

- The correction options available such as different cultural practices, planting resistant varieties, nonchemical or chemical pesticides, and the resources available.

- The perception of the problem (from a public relations standpoint) and who it concerns.

- The objectives of the property owner in relation to financial risks, liability, safety, health hazards and community values.

A number of tools are available to assist the sports field manager in determining thresholds for their fields. The "STMA Field Safety Checklist" is helpful for establishing safety thresholds. Just recently, the STMA has made available the "STMA PCI Pilot" as a tool for STMA member sports turf managers to use in assessing the current playing conditions of an athletic field at a given point in time. Both of these tools are available free to STMA members and can be found on www.stma.org. The "Field Wear Index," developed by David Schlotthauer and featured in the February 2008 issue of this magazine, is another useful guide for establishing thresholds based on traffic and wear, and suggests when to perform aeration, renovation and other tasks.

Once the standards, thresholds and treatment options have been set, continue to regularly monitor all of the problems and conditions on the site. After a treatment, schedule a follow up inspection. Develop a checklist and keep records so that the effectiveness of the program can be measured. Use this information to assess the effectiveness of the turf program and find ways to improve it for next year. After several seasons of recording and evaluating, a long-term trend toward better turf quality and low pest populations should be noticeable. Remember that these standards become a living document, which means that it can be amended regularly for maximum effectiveness. ■

Don Savard, CSFM, CGM, is athletic facility/grounds manager for Salesianum School, Wilmington, DE.

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Turf management strategies for large complexes



THE LOUIE POMPEI SPORTS PARK in Glendora, CA is a community sports park that hosts football, softball, soccer and numerous community events. The high percentage of foot traffic the turfgrass and soil are exposed to create a challenge for George Munoz and myself, our management team. The following are some considerations that must be met for our turfgrass:

- The turf must be green and attractive to the eye.
- It must be safe to play on with no clumps or uneven terrain on the playing surfaces.
- We must implement integrated pest management strategies.
- No standing water on any of the fields; we constantly strive for good drainage.
- An efficient use of water; we must be water wise in our irrigation management practices.

A sports turf manager strives for the concept “green is good.” Finding the correct diet for our turf is challenging. It would not be a prudent management decision to use strictly nitrogen as the sole source of a fertilizer on the sports turf.

Before we began to apply any fertilizers to the fields, we conducted a soil analysis. With the information that we now have regarding our soil, we can implement the proper turf and soil fertilizer diet. We use a slow release fertilizer exclusively, which provides a controlled feeding for 10 weeks. Advantages of this approach include:

- Slow release fertilizers provide a sustained color to the turf without sacrificing root growth at the expense of the leaf.
- Particle size of the slow release fertilizer is important; the slow release fertilizer that we use is uniform in particle size, so the application of the product is uniform on the turf. Applying a slow release nitrogen fertilizer to the turf decreases the potential for tissue burn from the application.

We mow our TifSport hybrid bermudagrass twice weekly at 1.5 inches with a Toro Reelmaster throughout the year. At this height we are able to provide the players with a safe cushion during practices and games.

All 7 acres of turf are aerated monthly, based on our windows of opportunity and inconvenience to the players; we aerate with either solid steel tines or hollow tines. When we are planning to topdress we will switch to hollow tines. Hollow tines will remove a section of soil and that exposed soil channel can now be filled with sand or organic matter. The solid steel tines simply push the soil to one side, do not pull a section of soil up, and so we don't have to remove cores.

To keep the turf attractive in cooler temperatures, we overseed with Grand Slam perennial ryegrass. Its seed germinates in 5-7 days, it is not clumpy, and has a nice dark, green color. Grand Slam has a low incidence of disease, though it does get rust but we manage that through a fertilization diet.

Windows of opportunity

Managing the windows of opportunity is extremely important for us. For example, we begin our overseeding schedule in late June or early July. The existing soil temperatures are warm and there's plenty of sunlight. Football practice at the sports park does not begin until August so the Grand Slam seed is fully developed by the time football starts. The seeding rate that we implement is 10 pounds of seed to 1,000 square feet of turf. In conjunction to applying the seed we also apply a starter fertilizer, such as 6-24-24 (follow the label rate for seeding purposes). We apply the perennial ryegrass seed a minimum of three times before our window of opportunity closes. The final reseeding is usually done in mid-November.

