The unmaking of mud

How to firm up the footing in your horsekeeping areas.

By Alayne Renee Blickle

If horses are part of your life, you've probably spent some time sloshing around in mud, trying to catch the coffee-colored horse who used to be a gray or chestnut or palomino, or straining to move wheelbarrow loads of manure, or searching for one firm patch in the pasture to spread the evening's hay. And, as you were slip-sliding around, you may have said to yourself, "So which part is the fun part? The mucky paddock, the filthy horses, the exhausting effort, the wasted feed?"

Despite what the poet e.e. cummings had to say about spring being "mudluscious," there's not a bit of joy for horsekeepers in a waterlogged environment. Yet, a history of muddiness is not a life sentence to recurring seasonal misery: Horses and wet-weather slop need not be synonymous. You can firm up the footing around your stable and in your paddocks and pastures, and, in doing so, not only improve your horses' lives and your own convenience but also contribute to the environmental health of your community.

Mud has no redeeming features, except for the fact that it's probably better than the alternative of drought. Its key component is fine organic material that can absorb and hold as much as two to three times its weight in water. One reason gardeners use manure to enrich their soil is to increase moisture retention during drying summer weather. But retained moisture is the last thing you want in the well-trod footing of your turnout areas and stable yard, where all the ingredients for a soupy mess are just waiting to come together. The precipitating event is an increase of **surface water**, maybe rain or snowmelt from your barn roof, or runoff from the driveway. Spread this excess water over **poorly drained, highly organic soil** (as opposed to gravelly, well-drained soil). Stir in a buildup of **manure**, seasoned with **decomposing organic material** such as stall wastes, shavings and hay leavings. Mix thoroughly in a **high-traffic area** such as in front of a gate or barn entrance. Smear this mess on top of an **impervious surface** compacted by heavy traffic, and voilà! You're knee-deep in mud.

Mud harbors bacteria and fungal organisms that contribute to diseases such as abscesses, scratches[0], rain[0] scald and thrush[0]. It is also a breeding ground for insects, especially filth flies, that are, at best, simple annoyances and, at worst, promoters of allergic reactions and spreaders of disease. When fed from muddy ground, horses are likely to ingest dirt or sand particles along with their hay, setting them up for dangerous episodes of sand colic. In winter,

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they'll be more rapidly chilled when they stand around in mud, contributing to unthriftiness and even hypothermia. Horses and people alike are at risk of slips and injuries on mud-slick footing around the stable.

Beyond the personal inconvenience and health consequences of living in soggy surroundings, your muddy horsekeeping areas can also exact a serious environmental toll through runoff into surface water. The sediment and manure nutrients can negatively affect the fish and aquatic wildlife in streams, ponds and lakes. The organic wastes can also leach into the groundwater, potentially contaminating the well water that you and your animals drink. Although you may feel powerless against the conditions that conspire to make mud, you can manage your way out of the mess by eliminating the ingredients of the organic slop.

Making a necessary sacrifice

Good pasture management is at the heart of creating a mudless environment for your horses. Grass and vegetation help hold soil in place and filter out nutrients and sediments from surface runoff. Keeping horses off of wet or frozen pastures is critical to maintaining the healthy turf covering that is your greatest ally in the antimud campaign. Soggy soils and dormant plants cannot withstand continuous grazing and trampling throughout the winter months. Horses are particularly hard on pasture, ripping up turf during their high jinks and compacting wet earth with their pounding hooves, thereby suffocating plant roots. In addition, dormant plants that are grazed below 3 to 4 inches in height start to die, leaving fewer and fewer plants and more and more mud in your pasture.

Controlled grazing spares the turf these death-dealing blows. Fence off your acreage into parcels according to how wet different sections are. Then in the spring, you can let your horses onto the higher, drier areas first and save the wetter areas for grazing later in the summer when the soil has dried out. A sacrifice area, a small enclosure such as a corral, run or pen used for turnout during mud and drought seasons, is an essential part of pasture management. Confine your horses to this area during the winter, the early spring and in the summer whenever your pastures are on the verge of becoming overgrazed. By the very nature of its use, this lot will become turfless and therefore potentially a mud pit, but you can take the following measures to assure that its footing remains solid:

■ Site the sacrifice lot on higher ground, at least 100 feet away from wetlands or surface-water flows, with sufficient slope for drainage but not so much as to encourage erosion. Above all, avoid locating

the sacrifice lot in a bowl or depression where water naturally gathers.

■ At the same time, locate the area as close as possible to your barn for chore efficiency and convenient maintenance.

■ Choose an area with well-drained, gravelly soil when possible, or create good drainage by filling the lot with a layer of stone aggregate topped with finer stone dust.

■ Surround your dry lot with vegetation—pastures, lawns, gardens, orchards or other vegetative areas—for its natural filtration effect on whatever organic matter and sediment might run off.

