With the current economic situation and with widening budget cuts, sports turf managers are being asked to do more with less. The challenge for me would be to put together an aggressive plan to address the many different unsafe conditions on the field then get the permission to use the limited funds that we have to do the needed applications and overseedings.

When I came to Norwood in August 2008 the fields had several large bare areas, mostly in the centers and goal areas. They were covered with a mixture of Tifway bermuda, perennial ryegrass, crabgrass, goose grass, nutsedge and *poa annua*. Because of the variety of grasses that were growing, it was causing differences in the color of the fields. There was always some grasses transitioning in and some out which brought the question of "How can we make it all one color green?" What I found with the existing program was that with the nitrogen applications the bermuda would green up but the unwanted grasses were still staying a few shades lighter. The nutsedge was even a few shades lighter than the poa. It was a constant challenge to keep the unwanted grasses from growing from the nitrogen, while trying to keep the bermudagrass as green as possible.

One challenge that I faced was trying to convince my superiors that we needed to put together an aggressive plan that would include one, and possibly two broad applications of an herbicide and at least one overseeding to address the many issues with the fields. They were completely against the idea at first because of the timing for an application of Revolver. It would take place around the same time as commencement for the school, and shortly before the start of summer camp; which host several sports related activities.

I was able to coordinate a meeting with them to show that these various grasses were the cause of the different colors on the field. But, more importantly, I was able to show that these various grasses were causing an uneven surface that caused bad ball bounces. There was the possibility of injuries from running across the different clumpy areas.

I knew we had to control the ryegrass, which was growing year around, to reduce the competition with the bermuda. I also had to control the Poa that was constantly germinating from early spring through the summer into the fall. I also saw it as my one chance to change their thoughts about what was really important, safety! I had to set the realistic expectation that there would be some browning that would take place on the fields as the unwanted grasses died off from the application of Revolver, but that if timed right it could be done right before the summer green up of the bermuda.

We also put in the plan to overseed any bare areas with Riviera bermuda that raised another concern that it would not blend with

the existing bermuda. After researching test results from NTEP and talking with Tim Moore at Newsom Seed, I was able to provide enough reassurance to the group that it would improve the density and with subsequent overseedings become the dominant variety.

Once I had eased some of their concerns and was given the green light to do the needed applications, I scheduled a broad application of Revolver to address the Poa and to eliminate the ryegrass. This was a challenge because we had to be mindful to schedule any applications when the fields were not be used. On a typical day we would have PE classes on them starting at 9 am that would go until lunchtime. Then comes recess. After recess, PE returns until the end of the day when the fields are then used for athletics for either games or practices. As soon as athletics are finished they are then used by several teams in the community for practice. So finding time for any applications had to be planned as far in advance as we could, and had to be timed to allow the longest period of dry time before anyone entered the fields.

We had to give the chemical a chance of getting into the plant before the possibility of foot traffic disturbing the application. Because of the heavy use this was not going to be an option during the school year so it had to be scheduled for the day after school ended, which gave us a big enough window before anyone started to use the fields again for the summer programs.

Using a 250-gallon spray tank we mixed the Revolver at 1 ounce per gallon of water, which was the higher of the two recommended rates. Because the grasses we were targeting and the stage at which they were in we thought this would get us better control. We noticed almost right away that the first grass to be affected was the Poa. The seed heads curled and start to brown out. Within the next few days we noticed the ryegrass starting to curl. Within 2 weeks we were pleased with the results of the application as most of the grasses had browned out and had no signs of new growth.

Making do

Because of limited equipment availability there were a few small areas that we missed so we had to go back and spot treat these areas with a backpack sprayer. We proceeded with the plan to aerate and overseed with the Riviera bermuda. We applied at a rate of 2 lbs per 1000 sq ft which gave us the 1 lb of pure live seed needed to get a good amount of germination. With the weekly mowing still taking place and the applications of nitrogen every 2 weeks we started to see a fair amount of germination. As many know we did not have a great year in the transition zone for establishing and growing bermuda whether it was in overseedings or sprigging. We experienced lower than normal temperatures and higher than normal amounts of rainfall.

