

	PET (inches)	Month	PET (inches)
JAN	0.00	JULY	6.10
FEB	0.00	AUG	5.31
MAR	0.62	SEPT	3.74
APR	2.00	OCT	2.02
MAY	3.72	NOV	0.75
JUNE	5.25	DEC	0.00

Table 2. Courtesy of Delaware Cooperative Extension

PET values vary by month. If you can measure the ET at your site, you can become very precise.

The Crop Coefficient is a water requirement scale of different types of plant materials relative to the water requirements of other plants and is used as a multiplier in irrigation audit equations.

Table 3. Water Requirement Crop Coefficient (-) for Sports Turf and Other Common Plants:

Using the information from your data collection as well as from the preceding tables, find the irrigation frequency using the following formula:

$$\text{Irrigation frequency} = \frac{\text{average water holding capacity} \times \text{root depth} \times \text{management allowable depletion}}{\text{potential evapotranspiration} \times \text{crop coefficient}}$$

VEGETATION TYPE	COEFFICIENT (-)
Mature trees	0.80
Shrubs (taller than 4 ft.)	0.70
Shrubs (shorter than 4 ft.)	1.00
Warm season turf	0.50-0.70
Cool season turf	0.60-0.80

Table 3. Puhalla, J; Krans, J; Goatly, M; Sports Fields- A Manual for Design, Construction and Maintenance; John Wiley & Sons Inc.

Find the run time frequency using the following formula:

$$\text{Run time} = \frac{60 \times \text{irrigation frequency} \times \text{potential evapotranspiration} \times \text{crop coefficient}}{\text{net precipitation rate} \times \text{irrigation application efficiency}}$$

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"Other duties as assigned"

By Kevin Bevenour

At the beginning of each month, as I anxiously await the arrival of my *SportsTurf* magazine, I sit down and write a 1-page report for my boss that generalizes the things the grounds department has accomplished over the past 4 weeks. It's normal that managing the sports turf on campus does not consume all of my time. There are other responsibilities that must be taken care of regularly and still others that pop up unexpectedly.

I'm sure most readers can relate on some

level to this situation. This article is dedicated to those duties, the "other things" that we do, whether they are part of your job responsibilities or just things that need to be taken care of by being in the wrong place at the right time.

"Sports Turf Manager" may only be part of your position description. We all know what N, P, and K are. We all know about mowing, seeding, and aerating. We all know when to irrigate and how to handle brown patch, weeds, and grubs. But if you're someone like me, being in charge of a larger facility, you might have to know about trees, shrubbery, flowers, trash, and snow removal. And that's not mentioning

students and events and construction and staff.

Regardless of the facility you maintain, we all have "off field" responsibilities. I'd like to tell you how I maintain some level of sanity trying to get everything done in a timely fashion. I'm not going to preach any time management philosophies; my wife has dissected my problems in that area. And I've only had limited success with mass quantities of adult beverages.

People

Let's face it, we can't do it all by ourselves. We need help. But some help is better than other help. Yes, people get sick. Some even

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FACILITY & OPERATIONS

take vacations! Others need special attention. There are roughly 260 normal working days in a year. Last year, only 5 of those days passed in which someone did not submit a leave slip for time off work. Supervising a crew and scheduling work takes time and is the least gratifying of all the things I do.

Wait! I almost forgot, doing evaluations has to be at the top of that list. And I won't even go into the whole payroll process. I, by far, have not mastered this part of my job. I sometimes feel like I'm running an adult daycare center. I guess I expect too much from others. Someday hopefully I'll be taken by complete surprise and it will all just fall together.

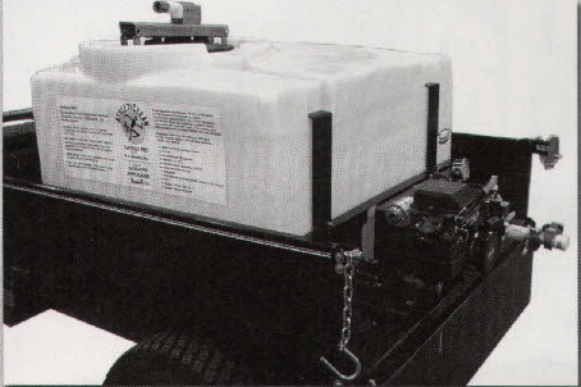
Salespeople and vendors fall under this category. Am I the only one who doesn't like unannounced sales calls? If I need something, I'll call you; otherwise please set up an appointment.

