

# MAINTENANCE



## BRIEFS

### LATHAM WINS PIPER AND OAKLEY AWARD

FAR HILLS, N.J. — James M. Latham has been honored with the USGA Green Section's Piper and Oakley Award. Latham was actively involved on the USGA Turfgrass and Environmental Research Committee from 1995 to 2002. He attended numerous research-monitoring visits and offered advice on the research being considered by the committee. Latham worked as a USGA Green Section Agronomist from 1956 to 1960 and from 1984 to 1994. In the interim, Latham worked for 25 years with the Milwaukee Sewerage Commission, helping to promote one of the nation's first businesses designed to recycle waste products into landscape fertilizers. The Piper and Oakley award was established in 1998 to periodically recognize those who have contributed to the programs and activities of the USGA Green Section.

### NEGCSA HONORS KURPOSKA

DELMAR, N.Y. — The Northeastern Golf Course Superintendents Association (NEGCSA) has presented its Distinguished Service Award to James Kurposka, superintendent of Normanside Country Club here. Kurposka previously worked at Colonie Country Club, Albany Country Club and Noyack Golf & Country Club. The NEGCSA presented Kurposka with the award to recognize his involvement, interest and commitment to the association. The award has been presented annually by the NEGCSA since 2000.

### EPIC ADDS SPANISH TITLES

WEST BEND, Wis. — EPIC of Wisconsin has added two new Spanish titles to its Superintendent's Video Workshop series of golf course maintenance training programs. Both "The Fine Art of Hand Watering with Paul Latshaw" and "Sun Safety" are now available in English and Spanish. The company now has 12 Spanish titles in its 26-program series, which are supplied on both VHS tape and CD-ROM.

## Editorial Focus: Putting Green Management

# Technology permits lower, leaner and faster greens

By KEVIN J. ROSS, CGCS

There is no debating the fact that managing golf greens today has changed over the last 25 years. Today, greens management uses technology and years of experience to produce the finest conditioned greens surfaces ever. It wasn't too many years ago, the 1970s, that we were cutting greens at 3/16 inch and producing speeds of seven feet on the Stimp meter. Times have changed.

### CONSTRUCTION

The greens that superintendents produce today are, in large part, a result of greens construction techniques that have been refined through the years to offer the ultimate in soil physics. The USGA has done an excellent job in continually reviewing and improving their specifications for greens construction. Present specifications are based on scientific laboratory testing, which will ensure that, with proper construction, a green will

perform for many years.

With technology, we have also improved the ability to match the proper sand particle sizes of a USGA spec green. Golf course material suppliers now have very sophisticated sand screening and mixing machines. These machines ensure the proper material will be produced and mixed for greens rootzones.

### TURFGRASSES

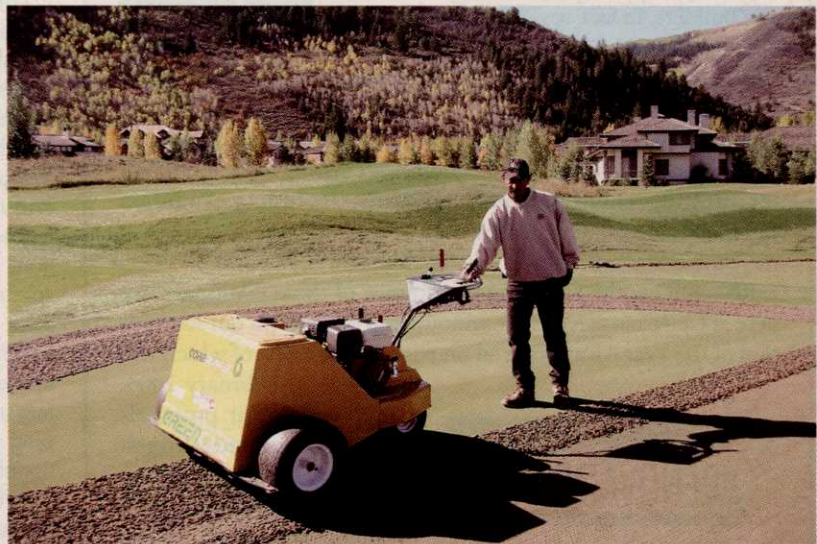
Since the late 1950s, Penncross creeping bentgrass has dominated the bentgrass market.

Even with the newer bentgrasses on the market, Penncross is still the world's top-selling bentgrass, with some 750,000 pounds sold

annually. While Penncross still dominates the market, the grass we now play on is one of the biggest changes in greens sur-

faces. The new "superbents" (As, Gs, L-93, SR1119, etc.) offer finer texture, greater density, upright

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Quad-tine-type aerification units allow courses to aerify more often without interrupting play.

Photo: Kevin Ross

## UMass study determines pesticide exposure figures

By ANDREW OVERBECK

PROVIDENCE, R.I. — A University of Massachusetts researcher has completed the first phase of a golf course pesticide study that provides, for the first time, accurate exposure estimates for golfers. The research is significant because it will give the U.S. Environmental Protection Agency realistic human exposure data to use when reregistering pesticides under the Food Quality and Protection Act (FQPA).

