Spreader technology: Manufacturer's Roundtable

Editor's note: We asked representatives from four major spreader manufacturers to answer the same four questions on their latest technologies. Respondents included: Scott Kinkead, Turfco; John Bentley, Earth & Turf; Kevin Clayton, TY-CROP; and Glenn Musser, Millcreek Manufacturing.

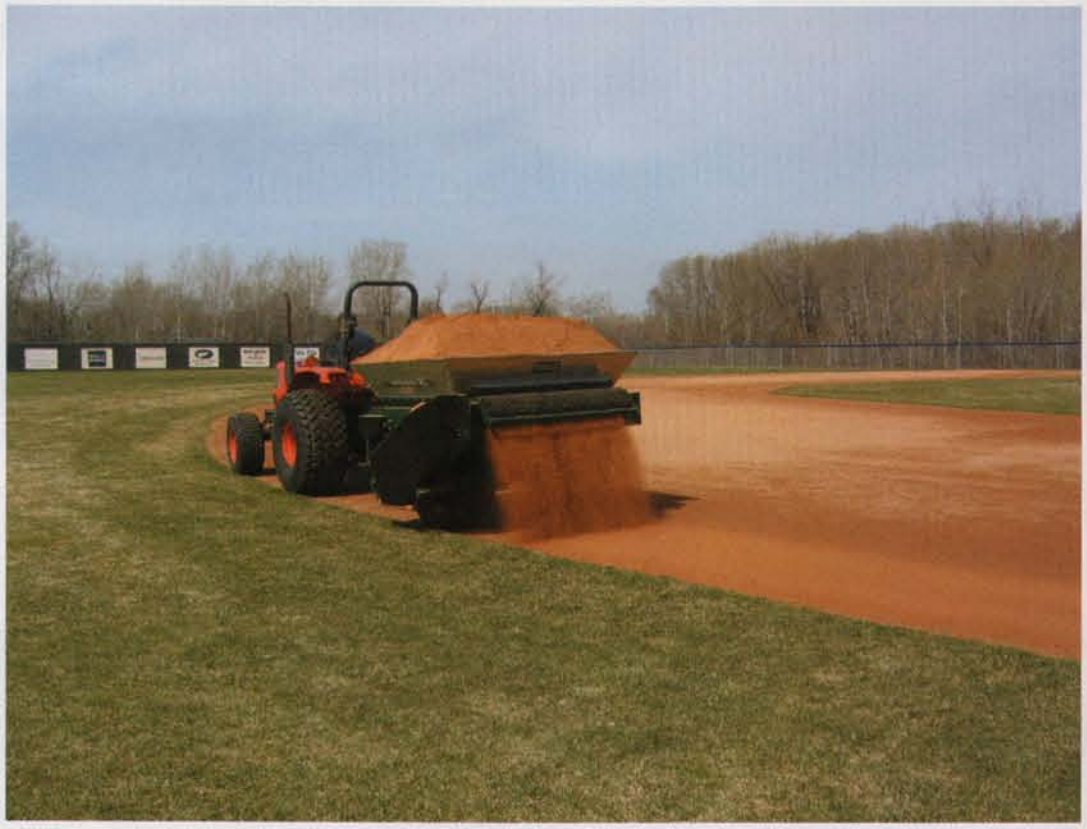
Why is it important to topdress?

Scott Kinkead: Topdressing is an important part of any effective sportsturf program, as it can promote a healthier, more uniform and compaction resistant growing environment for the turf. It helps turf withstand environmental pressure from heavy use, heat, or other factors that can compromise turf quality. Primary benefits of a well-designed and implemented topdressing program also include:

A smoother, more level and consistent playing surface that can help reduce injuries.

Help dilute the thatch layer so you can manage it at a healthy level. Excessive thatch layers can cause turf to be more susceptible to disease, and less able to survive day-to-day issues such as temperature changes and mower scalping.

