

RESEARCH UPDATE

Organism discovered that fights gray snow mold

By MARK LESLIE

MONTREAL — Researchers at the University of Guelph have discovered an organism that suppresses development of gray snow mold, according to Teri Yamada, national director of the Royal Canadian Golf Association (RCGA) Green Section.

Updating Canadian superintendents on research at universities funded by the Canadian Turfgrass Research Foundation, Yamada said studies have found that some isolates of *Typhula phacorrhiza*, a naturally occurring fungus found on corn debris, control gray snow mold as well

as or better than a control application of Daconil 2787 @ 2g a.i./m². And on those plots where *T. phacorrhiza* was applied along with the causal agents for gray snow mold, the turf remained clear of the disease the following year as well.

"This is very exciting,"

Yamada said. "But it's also a bit disconcerting to us as a funding agency. Ultimately, we would like to see a biocontrol developed and commercially produced for you. We have a couple of hoops to go through. We have to check risk analysis... We also have to find a way to deliver that



biocontrol onto the green.

"And, if you only have to use it once, we may have problems finding a company that will sell it."

University of Guelph scientists are working on the possibility of pelletizing *T. phacorrhiza*.

Storage is another factor. "They have been able to store *Typhula phacorrhiza* for up to 16 weeks," Yamada said. "But the organism is no longer viable after that period unless stored at minus-15 degrees Celsius."

Gray snow mold in Canada is usually caused by one of two organisms — *Typhula incarnata* or *Typhula ishikariensis*. It was discovered that *T. phacorrhiza*, when put in contact with the other two organisms, actually suppresses development of gray snow mold symptoms.

During the winter of 1994-95, Prof. Tom Hsiang inoculated field plots with 46 isolates of *T. phacorrhiza*. Some of those isolates equaled or bettered the control given by Daconil. The best 30 isolates and 16 new ones were used for the second round of testing in winter 1995-96. The 1994-95 plots were not reinoculated with *T. phacorrhiza* to test for residual effect. Several plots stayed clear of snow mold despite the causal agents being reapplied.

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Yamada is also excited about a "star wars"-type project at University of Guelph, where scientists are working on using micro-projectile bombardment to "shoot" antioxidant-producing genes into bentgrass cells.

The overall project has Guelph researchers investigating genetic transformation of creeping bentgrass to enhance environmental stress tolerance. The project, which they hope to expand into ryegrass, is exploring three techniques — one using an agri-bacterium to take genes into the cells; another using electrical current; and the third employing micro-projectile bombardment.

The bombardment "has been successful with alfalfa," Yamada said.

She explained that in plant cells, as in humans, there are oxygen-free radicals, which can be toxic. Antioxidants detoxify those oxygen-free radicals.

Dr. Steve Bowley has been able to introduce a gene into alfalfa that detoxifies some of the free radicals in the plant. Plants with this gene tend to be more tolerant of such stresses as drought, high and low tempera-

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a good one.

"I wrote a two-page letter to all of our members explaining that run-off is the result of negligence," Snyder said. "I explained to them that we properly apply the products used on the course and, therefore, run-off is not a problem for us." Snyder credits the low water solubility of pre-emergence herbicide, which kept the product from moving, even on slopes and hillsides.

Snyder communicates regularly with members.

He writes a column for the course newsletter on maintenance that includes a lawn-care tip, and puts weekly notices on a bulletin board

"Following the winter of 1994, we lost 30 acres of fairway grass to ice damage," he said. "I used the bulletin board to explain to our golfers how we were going to re-establish the grass. This let them know what we were doing and how their cooperation and patience would help."

According to Snyder, taking a chance and winning, gives more courage to try something new the next time. You have also improved your golf course and your career.

Zebra mussels, other topics due

BURLINGTON, Vt. — Terry Bastian of Waterflow, a North Reading, Mass., ecological design firm that consults on Northeast courses, is speaking at the 2nd annual Northeast Conference on Nonindigenous Aquatic Species here.

The spread of zebra mussels, hydrilla, water chestnut and similar vegetation is a concern of

scientists, environmentalists and superintendents as they struggle with keeping their water features alive and beautiful.

Bastian's lecture, "Loosing Loostrife by Fire" details his work with fire management at the Sagamore Spring Golf Course in Lynnfield, Mass. The goal was to burn the wetland and keep it in a sedge meadow stage of succession, killing the speckled alder, poison sumac and white pine bushes that restricted air flow to the 15th green, exacerbating fungal problems. The burn worked and the green responded very well, being the healthiest green the next season.

"What I had hoped to do was lessen the fungicide and pesticide use with a practice that was used here until the 1970s. What was a pleasant surprise was that this technique severely affected the exotic purple loostrife population that was squeezing out the native plants," Bastian said.

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tures. He wants to introduce that gene into bentgrass and possibly ryegrass.

Last year was the first year of the three-year study.

