



THE WORLD OF MAINTENANCE IN '97

If necessity is the Mother of Invention, then greenskeeping is the Father of Invention. This is proven again and again, from the shop to the fairway. Experimenting to ease the chemical and financial pressures on maintenance, superintendents have dipped deeply at the well of invention. Among their findings: barley straw fights algae, a molasses and cane sugar mix gives turf a quick flush, and shag carpet is a superior replacement for sod on sod-wall bunkers.

Meanwhile, superintendents and their crews are better educated. There are more college-educated first and second assistants and irrigation specialists. At the same time, burgeoning mechanics programs are starting around the country.

Parallel to all this progress, university scientists — many funded by the U.S. Golf Association — are discovering the impacts, or lack thereof, of golf course maintenance on water supplies, wildlife and the environment.

The maintenance business is fairly bursting with news and discoveries. The following pages give a glance.

— Mark Leslie

OSHA targets ergonomics controls on industry

By MARK LESLIE

WASHINGTON, D.C. — Arguing that ergonomics is the solution, not the problem, the Occupational Safety and Health Administration (OSHA) ergonomics coordinator defended the agency's work to define guidelines for the workplace.

"Our Congressional mandate is to prevent injury and illness in the workplace," said Nancy Adams. "The way the debate gets framed, ergonomics is the problem. But it's not. It's an intervention strategy to prevent the injury from happening, by good engineering, good process design, fitting the job to the worker and not the worker to the job. You can't do that as one-size-fits-all."

OSHA's push into the realm of ergonomics is not new. The first ergonomist joined the agency in 1979, and talks with labor, trade associations and professional organiza-



tions began in the early 1980s. But the business and industry communities got concerned when, in 1992, an "Advance Notice of Proposed Rulemaking" targeted such items as:

- Lifting or carrying anything weighing 25 pounds without assistance more than once during a workshift.
- Using vibrating tools, which would include weed-eaters, for more than two hours.
- Working in awkward positions (such as kneeling, stooping or squatting) for more than two hours.
- Performing the same motions every few seconds.

"That's called labor," quipped one superintendent regarding the 25-pound limit. "The standard weight [for bags for various products] is 50 and 80 pounds."

Various other chores on a golf course maintenance crew

Continued on page 20

Fathers of Invention

GCN JANUARY

Carpet-wall bunkers expected trend-setter

By MARK LESLIE

SCITUATE, Mass. — Some inventions seem to be just laying around under a bush waiting to be discovered by an innovative mind. Such was the case of the "sodwall bunker kit in waiting" — Dr. Michael Hurdzan's answer to standard, old-time stackwall bunker.

Fresh from a trip to Scotland, the home of sod-wall bunkers, Hurdzan was walking the property of what would become

Continued on page 17



No, this is not sod, which needs repair every couple of years. It's shag rug.

GCN AUGUST

Barley straw a fatal attraction for pond algae

By MARK LESLIE

TORONTO — News flash: Folk remedy strikes at the heart of the pond algae problem.

While science and technology are striving to remove algae from ponds, some superintendents are accomplishing the task with a simple bale of barley straw.

Continued on page 19



A bale of barley straw floats atop a one-acre pond at Toronto's Board of Trade Country Club.

GCN JANUARY

Mounted hose reels equal easy watering

By KEVIN J. ROSS

VAIL, Colo. — In all my years in golf course management, I have yet to see the perfect irrigation system. I do not believe this is due to a lack of irrigation design or equipment, but rather of agronomic science. Let's face it. No irrigation system can replace the agronomic benefits of a good hand-watering program. If you're not hand-watering on a consistent basis (when needed), perhaps you should evaluate your watering practices.

Hand-watering is a pain, but it can make

Continued on page 19



Three types of hose reels used at Country Club of the Rockies: mounted to an E-Z-GO (left); mounted to a Kawasaki Mule (center, in use); and mounted to a fabricated trailer.



GCN MAY

Ground, surface water: Minimal impact

By MARK LESLIE

WHEATON, Md. — Preliminary findings of studies monitoring ground- and surface-water quality at nearly 40 golf courses re-enforce golf industry claims that courses are not a danger, particularly when compared to other sources of chemicals, according to Stuart Cohen, president of Environmental & Turf Services, Inc. here.

"Overall, these results show that golf courses are not having a significant impact on human health or aquatic organisms relative to other sources of chemicals in the environment," Cohen said of the study he conducted for the Golf Course

Continued on page 15

GCN NOVEMBER

Dicamba, 2,4-D no problem on greens

By MARK LESLIE

BELLE GLADE, Fla. — A two-year study of a U.S. Golf Association-specified golf green by University of Florida Profs. George Snyder and John Cisar has found that concentrations of the herbicides 2,4-D and dicamba were low in the thatch and soil and far below federal maximum contaminant levels (MCLs) in percolate water.

