Q&A with Dr. Grady Miller

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Even new fields can need core aeration

So, it seems the sod that was recently installed on our manufactured sand-based profile has a fine-textured soil. It is being tested. What can we expect and/or what should we do?
— Greensboro, NC

So this message arrived in my inbox and a few days later I had a chance to visit the site. The general use soccer/practice field seemed to have been well constructed by an outside contractor. It was built with a good sand profile, modest crown, in-ground irrigation, and good-looking (installed within the week) bermudagrass sod. The staff onsite had seen some puddling following an afternoon shower and started considering if the soil that came with the sod may be the cause.

I pulled up a few sod pieces and removed some chunks of soil. Using the feel method, I could make a continuous ribbon when pressed between my thumb and fingers. I proclaimed to those watching that the "composition included a fair amount of clay and silt." If only I had paid closer attention when I took soils, perhaps I could have made a more educated classification. I was told the contractor had taken some samples for an independent laboratory analysis but not knowing when they would get the results, we collected some for North Carolina State to analyze. It never hurts to get a second evaluation.

A couple of days later the results from the laboratory analysis requested by the contractor were sent to me (the second set are not expected for another week). The test came back indicating the sod's soil had 23% silt and 4% clay. Considering the sand size separation the soil was classified as a fine sandy loam. So while it sounds like a pretty good soil, the infiltration rate was tested to be 0.02 inches per hour. I do not know any turf manager that would want that low an infiltration rate. In contrast the rootzone had an infiltration rate of nearly 12 inches per hour.

The standards provided by ASTM indicates that the ratio of the rootzone to sandy loam soil to be compatible though not ideal. It is not very common to purchase sod grown in a native soil that would have a composition similar to USGA sands. Despite the fine-sized particles found in this sample, the soil is probably among the better soils for growing crops or turfgrasses in North Carolina. I am sure many high quality athletic fields have been built out of similar soils.

Of course the outcome of every field construction project could range from failure to success depending on how it is managed and used after the contractor turns it over to the management team. I am confident this field will get great care because everyone from coaches to field staff wants the best. Plus the conditions of other fields at this location suggest they have the management capacity to provide a high quality product.

This field will require some extra attention early in its life. As soon as the field's sod is sufficiently rooted, they need to start core cultivation. Since they have the newly installed sand profile they really do not need to go very deep. In this situation, the purpose of core cultivation is not to alleviation compaction. It is to get rid of as much of the finer-textured soil as possible and to open channels down into the sand profile. The field staff should use 0.75-inch tines to core out that fine soil and then pick up the cores. Afterwards the field should be topdressed with the same sized sand material used to build the sand-based rootzone. This is the best and fastest way to alleviate layering and keeping the surface open for water infiltration.

I would suggest trying monthly aerification with large tines. As long as the grass is growing over the aerification holes and the level of use is not resulting in additional damage, then aerify. To replace the fine-textured soil will take numerous aerifications. This is because core aerification influences a relatively small portion of the surface area. Using three quarter inch tines on 5 inch by 5 inch spacing only displaces 1.8% of the surface area. So it would take eleven core cultivations to impact 20% of the surface area.

With careful management there is no reason why this field cannot have a championship-level of quality. It will just take more aggressive management during the first few years to ensure this quality. Unfortunately this will increase management and material costs. In a perfect scenario a sand-based sod would have been used so there would have been far less frequent core aerification needed this first couple of years and the cores would not need to be removed. They could have been re-incorporated into the surface as part of the topdressing process. So, unfortunately even new fields can need core cultivation. ■

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