

By MARK LESLIE

While weather stations today are light-years ahead of the past, great advances are still expected in the future.

Having completed its purchase of Broadcast Partners, DTN has already invested in turf-related developments and has hired a turfgrass expert to manage the golf end of that research, according to DTN Director of Public Relations Eric Miller.

"We want to be able to use short-wave frequencies and download the information right into the computer rather than use a modem," said John Gehr, a salesman for Spectrum Technologies, Inc., which distributes

the Davis station but with Spectrum ET software.

"We've tried to design a system that's adaptable for the future in case a superintendent wants to add soil moisture, soil temperature, water temperature monitoring," said Peter Levy of Weather Metrics in Shawnee Mission, Kan.

"Considerable work is still needed to establish historical databases for weather data and to accumulate field observations that relate to it," said

superintendent Dan Dinelli of North Shore Country Club in Glenview, Ill. "More disease models must be constructed. Degree-day models need to be calculated for other pests as well as for beneficial insects. There is a lot of room for home-grown research based on collected data, coupled with field observations.

"We are looking at soil temperature readings to help fine-tune the timing of green cover applications, day length and how it may affect plant

responses, solar thermal units to further refine degree units, and soil temperature versus root growth. The uses and applications are limited to your imagination — that's what makes this tool so exciting."

Levy adds his own vision — that of using, say, four sensors at different depths at every green to monitor such factors as moisture and pH content.

Beyond that? How about using the Smart Sensor, an available technology, for turf?

"Just think," Levy said, "a little chip that can make decisions. You can put one on every sprinkler head on the golf course and wire it back into the office. You could monitor different parameters at every sprinkler head. These sensors are getting smaller and smaller."

"The value of water, etc. is much more than, say, 20 years ago. The market will dictate when the Smart Sensor and other new technologies come along. We all can see that if we had four sensors at every green giving constant feedback, it would help protect a \$30,000 to \$40,000 asset."

Weather stations gaining favor

Continued from page 31

they don't do it. With five ET rates, they can input up to five different grasses and five mowing heights. It is continually calculated every second, while most systems take an average reading for the day."

Donelli is also enthusiastic about the new record-keeping abilities of weather stations and Metos' use of sensors.

The station has 10 sensors; a thermometer for air temperature 5 inches above the turf and one for soil temperature 2 inches below the turf; a rain gauge; two leaf-wetness sensors; a solarimeter to record solar radiation and day length; and a soil moisture probe two inches deep.

Soil temperature and moisture largely govern microbial activity as well as the nutrient release by some fertilizer carriers.

And insect development relies on many of the factors tracked by weather stations.

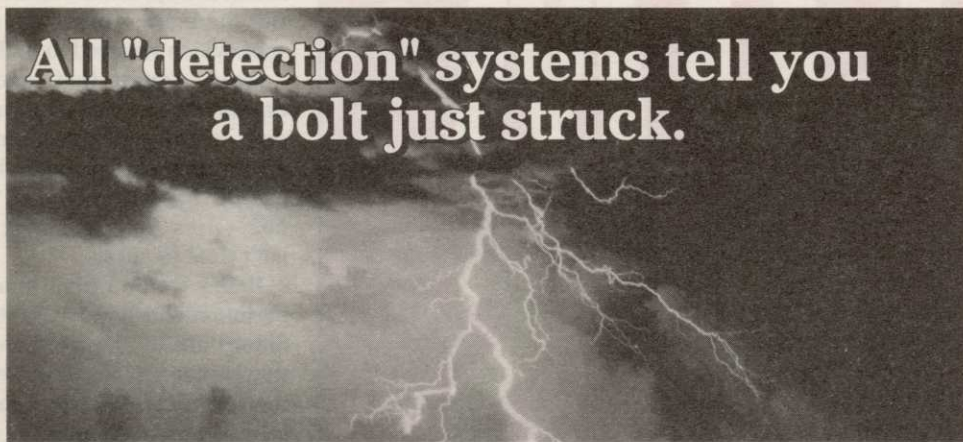
The record-keeping element of weather stations can be a job-saver as well as a help in court (see sidebar), Donelli added.

"We don't have time to go out every 12 minutes and document air and soil temperature, moisture, etc., like the station does," he said. "So it comes in handy, especially in extreme weather conditions. We can enter the software and pull out historic weather data to demonstrate any goings-on that may be in question."

"For example, we had a record-breaking hot, humid summer last year. We were able to document, with tremendous accuracy, what the soil temperatures were, which reflects why the turf was under such stress."

"You post that information on bulletin boards around the clubhouse, along with a brief article that explains heat stress, and people [golfers] start to understand the problems involved."

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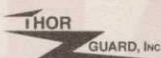
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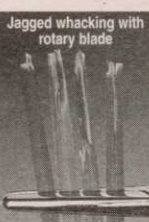
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