GOLF COURSE NEWS

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Courses breaking hazwaste law

BY MARK LESLIE

Most golf courses today are breaking the law.

Only 45 percent of the Club Managers Association of America members questioned in a poll say their clubs have a hazard communication program, and an industry expert feels even that is a high figure.

A poll conducted by Public Opinion Research, Inc., of Washington, D.C., and CMAA's Governmental Affairs Department found that only 56 percent of the managers polled had even heard about the law requiring a hazard communication program.

The law, which originally targeted heavy industry and manufacturing, was expanded to cover golf courses among other businesses in May 1988.

The federal Occupational Safety and Health Administration reports that lack of a

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This 18th hole displays a portion of the beauty of New England Country Club in Bellingham, Mass., designed by Hale Irwin and developed by Forge Development Corp. For more on this and other new courses, see pages 10 and 11.

Oregon seed law vote soon

A decision is expected in mid-June on a proposed field-burning law in Oregon that may endanger the entire supply of U.S.-produced cool-season golf course grasses.

Observers close to the Oregon state Legislature say the seed industry has enough support in the House to kill any bill that would be too damaging to the 70 seed companies and 800 farmers who grow seed in the state.

But Dave Nelson, executive director of the Oregon Fine Fescue Commission, is not taking anything or anyone for granted.

"Things have to cook and take their time" in the legislative process, he said. "We're proceeding through the process but we won't know anything for sure until the final vote on the floor."

Another industry expert said the state Senate in mid-May was taking a harsh stand that would have cut the number of acres that could be burned in the state from 250,000 to 150,000 this fall, then to 100,000 acres in 1990, and 50,000 in 1991 and thereafter. The Senate at that time supported raising the fee farmers pay per acre burned from the current $3.50 to $20 or $25 an acre in 1992. A total of 345,000 acres produces grass seed in the state.

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Beditz leads NGF into future

BY BOB DRUM

The National Golf Foundation is "its strongest in history," says Dr. Joseph F. Beditz, its new president and chief operating officer. "I'm inheriting a healthy club and want to keep it up and keep improving."

Beditz, 38, who had been in the job in an acting status since David B. Hueber resigned in January, has high hopes since being handed the post permanently after a May 2 NGF board meeting.

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Drought woes plague courses

BY KATHY BISSELL

The drought situation continues to affect golf courses in all parts of the country.

Most severely hit are areas of Northern California, according to Don Hoos, director of agronomy for Landmark Land Co., Inc., which has 22 courses from California to Florida.

"In Carmel and Monterey the underground aquifer is not as good as in some areas. There has already been a 20-percent reduction request for industrial users, which includes golf courses, hotels and resorts," Hoos explained. "They can achieve 20 percent by being more careful with irrigation, maintaining minimum levels for grass, not watering roughs. The greens,

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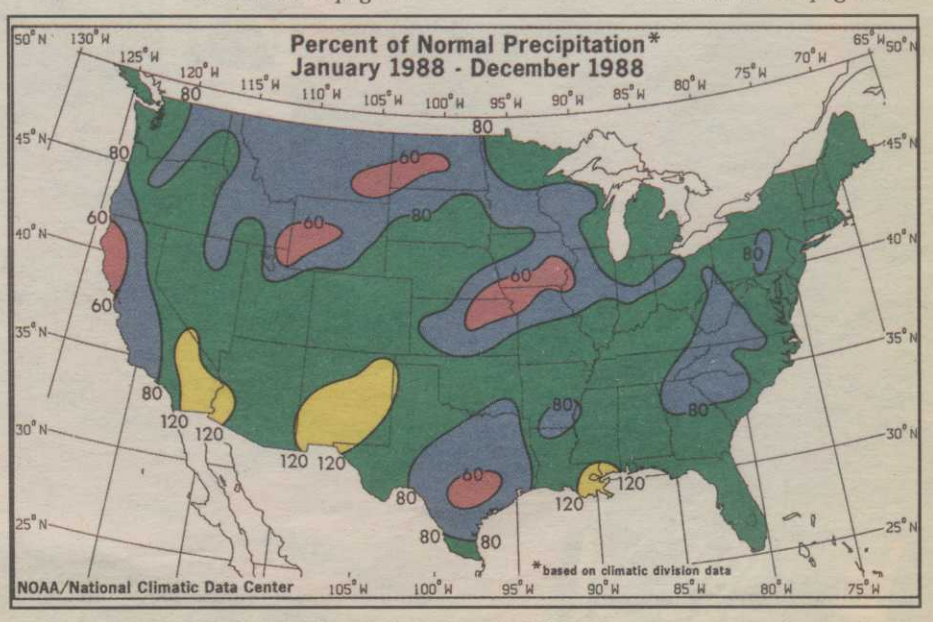