Although we were hosting several soccer camps on the fields we did see a fair amount of germination of the Riviera in the goal areas and down the centers of the fields. The coaches were very helpful in rotating their play to different areas of the fields to give each area as much of a break as possible. As we got close to the end of August I had to schedule an application of an herbicide to treat the rest of the goosegrass, crabgrass and nutsedge that was still hanging around. We went with an application of MSMA at a rate of 1 ounce per gallon that wiped out any of the remaining weeds and any of the newer weeds that started to germinate.

We started to gear up and look forward to the start of school and the fall athletic season. With all the work that we had done over the summer I had to make sure that we would be able to continue with the program I had put in place while not disrupting play on the fields. This would include another application of a MSMA to eliminate any leftover unwanted grasses or weeds and prepare the fields for the fall overseeding of perennial rye. In the past the fields had received only one aeration and overseeding in

the fall on the entire field. That would have to be changed to include not only more aerations of the entire field but weekly aerations of the goal areas and center of the fields. I would double the overseedings with the ryegrass and do weekly overseedings of the goals and center of the fields to continue to replenish what was lost each week from all the foot traffic.

I set up another meeting to discuss the benefits of the addition seedings versus cost. By reinforcing the idea of a safe playing surface I was able to show that by adding the additional overseeding we would continue to provide an even playing surface. It was a tougher sell to my superiors than I had initially thought because at the time we were looking out over full lush and dark green bermuda fields and trying to make them see 2 months into the future when fall sports are in full swing. I had the idea of pulling out some old photos of the fields from the previous year and was able to show how unsafe they were. A picture is worth a thousand words (or a couple thousand bucks), and it got me the approval for the additional funds needed for the fall program.

Fitting it in

With the fall athletic season now in full swing we knew we would have to take the first opportunity that came along with a break in the schedule to get the aeration and overseeding done. This chance came in the first part of September when the school had a long weekend planned. This would give the seed at least 5 days to get in the soil and start to germinate. Even though there was a game scheduled for Thursday we saw this as a great opportunity to do the aeration and overseeding and have the players help by pushing the seed into the soil as they ran over the fields.

We started first thing in the morning by aerating the fields in four different directions then overseeded the fields with Brightstar II perennial ryegrass at a rate of 10 lbs per 1000 square feet. As soon as this was finished we dragged the fields with a 3/8 inch by 1 inch by 1 inch galvanized steel mesh drag mat. We knew that we would not be able to get all cores off the field in time for the games so we did our usual game day preparations by cutting the fields with our ReelMaster 2000 in two directions and added a light application of water to help soften the upper layer of soil just enough to get the seed pushed in.

By the end of the break we had a good amount of germination from the seed but I started to see what could possibly be some Poa germinating in a few areas of the field. As I thought about the options that I had I really did not like the idea of doing another herbicide treatment especially with having just done the overseeding of the ryegrass so we decided on an application of T-NEX plant growth regulator at .5 fluid ounces per gallon. The T-Nex (trinaxepec-ethyl) had many more benefits than I had originally thought. Since growth regulators

John Mascaro's Photo Quiz

>> Answer: from page 17

The brown lines on these football fields are the result of mowing. The Sports Turf Manager at this facility several years ago was using a fairly new rotary mower with an offset cutting unit. The day before this photo was taken, the mower blades were removed, sharpened and replaced. When George Toma saw these stripes on the field the following day, he assumed that the mower blades were put on backwards. Upon initial inspection of the mower, everything appeared to be correct. The blades were nice and sharp and attached correctly. The cutting heights of the decks were also found to be correct. They called out a representative for the mower manufacturer and it was determined that when the mower blades were sharpened, they were sharpened at an incorrect angle. When the blades hit the turf, they were not cutting properly but instead, just beating the grass. To also aggravate things, the incident occurred on a hot summer day when the cool season grass was most susceptible to injury. The mower blades were again removed, re-sharpened with the correct angle and replaced. This solved the problem.