"Dicamba and 2,4-D, particularly dicamba, are pretty mobile in sand soils, and most people don't want any in their drinking water," said Snyder, adding, "As far as I know,

Continued on page 14

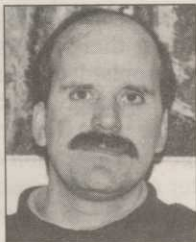
Notable quotables



Judy Bell

● "If we want perfect we can just stay at home and putt on a rug."

— Judy Bell, president, USGA



Kevin Ross

● 'You can spend a long time in a filing cabinet, or you can get a computer.'

— Kevin Ross, CC of the Rockies

● 'You've got to use common sense out there. It's like working in a fish bowl. People see what you're doing. Three or four kids edging a bunker is not acceptable.'

— Bob Feindt, superintendent retiring from CC of Rochester

● 'We tried in the '40s, saying spikes were terrible on the turf, and that did nothing. No, the impetus for going 'spikeless' is the golfers. It has nothing to do with research, or the USGA ... or anything else.'



Jim Snow

— Jim Snow, USGA Green Section director

Water study

Continued from page 13

Superintendents Association of America (GCSAA) Foundation.

Cohen said he was pleasantly surprised by the surface-water data, having expected higher concentrations of chemicals and a higher frequency of detection because of storm-water runoff. But he was unpleasantly surprised by high detection rates in the ground-water database.

"I think that if we got more data from more sites, the two [ground and surface water] would even out," he said. "I feel if we had more data from more golf courses around the country, and where the wells weren't immediately adjacent to managed areas, the ground-water detection rates would drop off significantly over time."

Indeed, a source of optimism is that the monitoring wells in the golf course studies were usually shallow and next to treated turf, whereas agricultural studies have usually focused on drinking-water wells that are deeper and farther away from treatment areas.

"The results are actually favorable for [golf courses] when one considers that fact," Cohen said.

Cohen recommended to the GCSAA Research Committee that an updated study be done in a year or two. "We learned there are many studies just beginning, or not yet finished," he said. "We think our research actually catalyzed interest in doing studies. We got several calls from golf course superintendents wanting information so they could perform research."

Citing the need for studies in the mid-continent and other areas, because of "major geographic deficiencies" in previous research, Cohen said, "It would be appropriate for others besides the golf industry to step up to the table, perhaps working jointly with the EPA [Environmental Protection Agency] and/or pesticide manufacturers on studies."

Despite geographic data gaps, some conclusions are apparent after reviewing the 16,700 database entries from the 38 golf courses in his study, Cohen said.

The concentrations of nitrate in ground water were surprisingly low — lower than what is typically seen in intensive agricultural areas, he said. Nitrate concentrations in surface water were also low. Pesticide detection rates and concentrations in surface water were somewhat lower than expected.

The federal standard for Maximum Calculation Level (MCL) or Health Advisory Level (HAL) of nitrate is 10 parts per million (ppm). The HAL is the upper concentration a person could

drink in water for a lifetime without showing any harmful effects. Levels slightly above 10 ppm might or might not be harmful.

Testing of wells, drains and lysimeters at 72 locations showed an average concentration of 1.6 ppm of nitrate in the ground water. Thirty of 849 data entries exceeded 10 ppm, but all but one of those were at a new golf course situated on former farmland.

Of 906 database entries for surface water, nitrate was found in 706 instances at an average concentration of 0.5 ppm.

Further, in ground-water monitoring for pesticides, Cohen said researchers found 160 detections in 12,214 data entries. "The typical detection limit," he said, is 1 part per billion (ppb), while some detection limits were at 1/10th ppb. Nine of the detections exceeded HALs or MCLs.

