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Tips on maintaining infill synthetic turf

For the better part of the past 15 years, the sports turf landscape has been swamped with filament style, infilled synthetic fields. Although there is no doubt they are a vast improvement over the original Astroturf, they have still sparked debates of all kinds within the groundskeeping community.

Synthetic fields have gotten better and better over the years with millions of research dollars going into finding ways to make them look and play more like real grass, and dramatically improved construction methods are a far cry from the early days when it seemed like every field was installed by a road builder who thought he could grade for an athletic field.

While there is no doubt that synthetic turf has a place in the industry, no self-respecting groundskeeper wants one as his prized game field. After all, we are in this business to grow grass and to make it lush, green, and beautiful, not to groom plastic. Still, we have evolved enough to recognize that having a synthetic field or two for a Division I or professional football team for two-a-day practices, etc., can be a savior for turf managers fighting the daily battle against the damage the ever larger players

can do to field in a short period of time.

In fact an actual game seems like a walk in the park compared to practice because the number of players on the field at any given time is limited to 22 and the play is, for the most part, spread all over the field, without the dreaded repetition of drill after drill in the same location. The same is true for all the overused high school and community fields with no realistic budget or proper level of manpower to manage them correctly.

MAINTENANCE FREE MYTH

As turf managers, we have learned a tremendous amount about these infill synthetic fields over the years and the equipment available to maintain them has grown by leaps and bounds, largely driven by a market need that now makes it profitable to manufacture this equipment.

We have learned it is a myth to believe these fields do not require any maintenance. In fact they are anything but, and some calculations have shown that factoring in the cost of the initial installation, plus the investment in specific equipment for their maintenance, and the inevitable replacement of the field 8-10 years down the road, means there may be very little, or even no savings at all over that time. The issues with these fields are well documented; some have been improved, some are curable, and some simply cannot be cured. Dr. Andy McNitt at Penn State has been conducting a very extensive study for 10 years addressing every conceivable aspect of the surfaces and using natural grass fields as a sort of benchmark for how they stack up, can be changed, improved, and maintained to minimize some of the less desirable issues that they pose.

Some of the early problems that were not anticipated involve compaction of the infill to levels that rival the hardness of Astroturf and cause leg fatigue and concussions, extreme heat on the surface caused by the black rubber infill and underlayment, silica sand dust from the sand infill that has been linked to silicosis, and bacteria that grows on the largely sterile surfaces. The results of some of these studies have given rise to solutions to some of these problems; some have proven to be less of an issue than originally thought, but some have proved they cannot be overcome with any reasonable activity. Altogether however, this is

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where the no-maintenance theory has been dispelled, and in fact proven that to have a quality field; it is actually rather maintenance intensive.

One of the issues that has been shown cannot really be overcome though any conventional means is the heat or temperature issue. These fields have been measured with infrared thermometers in the south, in the summer, just when most football teams are headed to summer camp, at temperatures of up to 160 degrees Fahrenheit on the surface. The bottom of athletes shoes have measured as high as 125 degrees. This has caused a shift in the way these fields are used to confine practices to times of the day when the sun is not as intense and the field temperatures are lower. For two-a-days, 7 am and 7 pm are the preferred practice times.

It was originally thought that the application of water to the fields would lower the temperature, although no one had provided for a way to do this since it seemed unnecessary at first. Water cannons were brought in to run down the middle of the fields as if growing in a natural grass field. This was not the best solution however, as it typically takes a cannon 2 hours to travel the length of a football or soccer field. Nevertheless, at first this seemed as though it may be a viable exercise. Initial application of water to a hot synthetic field showed a drop in surface temperature of sometimes 50 degrees or more. This seemed promising, however it was soon discovered that this drop in temperature was very short lived and often lasted no more than 15 minutes. On top of that, it added an element of humidity in some cases, right at the level the athletes were working, that some reported to make the situation even worse.

There are some very positive effects to having water available for a synthetic field that were initially overlooked however. In the summer of 2002, Southern Methodist University in Dallas decided to replace its bermudagrass game field with a synthetic field to accommodate the football team being able to practice in the stadium every day. As head groundskeeper I saw an opportunity to take advantage of an irrigation system that was already in place.

We left the system under the field (it was already a 100% sand-based rootzone and that was also left intact in the event we would ever

want to go back to natural grass), and only removed the heads, capped the swing joints and turned them down in the sand, removing the valves and altering the plumbing slightly to insure there could be no water under the field. We then took the perimeter lines and moved them out to the edge of the rubberized warning track, change the heads from sports field heads to golf course heads so that nearly 100% of the field could be reached with just a perimeter system.

The reason this was important, and I'm so glad we had the foresight to do it, was because I knew what was on my field after every practice, game, or for that matter, any event. Think about some of the substances that are deposited on a field during a contest (substances that I would typically wash out with post game irrigation anyway, although the primary importance of that was to begin the healing process for the natural grass as quickly as possible). You have blood, vomit, sweat, spit, potentially other bodily fluids (believe me, I've seen it, even in a packed stadium), and of course the obligatory 10-20 gallons of sugar-filled Gatorade or other sports drink dumped directly on the field by the trainers after every game as they packed up to leave the field.

Now think about all the available living microbes in a natural grass field that would typically render all of this a non-issue. Not so on a sterile synthetic surface, so as soon as the field was clear, the equipment removed, and the bench tarps rolled up, on would go the irrigation to begin the flushing and cleaning process. I believe this to be one of the biggest tools we had available to us in maintaining that field and in keeping what is now an 8-year-old field still looking like one of the best synthetic fields in the country.

There were other benefits to being able to apply water that we found advantageous. Many groundskeepers with sand-based rootzones, particularly with Bermuda, have seen that a wet field actually plays better than a dry field, even in a light rain. This is because the rootzone is firmer and allows for better footing. As long as there is no soil which gets slippery when it is wet, this is a proven improvement. The same is true for a synthetic field. Some moisture in the field gives the players better footing, and cuts down the sand and rubber flying that we see on very dry fields.

This is no small issue to the players who have to deal with these substances in their eyes and noses and can be a bigger problem than is often publicized. It will also cut down on the displacement of the infill, especially at the line of scrimmage where the most aggressive footwork takes place, and it cuts down on static electricity, whether you use a fabric softener or not. This helps with the static attachment of the rubber particles to helmets, but has become an even more significant benefit as more and more players have gone to clear plastic face shields. If you watch closely, you will routinely see these particles attached to all parts of the uniform, but especially the plastic parts like the helmets and shields.

A good soaking of the field during the early morning on game day, or even the night before, will allow you to realize these benefits during the game, and with any required painting complete and the game set up not yet in place, the timing works out perfectly. Only in very hot climates and in the early part of the season, when it is typically warmer everywhere may the moisture not last for the entire game, but it will last a long time and is always worth the effort.

It is important to remember that very little of this can be accomplished without an in-ground system just like you would use for a natural grass field and although it is not recommended to place live irrigation lines directly under the playing surface (it can be done however) because of the obvious repair nightmares should something go wrong, and it can (synthetic grass cannot simply be removed and replaced like natural grass), perimeter irrigation is a fantastic tool that very few groundskeepers think about.

You should demand it if you have to make a change, or build a new field, and field designers should recommend it when designing a field. Its cost is minimal in the grand scheme of the project and it pays untold dividends that are rarely considered, even if cooling the surface is not one of them. There are ever emerging, new technologies, albeit expensive, that will one day address that issue for sure. ■

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