

Riding Arena Maintenance: Dragging and Treatments

Claire Burnham, Morgan Hayes, and Staci McGill, Biosystems and Agricultural Engineering; and Robert Coleman, Animal and Food Sciences

Maintenance is a key to extending an arena's lifespan, and it is extremely important for the horses and riders who use the surface. Arena maintenance is essential for the casual recreational rider as well as the high-performance athlete. The surface the horse encounters during work has a profound impact on the horse's biomechanics, and a poor surface can affect the horse's soundness over time. A well-maintained surface increases the horse's performance capabilities and enhances training.

Arenas are a large monetary investment, and proper care extends the life of an arena. Regular and good maintenance is the best way to increase the longevity

of an arena surface and protect your investment as well as your horses. This publication provides guidelines for arena care and maintenance. Each arena is different and has its own set of needs, but these basic guidelines can help to keep the surface functional and long lasting.

Dragging

Arena maintenance is more than just leveling the surface. Simply smoothing the surface is not sufficient to maintain an arena over time. The base will begin to wear away with repeated use, especially in high traffic areas such as the outside track. The top layer of the arena can never remain completely level if the base is compromised. Regular attention to the base will ensure that it remains level.

Before starting to work the arena, determine that the drag is level and properly attached to the drive unit (i.e., tractor). To ensure that you are reaching the base of the arena, perform a depth check with a ruler. Dig through the top layer of footing until you hit the solid base and adjust drag settings accordingly. The goal is not to dig

into the base, but rather glide along the base to ensure that it remains level without compromising its structural integrity.

Evaluate the arena several times a year to identify any issues, such as the movement of footing around the edges and low or high spots in the arena. Regular depth checks throughout the arena will help identify irregularities. Check depth at the quarter line, center line, and three-quarter line, as well as high-impact areas such as where jumps regularly rest, horses are stopped, or barrels are turned.

Figure 1 shows suggested depth-check points that can be used depending on the riding style. For example, if most riding tends to happen along the walls, the blue dots will be useful for checking the riding track. If riding tends to occur in the middle of the ring, the black dots are recommended for depth checks.

All arena equipment should be removed before the arena is worked. Jumps that are used continuously in the same position in the arena can compromise the arena base and create low spots of footing, so move jumps regularly. The best

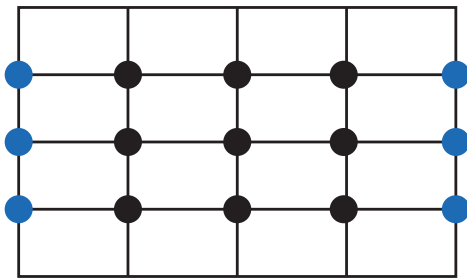


Figure 1. Potential points for depth checks.



Figure 2. A multi-unit drag can be used for redistributing footing. Claire Burnham, taken at Carriage Station Farm.



Figure 3. A box grader used to redistribute footing.

Dragging Patterns—Key

Solid black line	Arena border
Red dashed line	Centerline
Black dashed line	Quarter line

All diagrams based on a 100 ft wide by 200 ft long arena with a 10 ft wide drag.

approach is to remove jumps weekly and drag without them in the arena. Dragging with jumps in the arena is permissible between such weekly drags, but over time, this practice can affect the footing and base negatively, creating high and low spots and uneven compaction. The problem is not limited to jumping; any arena with activities concentrated in specific areas is vulnerable.

To address issues such as banking of footing around edges, rake regularly around the edges of the arena to bring footing back into the track. Certain drags are designed to alleviate this problem. For example, a plated box grader can draw material away from the edges of the drag pattern (Figures 2 and 3).

Manure removal is recommended for many different footing types, especially a sand and fiber mix. Some people choose to work in the manure over time, but this organic material will break down and impact the footing, creating the addition of small organic particles. The particles may release bacteria and potential allergens and may contribute to increased overall dust from the footing.