Eliminating mud's ingredients

Even with well-protected pastures and a well-sited sacrifice area for your horses to roam, mud can still be a seasonal nuisance in the vicinity of the gates and doorways to your stable and other horse-related buildings unless you take pains to keep the essential ingredients from merging.

Rerouting water: To get rid of the biggest mess maker, reduce the amount of rainwater reaching your stable yard and your horses' confinement areas. Are all your buildings equipped with rain gutters and downspouts that divert the runoff away from confinement areas? In some areas of the country, the annual amount of rainwater that runs off a two-stall run-in shed measures 7,000 gallons to 14,000 gallons or more. When such volumes of roof runoff are diverted to ditches, lakes, creeks, wetlands, rain barrels, dry wells, fishponds or unused grasslands, the clean water is a boon to the environment. Select the size and type of guttering and pipes to handle the extremes of rainfall for your area. Install downspouts where horses can't damage them, or protect them from contact with heavy PVC piping or hot wire. Have gutter screens or other devices installed to deflect leaves and trash that can clog the downspout openings and cause water to spill over the guttering.

When gutters, downspouts and outlets are in place, watch during a heavy rain event to see how the water travels. If surface flows run into your paddocks and stable surroundings, you may need to correct the catchment systems, but the fault may be with the natural drainage patterns of the terrain. If this is the case, you will need to move some earth to divert the surface water in better directions. Contractors can install French drain lines, underground drains, diversion terraces and water bars, swales, grassed waterways, ditches and dry wells to redirect and slow the water flow.

Soil solutions: When you do get the unavoidable bare spot, apply a "green Band-Aid" by scattering grass seed and resting the area long enough to let the growth get a good start. If your soil is very organic and mucky you may want to lay down some type of filter fabric, then add more permeable footing on top. Filter fabric, a plastic material used in road construction projects among other things, has small holes to allow water, but not sand or silt, to pass through. Consult with your local conservation district, U.S. Department of Agriculture (USDA) Natural Resources Conservation Service, cooperative extension office or Agriculture Canada office for advice and design help.

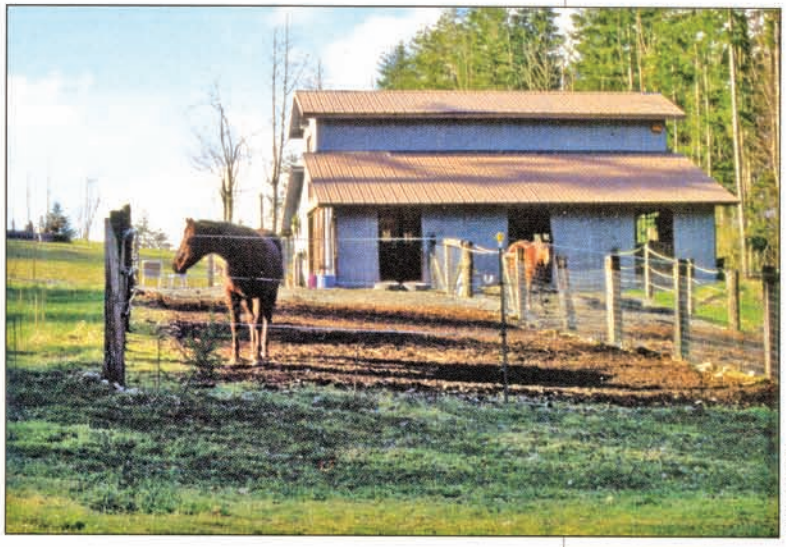
Percolation underfoot: Footing material is another important consideration in mud-reduction plans. Use some type of minimally absorptive footing, especially in high-traffic areas around gates, fence lines, feeding stations and water sources. This will keep the horses up out of the dirt, while rainwater percolates through and drains away. Among the common options in footing materials are

■ the chipped-wood product called Hog Fuel that not only provides a dry, stable footing, but also reduces odors by breaking down nitrogen in the horses' urine and manure through the natural composting process (beware of wood *shavings*, which decompose too rapidly to be good footing),

■ gravel or crushed stone, with pieces no larger than 5/8 inches for the horses' walking comfort,

■ sand, for locations—such as alleyways and gateways—where horses won't be eating their feed off of the ground.

A combination of footing types is probably the best in horse-confinement areas: for example, gravel concentrated in the high-traffic spots and Hog Fuel spread over the rest of the paddock or a base of sand or gravel with Hog Fuel on top. Research the products that are available in your area, and talk to other horse owners about what footing has and hasn't worked for them. Existing mire can swallow up vast quantities of footing materials before any appreciable improve-



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Reduce mud by creating and using sacrifice areas for your horses. Locate your paddock areas on higher ground, convenient to your barn, to make it easy to care for your horse and to maintain the area. A slight slope will help with drainage. Surround paddocks with grassy areas for a natural filtration effect. Footing material such as Hog Fuel (chipped wood) can provide a good surface that helps to eliminate mud.