Photo submitted by George P. Toma, natural and artificial turf consultant, Westwood, KS.

If you would like to submit a photograph for John Mascaro's Photo Quiz please send it to John Mascaro, 1471 Capital Circle NW, Ste # 13, Tallahassee, FL 32303 call (850) 580-4026 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.

reduce the amount of top growth which will produce a stronger healthier turf we were able to promote the ryegrass into a healthier stand of grass, prevent the Poa, not from growing, but from going to seed. We could keep it from spreading. It also gave us a break on the amount of time we needed to mow allowing us a chance to catch up on some much needed detail work on the rest of the 45 acres campus.

Since doing the application of T-NEX we have only had to mow the turf two times per month which has been we a huge reduction in labor time spent on the fields. We also liked the application of T-NEX because by preventing the Poa from seeding we are hoping for a reduction in the needed for an herbicide treatment in the future saving the school hundreds of dollars in labor and material cost. As the season progressed we planned to run the aerator in the goal areas and center of the fields to keep the soil compaction to a minimum and we also replenished the perennial ryegrass by put down two bags down the centers and in the goal areas. While this helped to continue the establishment of the rye in heavily used area what we found was that it also built up a seed bank so once the season ended we save an explosion of new growth in these areas.

The final step in the program was to put the fields to bed and cover them with turf blankets. Because I knew that the funds were not there for enough turf blankets to cover the entire fields I needed to at least purchase enough to cover the goals to show the benefits with the hope that we can secure the funds in next year's budget. ■

Jason Kopp, CSFM is head groundskeeper at the Norwood School, Bethesda, MD.

Finding time for applications had to be looked at as far in advance as we could and had to be timed to allow the longest period of dry time before anyone entered the fields.

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Understanding

turfgrass species for athletic fields and rec areas

Turfgrass selection is perhaps the most important part in developing and maintaining a healthy and vigorous turf stand. There are many choices available to us today and the planning process cannot be underestimated. Over the years plant breeders have made significant advancements in the development of cultivars within cool-season species like Kentucky bluegrass, perennial ryegrass, fine fescue and tall fescue. During this time seed companies have consistently released varieties with improved growth characteristics, turf quality, resistance to drought, insect, disease and other important benefits. Today the turf manager faces the ever difficult task of making the decision of "Which variety or varieties are right for me?"

In going through the decision process for new construction, renovation or maintenance (overseeding), it is important to review all the elements in which turf has to perform. The following points should be a part of the planning and selection process of the appropriate species and cultivars for the intended use.

Species selection: environmental factors

- Type of sport or use: football, baseball, soccer
- Physical characteristics: soil or sand, climate and environmental stresses and concerns, drainage.
- Management issues: wear (goal mouth, center of field, sidelines)
- Repair and maintenance: time of repair and renovation (during difficult times, during play)
- Maintenance budget
- Maintenance: number of staff, type and number of equipment, cultural practices, irrigation system.
- Inputs: fertility, pesticides, irrigation, topdressing material, seed, etc.
- Other uses: concerts, events

Species selection: turf characteristics

- Growing environment: full sun or low light (stadium facilities)
- Wear tolerance, recovery period
- Establishment, turf density
- Turf strength, lateral stability, stable footing
- Disease resistance and winter persistence
- Heat and drought tolerance
- Other: salt tolerance, weed control, etc.

With ever increasing environmental, climatic and public demands while maintaining the need for high quality turfgrass athletic and recreational fields, seed varieties today offer the turf manager many benefits, agronomic stability and flexibili-

Specific areas are targeted for collecting where plants have been growing and surviving for generations under harsh conditions.