We use IPM strategies to assist with weed control. We manage crabgrass two ways: first, in the early spring we will treat our 7 acres with pre-emergent herbicide pendamethalin (Pre-M). This allows us flexibility for duration of control; in our case, 6-8 weeks. Secondly, we aerify. To effectively manage crabgrass in a sports turf, you must manage compaction because crabgrass thrives in soils that lack oxygen. This means you also have to manage the percentage of water that

the turf receives since soil that is allowed to become saturated has a good chance of becoming anaerobic. Soil that does not drain effectively will become a habitat for crabgrass.



Help needed

Having adequate labor to manage your turf is the single greatest limiting factor. In addition to the sports turf we also have hardscape and numerous planters that require attention. In order for us to be successful with our turf management program, we have introduced drip irrigation to all of the planters throughout the park. By regulating the percentage of water in selected landscape zones we have been successful in reducing our labor time in these areas. Consequently, we can now spend more time managing the sports turf.

The entire sports park is run on a Rain Bird Maxicom irrigation system. Its efficiency allows us to grow healthy plants without introducing a weed problem in the planters. Hand weeding is not an efficient labor management strategy!

As with most municipalities we must watch the bottom line. Fortunately, by being proactive with our best management practices throughout the park we are capable of producing a very competitive stand of sports for the community to play on. ■

Mike Ventura is landscape maintenance supervisor for the City of Glendora, mventura.ci.glendora.ca.us.



John Mascaró's Photo Quiz

» Answer: from page 17

This is a new method for topdressing that has not quite caught on nationally...April fool! Actually, the sand being deposited and spread out on this stadium field is in preparation for a 3-day AVP Pro Beach Volleyball tournament at the University of Colorado's Folsom Field during the July 4, 2008 holiday. The event featured Olympic Gold medalists Misty May-Traenor and Kerri Walsh. First, railroad ties were used to outline the five regulation sized sand volleyball courts that were strategically located directly on top of the stadium turf. Next, 25 ton semi trailer end dump trucks drove directly onto the field and deposited the sand into the court areas where

massive front end loaders (like the ones pictured on page 17) spread it out. After the event, stages, stands, plywood and railroad ties were removed and then the sand was removed with front end loaders. Next, 4 inches of the field was excavated using a Koro TopMaker, then 2 inches of USGA sand was brought back in, tilled and then laser-graded. Irrigation heads were then re-installed before the laying of big roll sod. This process finished on July 16 which was 51 days before the first home football game.

Photo submitted by Jason E. DePaape CSFM, Athletic Field Manager, University of Colorado at Boulder.

If you would like to submit a photograph for John Mascaró's Photo Quiz please send it to John Mascaró, 1471 Capital Circle NW, Ste # 13, Tallahassee, FL 32303 or email to john@turf-tec.com. If your photograph is selected, you will receive full credit. All photos submitted will become property of SportsTurf magazine and the Sports Turf Managers Association.

Better seeding and sodding results

Editor's note: We asked two seed companies and two sod farming companies to share their thoughts on how to get the best results when using their products. Our thanks to Christiaan Arends, Barenbrug USA; John Marman, West Coast Turf; Marty Thiel, Graff's Turf Farms; and Russ Nicholson, Pennington Seed.

Successful overseeding

Annual ryegrass (left) and new dwarf varieties (right). Photo courtesy of Barenbrug USA.

THERE ARE A NUMBER of different methods to overseed your sports field. Whether you choose to use a seeder or simply hand spreading over bare spots, the overseeding practice is critical to your success. And while overseeding has traditionally been an off-season occurrence, newer varieties make overseeding during the season a great way to maintain the playability and aesthetics of your field throughout the year.

