BRIEFS

EPA STARTS ENVIRONMENTAL SERVICE

WASHINGTON — The U.S. Environmental Protection Agency has unveiled a new service to help the public access environmental information. The Government Information Locator Service (GILS) is an electronic service through the Internet that provides a decentralized location to anyone who needs to locate, access or acquire government information. GILS is available on the world wide web at http:www.epa.gov/gils.

MECHLING IS OHIO MAN OF YEAR

COLUMBUS, Ohio — The 29th Annual Ohio Turfgrass Foundation Regional Conference and Show was highlighted by presentation of the Man of the Year Award to Paul Mechling of Heather Downs Country Club in Toledo. John Fanning was honored for Professional Excellence, while Dr. Jim Beard and Doug Halterman were given special recognition and Gene Probasco was presented an honorary lifetime membership.

E/T EQUIPMENT BACKS DELHI

DELHI, N.Y. — A major distributor of turfgrass products has donated two new state-of-the-art mowers to the golf education program at the State University College of Technology at Delhi. E/T Equipment Co. of Croton has supplied the Delhi College Golf Course with a John Deere fairway mower and walk-behind greens mower, according to Delhi's Dominic Morales.

CANADIANS SUPPORT AUDUBON

HALIFAX, N.S. — The Royal Canadian Golf Association (RCGA) has awarded $75,000 to the Canadian Turfgrass Research Foundation to continue its turfgrass and environmental research projects, while Audubon International received $31,000 to fund a separately run Canadian office that will be instrumental in protecting the environment's relationship with golf courses.

RUTGERS' ROYALTIES ADDING UP

SOMERSET, N. J. — Jon Loft, president and CEO of Lofts Seed, and Dr. Richard Hurley, Lofts' director of research and professional sales, have presented Drs. C. Reed Funk, T. M. Casey and Bruce Clark of Rutgers University with a royalty check in the amount of $713,150. To date, Lofts Seed, through the marketing of its turfgrasses, has contributed over $3.5 million in royalties to Rutgers.

Cold stressed at the Maine turf conference

By MARK LESLIE

ROCKPORT, Maine — Hardening off cool-season turfgrasses is the most important factor in turf surviving a winter of freezing stresses, according to Dr. William Torello, turf program director at the University of Massachusetts at Amherst.

Speaking at the Maine Turfgrass Conference and Show here March 7, Torello said superintendents should make every effort to accumulate volumes of carbohydrates within the turf plant. Higher carbohydrate levels mean less internal ice crystal formation — "the kiss of death" — within the plant, he said.

Torello told superintendents to enhance the hardening process by:

• Increasing mowing heights, which "does great things for you. Even if you only bring it up 1/8 inch, it makes a big difference because you have increased leaf area and green tissues, which means higher carbohydrate production during the fall, increased storage, and increased concentration of stored carbohydrates in the crown which is going to give you a much better-prepared turf."

• Decreasing or eliminating soluble nitrogen (N) applications as the fall progresses. "Make no N applications after Oct. 15 — earlier in Maine," he warned. "How does nitrogen interfere with the hardening process? The more N picked up by the plant, the more protein it makes. Protein is made by taking carbohydrate and attaching ammonium nitrogen to it. It takes away carbohydrate." Dormant applications are an exception, he said.

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Determined: All sprinklers are not 'created equal'

Photo by JoAnn Kline

Tim Cavellier (left) and Jim McPhilomy are shown in 1990 making a practice run on the PITOT PSI test soon after the test stand was activated.

By AL KLINE, CGCS

Technical advances in irrigation equipment closely parallel the rapid gains made in all areas of turf management. Today, many of us think most, if not all, mysteries have been solved and maybe things have become a bit ho-hum. Yet, why do we continue to be plagued with "localized dry spot," wet areas, dry areas (that require continual attention from "hot spot" or "sponge" crews), less-than-acceptable results from pesticide and fertilizer applications, black layer, and just plain old-fashioned non-uniform turf.