I've developed some good relationships with many vendors. They can be a wealth of knowledge and make your job easier. Remember though that some of them are only as good as the product or service you buy from them. This inevitably leads to paying bills and dealing with the purchasing department. I have the responsibility of reconciling my purchasing card statement each month. Instead of their writing many checks, they only write one. Now I have to somehow manage to keep all the receipts in one place until the statement arrives. I have enough trouble remembering where I put my lunch.

I was informed long ago that when you provide a service, the



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requestor of that service is called a "customer." They can range from the athletes and coaches who use the fields to the chairperson of the committee whose group is having an event. All of them need your support and undivided attention. All of them want to be right. They don't want to hear "no" and they expect results. Their event is the most important, and they'll be the first to tell you that if there are any doubts. To them, the 9 AM soccer game before a 1 PM football game doesn't raise any flags. Fireworks are beautiful in the night sky, and then everyone goes home. What clean up? Developing procedures and practices has helped alleviate some last minute problems. The only advice I have is, be nice and smile.

The other supervisors and managers in your department or facility can be a life-saving support system. Use them whenever possible. Let them take care of any off-the-field issues they are capable of handling. Proper coordination will leave you with more time for proj-

ect managers or the Director or the Board or the Vice President or the President or the owner, all of whom have their set of expectations and demands.

Animals

How many have seen a video of a groundskeeper running around trying to catch a wayward cat or squirrel on a playing field? I wish it were that simple. I can't count the number of baby ducks I have rescued from storm drains, or helped to find their way back to Momma Duck. Though they are by far the cutest of all little ones. I've gotten calls about squirrels, groundhogs, bats, birds, geese, snakes, turtles, and skunks. I even was asked to try and get rid of a couple of foxes. How did wild animal control get mixed in with managing sports turf? What qualifies me as the expert? Oh, that's right; we're the keepers of the grounds, so naturally we know how to take care of it. And for those critters that don't quite make it—road kill potpie!

Mother Nature

If there isn't enough to keep you busy, you can add another line to the position description: meteorologist. When you want or need it to rain, it doesn't. When you have enough, it doesn't stop. But here's the kicker: somewhere along the line, you've become responsible for something that's completely out of your control. Everyone comes to you. When's it going to rain? How much snow are we going to get? What's the weather going to be next week? When are the thunderstorms going to hit? Thank God for radar loops!

The thing is, we're pretty good at guessing the weather, at least just as well as weathermen. I just go outside and look up. Try it, it works! Maybe if this whole groundskeeping thing doesn't work out, I can get a gig as one of those storm chasers on The Weather Channel. ■

Kevin Bevenour is campus grounds supervisor for Millersville University in Pennsylvania.



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Improving The Development of Kentucky Bluegrass Sod & Seed with APEX-10

Kentucky bluegrass seed is a primary grass species used for temperate climate sports fields because of its density and unique rhizome growth qualities that provides wear recovery. Kentucky Bluegrass sod is selected when time constraints become a factor during seasonal play. The biggest challenge when selecting sod for repair is establishing fully rooted sod as soon as possible to achieve functional footing for play and to insure player safety and turf longevity.

At Virginia Tech the organic and humus qualities of APEX-10 an OMRI approved organic peat humic substance were compared with the humic acid qualities of Leonardite. The Studies objective was to examine the establishment rate of Kentucky bluegrass post sod transplant for root mass, root strength, and tiller density (See Table 1).