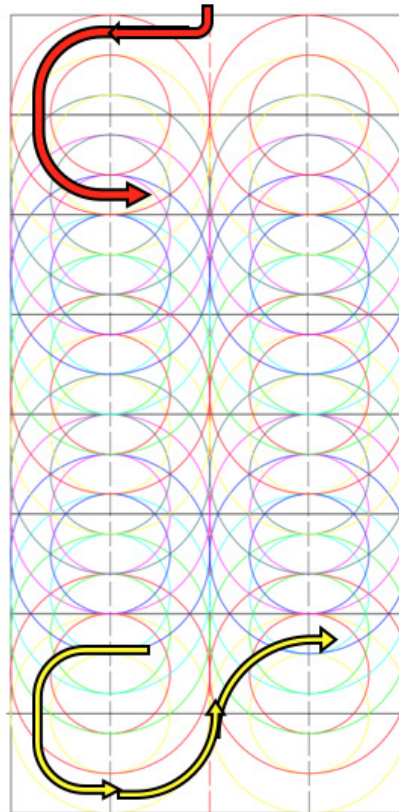
Settings

Some drags, especially multi-unit or complex drags, allow the operator to raise and lower portions of the drag to change the way the arena is groomed. Regularly monitoring and adjusting the settings can help prolong the life of the arena.

A deeper drag every month will help refresh the footing, but care should be taken not to disturb the base. Even if the drag is not adjustable, adding weights to your drag can help shift equipment closer to the base.

Patterns

Using the same drag pattern can create wear and will not address any problems that arise, so regularly change drag patterns. When drag patterns are changed, the settings of the drags should also be

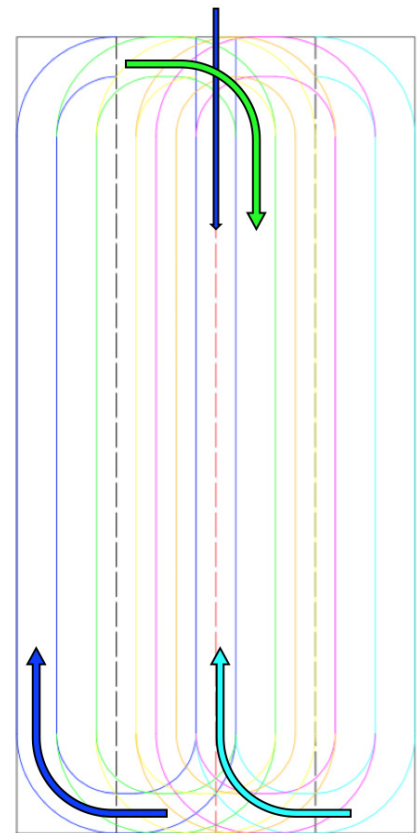


Arena drag pattern for arena with crown.

This pattern is intended to preserve the arena crown, which can be damaged when crossing over the centerline of the arena.

1	Red —Down centerline and begin first circle, which is approximately 50 feet in diameter.
2	Yellow
3	Dark Green
4	Magenta
5	Blue —Where top of blue overlaps with bottom of red (for following loops continue overlap)
6	Light Blue
7	Light Green
8-15	Same pattern as above
16/17	Yellow —Finish out circle at end of arena, go up centerline and start next set of circles at end of arena (figure 8 motion), working upwards.
Pattern follows up other side	Yellow, Red, Light Green, Light Blue (second half overlap begins top of yellow bottom of light blue, continue overlap), Blue, Magenta, Dark Green , and the pattern repeats.
On final pass (32 total)	Can go around outside track and centerline on either side of arena halves and smooth out any areas missed.

Covers 40,212 sq ft total. At a rate of 7 mph, 65 minutes to complete.



Drag pattern to bring material from center to outside.

1	Blue —Down centerline and around outside track
2	Light Green
3	Yellow —Up quarter line
4	Orange
5	Magenta
6	Light Blue —Down outside track and back up centerline

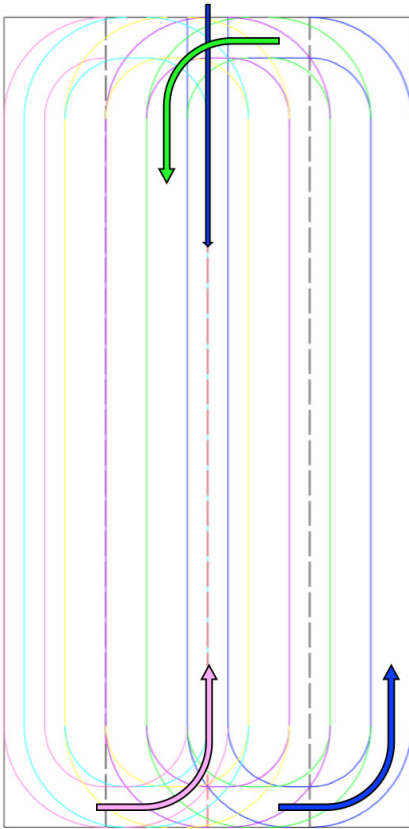
Covers 25,412 sq ft total. At a rate of 7 mph, 41 minutes to complete.

changed. Monthly, the arena surface must be dragged deeply to maintain and level the base and extend surface life.

