

Managing fields using crumb rubber & varietal selection

BY JOHN C. SOROCHAN AND J. TIM VANINI

Turfgrass is a biological system and if abused, it will die. Be prepared because the loss of a turfgrass stand can be just around the corner. Maintaining quality turf stands that withstand athletic field conditions has always been a challenge, particularly when many events are scheduled when growing conditions are not favorable for turfgrass recovery. Properly implementing the five primary cultural practices (mowing, irrigation, fertilization, cultivation, and pest control) and using non-traditional methods are important management practices in maximizing turfgrass vigor. Non-traditional methods can be cost beneficial and extend the field performance in the long run. Using crumb rubber as a topdressing and turfgrass selection are two methods that have demonstrated improved turfgrass functionality.

Crumb rubber is simply used car tires that have had the steel belts removed and been ground into small rubber particles or "crumbs." The size of the ground rubber varies, and is similar to the particle size distribution of sands and fine gravel. Research that was completed in the early 1990's at Michigan State assessed the dynamics and versatility of crumb rubber in a turfgrass situation for athletic field use.

Original research looked at crumb rubber tilled into the soil profile of an existing athletic field. Results showed crumb rubber was an effective soil amendment, but having to take a field out of play to add it was too time-consuming and costly. So more research was initiated to evaluate cultural practices that would be more effective at introducing crumb rubber to the turfgrass/soil interface.

Core cultivation and topdressing were evaluated. Crumb rubber particle sizes of 1/4-in. and 10/20 mesh were researched. Though core cultivation was effective, topdressing crumb rubber was more so. Plus, using the 10/20 mesh was the best particle size, over time, to introduce crumb rubber

to the turfgrass/soil interface.

When adding crumb rubber to a field, it is important to start off with as close to a 100 percent turfgrass stand as possible. Crumb rubber will not resurrect your turfgrass stand after wear damage has already occurred. Therefore, for an existing athletic field, the best time to add crumb rubber is before the start of a new season when your turf cover is greatest. Use crumb rubber that has a 10/20 mesh particle size and topdress it in at 1/4 inch (1/4"=600 lbs. crumb rubber per 1000 ft.) intervals until you have added 1/2 to 3/4 inch of the material.



You can see the sharp edges and angles of the sand particle (below) compared to the smooth edges of the rubber particle.

How does crumb rubber benefit?

Crumb rubber serves two functions when topdressed: reducing soil compaction and improving wear tolerance. Crumb rubber for an athletic field acts as a "padding" for protecting the turfgrass. If an athlete's cleats damage the crown tissue area of a turfgrass plant, the turf will quickly die because the point of rejuvenation has been damaged beyond repair. Crumb rubber protects the crown tissue of the turfgrass. This limits the direct impact of a cleat or shoe, thus resulting in the prolonged wear tolerance.

After a fall season of testing using simulated football traffic, 50 percent more turf cover can be maintained by topdressing 3/4-inch crumb rubber onto a sand-based athletic field, according to research. Another benefit of crumb rubber is that it will not break down with repeated wear in high traffic areas. Thus, it will provide a cushioning benefit for maintaining increased turfgrass cover. As a result, your field will be able to tolerate more traffic, which in turn translates into more events, which in turn translates into increased revenue potential.

Another benefit is extending your

turf's growing season. Having a 1/2 to 3/4-inch layer of crumb rubber at the soil surface increases surface temperatures enabling growth to occur earlier in the spring and later into the fall. Similarly, due to the black color, crumb rubber can act as a catalyst for seed germination when seeding either earlier or later in the year (overseeding) or starting "spring green-up" in bermudagrass. In other words, the warm season window for bermudagrass can be extended.

Potential problems

No question there have been concerns about topdressing crumb rubber if too much water takes over an area, i.e. rainfall or excessive irrigation. Crumb rubber is half the density of a soil particle, so it floats. Strategies to deal with this problem are first, be in tune with the weather and second, do not put too much crumb rubber down at one time.