Well, howdy to the real world where so many of us are frustrated and looking for answers. Indeed, a few people think sprinklers may be the key to solving the unsolvable and should be put under the old magnifying glass!

That's what we did at the University of New Mexico Championship Golf Course. Tim Cavellier, a local Toro irrigation specialist, and I built what appears to be the best outdoor sprinkler test stand in the world and are using the SPACE (Sprinkler Profile And Coverage Evaluation) computer program for sprinkler head evaluation as produced by The Center for Irrigation Technology at California State University-Fresno. Key players at CIT whom we have worked with, and are indebted to, are Dr. Ken Solomon, Dave Zoldoski and Joe Oliphant.

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The play's the thing, say supers who hit the links

By PETER BLAIS

All superintendents may not play as much or as well as Jim Dusch of Atlanta National Golf Course in Alpharetta, Ga.

"But it's hard to see how you can do this job and not play the game," said Dusch, winner of this year's GCSAA Championship and a self-described 1-handicap player. "My goal is to get the course to the point where it is agronomically sound and playable in my eyes."

Dusch tries to play his course at least once a week. He watches how the ball rolls on the greens, how bunkers are raked and how worn the tees are as both a superintendent and a golfer.

"You don't have to be a great golfer," he said. "But you should know what the course looks like to the people playing your course. Playing helps you understand what is good and what is bad from the player's perspective. I'm not saying someone who doesn't play can't have a great course. But it would be tougher if you weren't a player."

Charles Passios, head superin

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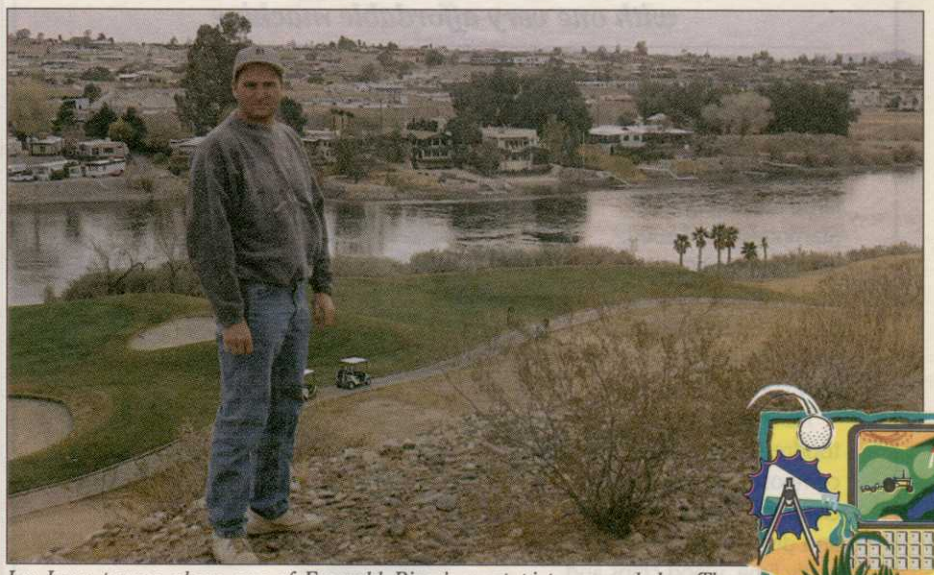

Jay Long pauses above one of Emerald River's most picturesque holes. The Colorado River flows in the background.

ON THE GREEN

Beating the water woes in Nevada

By ALTON PRYOR

LAUGHLIN, Nev. — Emerald River Resort and Country Club stretches for four miles along the Colorado River where it is carved out of rough and unforgiving desert. Built in 1989 on 380 acres of desert base, it requires huge amounts of water to cope with high summer temperatures. For golf course superintendent Jay Long, water is his biggest concern. Even though he pumps from the giant Colorado River, flowing only a fairway from the course, water is an expensive commodity and Long has had to discover ways to reduce that expense.