This map from the National Climatic Data Center, NOAA shows the percent of normal precipitation around the United States for the entire year of 1989.

Drought threat is real from East to West Coast

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tees and fairways will still have a pretty high level of maintenance."

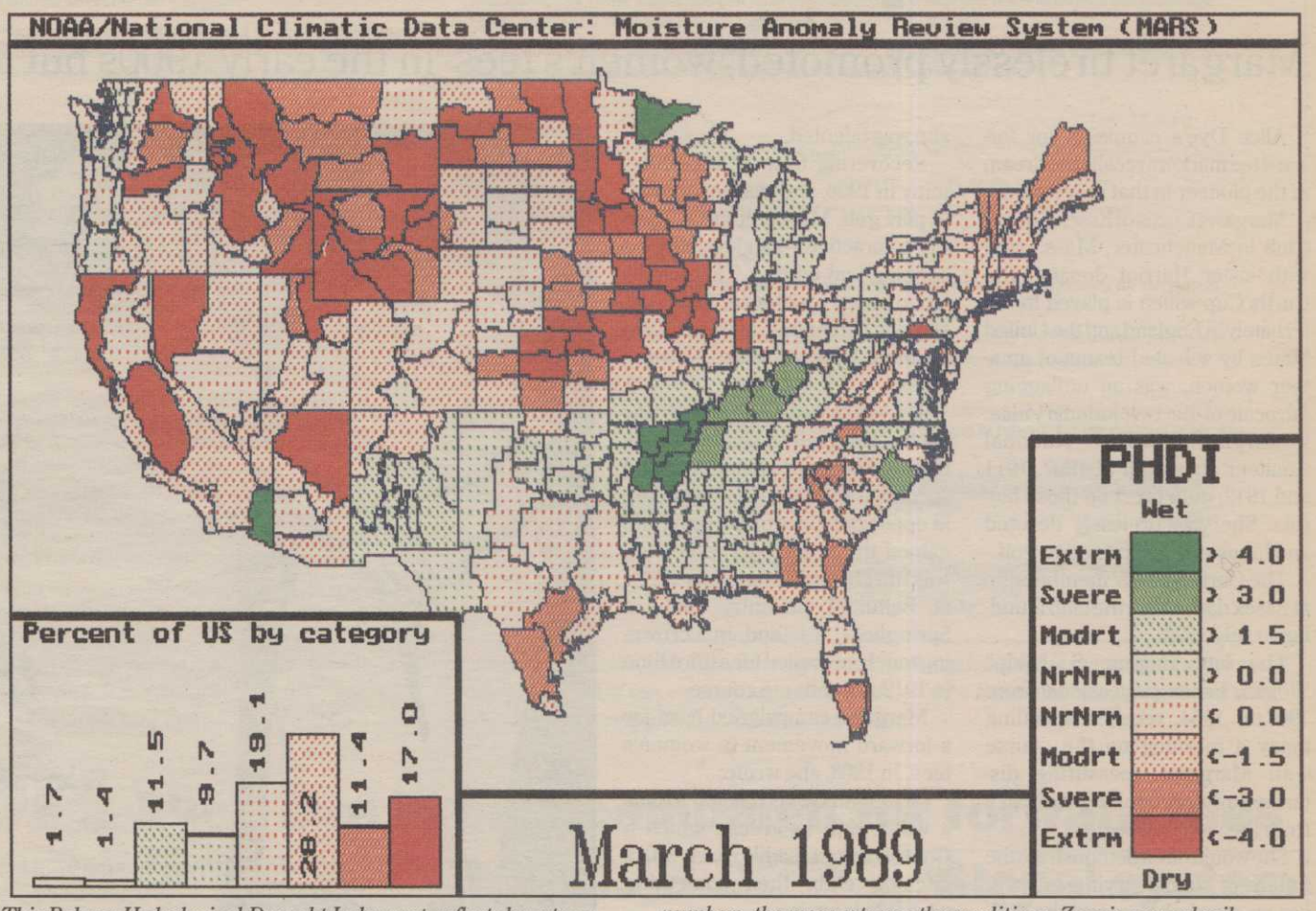
However, the northern areas may mandate 40-percent reduction which, Hoose said, would be severe. "It would require decreasing or eliminating watering in the fairways and roughs. Maybe they could water once or twice a week. A lot of grass would be lost."