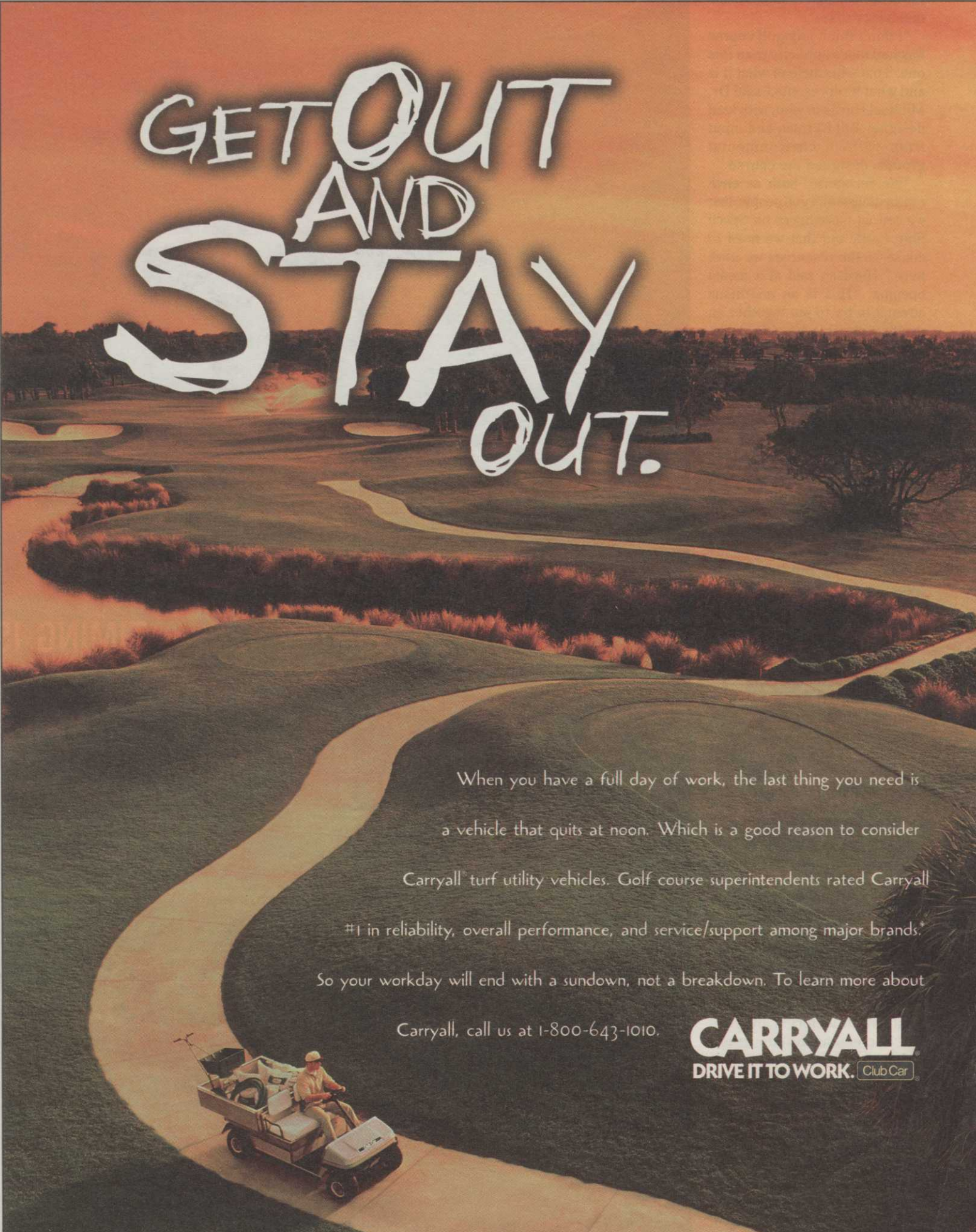
"We have wells next to tees. We have tests from drains under greens. These are not drinking-water wells in bedrock," Cohen pointed out.

Surface-water monitoring discovered that in 2,731 entries, pesticide levels exceeded MCLs or HALs five times, or 0.02 percent. Nineteen of the entries (0.7 percent) exceeded aquatic MACs (Maximum Allowable Concentrations for

aquatic organisms).

The average concentration was 0.07 to 6.8 ppb, Cohen said, depending on how non-detections were counted.

Saying the current study is based mostly on worst-case locations for wells and other test areas, he said, "One could infer that similar golf course studies would indicate a significantly reduced impact relative to agriculture."



GET OUT
AND
STAY
OUT.

When you have a full day of work, the last thing you need is a vehicle that quits at noon. Which is a good reason to consider

Carryall® turf utility vehicles. Golf course superintendents rated Carryall

#1 in reliability, overall performance, and service/support among major brands.*

So your workday will end with a sundown, not a breakdown. To learn more about

Carryall, call us at 1-800-643-1010.

CARRYALL
DRIVE IT TO WORK. Club Car



CLUB CAR
INGERSOLL-RAND

Club Car, Inc. • P.O. Box 204658 • Augusta, GA 30917-4658 USA • 706-863-3000 • Fax: 706-863-5808
*Based on ratings of Club Car, E-Z-Go, Cushman, Jacobsen, and Deere® lightweight turf utility vehicles in the 1996 survey of superintendents, conducted by the Golf Course Superintendents Association of America.