Our recommendation is that no more than 1/4 inch should be topdressed in a single application. Remember, you can always add more. A final strategy is to fertilize more frequently, budget permitting. Obviously, the grass will grow more vigorously and crumb rubber will gravitate quicker down to the surface.

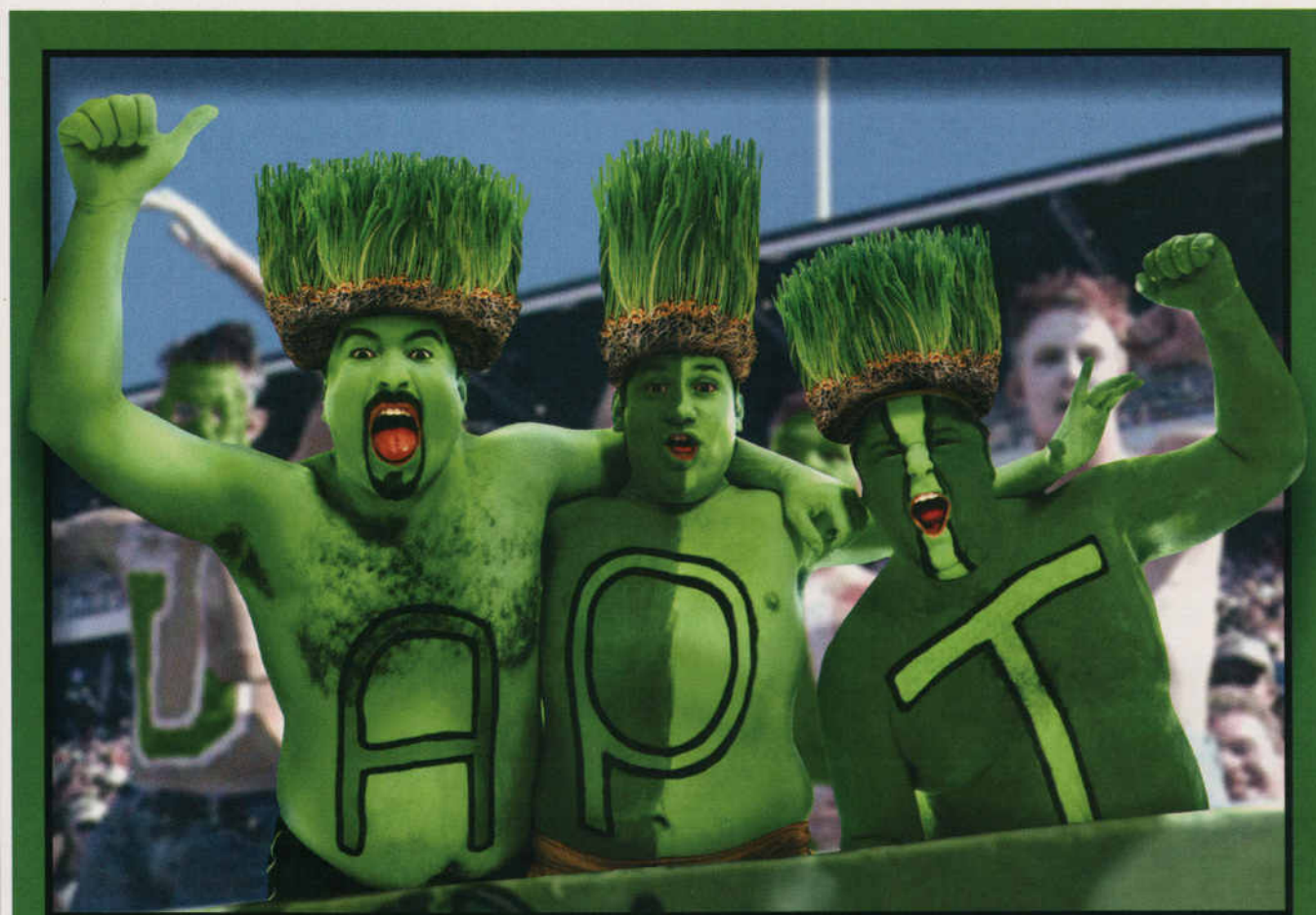
Turfgrass variety selection

Whether it is bermudagrass for a warm-season field or Kentucky bluegrass for a cool-season field, varietal differences for each turfgrass species are great in terms of vigor and aesthetics. Therefore, overall performance will in part be dependent upon the variety(s) chosen.