Most of the turfgrasses in that area are the poa annua, annual bluegrass, bentgrasses.

According to Hoos, under minimal watering conditions, perennial grasses go dormant but "a lot will come back. They will also have to reseed. That makes the seed companies happy."

Some regions are not affected. Oklahoma, for example, often thought of as dry because of the dust bowl era in the 1930s, has not suffered drought conditions. At Oak Tree Golf Club, site of last year's PGA Championship, they have had more water than average the last two years.

"Last year they had 90 percent of normal," Hoos said. "They are in good shape."



This Palmer Hydrological Drought Index map reflects long-term drought areas. It takes into account not only rainfall, but also temperatures, evaporation and soil conditions. Drought areas are colored red, extreme wetness areas green. The more extreme the numbers, the more extreme the conditions. Zero is normal soil moisture conditions. Long-term index value standard is negative for drought, positive for wetness.

The Midwest

In many parts of the country fall rains helped. At Butler National Golf Club in Oakbrook, Ill., golf course manager Oscar L. Miles feels they are more fortunate than many places in Illinois. Their rainfall is normally plentiful because they are close to Lake Michigan.

"We had nice rainfall last fall," Miles said. "It wet the surface 12 inches. However, we are deficient this year. Last year we had 107 percent of normal. November was very wet here. But this year we've had 46 percent in January, 79 percent in February and 75 percent in March."

The moisture isn't replenished when the ground is frozen, he explained.

"We had rains, but the ground was frozen, so it ran off," Miles said of conditions in early winter. "But we've had 1 1/4 inches recently and that wet ground 8 inches deep. We need substantial rainfall soon. It takes 2 to 3 inches of rainfall to wet a foot of soil. We need to have the soil wet 2 to 3 feet deep."

Miles feels conditions farther south and west in Illinois are more severe. A big concern are the trees.

"We won't see it (extent of damage) until budding," he said.

Damage shows with less budding and reduced vertical shoot growth.

"We have trees, but they are strategically placed. We aren't tree-lined tee to green like Medinah," Miles added.

Butler National, which hosts The Western Open, one of the oldest tournaments in professional golf, is more often remembered in recent years for flooded conditions, not drought.

Rains in 1983 were a problem for the tournament. In 1982, Miles, recalled, they were also flooded, but not during the tournament.

"In 1987 we had a 100-year flood and a 500-year rainfall. We had 9 inches in 24 hours. Some places had 11 and 12 inches. It replenished the aquifer — the water table rose in our area. That's the kind of thing we need — ground water — but not all at once."

In 1987 The Western Open was played partially at Butler National and partially on a neighboring course because so many holes were under water.

Southern New England

Most of southern New England is adversely affected by drought, according to Jay Reagan, superintendent at the TPC of Connecticut. "We are 5 inches below the water table right now," Reagan said in April. "We hardly had any snow last winter and only 6 inches of rain."

Last summer and fall, they were hand-syringing and watering on their course. "We have a totally manual irrigation system, so it takes a lot of work. The roughs burned out completely," he said.