Overseeding during the season can be a tremendous challenge. With constant field use and less than optimum growing conditions, germination and establishment are often inhibited. So, very often, overseeding during the season is abandoned. But this is a potentially wasted opportunity. With the development of very quick germinating turf-type annual ryegrasses varieties you can be mowing within a few days and have your field looking good for the next event.

During the season you do have one advantage when seeding—you have built in slit-seeders. If you seed just before a game the players are able to walk the seed into the soil. This places the seed exactly where you want it, in good contact with the topsoil. There are a number of sports turf mangers that use this method and are able to mow within a week of seeding, including Tony Leonard of the Philadelphia Eagles. He has seen tremendous results using this method and is able to improve the aesthetics and playability of his field within a week.

A key to the “in-season” overseeding method is selecting the correct varieties that germinate very quickly and at colder temperatures. Recently true turf-type annual ryegrasses have been introduced to the sports turf market. They have very high turf quality and good wear tolerance. A major advantage of the turf-type annu-

al ryegrasses are that they germinate quicker than perennial ryegrasses (yes, it is possible) and they germinate at lower temperatures. So for overseeding in early spring or late fall, you will see faster results using annual ryegrass.

While the annuals offer several short-term advantages, they are not intended as a long-term solution. As is their nature, annual ryegrasses will disappear after a few months, but even a short term grass on the field is better than the alternative. This method combined with your current off-season practices will provide a year round playing surface that will not only look good, but be safe.

Fast-germinating Kentucky bluegrasses

It is well known that traditional Kentucky bluegrass varieties have very slow germination rates. Varieties such as Midnight look beautiful, but are slow to establish and often outcompeted by other species in the mix. Because of the competition you may never get to appreciate their aesthetics or the inherent benefit of the bluegrass species, extreme wear tolerance. Kentucky bluegrass is seeded in hopes that the few plants that do take hold will spread, but often the plants are stressed to the point where this multiplication will not take place.

Recently a tremendous amount of research has been undertaken to increase the germination and establishment rate of Kentucky bluegrass. Currently released varieties can germinate in as little as 7 days, cutting the traditional time frame of 21 days significantly. In addition these varieties have been screened for wear tolerance making them an even better choice for sports turf applications. There has also been significant work done in the area of germination at lower temperatures. **-Christiaan Arends**



Better sodding results

Photo courtesy of West Coast Turf

Let's assume all construction irrigation and drainage is done properly.

Get several soil samples for a sieve analysis, sodium and nutrient testing. Find out what type of soil you have so it can determine what sod farms you should be talking to. Example: If you have a sandy field, look into finding a sod farm that grows your product of interest on a sandy profile. If you have high sodium you may consider planting paspalum sod. A soil sample is also very useful to determine the type of amendments and the rate of application of those amendments. Amendments are used most effectively when applied before tilling the soil or if you are importing soil they can also be blended in at the plant which is slightly more costly.

Visit your preferred sod farm and take a look at the material you will be receiving. Get an early look and make sure the soil will integrate well with your project. Some sod growers have several farms and may have the same variety of sod on different soils. They may grow on USGA sand or have the ability to wash the sod all to alleviate the possibility of having an interface problem created when the existing soil and the sod soil have different characteristics.

Make sure you select the proper turf variety, recognizing some varieties/cultivars may be better suited for specific field activities than others. Also, visit the farm a day or two before the delivery date to make sure you are getting what you requested and to get a last look at the sod condition.

Call your sod company and schedule an appointment with a sales representative. Go over ingress and egress. Let them know if you have neighbors harboring shotguns who are tired

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of semi-truck drivers asleep with the diesel engine running the air conditioner at 5 am on a 90 degree morning (it has happened!).

Consider laser grading the field after tilling. Get out to some of your STMA chapter-organized field days and get a chance to look at a laser leveling operation in process. You will be impressed with how close the grade is to perfection when it is complete. This will help drain surface areas if adequate drainage is/was not installed.

Close the mainline valve the night before sodding. This should be standard practice the day before sodding (I can tell you from experience after showing up to a lake with 100,000 square feet of sod ready to go right in the middle of it). Simply turning off the irrigation controller doesn't cut it if a valve breaks in the wrong place.