Improve soil composition - In areas where tight, compact soil conditions limit oxygen concentration and/or water infiltration, an effective topdressing program can help create a better, less compaction-prone growing medium. This can also improve conditions for new root zone development, and promotes the rooting of stolons. Topdressing is also useful for the development and maintenance of field crowns.



Kevin Clayton: Topdressing helps accomplish several objectives: thatch control; improved drainage; compaction correction; smoothing surface irregularities; modifying surface soil; aid renovation and overseeding; and winter protection.

Topdressing also provides the option to raise the height of cut, which can help the grass stay healthy during times of stress.

An effective sand-topdressing program has three main requirements: selecting the proper topdressing material; determining the appropriate rate of application; and adjusting the frequency of topdressing to site conditions.

Soil modification via topdressing is adequate to create the desired changes; it can be a desirable option because it does not interrupt site use.

Aeration and topdressing drastically impact your overall turf management program because the turf root mass is concentrated in the upper 6-8 inches of the soil profile, where these practices most improve soil conditions.

Compaction can be a turf manager's nightmare. Traffic, weather conditions and normal use push soil particles closer together, reducing pore space and increasing soil density. Due to decreased air, water and nutrient movement, turf roots struggle to fill their basic needs. As a result, turf quality declines and sports fields provide less cushioning for players. Turf shows less stress tolerance and increased susceptibility to weed, disease and insect problems. Aeration and topdressing are good bets to combat compaction.

Topdressing to smooth the surface is a necessary thing! Achieving trueness of the surface is just as important for a baseball or soccer field as it is for a golf green. If the surface is not true, a player is in danger, and you are in danger, as the manager of that field. This is particularly important for baseball, soccer or football players who aren't watching their feet during play but rather the path of the ball.

On established turf, topdressing aids in thatch decomposition, promotes recovery from injury or disease. In addition, topdressing can be used to modify existing soils and to aid in overseeding.

Most errors in topdressing will not have a short-term negative effect, but it is over a period of several years that an error in topdressing will tend to have a greatest impact.

John Bentley: Topdressing serves multiple purposes and in most case it is done in conjunction with some type of aeration, depending on soil conditions. If you are looking to improve drainage in tight soils you may want to spread certain types of sand or a calcined or manufactured clay product.

Some fields need humus (compost) to granulate clay particles or help retain moisture in sandy soils. In most all cases there is also a desire to make the playing surface smooth, and the topdressing when drag matted along with the core or loose soil material from the aeration process will give you a smoother surface because the drag will fill in low spots in the field.

An extension agent can be part of the process to help the field manager determine what he or she needs to do in improve the field.

Glenn Musser: We topdress turf for two basic reasons. First, it improves the playing conditions of the field. Second, it improves the agronomic condition, or the basic overall health of the turf. The healthier your turf is, the better it survives harsh weather and abuse, and the better it looks.

To turn grass into a playing field, it requires topdressing. You need to pay attention to the kinds of issues that require topdressing, like maintaining a smooth, level