In the roughs there was the added problem of rain and gallery traffic during tournament week of the Greater Hartford Open. Many areas of the course are relatively new, also, and were trampled by crowds.

The TPC of Connecticut gets water from a seven-acre, natural pond on site. "The pond level was down and it was critical. We were below the intake lines," Reagan said. They have imported water from the town water supply. Another 10,000-square-foot water area on the course is not used for irrigation.

TPC has not seen a tree problem yet. However, according to Hoos, severe tree problems will not materialize until next year. The first sign of trouble is defoliation, he said. "If there is a second year of substantial loss, then you may lose the tree. It depends on how efficient the type of tree is and what kind of root system it has. Needle trees are more efficient. They don't transpire as much. But the root system of other broadleaf trees may be better."

At Westchester Country Club in Rye, N.Y., they are in a water-cutback situation. "If you have your own water, you can water greens and tees, but no fairways," said Patty Knaggs, superintendent at Westchester. "April 17th, Phase II of the water conservation program started, and then we could water tees and

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Relative ranking of evaporation rates for the most commonly used cultivars of the major cool- and warm-season turfgrasses.*

Relative Ranking	ET Rate (mm/day)	Turfgrass Cool-season	Warm-season
Very low	<6		Buffalograss
Low	6-7		Bermudagrass hybrids Centipedegrass Bermudagrass Zoysiagrass Blue Grama
Medium	7-8.5	Hard fescue Chewings fescue Red fescue	Bahiagrass Seashore Paspalum St. Augustinegrass Zoysiagrass, Emerald
High	8.5-10	Perennial ryegrass	
Very high	>10	Tall fescue Creeping bentgrass Annual bluegrass Kentucky bluegrass Italian ryegrass	

* — Grown in their respective climatic regions of adaptation and optimum culture regime. Cultural or environmental factors that cause a drastic change in leaf area or shoot density of a given species may result in a significant shift in its relative ranking compared to the other species.

Scientists make advances in grasses

Developing new turfgrasses and management techniques that will reduce golf course maintenance costs and water use by 50 percent by 1993 remains the goal of researchers.

Relative ranking of evapotranspiration rates for the most commonly used cultivars of the major cool-and-warm season turfgrass has been released by the Texas Agricultural Experiment Station at College Station, Texas.

Drs. James B. Beard and Ki S. Kim, Texas A&M University turfgrass stress physiologists, prepared the table for the USGA Green Section Record.

Water use rate is the total amount of water required for turfgrass growth, plus the quantity transpired from the grass plant and evaporated from associated soil surfaces.

The comparative water use rates of turfgrass species, Beard and Kim state, are distinctly different from the relative drought resistances, because each is a distinctly different physiological phenomenon.

The differences among 19 turfgrass species used throughout North America are substantial, they point out.

Excellent research progress also is reported at New Mexico State University, where Dr. Arden Baltensperger has developed Sahara, an improved variety of seeded common bermudagrass soon to be on the commercial market.

Dark green in color with exceptional drought resistance and lower growing habit with shorter internodes (tighter turf), Sahara has proved an excellent seed producer.

Dr. Terry Riordan at the University of Nebraska is developing new buffalograsses.

The release of a superior vegetative cultivar is due this year, and improved seeded types are expected within a few years.

Reports from Texas A&M, Dallas, the DSIR in New Zealand, and Penn State and Rhode Island universities detail progress in developing improved bentgrasses with greater heat tolerance, lower water and fertilizer needs, and disease resistance — all without loss of superior playing qualities.

The target date of 1991 or 1992 for release of the early, promising new bentgrasses holds firm.

Golf courses critical care units in droughts

Turfgrass experts have a number of suggestions for care in drought situations:

Nutrition

In drought situations, superintendents "have to be cautious about feeding" their golf courses, says Jim Snow of the USGA Green Section's Golf House in Far Hills, N.J.

"You wouldn't want to overstimulate the grass," Snow says. "Too much fertilizer can reduce your root system, and as far as top growth is concerned, it's only going to make the water use go up. So you want to feed it enough to have healthy turf and to promote a root system but you certainly don't want to overdo it at all."