At Rutgers University APEX-10 was tested with Kentucky bluegrass seed planted in sandy loam soil with adequate and deficient phosphorus levels and measured for turf height and turf density over a 6-week period (See Table 3)

Virginia Tech

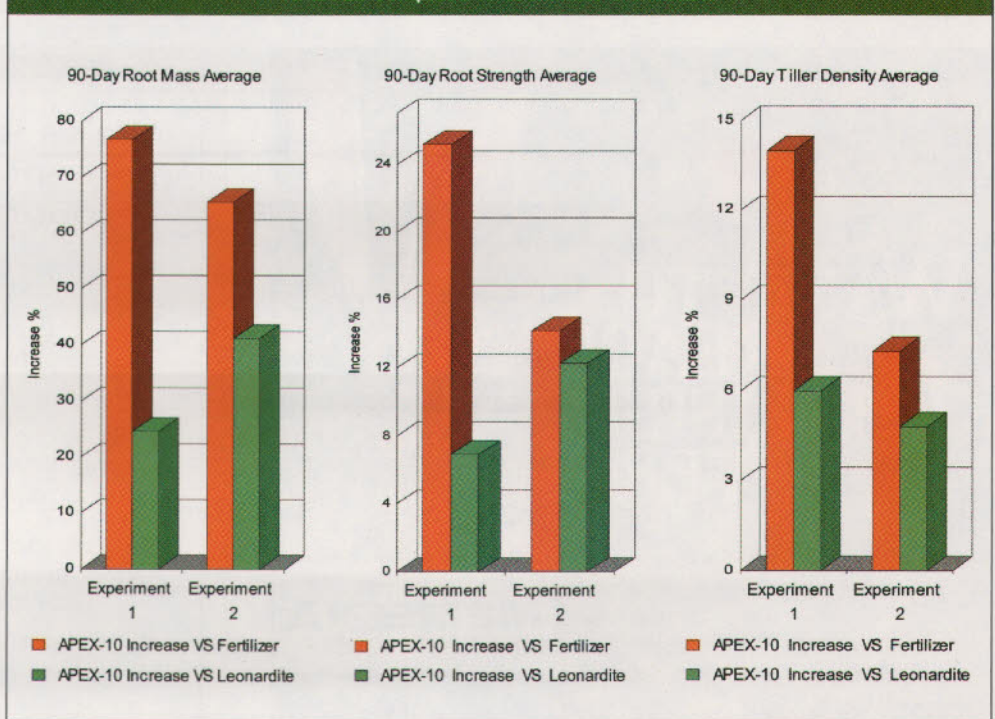
At the Virginia Tech Turfgrass Research Center two studies were conducted (April 26 - July 22 & August 27 - November 23) using APEX-10 and Humic Acid from Leonardite on an adequately fertilized sand based root zone

with an adequately fertilized sand based root zone used as the control. The chemical properties of APEX-10 and the Leonardite were also examined (See Table 2).

Kentucky bluegrass sod was placed of medium-coarse textured sand with expanded metal sheets having uniform openings to

allow root growth into the underlying sand and used for evaluating turf strength. The sod was rolled over the grates and fertilized with 15-30-15 and watered. Treatments were applied the day after sodding, with re-application every two weeks at the recommended rates until a total of six applications were

Table 1. Virginia Tech Kentucky bluegrass sod transplant, APEX-10 compared to Leonardite & Fertilizer



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Table 2. Virginia Tech chemical analysis, APEX-10 compared to Leonardite

Chemical Characteristics of APEX-10 and Leonardite

Parameter	Peat Humic Substance	Leonardite Humic Acid
Solids content	11%	100%
Ash (inorganic) content	12.5%	34%
Volatile (organic) content	87.5%	66%
Total C	49.3%	35%
Total N	0.91%	0.78%
C/N ratio	54:1	45:1
Humic acid in solids	100%	80%
pH	4.6	9.5

Additional substances added to soil (APEX-10 Compared to Leonardite)

	APEX-10	Leonardite
	Additional Solids	809%
	Additional Inorganic Matter	172%
Additional Volatile Organic Content	33%	
Additional Soluble Carbon	41%	
Additional Nitrogen	<.02%	
Increase in C/N Ratio	20%	
Additional Soluble Humic Acid	25%	
	Additional Non-Soluble Humate	25%
	Increase in pH	106%

applied during each experimental cycle.

Mowing was performed twice weekly at the height of 3.8 cm at two weeks after transplanting, until two weeks before the end of each experimental cycle, foliar fertilizer 20-20-20 with micronutrients was applied to all plots uniformly and Irrigation was provided on an as needed basis in order to prevent visual wilting.

Rutgers University

At the Rutgers University Research Farm in New Brunswick four replications were configured and treated with and without APEX-10 and with adequate levels of phosphorus and deficient levels of phosphorus.

phorus and deficient levels of phosphorus. Plots treated with APEX-10 received three applications at the rate of 1.5 ounces per 1000 sq ft to newly seeded Kentucky bluegrass in sandy loam soil and evaluated for 6-weeks.