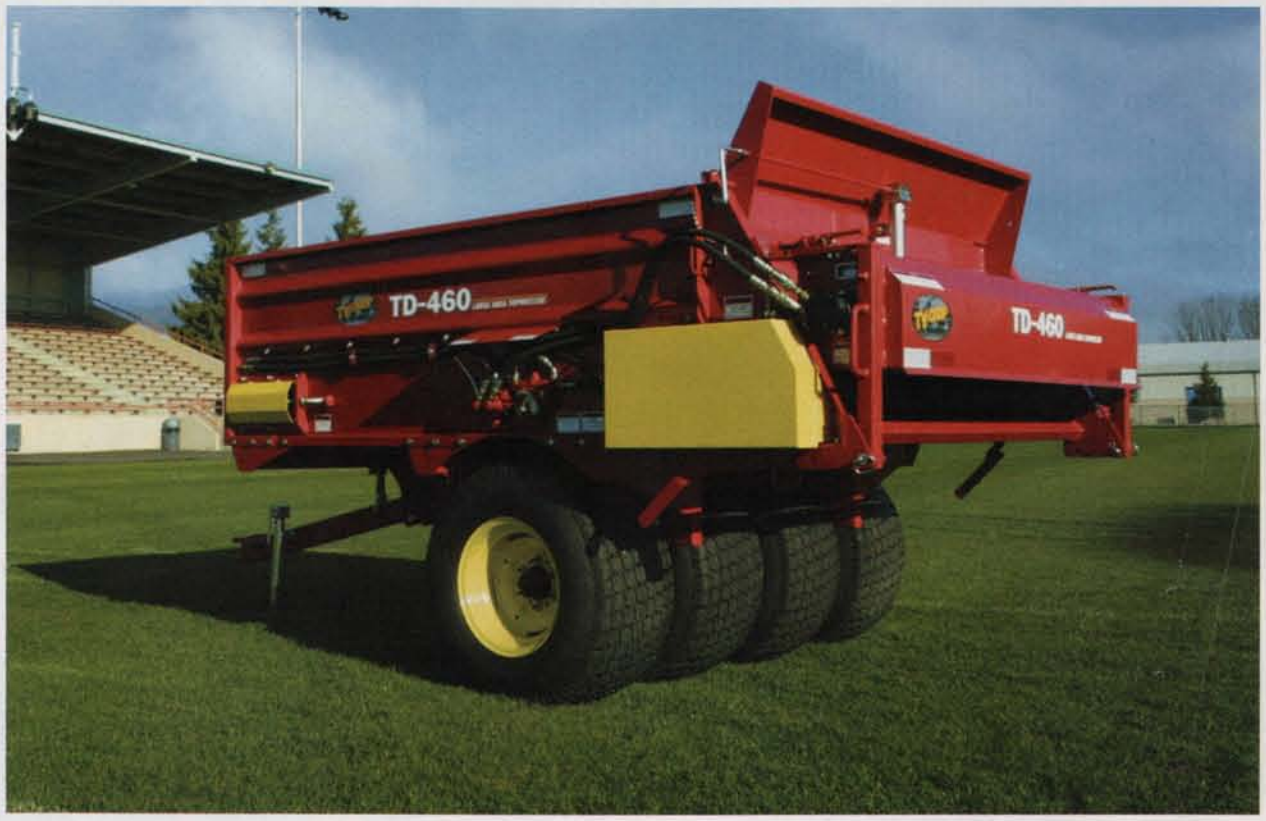
playing surface, controlling the thatch layer, changing the soil texture, and ensuring favorable environmental conditions for germination.

A smooth playing field. We all know how important that is for the safety of the players, for the roll of the ball, and for player performance. Topdressing adds soil or sand, in measured amounts, for leveling the field.

Controlling the thatch layer. Thatch is ordinarily our friend. But too much thatch can be our enemy. Topdressing enables us to control the thatch layer by applying soil or amendments to improve nutrient retention, or to promote biodegradation.

Changing the soil texture. Often a playing field won't have the right balance of clay, silt and sand. We call that a soil texture problem. Of course, you might just dig it up and replace it, at enormous expense. But instead, you can gradually modify your soil texture by repeated aerating and topdressing over time, at significantly lower cost.

Providing a favorable environment for germination. Sports turf managers know one thing: activity on the playing field kills grass. To offset the damage, they overseed. With a topdresser, you provide a favorable environment for germination by applying soil or amendments that enhance seed-to-soil contact and reduce soil water evaporation.



How is topdressing material applied using your type of equipment and technology?

Bentley: There are three types of application devices and they all serve the purpose from a different angle.

The spinner usually is to cover a large area with a thinner layer of material. They do well in drier materials but when material is wet their performance is reduced.

The brush is fine for putting down heavier layers in a defined pattern again the material should not be too wet.

The multispread beater will spread the widest range of materials from dry to wet and does spread wider than the belt width the material comes off of. The beater design is most tolerant of various particle sizes. For example one could spread sand or wood chips through the same unit. This gives the beater a little more versatility for people who want to spread several products.