Snow says that more specific suggestions would depend on the kind of grass involved and the history of the soil.

"Soil testing is crucial," he says. "You certainly should have adequate levels of phosphorus and potassium, because that will promote good root growth. If soil tests indicate low levels of either of those nutrients, you want to provide them. Keep nitrogen fertility down to low to moderate levels during a dry spell."

Norman W. Hummel Jr., assistant professor of turfgrass science at Cornell University, says the critical point in nitrogen managemnt is to provide only enough nitrogen in the spring to promote rooting. Areas that haven't been fertilized in a year or more would benefit from a pound of nitrogen per 1,000 square feet applied early in the growing season.

On areas fertilized in fall or late fall, nitrogen should be applied until after root production has peaked, he says. "The use of slow-release nitrogen sources at that time would help insure that the growth rate will not adversely affect drought tolerance."

Water

Many factors have to be considered when deciding watering practices, Snow says.

"Good cultivation practices are important because you want the water to penetrate into the soil as uniformly as possible," he says. "And of course well-aerified or well-cultivated soil will generate a better root system for your turf, so you will have deeper and denser root systems but they will take up moisture better."

Snow also suggested spiking and slicing soil dried by drought.

Watering frequency will depend on turfgrass species and use, soil type and evapotranspiration. But Hummel says that during drought stress periods, light, frequent waterings will produce higher quality turf than that under heavy, infrequent applications.

"Unfortunately, water use will probably be higher due to a more vigorously growing turf," he says.

In non-drought periods, Hummel says, heavier, less frequent waterings should be adequate to maintain high-quality grass. "As summer progresses, though, root systems deteriorate and plants must obtain most of their water from the surface few inches," he says. Thus the change in hotter weather to the light and frequent recommendation.

Snow says superintendents should make sure their irrigation system is working properly and covering the turf as uniformly as possible so that when they do irrigate they don't have poor coverage. Check the pressure, nozzles, head spacing, everything, Snow says.

Snow also suggests hand-watering higher or drier spots on the course.

Mowing

Snow also recommends decreasing the frequency of mowing. "If you're mowing every day, mow every other day," he says, although "you don't want to go a lot longer than that on a golf course."

Snow says that every time you cut grass, "you expose tissue and you lose moisture to the cut tissue."

Hummel says root systems of cool-season turfgrasses peak in the spring and mowing at a higher cut during this time should result in greater root development.

When summer arrives, mowing height changes according to what part of the country you are in.

Hummel says that in the northern two-thirds of the United States, maintaining a high-cut turf during the summer causes larger water losses due to the greater leaf area and lower resistance in the canopy to soil evaporation. He suggests that where practical, gradually reduce the mowing height starting in late spring and keep it at that height until early fall.

In the southern one-third of the country, superintendents should cut their warm-season grasses at a lower height in the spring and raise the cut slightly during the summer, according to B.J. Johnson, professor of agronomy at the University of Georgia Agriculture Department's experiment station in Griffin.

He says Bermuda and zoysia grasses especially need to be cut (to 1/2 to 3/4 inch) to remove thatch in the spring; but then the height should be raised as the temperature gets hotter.

Johnson says that in the South, people should cut cool-season grassesabout the same the year around (about 2 1/2 inc hes) and this will reduce stress in the summer heat..

Pests

"Do anything you can to control pests, especially insects, because insects can really cause a lot of problems with roots," Snow says. "They eat the roots of the plant and you have to use water like mad to keep the turf alive."

Checking for nematodes, or roundworms, and keeping them under control, is also critical, he says.

Traffic

Keeping traffic off the turf areas is important to the turf's survival, according to Snow.

He suggested the course officials look at restricting golf cars to specific areas. An example would be to keep them on the paths, or if the course doesn't have paths, have golfers drive in the tall rough areas. But still "you can't keep running over dry turf with a golf car even in the rough so if the roughs are not irrigated, consider putting the cars off the course all together or put them on the fairways for awhile," Snow says.