Consider the initial construction of the arena, the levelness of the base and footing, and any other important aspects of the construction, such as a crown in an outdoor arena, to ensure that the maintenance pattern does not adversely affect the arena structure.

Treatments

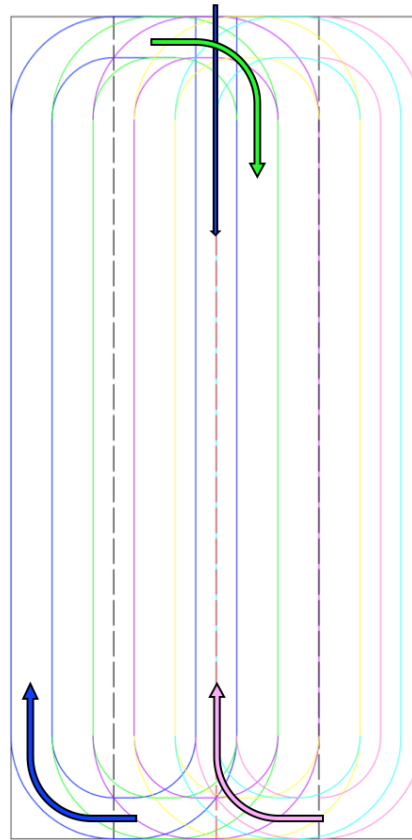
The common purpose for arena treatments is to reduce dust and prolong use of the arena surface.



Normal drag pattern.

1	Blue —Down centerline and up outside track
2	Green
3	Purple
4	Yellow
5	Light Blue
6	Pink —Down outside track and back up centerline (overlap)

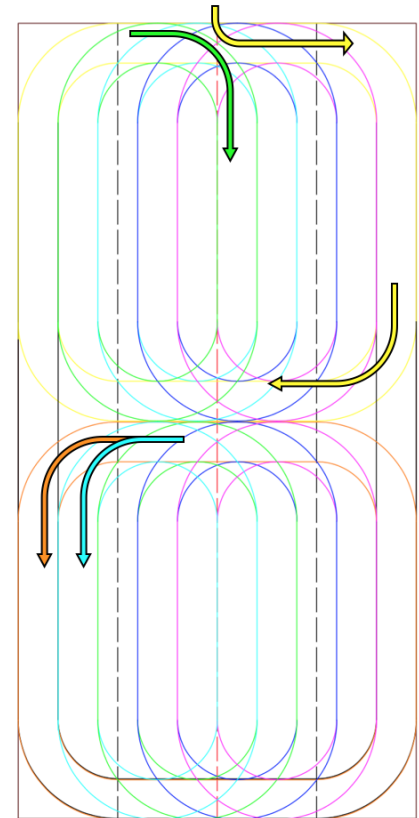
Covers 25,412 sq ft total. At a rate of 7 mph, 41 minutes to complete.



Normal drag pattern—reverse.

1	Blue —Down centerline and up outside track
2	Green
3	Purple
4	Yellow
5	Light Blue
6	Pink —Down outside track and back up centerline (overlap)

Covers 25,412 sq ft total. At a rate of 7 mph, 41 minutes to complete.



Drag pattern intended to bring material from outside to center.

1	Yellow —Divide arena into half, and go around outside track of upper half of arena
2	Light Green
3	Light Blue —Up quarter line
4	Blue —Down opposite quarter line
5	Magenta
6	Orange —Around outside track of lower half of arena
7-10	Pattern follows Light Blue, Light Green, Blue, and Magenta
11	Back around outside track of entire arena, smoothing out any missed spots

Covers 53,389 sq ft total. At a rate of 7 mph, 87 minutes to complete.

Water

The most common, and often most effective, arena treatment is water. Water can minimize dust and prevent separation of additives, and it also helps maintain the integrity of the surface and provides a better working surface.

There are many different methods for applying water, ranging from water tanks separate from or combined with the drag equipment, sprinkler systems, or even a common garden hose. Regardless of method, the goal is to add water in an even layer with no dry or wet patches.

The proper amount of water applied to an arena is relative to the overall environment. An outdoor arena will require less

water in humid climates and after recent precipitation. An indoor arena or covered arena will often need more consistent watering. Both indoor and outdoor arena needs may vary with changing seasons and different weather patterns. Humidity levels can also influence footing moisture content. In addition, footing in a climate-controlled arena must be carefully monitored to ensure that it doesn't dry out.