Kinkead: Turfco designed and developed the first mechanized topdresser in 1961. That original topdresser had a wood hopper and a metal slat conveyor belt. Since then, our product line has evolved to includes nine different models of topdressers, everything from a self-propelled topdresser to a 4 cubic yard topdresser/material handler.

Our straight-drop brush type spreaders integrate a patented chevron belt technology with our patented ground drive system. Our dual-spinner type spreader technology allows material placement flexibility.

Musser: There are several methods, just like there are different ways that lawn mowers cut grass. Reel blade mowers use a scissors action, and rotary mowers use a flying blade. Each type has its place. Topdressers, too, use different techniques for different purposes.

Why the differences? Well, topdressing is not just a science; it's also an art. When you come right down to it, what you're basically doing is hauling material around in a portable box and applying it to the surface or turf. Sometimes you need precision placement, for example on a golf tee or green. Other times the material is "dragged" after aeration, to fill aerating holes and turf pockets, so precision doesn't matter; but a higher application rate does. Also, you have to consider the consistency of the material and whether it's wet or dry.

Clayton: TY-CROP has been a leading designer and builder of topdressers since 1985. Customers can select from a range of sizes, configurations, and prices to find the products that make the most sense for their facility, tow vehicle, and budget.

What's your opinion on the advantages and disadvantages of the current technologies?

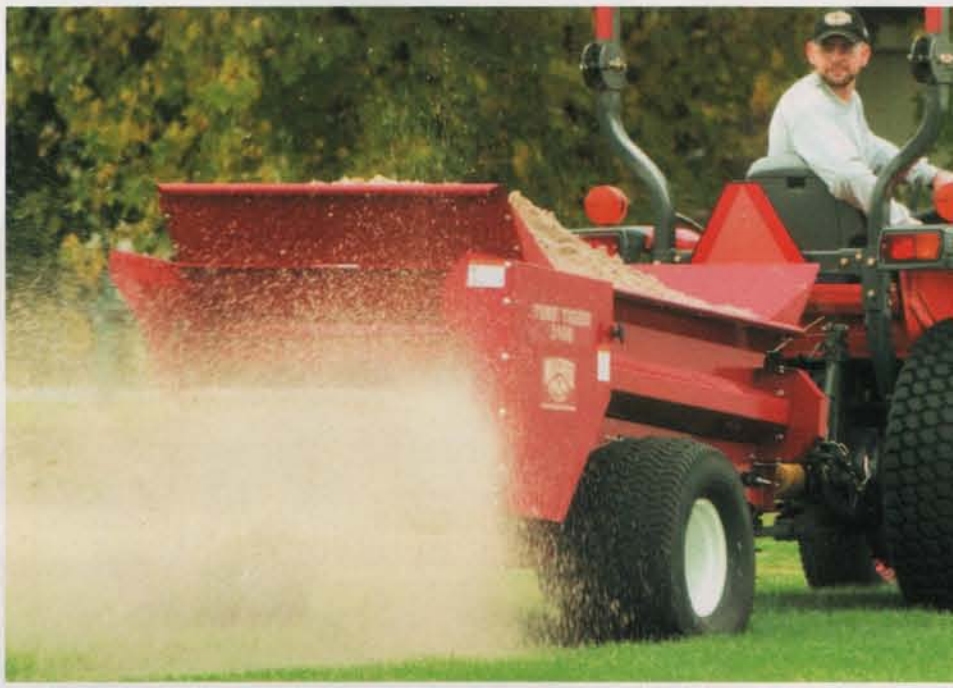
Musser: Okay. Let's do them one at a time.

