

TOPDRESSING SPORTS FIELDS: THE THREE W'S

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Players, coaches and fans all appreciate athletic fields that look good and play well. Most realize the practices of mowing, irrigation, and fertilization are responsible for keeping these fields in playing condition. Maybe a few would even know core cultivation is an important practice. What about the practice of topdressing? It is likely this would be very foreign to most people. Yet, it is just as vital as the four practices listed above. Failure to topdress will lead to an uneven, unsafe playing surface very quickly. Timing of topdressing is essential. Apply topdressing at the wrong time, and you can be the proud owner of a skating rink, too bad it is supposed to be a football field. Use of the wrong material may convert your field to either a parking lot or a quagmire (or a combination of both) for years to come. Topdressing is a science whose importance cannot be underscored and is a valuable tool to the knowledgeable professional. The logical question for implementing or strengthening your topdressing program now is 'Why, when, and what? The three Ws'.

Why Topdress?

We topdress turfgrass to improve both agronomic and playing conditions.. The term is self-describing, in that material is applied to the turfgrass surface from above. This is currently the only way to apply material and minimize disruption to your field. There are five major reasons to topdress. Each topdressing application can address one or all of the following reasons.

1. **Smooth the playing surface** – A smooth playing surface is critical and unquestionable for ball and player performance. However, this same topdressing is used to provide an uninterrupted slope for surface drainage. If this surface drainage is disrupted, then the formation of 'duck ponds' is imminent.
2. **Modify the thatch layer** – Thatch is our friend, but too much can be our enemy. We do not see thatch on high traffic portions of our sports fields, but there can be excessive thatch accumulation on low use areas. Topdressing modifies the thatch layer, maintaining adequate soil macroporosity and providing a better growing environment for the plant by aiding the microbial community for thatch decomposition.
3. **Change the soil texture** – If the soil of your sports field is unsuitable and a wholesale change is not possible, a gradual change could be the answer. This is accomplished through core cultivation and harvesting to remove unwanted soil and subsequent topdressing to incorporate back favorable material. Over time, soil texture changes, and surface and soil conditions improve.

4. **Provide resilient surface** – Topdressing a new material can change the surface characteristics and provide a more resilient surface that retains macroporosity. This objective often plays hand-in-hand with modifying soil texture, however it can be a single objective after efforts to change soil texture through core cultivation techniques are complete.
5. **Provide favorable environment for germination** – Sports turf managers know one thing: they lose grass to activities on the fields they manage and they must overseed. Topdressing provides a favorable environment for germination by enhancing seed to soil contact and reducing soil water evaporation.

When to Topdress?

Simply stated, the best time to topdress sports fields is during periods of active growth and little, or no, play. This may be impractical, but it is the ideal to strive toward. In order for topdressing to be effective, it must be at the soil/plant interface. Following topdressing, there is a time period where the particles are migrating to this interface. The speed in which they can migrate is critical. Irrigation will help in this process, but the best aid is simply actively growing grass. Therefore, the best time to work topdressing into the profile is the spring and summer for both cool and warm season grasses.

We can learn a little from the golf course regarding topdressing and timing. Putting greens are topdressed, but typically only during periods of active growth. The amount applied matches the growth of the grass and is done to minimize disruption to the putting surface because golf courses receive their heaviest traffic during the growing season. We can take this approach as well, but our amounts in the spring and summer can be greater if there is low play. The higher cutting heights (as compared to a putting green) will also lend themselves to greater amounts of topdressing.

Topdressings during periods of heavy traffic, i.e. during the season, should be done with caution. Fall topdressings during the season should be done early and with caution, if at all. If there is low growth, then it will be difficult for the material to migrate and the topdressing will be unstable, thus creating footing problems on the field. Another issue is the abrasiveness of the material. Topdressing material (like sand) damage leaf tissues, but during active growth times this abrasion is not an issue. However, during low growth periods the plant cannot recover as quickly and this abrasion can accelerate deterioration of the turfgrass plant.

In summary, remember timing is everything! Plan topdressings around periods of active growth and low play. This may mean topdressing in the spring and then late fall after the season. Cool season grasses should be topdressed heavily (6-16 mm) once per year in combination with core cultivation in late spring after spring football and soccer. This will provide topdressing to smooth the surface, modify thatch, and help with surface resiliency. If there are no games until late summer, the heavy topdressing will have time to migrate and not affect play.

What to Topdress?

The choice of topdressing materials is extremely important, with the range of materials available wide and varying. There are a couple of rules of soil physics to keep in mind. These center around soil macropore space. If your macropore space is the same throughout the root zone then drainage will proceed at the rate allowed by the size of the macropores. If the pore space of the top layer is finer than the pore space of the soil below, then water will not flow until the top layer becomes very wet. This has caused many problems on fields over the years, particularly with poor choices of turfgrass sod and/or topdressing. The key is to remember to topdress with a material that is at least equal to or coarser than the root zone material or the material at the surface. This will ensure that the macropore space on top is greater and water will drain at the rate of the root zone profile.

There are numerous materials from which to choose, both organic and inorganic. The potential for success with these materials can be just as great as the potential for disaster. Never use a topdressing product without a thorough understanding and testing of the particle size of the material. Sand is a good example. It is a long-time excellent choice for topdressing, as it is readily available and relatively inexpensive. However, you must perform a particle size analysis for the material, and never assume that a "named" sand will always be suitable for your needs. Numbers and names of sands can have tremendous variation, as their origin was usually for road building or construction, not sports fields.

Several products on the market today have proven themselves as very effective topdressing materials. These are heat-treated materials like calcined clay, diatomaceous earth, and porous ceramics. One key to porous ceramics is the particle size of the product. The product helps to maintain adequate macroporosity in the soil profile. Another inorganic product used is crumb rubber from used tires. Although expensive in comparison to sand, one benefit is its lack of abrasiveness on leaf tissue. This can be an advantage during periods of low growth. Again, you must monitor product particle sizes to prevent any soil layering problems.

Conclusion

Topdressing is as essential to quality sports fields as any other cultural practice, and must be included as part of the management plan. Applications should revolve around periods of low play and good growing conditions. Materials should be chosen with an understanding of the particle size and its relation with the existing root zone.