NO HORSING AROUND

Equestrian facilities are not easy to maintain

BACK IN THE STORIED DAYS of the Wild West, equestrian facilities were the open range or possibly the paddock outside the stables. There wasn't a lot of consideration given to the surface being ridden on, and as long as stalls were mucked out, there wasn't a great science to what went under the horses' hooves once they were inside a barn.

But just as sports surfaces have changed for human athletes, they've changed for horses as well. Now, what goes underfoot is at the top of an owner's mind and at the head of the list of a trainer's concerns. Equine veterinarians dedicate years of study to ways of keeping horses' hooves in good shape, and farriers have chipped in with their insights as well. Footing, as the performance surface is called in equestrian circles, has become a science as well as an industry. And the facilities in which horses perform have evolved as well.

So for those who are working with equestrian facilities, much needs to be considered. And it all starts from the ground up, according to the pros.

ON THE SURFACE

"One of the biggest challenges with getting good equestrian footing is making sure you have the right surface for the discipline that the rider and horse are doing, such as jumping, dressage, reining and simply pleasure riding," says Lori Douglass of Thor Turf Equestrian Surfaces in Sandusky, OH.

According to Douglass, each discipline has its own needs. "Jumpers like the footing to be more compacted but still have the ability to grab the surface on takeoff and landing. They also require some cushion for the protection of the horse's joints. Dressage riders like their surface to be somewhat compacted but the surface needs to have cushion and a little spring to it. Reining horses need the surface to be a little deeper and looser so the horse has the ability to slide and spin. English Equitation riders with high-stepping horses also like the surface a little more compacted; this creates more of a level surface which is good for balance. It is very hard to please all disciplines in one ring with one type of surface."

Many recreational horse shows are still held outside on grass, while others take place at fairgrounds, either inside or outside. Over the years, the latter events had taken place on sand, dirt, wood chips and a

"One of the biggest challenges with getting good equestrian footing is making sure you have the right surface for the discipline that the rider and horse are doing, such as jumping, dressage, reining and simply pleasure riding," says Lori Douglass of Thor Turf Equestrian Surfaces in Sandusky, OH.

mixture of some or all of these. Over time, however, there arose a demand for equestrian-specific surfaces. After all, if the horse's feet aren't right, nothing is right.

"There have been many changes in surfaces over the past few years," Douglass notes. "Many facilities use a sand and clay mixture, sand and geotextile felt-like product, and also a manufactured synthetic footing made up of sand, fiber, wax or polymer coating. The surfaces that are not synthetic use water to get the consistency that they need for the discipline they ride. Of course with a synthetic dustless surface, you do not have to ever water for compaction or dust issues because they stay compacted and you will have no dust issues. Typically, synthetic surfaces are the same whether they are used in indoor or outdoor installations. They may have to groom the surface a little differently for race tracks as opposed to riding rings. You also need to be sure that you have a base that drains very well for outdoor installations because of weather. The footing will drain if your base drains."

The preferences of the rider will depend a great deal upon what they have trained on, what they are used to riding on, and what is a traditional surface for that discipline. Polo riders, for example, because they generally compete on outdoor grass fields, are used to surfaces that do not produce dust, or do not produce much dust. As always, however, the climate of the area the rider generally trains will determine his or her comfort level.

THE FACILITY ITSELF

According to Jack Kamrath of Tennis Planning Consultants, Inc. in Houston, the design of an equestrian-specific facility is more than just enlarging upon a barn or refining a pasture. TPC discovered this upon embarking upon the design of a tennis, equestrian and polo complex in Richmond, TX in 2008. The need to balance all aspects of the project, and particularly, to design a horse-sensitive and rider-friendly environment, was a learning experience.

"We learned some fundamental design parameters," Kamrath noted, "which we followed at nearly all times including allowing the horses to live with and be near other horses, keep spaces safe for the horses, provide enough stall space to allow the animals to roll on the ground and be free to stretch and exercise, give horses good windows to allow them to smell and interact socially in their stalls, provide plenty of run out space according to land available and providing ample fresh air (without drafts) and as much natural light as possible. For the staff, safe and ease of access to boxes, open sight lines, dryness and warmth, easy access to water, feed and bedding material is important as a few of the basic design needs."

According to Kamrath, the covered indoor equestrian building needed to be a minimum of 300 feet long and 150 feet wide to accommodate the events planned for the facility. TPC went with a pre-engineered covered building that had a midpoint of 25 feet to allow for adequate air circulation from a fan system.

"In the south, summer heat and adequate air circulation is a major need which, as we discovered, was a major need even in northern latitudes of the United States

>> AERIAL VIEW OF THE NANCY G. HELD EQUESTRIAN CENTER, Albion College, Albion, MI. Thanks to Mark Frever, CSFM for this photo.

when the summer sun is at its most severe northwestern azimuth," Kamrath noted.