Consider spending a few extra dollars and request that the sod be sprayed with a plant growth regulator (PGR) a week before shipping. This is effective in two ways. First, slowing down the respiration of the plant will permit less heating in the rolls. This will provide longer transport time particularly useful for sod shipped long distances. The second benefit is the fact that a PGR will generate more growth laterally closing seams while also enhancing rooting into the rootzone while effectively slowing top growth. This will act as a catalyst to generate more rooting before having to mow the turf too soon due to excessive top growth. This works especially well with cool season big roll sod in a warm season climate.

Make sure the irrigator handling the initial watering has both knowledge and control of the irrigation field controller. The irrigation tech must also continually hand water the sod as it goes down with a hose attached to a quick coupler or any other source, particularly on hot days. This specific hand watering will ensure that all sand and soil lying on top of the sod is properly washed off and not heating up and burning the turf below. Hand watering will also increase the effectiveness of finding hot spots that may need more water initially while keeping the water at only the necessary level on other areas where the irrigation system will adequately and uniformly distribute water.

Hopefully you have had an irrigation audit to increase irrigation efficiency; however, we do install sod on windy days and efficiency goes out the window with a slight breeze.

Fertility. We could go on and on about fertility, but there are sev-

eral important points to note. If you have a sand-based field you may lose a lot of nitrogen if applying too much before or even after sodding. You may or may not choose to use a pre-plant fertilizer depending on your soil profile. You should apply water soluble fertility through a fertigation system if you have one or use a spray rig after the sodding is complete and tacked down with roots. If you have questions regarding fertility, talk with your sod farm rep or your fertilizer rep about a grow-in and maintenance fertility program.

And finally—rolling. For many years I have listened to architects, university turfgrass professors, field managers, landscape contractors, sod farm salesmen on the subject of rolling. Here are my thoughts:

If you have a nice firm grade you will only have to roll if your sod installer uses equipment that leaves tracks. If you use turf tires or even a track layer you may be home free without having to roll. If you are sodding with thick-cut material due to a fast approaching event you will need to roll the sod because thick-cut sod will have air pockets that need to be compressed. If you are using a tractor without a side shifter and you are rolling over part of the sod, you may need to use a sod roller to compact all of the seams evenly.

Many high profile athletic facilities will use 1.5 ton rollers but they have different goals and a larger budget than say, a high school field. Professional field managers in some cases have so many other events they have the ability to re-sod annually. In that scenario they will often rip the field and till the soil, which will relieve compaction allowing for some rolling to be done once the field is installed.

A high school field will not have that luxury and each time the field is rolled you increase the rate of compaction. In some cases more harm than good is done when rolling a field with a heavy roller or an inexperienced operator. If you *must* roll, make sure the field has the proper moisture level and be sure to flag heads and valve boxes. Start firm and apply water if necessary.

If you consider all of these steps to sodding you should be in good shape. But remember that your final product is not all about the sod. At our sod farm we like to say that "your success is our success." A good majority is about all of the preparation that goes into the field before sodding and how you maintain the sod thereafter.

-John Marman

Prep for better bermudagrass establishment

Preparing a good seedbed is critical to establishment and can help prevent problems that are hard to correct later.

Planting dates for seeded bermudagrass vary based on climates. There is no one best date to plant, but rather planting windows. Seeded bermudagrass varieties are best planted in the spring when soil temperatures are consistently above 65 F (18 C) at a 4-inch depth. Optimum soil temperatures for bermudagrass growth and development are 75-85 F.

A soil test is the best means to assess the fertility needs and pH

of the soil. If a soil test is not obtained, it is generally advisable to apply a balanced fertilizer containing N, P, & K. Your local Extension Agent or fertilizer rep can provide recommendations for your area. A soil pH outside the optimum range of 6.0-7.5 should be adjusted to provide a more favorable growing environment. Elemental sulfur or gypsum can be added to lower soil pH, lime can be added to raise soil pH.