At a presentation delivered during the New England Regional Turfgrass Conference and Show here March 19, Dr. John Clark outlined the results of the three-year, \$250,000 study. The work was sponsored by the USGA, the New England Regional Turfgrass Foundation, the United States Department of Agriculture, Dow AgroSciences and Bayer.

"The EPA didn't ask us to do it [the study]," said Clark. "The driving issue is they are in the



Researchers had volunteer golfers wear special suits to absorb pesticide residues.

process of reregistering through FQPA and as the industry looks

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## Anthracnose proliferation continues

By ANDREW OVERBECK

As new chemicals to fight anthracnose proliferate, so does the disease. The combination of warm winters, hot summers, lower cutting heights and leaner greens has led to increased outbreaks of anthracnose over the last few years.

"It used to be a hot-weather phenomenon, but it has become a disease that starts up in the spring," said Dr. Gail Schumann from the University of Massachusetts. "I need to put a thing on my phone that says, 'If you are calling about anthracnose, press 2.'"

According to Schumann and other turfgrass pathologists, the disease that attacks *Poa annua* and has even been seen on bentgrass, is becoming more prevalent and more

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## SUPERideas

### System refills divot mix bottles with ease

At many clubs it is common practice to have divot mix bottles on golf cars and located on par-3 teeing areas. One of the biggest problems is efficiently filling these bottles. Some methods, such as the ice scoop, are more of a means of frustration than efficiency.

One way to ease the pain of filling divot bottles is to construct your own divot sand tube filler. There are many ways to make a filling device. The unit I made holds slightly more than three 150-pound bags of mix and can be mounted in



Ross' tube filler refills divot mix bottles efficiently many ways. In the photo, the tube sits in a welded square of two-inch angle iron that is

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Photo: Kevin Ross

## Technology allows for finest conditioned greens ever

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growth patterns, and the ability to be cut at preferred heights of 1/8 inch and lower. These bents also offer tremendous rooting potential, which translates into a very water-efficient plant.

### IRRIGATION

The old design of a common irrigation system that watered both the greens surfaces and the surrounds has been thrown out the door. This may be one of the biggest reasons for improved greens quality. Now we have dedicated greens sys-

tems that water the green surface only. Irrigation companies must also be commended for developing very efficient sprinkler heads, along with computerized controls, that offer the greatest of flexibility.

Over-watering was the biggest mistake made when superintendents switched from managing a soil push-up green to managing a sand-based USGA green. The perched water table theory of the USGA green ensures very efficient water usage. This perched water table, along with independent watering systems, has changed the

face of watering practices to more of a "fill the glass" approach. For many, this approach means irrigating to fill the rootzone cavity (the glass) to field capacity, plus an additional amount for flushing through positive drainage. Then let the turf dry down the cavity water (drink the glass) to nearly empty and repeat the cycle. This method of watering has produced excellent turfgrass and water conservation results. Many of the past failures of the USGA green have been directly related to over-watering. Now through experience, these over-watering failures have been all but eliminated.

### CULTURAL PRACTICES

One big side benefit of the new "superbents" has been the development of equipment that will help manage these new bents, and contribute to maintaining older bents at a higher level. Quad-tine-type aerification setups and machines have been developed by almost all of the major manufacturers. These give the superintendent the option to aerify more often with much less intrusion to play. Small 1/4 inch and 5/16 inch tines spaced close at one-inch centers have moved front and center as the preferred method of aerification. Some manufacturers are even developing larger diameter tines, which will fit quad-tine set-ups for a more aggressive approach when needed.

The development of true dethatching units has been very beneficial for managing the thatching potential of these new bents. These machines offer depths of up to 1.5 inches and various blade widths from 1mm to 3mm. The combination of these de-thatching units and quad-tine type aerification units has made thatch management much easier.

When it comes to topdressing, the approach of frequent and light is the present standard. Some clubs use fertilizer-type rotary spreaders with kiln-dried sand, and even green colored sand has been used. This is a far cry from the past where larger machinery was consistently used, and sand applications to greens were only a few times per year.

### MOWING AND GREEN SPEED

As mentioned above, it wasn't that long ago that 3/16 inch was the normal cutting height for greens surfaces. At most golf courses today, 3/16 inch will get you a pink slip. We now see this height on tees, approaches and some fairways. Today, some golf courses are cutting greens below 1/10 inch. The question now becomes, how low can we go? One fact is for sure, we are rapidly approaching the bottom.

There is no question that the need for speed has brought us to these low limits. Whether TV golf or superintendent competition is responsible for lower cutting heights, speed is here to stay. When determining the perfect speed, a variety of input should be considered, from green design to playability, to name a few. The best way might be to follow the model of Mike Morris, superintendent at Crystal Downs Country Club in Michigan (see story on page 1).