Straight Drop Brush Method. This method gives you a spread pattern about the full width of the box, which means usually 3-6 feet. A metering gate determines how much material is delivered to a conveyor belt. At the rear discharge edge, a brush, roughly 8 inches in diameter, wipes the belt and propels the material to the turf surface. PROS - This is the most precise and simplest method for light applications. CONS - First, the spread pattern is limited to the width of the box or belt. Second, the wheels have to be underneath the box, otherwise you'd need to double-track, and that's not good for the surface. Since the wheels are underneath it, the box has to be higher, which gives it a high center of gravity that makes it less stable. Third, it takes more trips to cover the field. Fourth, the high velocity of the topdressing can damage grass blades. Fifth, and finally, since they make them wide to maximize coverage, the wide boxes with their wheel shields are hard to get through doors.

Dual Spinner Method. The dual spinner method can use a narrower conveyor belt, usually 18-24 inches. The belt delivers material to the top of two spinning horizontal disks. The disks, or wheel plates have spoke-like ridges called paddles. The paddles grab the material and throw it 12-15 feet to either side, so that it produces a 30-foot wide spread pattern. PROS - The spread pattern covers a lot of ground, so this method requires the fewest trips over the field. CONS - First, the quantity and depth are very difficult to get right. It may not matter for spreading cinders and ice melt. But treating turf, it may matter a lot. You can adjust the application rates, or the feed depth of the material delivered to the spinners. But then each of the spinners needs to be repositioned. You usually have to go through a lot of frustrating trial and error until everything is set correctly. Second, when you're trying to apply wet or damp materials with a dual spinner, you have to hope you're lucky enough that the material will flow to the correct spot on the spinning wheel plates, and that it doesn't bridge over the narrow conveyor. Compost especially has a tendency to bridge over the 24-inch wide belt. Third, this method doesn't suit for thick or deep application rates because all of the material must go through a narrow window to reach the dual spinners.

Wide Spread Beater Method. This method amounts to a combination of the other two. And it solves other problems neither of those methods handle well. It has a spread pattern wider than the straight drop brush units, though not as wide as the dual spinners. The spread pattern is significantly wider than the box. So even though the tires are outside the box, you don't have to double track in the field to get complete coverage. With wheels outside the box, the box can sit lower, and a low, stable center of gravity is good for loading and hauling.

Like the other types, a metering gate governs material depth. In these units, the material is dropped onto precision angled, spinning paddles or beaters that cast it in



an exact pattern, beyond the width of the box. Unlike dual spinners, you can easily change application rates, from a dusting to depths of up to an inch, just by changing the metering gate.

PROS - First, the unit is more stable because of its low center of gravity. Second, you can use it for light or heavy application rates reliably simply by adjusting the metering gate. Third, and very important, unlike the other two methods, Wide Spread Beater units handle both dry and wet material. And they handle both coarse and fine material. Fourth, the conveyor runs the full width of the box, so bridging of compost and wet sand is not a problem. Finally, these machines love heavy application rates. CONS - It's not quite as precise as straight drop brush units and doesn't have quite as wide a spread pattern as dual spinner units have.

Kinkead: The choice of a "best" spreader technology boils down to the application. For example, if you need to do frequent, light topdressing, one of our models with twin-spinner design would most likely be the best equipment choice.

The downfall of most dual-spinner spreader is that they traditionally have been more focused on delivering light topdressing, as opposed to the heavier (up to 1/4-inch) layers that are typically applied to sports fields.

For sports fields, the success or failure of a topdressing program depends heavily on the accuracy of the application. Instead of the light, frequent topdressing done to golf greens, sports fields are typically going to be topdressed less frequently, with a heavier application rate, often applied after aerification. For these applications, a drop spreader is often preferable.

Because this type of topdressing often involves applying materials of varying consistencies and moisture contents, Turfco developed its chevron conveyor belt to accommodate these variables. Since material placement and application rate need to be consistently controlled for best results, the chevron conveyor belt and brush are driven by Turfco's ground-drive system, which synchronizes the material application rate with tow vehicle speed.

Contrast that to engine- or hydraulically driven brush-type topdressers, which rely on precise calibration between the hydraulic or PTO speed, and tow vehicle speed to ensure even materials application. With this type of spreader, if vehicle speed increases, the application thickness drops, since changes to vehicle speed do not affect spreader speed. As a result, they require a high degree of operator skill, as well as accurate machine set-up to get consistent coverage over the entire field.