It's important to have gutters and downspouts on your barn, shelters and other farm buildings. Diverting rainwater will keep thousands of gallons each year from creating more mud in your high-traffic and confinement areas. Use rainwater to fill rain barrels or watering tanks.

One technique for diverting surface or subsurface water away from your barn is to install French drains. They are placed on the uphill side, below the topsoil and into the hardpan (right). They intercept clean water before it is contaminated in the paddock, thus substantially reducing mud. Gutters and downspouts can be tied into the drain line (below right) so that all of the clean rainwater is diverted from the barn.

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ment occurs, so you're smart to remove the mud down to solid soil, then apply at least 3 inches of footing. Where mud remains, plan to put in footing on at least a 1:1 ratio, meaning that for 6 inches of mud you'll need to apply at least 6 inches of footing material. In really mucky situations you may have to double the footing in the footing-to-mud ratio.

For barn and stall entrances, compost- or manure-storage sites, shavings bins, walkways, parking areas and driveways and other mud trouble spots used primarily by people, you can use the same mud-fighting materials listed above, but additional options include

- cement pads, aprons or walkways (too slippery for horses' living areas),
- mulched tree trimmings, free from your local power companies or tree-service business (contents may not be safe if horses decide to browse),
- used materials, such as dryer felt (fabric belting used in continuous feed-drying operations), belting from gravel or paper companies or jute-based carpet turned upside down, available for free or at low cost (some may be safe for mats in wash racks, aisleways or feeding areas),
- commercial rubber stall mats, grids, etc.

Eliminating the organics: Removing manure on a regular basis—every 1 to 3 days—from confinement areas is probably the single most important aspect of keeping small paddocks mud free. Not only will the footing remain firmer, but you'll be significantly reducing the horses' parasite exposure. And while you're at it, pick up stray clumps of bedding or uneaten hay. All of this organic material eventually becomes mud.

Assisting the environment

Ask not just what you can do to make your own small world mud free, ask what you can do to protect your community's water quality and environmental health. One of the simplest steps you can take is to protect your manure pile from the elements. A tarp cover may be all it takes to keep your heap from turning into a pile of mush. The nutrients you are planning to recycle will stay in the compost instead of being washed out into the surface waters where they can cause a problem. Store manure as far away as possible from streams, ditches and wetlands to avoid more mud problems and potential environmental harm.

Trees, which use a lot of water, can be both attractive and effective allies in your moisture-management program. A mature Douglas fir drinks between 100 to 250 gallons per day, and all varieties of evergreens have the added advantage of using water in the winter when deciduous trees are dormant. Water-loving native shrubs planted along the periphery of the sacrifice lot may help keep the area drier and reduce any

Gravel can be a very useful footing for paddocks. Use a larger size underneath, such as 1 1/4 inch, to improve drainage. For your horse's comfort use nothing larger than 5/8-inch pieces on top.

Plant and maintain trees as a way to manage mud. Trees use a lot of water on a daily basis. Evergreens have the added advantage of using water in the winter. Water-loving trees planted along the outside of sacrifice areas help to keep those areas dry and reduce runoff.

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runoff that might occur during heavy rain. Willows, cottonwoods, red osier dogwoods and hybrid cottonwoods are especially thirsty trees that might thrive in your area. You'll need to fence off any trees within your pastures and paddocks to protect them from the marauding teeth and root compacting feet of livestock. Extend the protective fences beyond the trees' drip zones—the ends of the branches where the raindrops roll off. When planting new trees, locate them far enough outside the fence lines so horses can't ever reach them. A thriving stand of trees on your horse property has the added benefit of increasing habitat for wildlife, a plus for the esthetics of your farm *and* the environment.

Finally, one mud-management action that is especially beneficial to the environment is to fence horses and livestock out of creeks, wetlands and lakes. Easy, cost-effective watering systems are available to supply your livestock on solid ground away from bodies of water. You can also build water crossings and watering points that limit the destruction your horses inflict on creeks or other natural water sources. Be sure to keep organic fill, especially manure and garbage, out of wetlands, which are nature's water-filtering systems. Water from these areas moves into streams and groundwater, where contamination can have wide-reaching effects. Check to see if specific design help and programs for protecting area waterways are available from your local conservation district, USDA Natural Resources Conservation Service or cooperative extension office.

By firming up the footing around your stable area and pastures, you'll abolish the most annoying feature of wet-weather horsekeeping. No more mud-caked critters; no more extra effort and wasted feed; no more slips, slides and sometimes spills. The personal benefits are reward enough for taking some time and trouble to eliminate the ingredients of mud. The environmental pluses of reducing polluting runoff and preventing wetlands destruction extend the benefits into the larger community. Ample rainwater is a blessing for all when it's kept separate from horsekeeping's organic output.

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