

Q&A

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Thin soil layer

When our central Florida school district built a new high school, we also constructed several new athletic fields. Since it was getting late in the summer and they were way behind schedule, the contractor pretty much just leveled the ground, put a thin layer of sandy soil over a clay/crushed rock surface and then sodded the field with a hybrid bermudagrass. At the time, this seemed to be the only solution since the field was needed for fall sports. As a grounds supervisor, I have responsibility for all fields maintenance. Six weeks after sodding, the field is in use. I have already experienced a few drainage problems, but was curious what other problems I should anticipate with this field.

When a new school is built more often than not the sports fields are the last item to be constructed. This is not always a bad thing. I once saw a newly built football field serve as an equipment parking lot for the building construction contractors. Ideally, the field would be constructed to the best specifications allowed by the budget, it would be surrounded by a good sturdy fence, and the new grass would have time to mature before it is used for competitive sports.

From the scenario you described several potential problems come to mind. A shallow soil over a dissimilar surface is certainly going to cause water management problems. As you have already experienced, with heavy rainfall the water penetrates the thin sandy layer and then stops when it hits the heavier soil. Some of the water will start to penetrate this clay/crushed rock layer, but percolation will be very slow. Additionally, some water may begin to move laterally if there is a slope in this subsurface layer. The thin soil layer will quickly become saturated and may cause widespread standing water on the field's surface.

Drain clogging

It may seem like a good idea to start trenching and putting in subsurface drainage to remove excess water, but this may actually cause some additional problems. If the drains are put into the clay/crushed rock layer without surrounding the trench and drainage pipe with a

coarse sand or gravel, the drains may quickly clog with the clay. And without some slope, you will need to put the drains pretty close together since the water will have to move on top of this semi-impervious layer to reach the drainage pipes.

You might end up causing the thin soil layer to be excessively dry without regular rainfall or supplemental irrigation, which will be worsened by the fact that the turf will most likely have a shallow rootzone due to the soil layering. If you only have a few "birdbath" areas, you may do better by just installing French drains (drilling through the clay/crushed gravel layer and backfilling with coarse sand) to allow the water to drain from those localized areas.

Regardless, I believe it will be a constant challenge to maintain uniform soil moisture. I would suggest that you test your irrigation system with catch cups to determine precipitation rate and uniformity. Irrigation management is going to be critical.

High pH problems

The next problem you should anticipate is directly related to the content of the clay/crushed rock layer. The presence of limestone (or limerock), which is typical in Florida soils, suggests a high soil pH that will contribute to micronutrient deficiencies, most likely manganese and iron, and possibly phosphorus. Symptoms include a general yellowing of the turf; this yellowing is typically patchy and is often more noticeable near irrigation heads.

The easiest way to combat this is to use acidifying fertilizers such as ammonium sulfate and to a lesser extent, ammonium nitrate. Elemental sulfur (S) can also be used, but it is a little more tricky to use on

mature turf (versus bare soil). Also, do not forget applications of the micronutrients to combat their reduced availability. Use a soil test and your experience as a guide to how much and when to apply.

My suggestion is do everything you can to maintain a healthy root system. Careful water and nutrient management is going to be a necessity to keep the turf looking healthy. Try to get on an aggressive core aeration and topdressing program to build up the top layer and increase your drainage potential. Given time, and careful management, you can still end up with a great field.

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Have Questions?

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