Turf managers with a large number of sports fields to topdress may need a level of productivity beyond what a drop-type spreader can offer, and for them, a topdresser/material handler with WideSpin technology would be a good choice. The dual-spinner topdressers are not only capable of efficiently delivering light topdressing applications, but they're also capable of applying heavy topdressing at up to 1/4-inch depth.

Turfco has chosen not to offer multi-spread beater designs, because beater-type spreaders simply don't offer the same consistency and control over material application rate and placement. They also do not offer the ability to apply materials such as calcined clays.

Clayton: "Drop style brush" topdressers are used for heavier applications. A brush-style topdresser can move a wider range of materials than a top dresser using twin spinner technology. For materials that clump together or are made up of irregular particles the "brush style" top dresser will break up the materials and spread them in a more consistent and uniform pattern.

"Dual Spinner" top dressers are used for more light and frequent applications. Spinners can spread at greater widths saving time when top dressing at light rates making less passes to cover the turf area.

Multi-spread beater or "beater drums" is older technology mostly used with topdressers that need a way to break up material before applying it. New technology has provided variable, high-speed drop style brushes (Finishing or Standard Brush), that when adjusted properly, break up material and apply it in one simple step.

In your opinion, what is the preferred technology for turf managers with regard to topdressing?

Bentley: Today the preferred technology would be a brush or a spinner because that is what the market is used to but as they see the obvious benefits of a beater design it will grow.

Clayton: There is no preferred technology as each provides a purpose depending on the desired result of the sportsturf manager and the environment in which he or she operates.

Musser: Our whole company depends on us understanding the needs of average people making

difficult buying decisions in real world situations. Professional turf care owes a lot to the golf industry. Golf people have been setting the pace for a long time. And their preferences are well known. Greens keepers use straight drop brush machines for the tees and greens, and they like a dual spinner unit for the fairways. We make those models; good ones, with all the bells and whistles. And they're very popular. The golf industry has what they call "deep pockets." They can afford the biggest and the best, and usually that's what they look for.

But there are a whole lot of professionals out there getting paid to manage turf who are not in the golf industry. Their needs are different. Think about a person who takes care of a dozen or two fields for a municipal park system; or who manages the playing fields and grounds for a high school. Or the folks who contract their turf care services out to schools and parks.

Their problem is money. What they all face in common is tremendous pressure for excellent results. But they also have to meet those demands with less money in the budget all the time. We understand their situation. They need good, versatile products that are inexpensive and deliver a big bang for the buck. We've put a lot of time, money and effort into developing models that meet their needs.

Wide Spread Beater topdressers are simple and straight-forward to operate. The good ones are. Follow the directions and you'll get predictably good results.

Another very important factor is, that just like golf courses, your park or school system orders soil treatments in bulk. A huge load of, say, topsoil or compost will come in and be dumped at some convenient loading point. But unlike many golf courses, the loading point for a park system or a high school will be open to the elements. The material is probably going to get pretty soaked before it's applied. It may have even come in as a wet load. Plus, the material is sometimes already pretty clumpy. But you can't wait around for it to dry out. It has to be applied.

With the first two topdresser types, applying wet or clumpy material is a nightmare. Not so with a well designed Wide Spread Beater model. It'll break up those clumps like a knife through butter. You'll get a smooth, even, predictable pattern even if you're running your top dresser in the middle of a rainstorm.

When golf course precision isn't essential, when you need to work quickly, applying depths of sometimes 1" or 2" to fill coring holes and fill soil pockets to level the surface, when you have budget concerns a Wide Spread Beater unit does the trick.

Kinkead: There are a lot of companies trying to sell topdressers designed for golf or agricultural applications to sports turf managers. We've developed distinct topdresser models that have the right design features for each unique topdressing application, including sports turf topdressing. For these managers, a large-capacity, ground-driven, brush-type drop spreader with a chevron conveyor will best meet their needs. ST