Use a non-selective herbicide just before planting to kill weeds or undesirable turf that may compete with the new seedlings. This

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is important for perennial warm season turf that may already exist on the site such as weedy off-type bermudagrass, zoysiagrass, bahiagrass, centipedegrass, kikuyugrass, etc. that is undesirable in the new turf or creeping perennial weeds such as nutsedge, nimblewill, etc.

In the Northern area of bermudagrass adaptation (USDA zones 6-8a) it is necessary to spray out perennial cool season grasses such as ryegrass, tall fescue, Kentucky bluegrass, etc. and perennial cool season weeds such as quackgrass, etc., that could compete with your bermudagrass. Make sure that any herbicides used do not have soil activity that could inhibit seed germination or cause injury to seedlings.

Apply starter fertilizer and soil amendments to the soil surface and incorporate using a disk, rototiller, or similar piece of equipment; put one-half in one direction and the other half perpendicular to the direction of the first pass. Work up the ground to a minimum depth of 6-8 inches but preferably 8-12 inches using a disk or rototiller. Disking and rototilling will bury weeds, organic matter, etc. and will provide a clean soil surface. It also will eliminate/reduce layering in the soil profile, and improve tilth and drainage of the soil. Incorporating fertilizer and amendments will provide a deeper, healthier rootzone for the young seedlings and established turf.

If you have a heavy clay soil or extremely sandy soil, the addition of organic matter may be done before rototilling/disking.

Organic matter will improve soil structure, allowing for better drainage in a heavy clay soil. In a sandy soil, organic matter will increase the water and nutrient holding capacity of the soil. It is often necessary to make 2-3 passes in different directions, or offsetting in the same direction to incorporate materials to the desired depth and break the soil clods to a small, desirable size.

Use a landplane, box scraper, blade or laser grading to achieve a final grade. Usually a 1-1.75% grade is sufficient for surface drainage.

Proper seedbed preparation is critical for the establishment of the turf, and short cuts should not be taken. Seedbed preparation is something that is only performed once for the life of the turf site, and by providing an optimum rootzone for the establishment and future growth of the turfgrass, many potential future headaches can be alleviated.

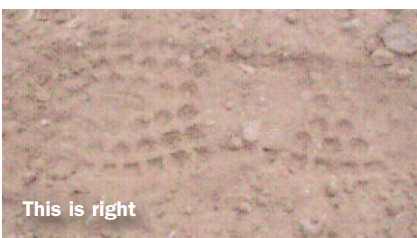
Drainage issues both sub-surface and surface should be addressed before you start. During seedbed preparation, you are providing the future rootzone for your established turf. Make sure that your turf will have a healthy 6-12 inch rootzone by eliminating providing proper soil pH and fertility.



Too soft



Too hard



This is right

Photos courtesy of Pennington Seed

soil layering and
-Russ Nicholson

Better sodding results Part II

There are many different situations that require sports turf managers to install new turf, and each one has different situations and timelines. They can range from the projects that are 2 years out that can be planned ahead of time down to "I need turf tomorrow so we can play on the field this coming weekend." Each project requires a different approach, although the steps are all equally important.

Starting with your general managers and ending with the person in charge of the final steps of the project, you must outline all of your expectations and goals from start to finish. You are the final say on every step of the project. If everyone knows your expectations going into the job, they will be better prepared and willing to go the extra mile to make your project a long-lasting success. It is important to review those expectations and goals regularly. Also, be willing to keep an open mind with outside ideas.

The process of selecting your turf means that you are going to be building a relationship with the sod grower that will last over the years, making repairs and re-sodding easier. This can be an educa-

tional time for both the producer and the sports turf manager.

Research is vital. Check out the farm's resume and follow up with previous customers to find out their history. Visit the farm you want to work with, examine the product, walk the fields, dig around, and observe the overall operation and get a feel for their standard of quality. If it is feasible, visit the farm periodically to inspect the product. It takes time to develop trust with your vendor. Don't assume anything. When you are visiting, don't be afraid to express your opinions and ask questions.