When it comes to selecting the best turfgrass varieties, you want to choose an aggressive growing variety and an aesthetically pleasing variety. It is best to have an aggressively growing turfgrass because they provide the greatest recuperative potential from damage caused by wear. Typically, turfgrass varieties that grow aggressively will be more prone to producing a thatch layer if they grow by rhizomes and/or stolons. While a more thatch-producing variety may not be desirable for a home lawn situation, for an athletic-field, this characteristic offers increased benefits, such as reducing surface hardness, and increasing shear strength. The National Turfgrass Evaluation Program (ntep.org) is an excellent resource to compare

differences between turfgrass varieties.

Even when cool-season turfgrasses are used for overseeding warm-season fields, species and varietal selection is important. Although cheaper and faster to establish, annual ryegrass, as an overseeding species, is inferior to perennial ryegrass. This was demonstrated in an overseeding study done at the University of Tennessee football practice fields last fall. The study compared perennial ryegrass



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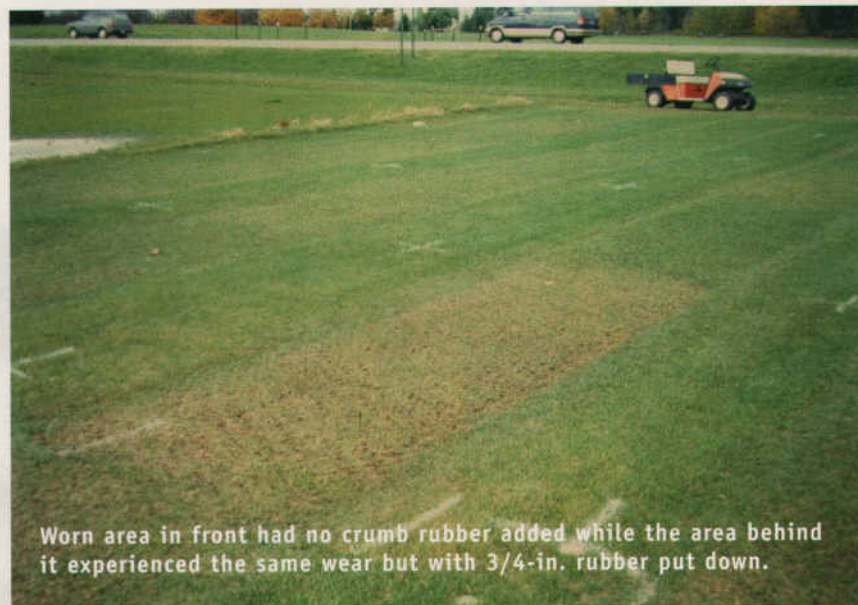
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varieties and annual ryegrass for density, color, and wear tolerance. Results determined that all perennial ryegrass varieties had greater turfgrass density, color, wear tolerance than the annual ryegrass species investigated. Thus, perennial ryegrass is used as an annual turfgrass for overseeding warm-season fields. Differences in turfgrass density, color, and wear tolerance also occurred between the perennial ryegrass varieties compared. "Hawkeye" perennial ryegrass was the best variety in terms of density and color when overseeded into dormant bermudagrass and subjected to actual collegiate football practice wear conditions.

By topdressing crumb rubber and choosing the appropriate species and variety, you will prolong the wear tolerance of the turfgrass stand and improve the playability of the field for a longer period of time. Pending on your turfgrass selection and other management practices, re-establishment will be minimal in terms of cost over the long period.

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Worn area in front had no crumb rubber added while the area behind it experienced the same wear but with 3/4-in. rubber put down.



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