Q&A

Good Idea for Bad Soil

by Dr. Dave Minner

Have questions? Send them to Dave at: ISU, Hort. Dept., Ames, IA 50011.

We just built a sand-based soccer field and it was sodded with local sod that contains a heavier soil than the field. The field drains well, but the surface remains too soggy when we have games within a day or two of rain. We aerified and topdressed for the first time at the end of the fall soccer season. What can we do to prevent this soggy surface on our new sand-based field?

When you spend the money to build a rapid-draining, sand-based field, you certainly don't expect to deal with drainage problems, especially in the first year.

Many of the sand-based systems use a USGA-type sand. It's then recommended to choose a sod with the same sand particle size. It's very unlikely that you will find a sod grown on soils that meet the USGA criteria for particle size (approximately 92% sand).

In fact, I have topdressed sod with a USGA-type sand and then harvested it from the sod field to place it on a USGA-type sand-based field. From an agronomic view, this works quite well. Roots establish without any layering, and rapid drainage through the sod layer prevents any soggy conditions of the sod.

However, these sands often have a medium to low coefficient of uniformity (CU = 1.8 to 2.4), and surface stability is lacking. In most cases, you end up using the sandiest sod you can find within a 100-mile radius of your sports field.

Try to locate a sod that has 70% to 85% sand, and a silt to clay ratio of less than 2:1. Sod with less than 60% sand often holds too much water near the surface, and this can result in a soggy surface. Sod with 70% to 85% sand will have more surface stability, and it will absorb water very quickly.

Core aerification and sand topdressing will be the most effective means of reducing soggy surface conditions caused by laying a heavy soil sod over a sand-based root zone. Coring and topdressing with sand will bury the original soil layer that was attached to the sod.

It's important to develop a management strategy that removes the heavy soil layer from the field. As a target, you should try to remove at least 25% of the sod/soil layer during the first two years after the sod is laid. hollow coring and removing the cores from the field before topdressing will accomplish this task.

Since your goal is to mine out the sod layer, it will only be necessary to cut a shallow core. Remove cores that contain the heavy sod layer. This is easier said than done, because there is not any really good equipment for collecting cores on grass that is mowed at a two-inch cutting height.

In fact, I challenge the equipment industry to develop a good core aerifier attachment that removes cores from athletic fields. Sweepers can be used, but they tend to break up the cores and redistribute the bad soil back to the field. Even on native-soil fields, there is great need to be able to remove cores so that topdressing can quickly build up a sand layer.

Figure 1 gives you an idea of how much coring you will need to do to remove a sod layer. My target on sand-based fields is to remove 25% of the sod layer within two years of sodding.

Start as soon as rooting is stable enough to allow coring that won't tear up the sod. Core as often as possible, but allow sufficient recovery time before games. Heavy coring will temporarily reduce surface stability, especially coring on two-inch centers.

If you remove cores on three-inch centers, it will take nine passes to meet your goal of removing 25% of the sod layer in two years. This may be more coring than you're accustomed to, but it's necessary to avoid a soggy surface when heavier sod is laid over a sand-based field.

You can also use the table to determine how much core removal is necessary to mine out 50% of a native-soil field and replace it with good topdressing sand. ❑

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Figure 1. Amount of coring required to remove various amounts of soil or sod from a sports field. Calculations are based on 0.5-inch diameter tines and 100% efficiency on successive passes over the field.

Core spacing inches	*Number of holes / sq.ft.*	*Area removed with each coring %*	*50% removed*	*25% removed*	*10% removed*
			Number of passes over field		
2	36	12	8	4	2
3	16	6	18	9	4
4	9	3	32	16	6
5	6	2	50	25	10
6	4	1	72	36	15