



▲ **HERE'S THE SAME FIELD 4 YEARS LATER** at the end of a season after hosting 70 events, and after reconstruction and yearly renovation.

No more muddy football fields

JUST AS TECHNOLOGY to produce better synthetic turf football fields improved over the past decade, so has the technology for real turf football fields. The ideas presented here for football fields can be used for other fields that have trouble keeping a thick stand of grass like

soccer, lacrosse, field hockey, and rugby fields. This article includes the most recent recommendations for grass football fields (grown on native soil) to keep fields thriving. We will explore the latest technology in football field construction, reconstruction, and renovation that makes this possible. The recommenda-

Sound maintenance practices are a must including: soil testing, fertilization, mowing, irrigation, aeration, seeding (if necessary), and pest control (weeds, insects, and disease).

tions for keeping fields thriving in wet climates also work for fields in dry climates. Soil structure and pore space are the key elements.

Here are some particulars to consider for real turf football fields that host up to 70 events per year. In the north, Kentucky bluegrass fields should have a yearly rest period of one full growing season in the spring. For football fields in the south, bermudagrass fields can be overseeded in the fall for winter and spring sports with a rest period in the summer. Sound maintenance practices are a must including: soil testing, fertilization, mowing, irrigation, aeration, seeding (if necessary), and pest control (weeds, insects, and disease). Commit to a yearly renovation program and replace the sod every 10 years. Most facilities that have real turf football fields should be able to afford these easy to follow, full-proof methods. (See ESTIMATED BUDGET at the end of this article.)

CONSTRUCTION AND RECONSTRUCTION

For an existing field, remove the grass, treat the soil, grade, and sod. If the budget allows, install irrigation and subsurface drainage before sodding. For a new field, start with treating the soil.

Existing Grass Removal. The easiest and least expensive way to re-



Photo 1



Photo 2



Photo 4



Photo 5



Photo 6



Photo 7



Photo 9



Photo 10

move the grass is to plow the existing grass under just as a farmer would plow the field to plant a new crop. Allow 3-4 weeks for the sod to decompose. (See photo 1)

Soil Treatment. An additional benefit to plowing is the compacted top layer of soil ends up on the bottom and the loose soil from the bottom ends up on top. This creates better soil structure with more pore space for improved drainage and rooting. Continue to treat the soil by disking, lightly tilling, and pulverizing (see photos 2 and 4).

Positive Surface Drainage. Perform a

topographic survey to determine the existing grade including consistency and percentage of slope. Then develop a proposed grade plan to correct any inconsistencies remembering that grass football fields need at least 1% slope to remain playable in wet conditions.

Grade the field according to the proposed grade plan using equipment with turf tires or tracks to minimize compaction (see photo 5).

Optional Pop-up Irrigation System. All of the irrigation water lines must be in-

stalled in trenches that are a minimum of 18" deep if a subsurface drainage system is going to be installed. This depth allows the drainage system to be installed 12" deep over the top of the irrigation lines (see photo 6).

Optional Subsurface Drainage System.

The pipe for the drainage system must be installed in trenches that are a maximum of 4" wide by 12" deep. Use 1" by 6" cloth rapped vertical drains or 2" perforated corrugated pipe. Backfill the trenches to the surface with coarse to very coarse sand with

less than 5% passing the 100 sieve screen (see photo 7).

Big-Roll Sod. Look for sod that is mature (1 to 1-1/2 years old) and grown on soil that is similar to the native soil of the field. If it's available (and especially if the drainage system described above is installed), use sod with sandy soil. If it's not available at this time, use native soil sod. Aerating and topdressing with sand will begin next year and provide better rooting and better drainage.

Before the sod is installed, apply starter fertilizer recommended by soil test results and go over the surface with a finishing tractor attachment like a power rake. This attachment removes small debris and provides a flat, smooth surface to prepare the soil for sod.

Then install the big-roll sod using Kentucky bluegrass in the north and bermudagrass in the south (see photo 9).

YEARLY RENOVATION

Create a 3 to 4 inch sand-cap over a 10-year period with this yearly renovation program starting the year after the sod is installed. The sand layer will allow surface water to drain quickly into the underdrains (if installed). The field will get better each year.

Aerate and topdress with 3/8" of the sand that was recommended for the sub-surface drainage trenches. You will need about 75 tons to topdress the field (goal post to goal post and sideline to sideline including the bench areas). This process should be done every spring between April and May for cool season grasses and between May and June for warm season grasses. The results are better rooting, thicker turf that will hold up to more events, and improved drainage. Use a solid-tine vibrating aerator unless you can remove the cores that a hollow-tine core aerator leaves behind. Mixing the topsoil cores with the coarse sand will contaminate the sand and prevent drainage (see Photo 10).

Don't worry about creating a perched water table that will prohibit drainage by topdressing with a different material than already exists on the field. In fact, the opposite is true; placing coarse material over fine material allows water to

drain freely through the coarse material and into the fine textured soil below and eventually into the underdrains (if installed). A perched water table is created by placing fine material over coarse material preventing water from draining through the fine material until it reaches almost 100% capacity. USGA putting greens and high profile sports fields are built using a perched water table with the intent of keeping the sand moist.

After 10 years of when the sod was installed, replace the sod as you would the carpet on an artificial turf field. Let's face it, nothing lasts forever.

This time you won't be able to use a plow to remove the grass. Use a big-roll sod cutter or other conventional machine to physically remove the sod and the thatch layer to dispose of off-site.

Remove some of the sand at this time leaving about 1-1/2" to 2" of the sand below. This will allow for yearly topdressing with sand for the next 10 years.

Install sod that is grown on a coarse sand soil or washed sand to prevent a perched water table (placing fine over coarse texture).

Beginning in the spring of the following year, start topdressing with about 1/4" of sand yearly (50 tons of sand). That will bring the sand layer back to 4" before it's time to replace the sod again. Then start all over by removing the sod and 2" of sand and so on and so forth.

ESTIMATED BUDGET

Initial reconstruction cost to remove the grass, grade, and sod: \$60,000

Optional: full field irrigation \$32,500

Optional: subsurface drainage installed on 20 ft centers. \$32,500

Yearly renovation: \$8,000

After ten years replace the sod: \$60,000

The total for a 10 year commitment program: \$124,000 (excluding irrigation and drainage). ■

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