When you are satisfied with your choice of sod producer, you can begin choosing your turf. Start with the sand/soil selection. Check the analysis of the growing medium on your sports field and ask for soil samples from the farm to verify that they closely match. If the sand/soil selection is not what you want, decide if it is close enough to succeed. If a closer match is needed, start talking about importing the correct growing medium for growing the turf.

Once you have established the correct soil type, move on to the



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Photo courtesy of Graff's Turf Farms

varieties of grass. Find out what turf the farm grows and why. If these varieties work for you, you're all set. If not, decide if they will be close to what you require. Depending on your circumstances, you can decide if the turf variety offered will perform well in your field. If not, ask yourself if you have time for a custom grow. Custom grows are a great option and allow you to implement all of your ideas.

The next consideration is the depth of harvest. This is critical: Will you play tomorrow or in 3 months? What time of year is the turf going in? Who is playing on the field? All of these factors must be taken into account when deciding depth of harvest. Inform the farm of your mowing height and request that the sod comes in at or under what you prefer.

Just as important as the turf is the equipment used for harvest. Is the machinery in good condition? Can they see your job through with no delays?

The foundation of your playing surface must be perfect; there is no room for error. As with the turf producer, choose your contractor carefully. You will want a long-lasting relationship here as well. Throughout the process of the field preparation, watch every step of the operation to insure it will meet the specifications. The turf farmers and turf installers will thank you for your diligence on the final grade. The extra care shown here will visibly enhance the high-quality of the product you have chosen. If at any time during the project you have questions or concerns, stop and clarify.

As with the turf producer, check the history of the company doing the install. If you are not already, this is the time to become a perfectionist! Machinery is top on the list here. There are several options out there: track machines, wheeled machines, forklifts, or tractors.

For example, we use lightweight, truck-carried forklifts with four large floatation tires. These are exceptionally versatile machines that can unload trucks, move turf in and out of the field, and install turf. They leave very few imprints on the grade and are very nimble when turning on graded surfaces or freshly installed turf.

You and the installation crew must protect the final grade at every step of the job. It is difficult to fix the grade once the turf is laid. Walk the job as the installers are working, making sure the simple things are correct: seams tight, ends tucked and butted

squarely, and when there is patching to be done, the largest possible pieces are used.

As the turf is going down, start watering. Although the turf may appear fresh and healthy, it is stressed—after all, its lifeline was just severed. No matter what the weather is like (unless snow or rain), water! Designate one or two individuals to hand water as the turf goes down, and communicate with the installers. (Don't water them or their work space; they melt!)

The working relationship with the installers is crucial, for time and quality are very high on the priority list. Everyone must communicate throughout the day so the work at the jobsite flows smoothly. As with every step of the project, communicate your expectations of what you want done.

Everyone has different opinions on fertilizing turf: how much, the analysis, timing, dry or liquid, etc. There are many good options out there, so use what you are comfortable with. Start with soil and tissue samples and build your program from there. A critical issue here is the fact that when the turf was harvested, a bit of your roots and nutrients remained on the farm. Typically it requires 12 to 18 months to develop the root system; you have a very short window of opportunity to get them going again. An aggressive fertility program is needed to quickly establish a healthy and stable turf that is safe and playable. Continually monitor your root development using a soil profiler. This will keep you informed on progress and also if there are any problems developing with the grow-in.

Irrigation also plays a vital role in reestablishing your root system and maintaining the density of the turf grass. Before the turf goes down, check your watering system, and after the turf goes down, check your system again. Make sure the water is being applied evenly over the entire field. If it is not, you will notice a difference in the quality of the turf density and root establishment. Don't hesitate to pull back turf to check moisture throughout the turf and root zone.

New turf can stress on top even when the subsoil moisture is sufficient. (Usually this occurs in hot, windy conditions.) Beware of over-watering; allow the roots to develop. There is a fine line between not enough water and too much water so observe constantly.

To achieve the best results know your goal(s) and share them. Set up a program that will get you the desired results. **-Marty Thiel. ■**