, coats develop flecks of gray, and bodies just aren't as limber as they used to be. Some changes, such as those related to dentition and digestibility, can influence what these horses need in their diets. It's at this point in a horse's life that feeding a "senior feed" might become a necessity. Generally, you can tell a feed is formulated for senior horses by both its Association of American Feed Control Officials-regulated product name and its purpose statement. Looking at a feed's guaranteed analysis and ingredients list can also tell you if it is suited for older horses. In this article we'll describe some of the physical issues that cause horses' nutrient needs to change and how a senior feed can meet those requirements.

Digestive Differences

Horses are born with all of their teeth embedded within their skull. Throughout a horse's lifetime these teeth continuously erupt; all the while the horse wears them down with regular eating patterns. As horses age, the teeth change in a variety of ways, most noticeably in how they elongate and angle forward, which can affect the grinding surface for chewing. Very old horses (particularly those older than 25) can ultimately run out of teeth and be left with only gums. For these reasons, horse feeds designed for senior horses are often pelleted, pliable to the touch, and, therefore, easy to chew and break apart. Pellets also tend to absorb water readily, quickly forming a soft mash



Senior feeds are often pelleted, pliable, and easy to chew, so horses can still ingest and put to use the feed's nutrients even if they have a reduced ability to chew.

when soaked for horses with particularly bad teeth.

Several research groups over the years have investigated differences between older and younger horses' nutritional requirements. In one study, in particular, researchers found that older horses were less able to digest protein, phosphorus, and fiber than adult (generally referred to as mature) horses. For this reason, senior feeds tend to have crude protein content in the 12-14% range, higher than what you might find in a feed designed for mature, idle horses. Many brands also supplement their senior feeds with individual amino acids, namely lysine,

methionine, and/or threonine, that might be beneficial to older horses. Similarly, senior feeds typically contain slightly higher phosphorus levels (in the 0.5-0.65% range or more) to account for this reduced ability to digest. To ensure a strong calcium-to-phosphorus ratio of 2:1, these feeds might also contain higher calcium levels than feeds for mature horses.

The older horse's hindgut (large intestine and colon) has a potentially reduced capacity to digest fiber, which it does by fermentation. This is problematic because fiber is very important for maintaining gastrointestinal health and motility. Senior feeds tend to be higher in fiber than