Results

Turfgrass height and density was generally better in soils with phosphorus applied than those deficient in phosphorus. The combination of APEX-10 further enhanced turfgrass height and density when applied in soil with deficient levels of phosphorus and when applied in soils with adequate levels of phosphorus. ■

Table 3. Rutgers University Kentucky bluegrass seed establishment

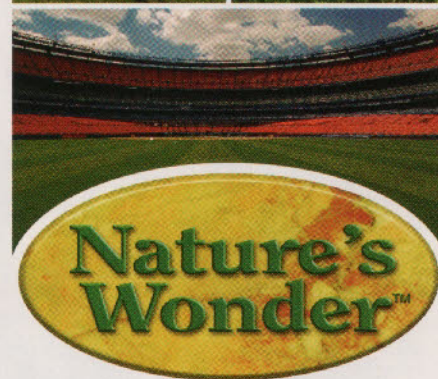
6-Week Height Average			6-Week Density Average		
Plot	Plot	Increase	Plot	Plot	Increase
T1	T2	4.41 %	T1	T2	16.84%
T1	T3	15.25 %	T1	T3	50.64%
T1	T4	18.54 %	T1	T4	61.30%

T1 = Control With Deficient Phosphorus
T3 = APEX-10 & Deficient Phosphorus

T2 = No APEX-10 & Phosphorus
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John Mascaro's Photo Quiz

A

**Answer:
from page 27**



This part of Pioneers Park is used for a large number of outdoor weddings each year and this area had just been re-sodded in the spring. On July 6, 2007, a wedding party laid out a carpet runner for the bride to walk across this area of lush green turf. After the runner was properly laid, a person proceeded to spray the turf with a can of personal use insect repellent. Fortunately one of the staff members saw this and was able to get them to stop before they sprayed the entire area. As you can see in the photo, the long runner they put down for the wedding party to approach the ceremony left a nice green rectangular area of

grass that was protected from the spray. The sports turf manager thinks they were just afraid of any kind of insect crashing the wedding. The wedding ceremony took place just a couple of hours after they sprayed down the turf and the photo was taken 3 days after the application. The sports turf manager reported that the turf would recover on its own with plenty of water and lots of words of encouragement. Apparently after all this, weddings still do not bug him. ■

Photo submitted by Dave Allder, Southwest District Park Supervisor for the City of Lincoln Parks and Recreation Department.

If you would like to submit a photograph for John Mascaro's Photo Quiz please send it to Turf-Tec International, John Mascaro, 1471 Capital Circle NW, Suite # 13, Tallahassee, FL 32303 or email to john@turf-tec.com. If your photograph is selected, you will receive full credit. All photos submitted become property of SportsTurf Magazine.