### FERTILIZATION PRACTICES

Fertilization practices are also evolving. There is no doubt that the biggest management changes in this area are less nitrogen and the use of foliar products. Application amounts of nitrogen per thousand square feet have gone down consistently through the years, and now are in the 1-4#N/M range per growing season. The most popular method of fertilizing has changed from granular application to foliar feeding programs. The spoon-feeding (light and frequent) approach is certainly the en vogue method. Even though foliar is the hot topic for fertilizing, kudos must be given to the fertilizer manufacturers. They have produced some great fertilizer materials, with extremely small particle size, that work very well with the new, denser bents.

### SEEDING VS. SODDING

For years, seeding had been the preferred

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Since being on the ROOTS® program, root depth has increased. The roots seem to have more mass, even in summer, and the turf seems to be a lot denser, with fewer ball marks. The greens are definitely rolling faster, at least 12 on the Stimp meter, and the program gives me superb color, with no flush of growth.

The 2000 season was wet and hot. On the greens and tees, I had virtually no disease and that really sold me on the ROOTS® program. The program has saved me money due to less time on the spray rig, and less money on chemicals. I have used other systems, mainly chemical fertilizers with organic additions, but the results are not even close to what I get with the ROOTS® program.

Randy Harris  
Superintendent  
Lexington Country Club  
Lexington, VA

**roots** inc. 3120 Weatherford Road • Independence MO • 800 342-6173

info@rootsinc.com www.rootsinc.com

## Study: chlorpyrifos exposure within allowable limits

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at this, if you don't have numbers to show what a chemical's input is into the EPA's risk cup, then they just make the numbers up. Once the risk cup is full, they have to drop uses and the first ones to get dropped would be turf and other home uses."

However, the research did more than just quantify critical risk values for the EPA. Clark's study also demonstrated ways superintendents can minimize exposure risks. Further research will develop data that covers the physical chemistry of compounds allowing exposure rates and allowable daily intake (ADI) figures to be calculated for an individual active ingredient without any additional study.

In this first phase, Clark studied chlorpyrifos (Dursban Pro), carbaryl (Sevin) and cyfluthrin (Tempo). The three compounds were chosen because of their differing levels of toxicity, volatility and water solubility.

At this point, full results are only available for chlorpyrifos, but the results are encouraging. Under the previously allowed four pound per acre rate of chlorpyrifos, the ADI was right at the one microgram per kilogram a day limit. However, under the new EPA allowable rate of one pound per acre, the ADI falls to .25, well below the limit. While ADI for the other compounds is not currently available, Clark said the initial figures are favorable.

### CALCULATING RISK

In order to calculate pesticide exposure to golfers, Clark constructed a 110-meter by 20-meter "golf course" on a bentgrass field. With greens and tees on both ends of the field, Clark's two foursomes played a simulated 6,800-yard golf course, which took an average of four hours to finish.

The first foursome, the dosimetry group, had to wear special solvent extractive cotton shirts, hats, gloves and pants and air samplers. After a round of golf, these suits were analyzed to see how much pesticide matter golfers come into contact with. The

results found that the greatest exposure occurred in this order: lower legs, hands, lower arms and face.

The second foursome, the biomonitoring group, wore shorts and golf shirts instead of white suits, but they were subjected to urinary metabolite tests. These tests use existing toxicologic data to measure the amount of the compound that is excreted in urine and calculate the amount of pesticide absorbed by each individual.

The third part of the study involved

environmental sampling that collected residue data from areas on the treated plots and in areas surrounding the treated plots to determine the spread of the compounds.

### REDUCING EXPOSURE RISKS

While the research has shown the current rate for chlorpyrifos to be below the ADI, Clark also confirmed the usefulness of several cultural practices that further reduce exposure risks.

Clark obtained the ADI figures by irrigating with a quarter- to a half-inch of water following an application and waiting one full hour before re-entry into the treated area. Irrigating with this amount reduced resi-

dues by 90 percent, and the exposure risk was reduced by 50 percent by waiting an hour before re-entry. By applying chlorpyrifos to just tees and greens, Clark lowered the ADI from .25 to .2.

"You can further reduce risks by only applying pesticides to six holes at a time or by following the last group off the course at night, giving the materials overnight to dissipate," said Clark.

Going forward, Clark will be completing the extensive testing on carbaryl and cyfluthrin in addition to several other compounds that cover other physical chemistries. ■



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## Technology and greens

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method for greens establishment and sodding was labeled taboo. However, in recent years sodding greens has made major gains over seeding. These gains have been made primarily because of the ability of the sod producers to grow excellent sod quality and address the layering phenomena. In the past, failures from sodded greens have been mostly related to an incompatible match of the rootzone mix with the sod medium. Presently, sod is even being grown on plastic. When harvested, the roots stay completely intact, suffer less shock, and have very fast rooting potential.

### LOOKING TO THE FUTURE

No one can predict the future, but we certainly can guess what it holds. Are we at the ultimate in greens management? Maybe. Can the height of cut be dropped much lower? Probably not. However, years ago, Penncross was considered the ultimate, as was 5/32 of an inch and 10 feet on the Stimpmeter. So who knows, anything could be possible 10 years from now. ■