Different types of footing require different amounts of water. A wood chip or dirt arena can be dusty, especially as particles break down as it ages, and will likely require more water than a rubber or crushed rock arena. Synthetic mixes with

fiber and sand will require water to keep the components combined as well as to minimize dust, but this recommendation would change with the presence of a wax coating. A general rule of thumb is to add enough water so that the surface can be pressed into a ball between your hands and retain its shape.

Oils and Waxes

- **Mineral oil/plant-based oil:** A mineral oil coating can be added to reduce dust and eliminate need for watering. Mineral oil can be messy and may cause footing to stick to horses, people, walls, and equipment. Plant-based oils can/will become rancid.
- **Motor oil:** Applying motor oil is an outdated technique that was intended to reduce dust. This practice can have potential harmful effects, has been linked to carcinogenesis, and poses concerns for groundwater leeching. Motor oil should never be used as an option for reducing dust.
- **Wax:** A polymer coating that is intended to reduce dust and the need for watering. It is also used to retain cohesion of primary footing components and additives, commonly sand and fiber. Wax is generally added during the creation of synthetic sand and fiber mixes.

Chemical Agents

Many different chemical agents are added to the footing under different names. Most are intended to increase water retention and decrease the need for watering. Often used in the winter to control dust.

- **Magnesium chloride:** Magnesium chloride is a hygroscopic material that draws water particles suspended in the air into footing. It can cause mild irritation for humans, especially if it comes in contact with the eyes. There are some concerns about corrosion of metal structures within an arena.
- **Calcium chloride:** Similar to magnesium chloride, calcium chloride is intended to draw moisture from the air. It also may cause some wear and corrosion of metal materials.

References

- ABI Attachments. (2011, August 18). *How to Drag a Horse Arena—Drag Patterns Animation*. [Video File]. Retrieved from https://www.youtube.com/watch?v=d-NRvq_fQ0IA.
- Adams, L. (2019, November 28). Phone interview.
- Biggs Waller, S. (2002, January 01). Get a Handle on Your Footing. Retrieved from <https://thehorse.com/132566/get-a-handle-on-your-footing/>.
- Brewster-Keating, C., and Stone, J. (2019, May 15). Phone interview.
- Clayton, H., BVMS, Ph.D., DACVSMR, MRCVS. (n.d.). The Most Important Three Inches in Your Horse's Career: AAEP. Retrieved from <https://aaep.org/horsehealth/most-important-three-inches-your-horses-career>.
- Detweiler, B. (2018, November 28). Phone interview.
- DR's Country Life Blog. (2017, October 06). Equestrian Arena Footing Maintenance (Part 1/2). Retrieved from <https://www.drpowerblog.com/equestrian-arena-footing-maintenance-part-1-2/>.
- DR's Country Life Blog. (2017, October 06). Equestrian Arena Footing Maintenance: Arena Drag Comparison (Part 2/2). Retrieved from <https://www.drpowerblog.com/equestrian-arena-footing-maintenance-arena-drag-comparison-part-2-2/>.
- EastWest Arena Construction. (2013, November 19). Proper Technique for Dragging an Arena. Retrieved from <https://www.eastwest-construction.com/blog/proper-technique-for-dragging-an-arena>.
- Equisearch. (2006, April 01). Tractors and Implements for Horse Pasture and Horse Arena Care. Retrieved from <https://www.equisearch.com/articles/tractors-and-implements-horse-pasture-and-horse-arena-care>.
- Equus. (2015, February 09). Study Suggests Deeper Harrowing Is Best for Arena Footing. Retrieved from <https://equusmagazine.com/horse-care/maintaining-footing-deep-27178>.
- Fabian Wheeler, E.E. (2016, May 19). Riding Arena Footing Material Selection and Management. Retrieved from <https://extension.psu.edu/riding-arena-footing-material-selection-and-management>.
- Hernlund, Elin; Lönnell, Cecilia; Roepstorff, Lars; Lundholm, Marcus; Bergström, Lars; Andersson, Ann-Margrethe; Carlsson, Björn; Fogelberg, Fredrik; Krügel, Fia; Söderberg, Markku, et al (2014). *Equestrian Surfaces—A Guide*. Strömsholm: Swedish Equestrian Federation. [PDF File]. Retrieved from https://inside.feiorg/system/files/Equestrian_Surfaces-A_Guide.pdf.
- Hobbs, Sarah; Northrop, Alison; Mahaffey, Christie; Martin, Jaime; Clayton, Hilary; Murray, Rachel; Roepstorff, Lars; and Peterson, Michael. (2014). Equine Surfaces White Paper. Retrieved from <https://inside.feiorg/system/files/Equine%20Surfaces%20White%20Paper.pdf>.
- Horse Journal. (1999, October 01). Ring Maintenance: Harness A Harrow. Retrieved from <https://www.equisearch.com/HorseJournal/ring-maintenance-harness-a-harrow>.
- Horse Journals. (2019, January 14). Arena Footing: Materials, Installation, and Maintenance. Retrieved from <https://www.horsejournals.com/arena-footing-materials-installation-maintenance>.
- Kentucky Equine Research Staff. (2017, December 31). Good Footing is Important for Horse Arenas. Retrieved from <https://ker.com/equinews/good-footing-important-horse-arenas/>.
- Leeming, K. (2018, October 3). Email interview.