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ty. Understanding the major and subtle differences between varieties within a species category is important in the selection process. For example Kentucky bluegrass is highly apomictic, meaning that plant alteration and variety improvement is a difficult and complex process, generally resulting in small differences in agronomic characteristics and range of genetic diversity within varieties categorized in the same 'Type' such as Midnight, Aggressive, America and Compact ,to name a few. Other major cool-season species such as perennial ryegrass and fescue (tall and fine) are also organized into types offering different characteristics for specific use.

When selecting a new seed variety from a proven seed company with a well-established development and breeding program, you can be sure that the varieties have been thoroughly field tested and evaluated to produce a broad genetic base. The National Turfgrass Evaluation Program (NTEP) testing conducted at multiple locations and through independent university sites across the US and Canada, data confirms the improved qualities needed for producing a high quality turf. If the variety has no traceable testing history then it is not worth looking at.

Adding perennial ryegrass will speed up establishment assisting with natural weed control and increasing disease resistance

Most importantly, parent plants for new varieties have survived the test of time growing in different locations. Over the years well established breeding programs have selected turfgrass clones from hundreds of locations across North America and other regions around the globe. During a site visit the plant breeder will identify and collect desirable turf samples. Plants identified for collecting have noticeable characteristics that would be beneficial to incorporate into breeding project, leaf textured, density, vertical growing, specific disease and insect resistance, drought tolerance, salt tolerance etc. Specific areas are targeted for collecting where plants have been growing and surviving for generations under harsh conditions.

The collected plants are brought back to the research farm for evaluation. Collected plants, commonly referred to as "germplasm," are added to the already established collection. After a few years of evaluation only the best 1-2% of all plants collected will be considered for use in breeding a new variety. Ninety eight to ninety nine percent of collected plants will be discarded. Only the best performing plants will be used for developing a new variety. Typically, it takes 10-12 years to breed and commercially release a new improved variety for use on professional turf surfaces.

For example, with the breeding and development of a new variety, existing plants from proven varieties are used. Additionally, new clones or germplasm are crossed with a selection of the new material that has been identified for improved agronomic qualities and characteristics (disease resistance, drought tolerance, vigorous growth, wear and recovery, uniformity, density etc.). This would mean that the new variety would have a broader genetic base developed using 20 parent plants and therefore be superior and less likely to suffer from catastrophic failure. This summary of the detail and investment that goes into the development of a variety give turf managers confidence that there are significant agronomic advantages and benefit in working with an improved seed variety. NTEP.org and private independent research data is a good reference point for identifying proven new varieties in the Kentucky bluegrass, perennial ryegrass and fescue species.

Understanding Kentucky bluegrass cultivars

Kentucky bluegrass is the primary species for athletic fields and recreational turfgrass use in North America. With proper management forms a fine-textured, high quality, long lasting turf stand. The rhizomes of Kentucky bluegrass increase stability, improve traction and provide good recovery to damaged and bare areas. Kentucky bluegrass can be used as a monostand, but to maximize the genetic base it is advantageous to select a polystand or blend of types.

It first must be understood that Kentucky bluegrass in contrast to all other cool-season turfgrasses, is highly apomictic. This means that almost every seed (usually over 95%) is an identical copy of the mother plant, which means that there is very little genetic diversity within a variety. This is because most varieties fall into similar groups or classifications. To maximize diversity it is best to blend together similar varieties from different categories. For example there is little agronomic benefit for an athletic field to be seeded containing five varieties similar to Midnight. The best approach would be to blend top varieties able to tolerate very low cutting heights from within the "Compact Elite," the "America Elite," the "Aggressive" type and possibly within the "Early Spring Greening" categories.

Improved drought tolerance of Texas hybrids

Recently much attention has been given to the development of heat and drought tolerance in Kentucky bluegrass. Known as hybrid bluegrass (Texas hybrids) these new cultivars have proven