The facility required two sets of stables: one for equestrian training and events near the covered facility, and a second set of stables near the polo fields for the polo ponies. Kamrath noted that infrastructure planning was also essential.

"In both stables, adequate trailer parking for unloading and loading of the horses was a paramount planning need and we were able to accomplish that goal. This trailer space helped also to determine the road master plan for the project. Roads needed to be 28 feet wide for two lanes in order to have adequate trailer maneuverability as well."

The facility also included 'run-out' or exercise space near the events facility for horses to warm up and exercise prior to events. An additional eight to ten turnout paddocks, a minimum of 50 x 50 feet, were also incorporated.

"The stables themselves needed to be 10 x 15 feet for each horse, have plenty of fresh water available, excellent air circulation and ease of access for both horses, trainers and riders," Kamrath said.

Housing was needed not just for equine residents, but for humans as well, Kamrath noted, so on-site apartments of about 20 x 20 feet were provided between both the polo stables and equestrian stables. A central cooking/grill area for the trainers was built in as well. The ancillary sports facilities on the campus—tennis and golf (as well as a clubhouse)—were planned so as to be non-intrusive to the horses, stables and equestrian activities.

At its core, however, says Kamrath, planning for a facility has to take into account the needs of the users: in this case, the kind with four legs and a tail.

"In general, it is critical that the well-being of the horse and allowing it to reach its full potential should be kept uppermost in mind ," he notes. ■

Mary Helen Sprecher wrote this article on behalf of the American Sports Builders Association. Available at no charge is a listing of all publications offered by the ASBA, as well as their Membership Directory. For info, 866-501-2722 or www.sports builders.org.

Selecting the right topdressing material

IN ORDER TO HAVE A SUCCESSFUL TOPDRESSING PROGRAM, it is essential to choose the right topdressing material for the job. Soils can vary from very fine, heavy textured clayey soils to very coarse; light textured sandy soils, depending on the location. Therefore, the same topdressing material may have different results on different locations.

It is important to know the texture of the soil in your rootzone, so start by obtaining a physical analysis of your soil by a reputable testing laboratory. In addition to the proportions of sand, silt and clay in a soil, the coarseness or fineness of the sand portion, has an effect on the physical properties of a specific classification of soil.

Medium size sand with a relatively consistent particle size usually has a higher rate of hydraulic conductivity than a material containing a more diverse blend of coarse, medium and fine particles. A principle to remember: water will move from a coarser textured soil to a finer textured soil more readily than the other way around, providing there is adequate pore space between the particles.

When using any material to modify an existing rootzone, adequate cultivation is necessary to insure proper incorporation of the material. The more a topdressing material varies from the existing rootzone in relation to its texture classification and physical properties, the more cultivation is typically needed.

Without adequate cultivation there remains a very real potential for layering in the soil. Anytime there is a layer created in the soil, the interface between the layers will have the potential to negatively affect

A few reasons for topdressing are:

Modification of existing rootzone.
- Increase water conductivity
- Increase organic matter content
- Increase tilth (soil structure)
- Increase cation exchange capacity (CEC)

Increase success rate of renovation thru improved soil seed contact.

Smooth a rough uneven surface.

hydraulic conductivity, root penetration and even air and gas exchange characteristics of the soil.

Before you can determine the proper topdressing material to use, it is important to determine why you are topdressing. A few reasons for topdressing are:

Modification of existing rootzone.

- Increase water conductivity
- Increase organic matter content
- Increase tilth (soil structure)
- Increase cation exchange capacity (CEC)

Increase success rate of renovation thru improved soil seed contact.

Smooth a rough uneven surface.

Two common materials used to modify a rootzone are organic materials (in the form of compost) and sand. Caution must be practiced with either material.

Sand is sometimes used to improve the drainage characteristics of a heavy textured, clayey soil. A heavy textured soil should reach approximately 85% sand by weight to have a positive effect on hydraulic conductivity. Medium to coarse size sand should be used for this purpose.

A steady supply of a uniform material, which conforms to very specific guidelines, should be consistently available. Variations in material uniformity can void the success of the most well planned program. An agronomist can best prescribe these specifications.

Leaf compost is being used more and more to topdress athletic fields. Production by private and public recycling plants alike has made it a widely available material. It is sometimes blended with sand and sold as organic topsoil. The benefit to incorporating compost into the rootzone is realized through the addition of organic matter.

The addition of organic matter can provide a number of benefits. In a light, sandy soil, organic matter can be of benefit by increasing the ability of the soil to retain moisture. This increase can combat compaction and maximize irrigation efficiency.

The incorporation of organic matter into a soil adds essential plant nutrients. Depending on the source of the organic matter, this "fertilizer effect" can be substantial and could replace one or more applications in a fertilization program. Organic matter can also increase CEC or the ability of a soil to retain nutrients. This increase in not usually necessary with heavy textured clay soils but may be of benefit in sandy soils. Note that it takes a tremendous amount of organic matter to increase soil CEC. Thus in most situations the benefit of incorporating organic matter is more a result of increase water retention and nutrient addition than increase in CEC.

