Golf catches the new technology wave

Restoring greens for play in 24 hrs.

By MARK LESLIE

PEBBLE BEACH, Calif. — Coming soon to a golf course near you: Sand Channel Greens. The company, which promises to add drainage channels to old pushup greens and have them playable in a day, is expanding this winter into Southern California, Arizona, Las Vegas and the Northwest, according to Marketing Director David Lansdale. “And we’re looking to establish a machine on the East Coast. We have two machines going full-time now, and we want to be up to five next year.”

The former “Cambridge greens” process, which used a vibratory plow so disruptive it took months for turf to heal, also has a whole new life: cutter wheels. With these cutter wheels, the machine can

Continued on page 32

The WholeView image from a flyover shows turf health, from the less healthy browns and yellows to the more healthy greens and dark greens.

Flyovers foresee future of turf health

By MARK LESLIE

Thank you, Dr. John Schott. Schott, of the Center of Imaging Science at Rochester (N.Y.) Institute of Technology, was an early proponent of digital enhancement of infrared images. Today, combining that technology with Global Positioning Systems, CAD software, golf course superintendents can “see” situations developing on their turfgrass weeks before they are visible to the human eye.

“It’s an exciting prospect to integrate all these technologies for the maintenance, construction and redesign of a golf course,” said Bob Katula, president of Links Diagnostics, Inc. (LDI) here.

In its agronomic service, LDI flies over a property taking infrared images revealing the photosynthetic rate of the plants

Continued on page 38

Taking irrigation into the future

By ST. BRUNEAU, Quebec, Canada — A golf course irrigation control system that may change the industry has been installed at one of the oldest golf courses on the continent, Mont Broune Country Club outside Montreal, and at Widow’s Walk Golf Course in Scituate, Mass., which will open in July.

“They just might revolutionize the irrigation industry,” said Dr. Michael Hurdan, a golf course architect from

Continued on page 36

Niemczyzk on non-traditional turf treatments

Dr. Harry Niemczyk is professor emeritus and coordinator of turfgrass entomology research at The Ohio Agricultural Research and Development Center of the Ohio State University in Wooster. He received his bachelor’s, master’s and doctoral degrees from Michigan State University. His research on turfgrass insects and behavior has been widely published. Recently he has been doing extensive research on biological controls of turfgrass insects.

Golf Course News: Could you describe the progress of your work regarding biological controls for insects?

Harry Niemczyk: I’ve been studying the effects of entomopathogenic nematodes, parasites that destroy cutworms, grubs and other insects. Several have shown good results. They are introduced live into the soil, seek out the nematodes through the thatch and into the soil. It’s hard to introduce them since they can be destroyed by desiccation and ultraviolet light.

LESCO has a product called Vector that’s been pretty successful with cutworms on golf greens. It is supposed to be irrigated into the green. But that can be complicated. Vector is often mixed in a spray tank and applied along with other products, like a contact fungicide. But contact fungicides should not be watered in. So you end up applying two products together that have different requirements for post-treatment irrigation. That’s a problem. Vector can be effective if it’s used according to the label directions.

GCN: What products are showing promise?

HN: We’ve had some good results on grubs with a product called Cruiser by the Ecogen company. The key is getting the nematodes through the thatch and into the soil. It’s hard to introduce them since they can be destroyed by desiccation and ultraviolet light.

Continued on page 37
Intelligent sensors at the heart of Smart Rain

Continued from page 19

Columbus, Ohio, who is having the system installed at Widow's Walk for research purposes rather than irrigation control. Developed by engineers and computer scientists at Smart Rain Corp. here, the system is a network of "intelligent" 12-inch soil probes that can control the entire irrigation system head by head, gauging water needs by reading soil moisture, temperature and fertility. Smart Rain sensors communicate to the central control computer through the same cables that energize the valves.

No weather station, nor controller is needed. And because the central computer is voice-activated, the superintendent can call it by walkie-talkie and command it to do what he or she wants. Because the system is operated based on soil moisture and temperature, and not on evapotranspiration, Hurdzanz said, "You are getting to the heart of the turf's requirements. You need to measure water in the root zone, not on some arbitrary figure of what evaporated."

"You don't have the time to read 100 sensors in the field," said Smart Rain President Romain Gagnon, explaining the efficiency of his system, whose sensors are little computers connected in the network that talk to each other and the central computer. "If a course has 170 sensors, they provide 510 pieces of data to read."

To help the superintendent make manual watering decisions, the system includes a graphic Windows software program. It depicts a map of the golf course and indicates different colors for every sprinkler head according to soil conditions. Whenever the sprinkler turns red, it means the soil in that area is too hot and needs syringing. When yellow it's too dry and needs heavier watering. Blue, it means it is over-watered, and white, it is too wet.

"At the central computer, superintendents can adjust at what level they want every individual sprinkler to change color," Gagnon said. "They can define what's too cold, too hot, too dry, and too wet, what to fertilize or not fertilize... The colors are there to quickly give them an idea of what's going on in the field. Whenever a sprinkler turns color, you can click on that sprinkler on the computer with your mouse and get precise data about it."

When you water, animation shows that on the screen.

While Widow's Walk and Mont Bruneau will start up their systems in July, Smart Rain has only been in the golf industry since January 1995.

Gagnon and Sales and Marketing Vice President Jim Simonini have been marketing the product for a year, getting feedback for adjustments and additions.

"A lot of the concepts we use come from other industries," Gagnon said. "But irrigation is a low-tech business. Industrial control is my background. When I looked at how people were doing things in irrigation, I was amazed."

Soil-moisture measurement has been available for more than a decade, but the device cost $10,000, he said. Smart Rain engineers developed a much cheaper, little circuit to do the job.

"We did not contribute on the agronomic side," Gagnon said. "The machine cost so much because agronomists didn't have the technical knowledge."

There are three basic technologies in this new system:

- water-sensing technology, which Smart Rain developed;
- Windows technology; and
- Lonworks technology, which allows the sensors to communicate with the central computer. This was developed by Echelon Corp., which is partially owned by Motorola and Toshiba, according to Gagnon.

At Widow's Walk, Smart Rain is being used as "an experimental tool to help us measure soil moisture, fertility and temperature," Hurdzanz said. "We're not using them for irrigation control. We're using them for research. We want to measure how quickly and how deep the root zone goes into a frost layer, and how water moves through profiles, and what the soil temperatures are. We want to use them to determine the efficacy of fertilizers and pesticides — how a fertilizer reacts at 52 degrees soil temperature versus 62 degrees..."

Each green has four sensors installed — one at 4 inches and one at 8 inches both at the front and back of the greens.