"We pump out of the river, but cost for water is very high," Long said. "I'm budgeted $250,000 a year for water and that isn't enough. We are charged $1.94 per thousand gallons, which is the residential rate, and there are meters on the pumps to make sure we don't cheat. When the courts broke up the water rights among the states on the Colorado River, Nevada didn't get a very big share."

Long said he applies about 50 acre feet per year to his green areas — about 75 acres. During the summer, when temperatures soar to as high as 125 degrees,

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Sprinkler deficiencies

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So what triggered our interest in exposing suspected problems as a result of sprinkler deficiencies? Tim and I have been long suspicious of failings that appeared sprinkler-related and were highly motivated to seek answers by the works and accomplishments of two eminently qualified researchers: Dr. Solomon and deceased superintendent Jim (JaMac) McPhilomy. McPhilomy managed golf courses in New Mexico and Colorado, and his tireless and voluminous records allowed us to hit the ground running in our search for answers. A few of his noteworthy observations were that:

- rain tests out at 98 percent uniform;
- part-circle sprinklers in general had the most deficient (non-uniform) water application;
- elevation significantly impacts sprinkler performance; and
- catchment testing on golf courses in five Southwestern states revealed that golf course greens have the worst uniformity, fairways the best and tees fell in between.

On one occasion, to prove to his own satisfaction that elevation affects uniformity, McPhilomy dug up a sprinkler head in Pueblo, Colo., and tested that sprinkler in Denver (a much higher elevation), verifying that elevation was the variable.

Dr. Solomon, then director of C.I.T., brought keen insight to our world of turf management by revealing there is a huge difference between what we need for uniformity in high-play turf situations and in most agricultural applications. The key being that we find a dry area on a green, the size of a tabletop or less, to be unacceptable whereas in other "crop" situations "yield" variations are more acceptable and tend to average out.

Solomon believes we should depart from agricultural uniformity evaluations based on the Coefficient of Uniformity (C.U.) and Distribution of Uniformity (D.U.) methods because the results of these tests, expressed as a percentage, are based on averages. The end result of these averages are unacceptable to golfers and leave us in the dark relative to pinpointing our problems.

Ed. — Determining that sprinkler selection is "too often no better than Russian roulette," Certified Golf Course Superintendent Al Kline of University of New Mexico Championship Golf Course in Albuquerque joined forces with Toro irrigation specialist Tim Cavellier and staff at The Center for Irrigation Technology (CIT) at California State University-Fresno. Their aim: to improve the efficiency of the heart of golf courses, the irrigation systems. The result of their work is some fascinating findings, conclusions and recommendations. Here is Kline's report.

Exit, agricultural sprinkler evaluation; enter, turf sprinkler evaluation by way of SPACE. This approach enables us to see and evaluate where those water drops actually do and do not wind up; and assist in finding answers to improve uniformity and/or predict how much more time must be added to a station to eliminate dry spots.

Now, our sprinkler test stand will make even the most skeptical excited about uncovering the mysteries of where "the drops fall." Within two hours (including the one-hour test), the computer will divulge exactly how this sprinkler will perform, in whatever configuration (triangular, square, rectangle) with the size nozzle and base-of-head pressure provided for that particular test.

Imagine how much more accurate recommendations or decisions will be with no-nonsense data!

Let's move on and take a quick look at your warranty. Your sprinklers may be guaranteed to pop-up, squirt and turn for some guaranteed period, but not necessarily give a uniform application. Think about that. Shouldn't uniformity be at the top of your list, and an excellent uniformity be the number-one priority and guarantee? Have we never thought about the absolute importance of uniformity because we assumed all sprinklers, with all nozzles at all pressures were uniform?

Let me explode this myth and hopefully cause us to begin asking questions and getting documented answers.

