

# Current drought only hints at water problems to come

**D**rought conditions continue to plague huge regions of the United States, posing enormous challenges for course superintendents. In the southeastern states, including Florida, Georgia, Alabama and South Carolina, the situation has deteriorated from serious to critical. In metro Atlanta and many other areas, for example, water restrictions are now in place.

Farther west, Missouri recorded its driest April on record. In Arizona, the stretch from October to April was the second driest ever. The story in Texas is no better. And much of the great American "breadbasket" — including Kansas, Nebraska and Oklahoma — is now drought-stricken.

In time, the rains probably will return. But if you listen to Professor Ronny Duncan, of the University of Georgia, the long-term outlook for fresh water isn't very pretty — not in the United States, nor anywhere else. Duncan, a Ph.D. specializing in the development of turf grasses for stressful conditions, says "we've got a situation here that's not going to get any better than it is right now, and it will get progressively worse."

Duncan frames his position against the background of a wildly exploding global population and a rapidly growing thirst for potable water. A few facts he cited recently at an Oregon conclave of seed industry suppliers and distributors:

- According to United Nations' projections, world population will double to 12 billion people by 2100.
- Global demand for fresh, potable water will double every 20 years.
- Renewable water resources per person decreased 50 percent between 1960 and 1998. Another 50-percent reduction is projected by 2025.
- During the past 30 years, the U.S. population has increased 52 percent, while total water use has increased 300 percent. (Separately, the Census Bureau forecasts that the U.S. population will double over the new century, to about 550 million, driven by massive immigration.)

• A mere 2.61 percent of all the water on earth is fresh and non-saline, and most of that is in the form of polar ice. Seawater accounts for 96.5 percent of the planet's water. Fresh groundwater makes up a scant 0.77 percent of the total.

• Global warming will melt polar ice and raise sea levels, flooding low-lying regions and contaminating coastal fresh water with salt. The Caribbean, for example, is expected to rise between five and 32 inches over the next 100 years, depending on the severity of the "greenhouse effect."

Water quality and quantity will be a dominant worldwide concern in the 21st century, Duncan maintains. "The coming water problems," he predicts, "will significantly impact entire societies. The whole issue of water availability is going to change, and I think it's going to change very fast."

Against Duncan's grim scenario, golf courses are bound to face even greater societal and regulatory pressure to lower water usage. Faced with a choice between watering courses or providing the essential resource to their burgeoning populations, there's no doubt where government authorities will come down on the issue.

Fortunately, Duncan says, the golf industry is somewhat ahead of the curve. New grass varieties are coming on stream, more courses are irrigating with effluent or "gray water," and irriga-

tion audits are on the rise. Amazingly, the possibility of irrigating with sea water now also exists.

"We don't have to sacrifice anything from the golf side, or in the quality of the grass," he says, "but we have to change our mentality as to how we manage these grasses. And we can be proactive in showing how we're environmentally responsive to this. The golf industry needs to present a positive image to the public that says, 'Hey, we are environmental stewards and we're going to stay on top of this with our management tactics.'"

Superintendent Brian Sullivan, at Bel-Air Country Club in Los Angeles, concurs with that approach. "Water is going to be the main issue throughout the country," he says. "Certainly in Southern California is it our biggest issue. We need to do our best to conserve it, and we need to communicate our conservation efforts, so when water boards allocate the water, turf is right up there with all the recreational activities that compete for that water."

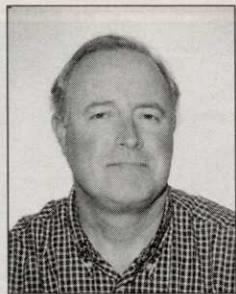
Duncan points to drought-tolerant grasses as one promising example. Seed research companies have made nice strides in developing grasses that can survive in harsh, dry conditions. "We're starting to see a trend in that direction," he observes. "Those grasses are beginning to pay off with reduced course watering."

He is also seeing greater emphasis on efficiency in irrigation. More superintendents are intent on fitting the heads and coverage to very specific situations, he says, and then, instead of doing blanket coverage, they are starting to tie in irrigation with evapotranspiration and weather conditions. And increasingly, he adds, superintendents are ordering irrigation audits.

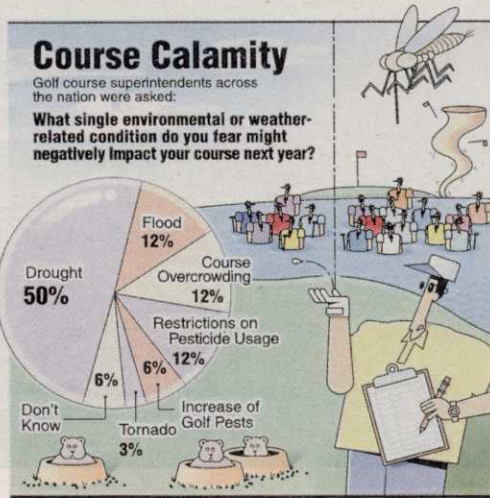
"Irrigation companies come in and run these audits," he says. "They go hole to hole, sprinkler to sprinkler. They look at coverage and make sure the course is getting the maximum benefit."

With one strain of grass — seashore paspalum, which Duncan helped develop — it's possible to water golf courses with ocean water, he says. "You need a coarse, sandy soil, and it takes very intensive management to keep the salts moving down through the profile, but it can be done. If you have to go to straight ocean water, you're in a very desperate situation. But if that's the scenario you're up against, we now have the capabilities that can help, that can keep the grass growing."

All these steps and more will be needed as the earth's population continues to boom and the scramble for water intensifies. The golf industry, however, need not be a casualty. "It's not just one thing that's going to solve the problem," Duncan says. "We have to move on multiple fronts, and be proactive in how we do things."



Jay Finegan



# Return of traditional course design is well underway

*"What has been will be again, what has been done will be done again; there is nothing new under the sun."*

*Ecclesiastes; 1:9*

**T**he author, Solomon, was referring to the works of the first, and greatest, golf course architect — God. The world waited another 3,000 years, however, for 'the gowf' to

take advantage of the natural 'golf courses' that existed long before the game. Everything the modern architect does has been done before. The genius of the golf course architect finds expression not in creation but in re-creation.

No excuses for repeating the above which I wrote in a freelance article some months ago. It seems that another band-

wagon is rolling, and the more grease on the axles the better, as far as I am concerned.

The fact is, the return to traditional golf course design is well under way. The renewed enthusiasm for links-style layouts is evident in the United States and around the world. At Lake Obing in Germany, architect Tony Ristola described his new course as "real raggedy George

Thomas kind of stuff with some Alister MacKenzie, say Cypress Point, thrown in as well." David McClay Kidd at Queenwood in England says, "To do something new, you have to do something old."

No doubt there are many examples of architects and golf courses that have never left such a traditional approach, but I hazard that they



Trevor Ledger, international bureau chief

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