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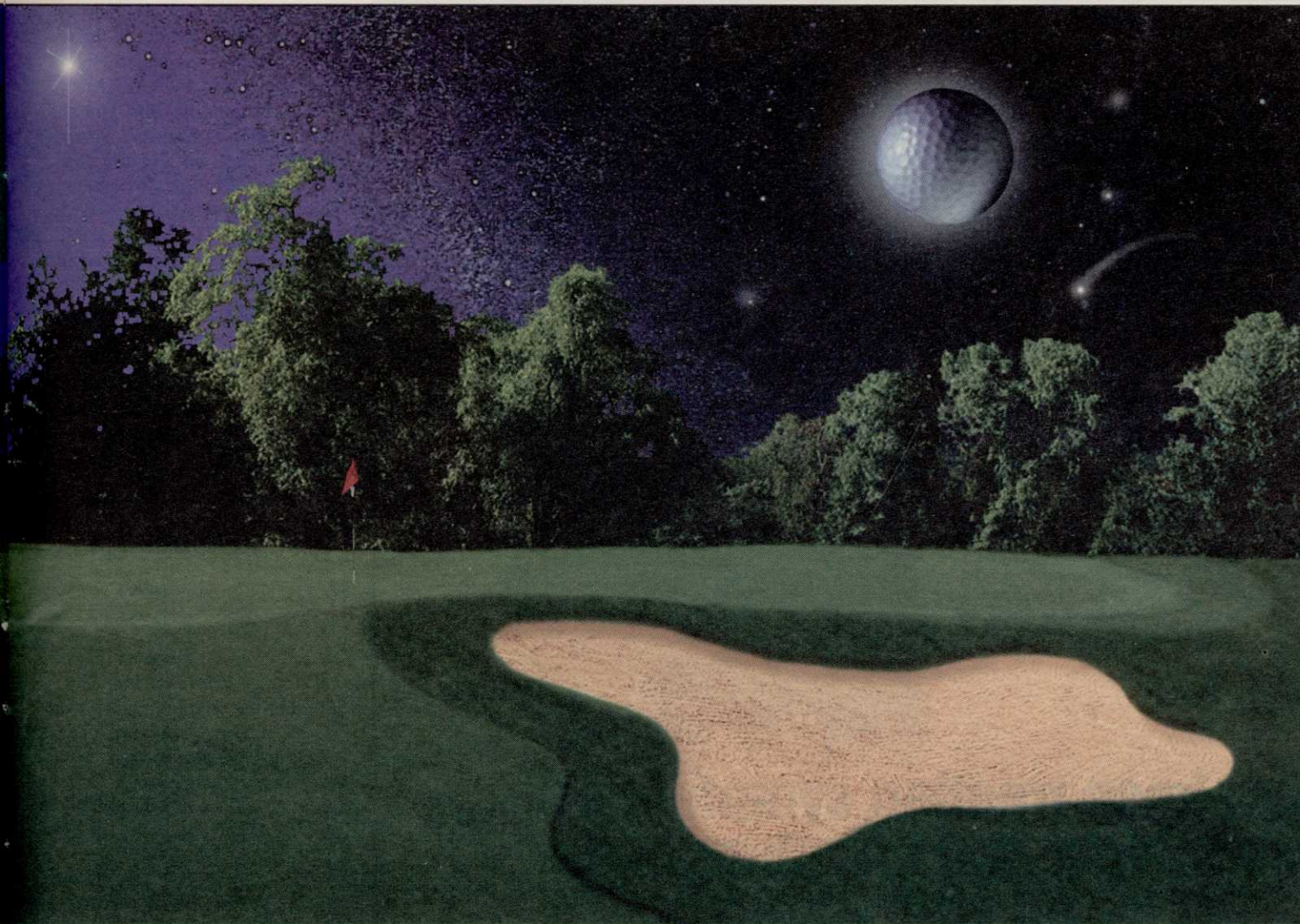
In other research:

- At the Laval University, PhD student Julie Dionne and Dr. Yves Desjardins have studied winter covers, finding that -10 degrees Celsius is "the critical minimum temperature where poa annua starts to sustain damage," Yamada said. "If you are in a very severe low-temperature climate and do not have any insulating covers, be it snow or other, you are in danger of sustaining damage just from low temperature."

- At Olds College researchers saw the trend for poa annua to deharder faster in the spring than bentgrass, explaining why it is more susceptible to early-spring damage.

- At the University of Manitoba scientists are investigating use of native species of perennial grasses and their potential use on golf courses and other settings as low-maintenance turf. They are establishing plots of buffalograss, side-oats grama, inland desert salt grass, tufted hair grass, Canada bluegrass, prairie junegrass, fowl bluegrass, alkalai and other non-traditional types of grasses. This year they will cut them at 7/10, 1-1/2 and 2-1/2 inches to see if they can be used on golf course roughs in very low-maintenance areas without irrigation.

"They will also be selecting for drought-tolerance as well as salt-tolerance," Yamada said.



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