Really good sprinkler uniformity, from our testing to date, is the exception rather than the rule.

The following summary illustrates some of our sprinkler test stand findings:

- Pressure changes of plus or minus 5 pounds or more at the base of the sprinkler head will usually affect uniformity — sometimes good, sometimes bad.
- The size and configuration of a "swing joint" can and usually does affect uniformity. (Note: Most, if not all, sprinkler heads tested do not have "swing joints" attached during the test.)
- Nozzle rotation, as little as 1/8 inch, can and usually does affect uniformity with certain nozzles.
- Speed of rotation can and usually does affect uniformity.
- A difference in the bore surface (rough or smooth) of a nozzle, same size compared to same size, can and usually does affect uniformity.
- Elevation affects uniformity. (Note: Most heads are tested at sea level. More work needs to be done on this.)
- Existing systems that are lacking in uniformity (and most are lacking) have great potential for improvement, that is, nozzle change, pressure change, internal change, etc. SPACE shows the problems and enables you to make improvements.
- All sprinklers are not created equal (specifications without a definite CIT rating are most often meaningless); and further, each sprinkler will probably have only one nozzle at one pressure (out of all the nozzles and pressures listed in the catalogue) that will give you a really good uniform application of water.
- At this time it appears that if a CIT — Coefficient of Scheduling of 1.10 to 1.30 (10 to 30 percent inefficient) is an acceptable performance range, then sprinkler manufacturers would do us a favor by reducing their product offerings by 75 to 80 percent.
- Testing confirms that there is greater potential for very good uniformity relative to smaller nozzles and lower pressures. This, however, is not an automatic result, and in the absence of testing you will not truly know.

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Our test results reveal:

- For a number of reasons, manufacturers don't often give definite uniformity information. (If you don't believe this, pick a page out of your favorite catalogue and request to see profiles at all pressures and nozzles listed, densograms and scheduling coefficients on all those same heads at a spacing selected by you.)
- We find differences in uniformity between new sprinkler heads "right out of the box."
- Production changes and/or flaws caused during the manufacturing process can and usually do change uniformity.
- A sprinkler head with excellent uniformity (great descending wedge pattern), is much more "forgiving"; i.e. pressure changes and deviation in spacing.
- Many tests result in D.U.'s and C.U.'s in the 80- to 90-percent range which is accepted by many today as being excellent. The CIT Scheduling Coefficient often is 1.5 or higher on these same tests, causing those of us in turf to increase our scheduling times by 50 percent, which, in fact, is horrible.

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CONCLUSIONS

1. Testing sprinkler heads before installation should be the rule and not the exception. (Note: If you don't believe this, ask for the print-outs and uniformity data that the designer used in sprinkler selection for your system). If there is data to be found, look at it, ask questions, find comparisons.

2. Until the end users of sprinklers become more knowledgeable and begin to request and specify excellent uniformity (low scheduling coefficients — 1.1 to 1.3 at no more than .50 inch per hour precipitation rate) as a primary requirement, we will continue to waste water and money and be plagued with turf problems directly related to poor uniformity.

3. There should be at least one sprinkler test stand available in each community. It's time to expect more from our sprinklers. Reducing our water use by 25 to 50 percent is a realistic goal with the technology now available. Let's get with it before the wells run dry.

4. Beware of so-called "custom-designed" systems which usually include the use of two systems on a green and tout the virtues of valve-in-head. Hard copy, CIT-type test data will likely send a shiver down your spine.

5. Beware of the trendy reply, "Oh yes, these sprinkler heads have been tested." Even if by CIT, why, you ask? Because they haven't told you anything yet. You want to know if it was a good or bad test, how many alternatives were looked at (and you want to see those tests) at your elevation, with your size swing joint, with your pressures which do vary at different elevations, etc. You must have hard copy of these tests in order to do your job.

6. There is no substitute for uniformity — demand it.