The addition of organic matter can decrease the compactive tendencies of a soil and over time help to improve the soil structure (tilth) of a heavy textured soil. Tilth can be associated with the soft, fluffy texture of a well-maintained garden soil. A lack of tilth can be associated with the hard clumpy soil of a goalmouth. The benefits of organic matter can be realized in all areas of an athletic field but more noticeably in high traffic areas where existing soil structure has been destroyed.

Once soil structure is destroyed the ability of the soil to drain and maintain turf cover is severely compromised. The result is a weed-infested area of high compaction. A major cause of this destruction is playing games in wet water logged conditions where the soil is actually smeared under the stress of heavy foot traffic.

Similar materials to leaf compost are biosolids such as sewage sludge and spent mushroom compost. These materials are much the same as leaf compost in that they have high organic content but many have the added benefit of higher nutrient availability and therefore the potential for a greater "fertilizer effect."

As with any topdressing material, care must be taken when acquiring and applying compost. A quality compost material should be adequately aged before purchase and be properly screened to eliminate all twigs and debris. It should show no resemblance to its original components and have a clean earthy odor.

The results of a compost analysis report should be requested before purchase. These results should supply a minimum of pH, percent of organic matter, soluble salt levels, heavy metal levels and the carbon:nitrogen (C:N) ratio. Included with these test results should also be a reference made to the acceptable levels of soluble salts and heavy metals. If the compost is a blended material it should also carry a physical (sand, silt, clay) analysis and have a texture classification such as loamy sand, sandy loam etc. A chemical analysis is also useful in determining the potential "fertilizer effect" of a topdressing material.

The C:N ratio is used as a barometer to measure the level of decomposition and should be less than 30:1. Higher C:N ratios can cause nitrogen supplies in the soil to become temporarily unavailable to the turf until the C:N ratio is reduced through further decomposition. This can have a negative effect on turf quality.

With compost materials as with any other topdressing material, care must be taken to provide adequate cultivation in conjunction with the topdressing procedure. The more a topdressing material differs from the existing rootzone, the more cultivation is necessary to blend the two materials. This is done to minimize the effects of layering. Applying highly organic compost to a

As with any topdressing material, care must be taken when acquiring and applying compost. A quality compost material should be adequately aged before purchase and be properly screened to eliminate all twigs and debris. It should show no resemblance to its original components and have a clean earthy odor.

mineral based soil brings with it the risk of layering. If adequate cultivation is not provided, this risk can become greater with each subsequent application. In this particular situation more is not necessarily better. An anaerobic organic layer (black layer) in the soil is a potentially devastating problem on athletic fields.

Cultivation in conjunction with topdressing should be accomplished during times of the year when there is adequate moisture available and when the turf is actively growing and is in a position to repair itself. Topdressing materials with high organic matter content such as straight compost materials should not be applied when there are inadequate moisture levels or when there is the potential for drought stress. These materials have the ability to rob the turf of available moisture when moisture is in limited supply.

Core aerification is generally the recommended means of cultivation with any topdressing application. Multiple passes done in different directions are typically recommended. Again, the intensity of the aerification procedure is governed by factors such the extent of texture variation between the topdressing material and the rootzone and the degree of thatch buildup in the area to be topdressed.

When rootzone modification or turf renovation is the intent of a topdressing application, multiple passes to provide a coring pattern of a maximum distance between core holes of 2 inches and at a depth of 2 to 3 inches is recommended. The application of topdressing should be accomplished before core aerification. The cores, along with the topdressing, should be dragged into the core holes using a drag mat at the completion of the procedure. If a more rapid change in the surface conditions is desired, the soil cores can be removed after aerification; in this case it would be appropriate to topdress after soil cores are removed.

Where severe soil structure damage has occurred such as in goalmouths, it is sometimes necessary to till the area in an effort to blend the topdressing material with the damaged soil and create an adequate seedbed.

Be wary of over-cultivating with the rototiller style of equipment, especially if the soil is to dry. Rototiller style cultivators can destroy existing soil structure by pulverizing the soil into a fine grainy (dusty) material if over used. As with most soil cultivation procedures, the soil should be moist enough to hold its shape after being clenched in your fist but dry enough to crumble if rubbed between your thumb and forefinger.

It is not uncommon among sports field managers and contractors alike to incorporate topdressing into a renovation project. Topdressing can not only smooth and therefore improve the topography of a field, but also improve soil seed contact, which is critical to the success of an athletic field renovation.

When topdressing is used properly, it can provide beneficial results, which in certain situations could not otherwise be achieved as effectively. The cost of these benefits must be justified when compared to all other available options. ■