- Masia, S. (2011, November 29). What a Drag—The #1 Resource for Horse Farms, Stables and Riding Instructors: Stable Management. Retrieved from <https://stablemanagement.com/articles/what-a-drag>.
- Meyer, J.F. (2017, March 23). Plan to Ride on Good Ground. Retrieved from <https://horseandrider.com/how-to/plan-ride-good-ground>.
- Millcreek Spreader. (2016, July 11). Fundamentals of Riding Arena Maintenance—Groom It Right! Retrieved from <http://www.millcreekspreader.com/blog/fundamentals-riding-arena-maintenance-groom-right/>.
- Munniksma, L. *Happy Landings*. [PDF File]. Retrieved from https://www.usdf.org/EduDocs/Facility-Management/Happy_Landings1.pdf.
- Premier Equestrian. (2016, February 18). *How Arena Surfaces Affect Horse Biomechanics*. [Video File]. Retrieved from <https://www.youtube.com/watch?v=l-c347oiAXoE>.
- Premier Equestrian. (2017, September 29). *Premier Pro Groomer | Horse Arena Grooming Equipment*. [Video File]. Retrieved from <https://www.youtube.com/watch?v=LRgJNnd8PIg>.
- Premier Equestrian. You Can't Beat Water. (2018, August 15). Retrieved from <https://premierequestrian.com/you-cant-beat-water/>.
- Premier Equestrian. (2018, August 29). Horse Show vs. Training Surfaces. Retrieved from <https://premierequestrian.com/horse-show-vs-training-surfaces/>.
- Premier Equestrian. (2019, June 19). Five Factors that Create a Great Arena Surface. Retrieved from <https://premierequestrian.com/five-factors-create-great-arena-surface/>.
- ProEquine Grooms. Arena Care Basics! (n.d.). Retrieved from <https://www.proequinegrooms.com/tips/barn-management/arena-care-basics>.
- Reveal, K. (2019, October 19). Phone interview.
- Steenberg, K. (2018, November 14). Phone interview.
- Strickland, C. (2013, September 25). Give New Life to Your Arena Footing—The #1 Resource for Horse Farms, Stables and Riding Instructors: Stable Management. Retrieved from <https://stablemanagement.com/articles/give-new-life-to-your-arena-footing-3831>.
- The Horse. (2018, June 14). Arena Maintenance: What to Remember. Retrieved from <https://thehorse.com/112571/arena-maintenance-what-to-remember/>.
- Ultimate Arena Guide. Horse Arena Footing. (2017, February 17). Retrieved from <http://ultimatearenaguide.com/horse-arena/footing/>.
- Zorn, H. (2018, October 18). Phone interview.

Some arena diagrams adapted with modifications from ABI's *How to Drag a Horse Arena—Drag Patterns Animation*.

Cooperative Extension Service

Agriculture and Natural Resources
Family and Consumer Sciences
4-H Youth Development
Community and Economic Development

MARTIN-GATTON COLLEGE OF AGRICULTURE, FOOD AND ENVIRONMENT

Educational programs of Kentucky Cooperative Extension serve all people regardless of economic or social status and will not discriminate on the basis of race, color, ethnic origin, national origin, creed, religion, political belief, sex, sexual orientation, gender identity, gender expression, pregnancy, marital status, genetic information, age, veteran status, physical or mental disability or reprisal or retaliation for prior civil rights activity. Reasonable accommodation of disability may be available with prior notice. Program information may be made available in languages other than English.

University of Kentucky, Kentucky State University, U.S. Department of Agriculture, and Kentucky Counties, Cooperating.
Lexington, KY 40506 Revised 04-2024



Disabilities accommodated with prior notification.