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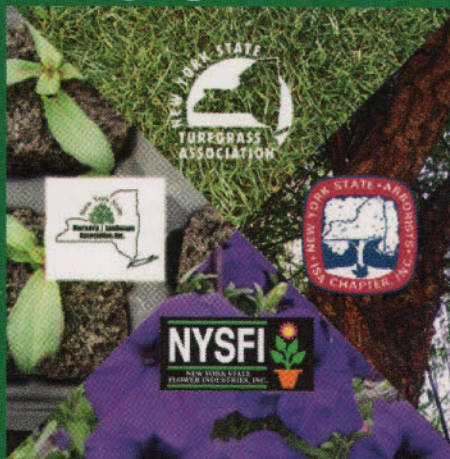
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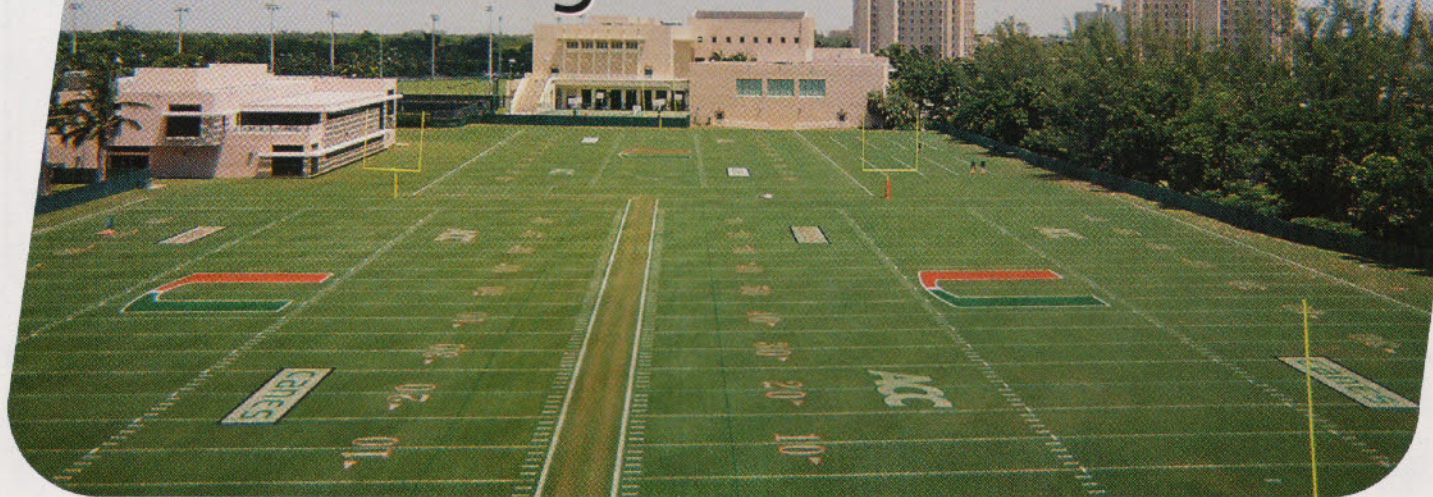
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MIAMI'S Greentree Facility is college football's best



Chris Denson and his crew are to be congratulated for winning the Sports Turf Managers Association's 2006 College Football Field of the Year Award for their work at the University of Miami's Greentree Football facility. Crew members include Benny Avila, Jose Gutierrez, Geovani Dearmas, and Chris Hughes.

Built in 1998, the Hurricanes' 6.5-acre practice facility features GN-1, is built on 100% sand, and includes a gravity flow drainage system. Denson says one of the three fields has a fiber mat under the turf that initially was installed to provide stability in the sandy subsoil. Now it inhibits root penetration, so after trying to break through it with a GA-60 aerifier without success, Denson has the field on a heavy topdress program.

"I did try a GA-30 aerifier with core tines but when the tines wore down they formed a barb," he said. "It actually penetrated and pulled fibers out of the ground without disrupting the turf but it didn't get much for aer-

ification. I'm looking to do this with the GA-60 when the tines are worn."

Denson says all the area's sod farms have stopped producing GN-1 and though his sodding needs are minimal, there are spots, such as where carts run and entrance areas. "Since it's only a few hundred square feet at a time, it's not worth bringing GN-1 from out of state," he said. "We have set aside a small area that we do almost no maintenance on, and we cut the thatch off with sod cutters, roll up our turf, and transplant when we need to.

"Then we topdress both areas lightly with sand. It needs a little time to grow in but this allows us to keep the field the same variety."

Denson and/or crew check for problems daily, and report the fields are in use almost daily as well, whether for conditioning, camps, or practices and training camp. "We have a beneficial microbe germinating system that provides live microbes daily," he said. "These microbes are sprayed three times a week on various fields and watered in.

"We purchased a new turf vacuum at the

beginning of the year. We will probably rotate out a few paint machines in the near future and some of our smaller pieces of equipment during the year," he said.

"I have done a few small additions/subtractions to my nutritional program from what test results are showing. We were also able to get in one extra verticut and aerification this year due to the subtraction of a winter camp. Everything else is staying the same," Denson said.

Denson said he knew when he finished high school that he wanted to be involved in some area of the turf industry.

"I have always been a big sports fan and I saw a chance to be involved with that. As I looked into the options and varieties of sports turf careers, I just knew that was what I wanted to do. It is a unique experience growing up rooting for a particular sports organization, and then having the opportunity to be a part of that organization later on," he said.

As athletic grounds manager, Denson's responsibilities include maintaining the athletic equipment and surfaces. "We take care of all