Drought

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greens — lawns and gardens with hand-held containers only."

While it is labor-intensive, Knaggs pointed out that there is also less mowing. They will most likely have to bring in water tanks to supplement their self-contained ponds and wells.

However, Knaggs is taking measures to take care of the plant structure.

"We will use deep-drill aerification on greens," she said. "We'll be cautious with fertilizer use (because the plants will grow more slowly). And we'll make sure we use potassium to help the plants under stress. We'll use a higher cut and smaller machines."

Knaggs said she could not speak for last season at Westchester because she was at The Country Club in Brookline, Mass. Last summer they, like most people in the Northeast, had a great deal of rain followed by severe heat and no rain.

"Where I was last summer, we had no water restrictions and an excellent irrigation system," she added. "But everyone in this area had similar weather problems.

"Right now, we have a perfect spring rain," Knaggs said. "But we need 6 inches a month to put the reservoirs back to normal. They should be at 90 percent now, and they are at 60 percent."

The Southeast

In the Southeast, Hoos said that even moisture-laden Florida has had problems. "In 1988 — January to May — Florida was OK. From May on, they were behind in water. September to December they had 2 inches of rain. Normally, they get 20 inches in that time."

According to Hoos, what happens then is that canal levels drop. If it continues through the spring and summer, they could see problems. "Most people irrigate out of the canals. And if it drops below the pump intake levels, then people won't be able to pump water," he added.

Southern California

Back on the West Coast in Southern California, the Los Angeles and San Diego basins face problems that will become severe without adequate rain.

Hoos cautioned that the Northern California reservoirs serving the Los Angeles and San Diego basins were at 50-percent capacity for storage in April, before the snow melt and any spring rains that arrived.

"If they do not get enough rainfall to recharge the storage this winter, 1990 could be a real problem," he said, noting that normally the reservoir is kept at 75 to 100 percent.

If reservoirs are not refilled, cutback may be necessary in the greater Los Angeles and San Diego areas.

California's desert resorts, an area everyone ordinarily believes is troubled by water problems, is less affected than other areas in California, Hoos said. "Our ground water and Colorado River water is adequate. In fact, the Coachella Valley Water District sells water to Los Angeles. We have first right to the water for our area."

The Southwest

Arizona is a different matter. Severe legislative measures have already been implemented. Courses can only irrigate 500 acre/feet per year. They can get more water after that amount, but they pay a severe penalty, according to Hoos.

This accounts for the kind of natural desert design schemes found at such places as Desert Highlands in Scottsdale and Ventana Canyon in Tucson.

Designers and developers have eliminated grass in the roughs, promoting the target concept.

They use 60 percent to 80 percent native plant materials. The courses, Hoos said, have 30 to 40 acres of fairway and narrow bands of rough surrounded by native materials.

Homes, too, have no turfgrass.

"There is a big debate on the care of older versus newer courses because the older style courses have green fairways and roughs," Hoos said.

Solutions available

But while there is a serious problem, there are also aggressive solutions.

The USGA Green Section's research program has a goal of developing turfgrasses that decrease the amount of water needed by 50 percent. It is starting to releasing the first grasses this year.

"There are seeded bermudas with cold tolerance that can be used in Oklahoma, Kansas, Southern Missouri. Bermudas are more drought-tolerant. The idea is to stretch the band of warm-season grass users," Hoos said.

While Hoos said the goal of 50-percent reduction in water use for turfgrasses is unlikely to happen, there is ongoing research to get as close to the mark as possible.

The University of Georgia, University of Nebraska, Oklahoma State and New Mexico State have ongoing programs to that end. They study the stress physiology mechanics in plants to determine drought and disease tolerance and decrease disease, chemical and other costs. This information goes to breeders who create stronger plants.

The issue of water for golf courses is an unending one. Perhaps Butler National Golf Club's Miles has the best philosophy: "It's everybody's responsibility to be responsible."

Kathy Bissell hosts a nationally syndicated golf television show and is vice president and director of public relations for Landmark Land Co., Inc.