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INSIDE

FOES NO LONGER: GAUNT & MARNOCH LTD.
Jonathan Gaunt (right) and Steve Marnoch, two of England's youngest golf course architects, have decided to join forces. Their mission: To become bigger players in the global golf course design market. See Q&A page 45.

Poa annua control finally within sight

By MARK LESLIE

SAN DIEGO — A control for annual bluegrass, or *poa annua*, has been the desire of the golf course industry for at least half a century. Now it appears one has arrived, and the bonus is that it is a natural bacteria.

"If this works as well as it appears, it's huge [for the industry]. I'm excited," said Dr. Joe Vargas of Michigan State University about the bacteria *Xanthomonas campestris*. "When I got into this business in the 1950s we were talking about how to get rid of *poa annua*. Here we are, 40 years later, talking about how to get rid of *poa*. And the market is almost nationwide."

Acutely selective, *Xanthomonas campestris* kills only *poa annua*, not

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Purdue embarks on 5-year course research project

By MARK LESLIE

WEST LAFAYETTE, Ind. — With the help of course architect Pete Dye, multiple donors and a group of students who built it, Purdue University on June 27 will open a golf course that will produce a major five-year study on the effects of golf maintenance on ground and surface water.

Pointing out that environmentalists criticize past corporate-funded studies as biased, Dye said: "What Purdue produces should be the most unbiased report, simply because there is no reason to be biased. Good or bad, no one can argue

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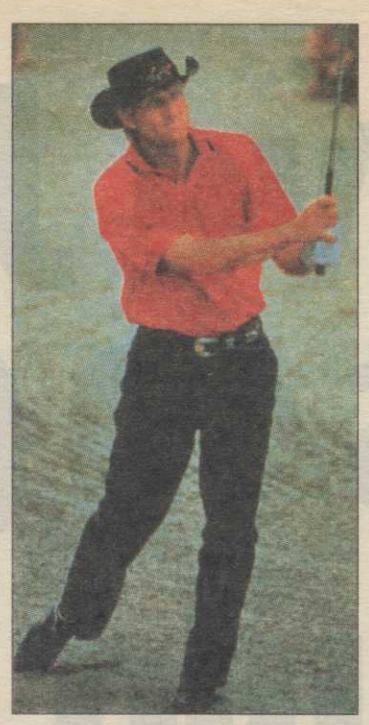

The Shark and Hurdzan keynote Public Golf Forum

By MICHAEL LEVANS

PALM SPRINGS, Calif. — The Shark's clipped fin may keep him off the PGA Tour but it's certainly not slowing him down.

Greg Norman, golf's premier international spokesman and all-time money winner, will kick off day two of this year's Public Golf Forum, the *Golf Course News*-sponsored business conference and expo for superintendents, owners, managers and developers of public access golf facilities on October 26 & 27 at Rancho Las Palmas Marriott Resort in Palm Springs, California.

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PUBLIC GOLF FORUM
A NATIONAL BUSINESS CONFERENCE AND EXPO FOR SUPERINTENDENTS, OWNERS, MANAGERS, AND DEVELOPERS OF PUBLIC-ACCESS GOLF FACILITIES

(Top) Greg Norman, golf's all-time leading money winner, lofts one out of the sand. (Left) The king of the environmentally-sound public golf design, Michael Hurdzan, on site at Desert Willow.

Greece: Will 30 courses in 3 years be possible?

By TREVOR LEDGER

ATHENS, Greece — The Greek Government has made a startling commitment to golf course development with its stated intention of having 30 new golf courses built in its beautiful country over the next three years.

As the rest of Europe (on the whole) leaped into the golf course stratosphere — 43.9 percent increase in courses since 1990 — Greece has bucked the trend by actually losing one of its five courses and leaving the country with only four.

This looks all set to change.

The Hellenic Tourism Office (EOT) hosted a meeting at Wentworth last July for golf course architects, holiday companies and tourism specialists in order to out-

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American Golf Corp.'s Sierra Nevada Golf Club in Genoa, Nev., to open this month. See page 3.

Biological control for *poa annua* waiting for wide test distribution

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at all harming bentgrass, ryegrass or Kentucky bluegrass, and leaving *poa trivialis* barely effected.

"I would parallel it with new drugs for killing cancer tumors. That's how important it is to me," said David Major, a certified golf course superintendent at Del Mar Country Club in Rancho Santa Fe, Calif., one of four courses testing the biological. "*Poa* is the biggest problem we have to deal with in the condition of our greens."

Xanthomonas campestris was first discovered 15 years ago, according to Vargas. But it wasn't until the advent of the BioJect technology from Eco Soil Systems Inc. of San Diego that it became a viable way to fight *poa annua*, which infests golf courses from Pebble Beach to Maine. Between then and now, Michigan State licensed the rights to the bacteria to Mycogen Corp. of San Diego. Mycogen spent years trying dry formulations, but found it too expensive, and recently turned over the license to Eco Soil.

Situated in a golf course's pump house, the BioJect System actually "brews" bacteria in a fermentation process, like a still. The brew then is normally fed to the golf course through the irrigation system. Since biological controls usually must be applied frequently in order to be effective, the advent of BioJect two years ago has opened new doors for natural control of diseases and, in this case, *poa annua*.

Using this system at Michigan State, *Xanthomonas campestris* kills the *poa* and leaves the bentgrass, said Vargas.

"I'm very excited about it," said Major, who is brewing the bacteria in his BioJect but spraying it only once a week from a boom sprayer, not though his irrigation system. "This is my last miracle hope to find something that will transition out the *Poa* and let the bentgrass fill in where *poa* has encroached.

"We just started applying it about two months ago and I started seeing results in a month."

Vargas said he is recommending that superintendents start spraying the product three days a week, then modify the applications accordingly.

"Once a week may do it," he said. "I need to work out a better model. Right now, for simplicity's sake, I'd say to apply it when temperatures reach into the 80s."

Major expects the arrival of warm weather will deliver the killer blow to the *poa annua*, saying that two days of 80-degree temperatures made a significant difference.

He said that besides the BioJect and warm weather, the key to *Xanthomonas campestris*' effectiveness is "wounding," or mowing the *poa annua*. When the grass plant is cut, the bacteria enters and plugs up the tissues that conduct moisture up and down the plant.

Whether he will, in the end, apply the bacteria through the irrigation system has not been decided, Major said. "It may be more effective to have a fairway-mounted tank with which you would spray while you mow," he said. "But, if you were to put it through the irrigation system, you can water before dawn, then mow first thing in the morning."

However it is applied, most superintendents will have to wait a year or two to get it. Jeff Johnson, president of Eco Soil's ESSI Product Division, said *Xanthomonas campestris* will "certainly" be on the market by the year 2000.

The federal Environmental Protection Agency (EPA) is fast-tracking the product through the approval process, and is expected around June to designate it as a

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Penn State presents honors

STATE COLLEGE, Pa. — The Golf Course Turfgrass Management Program class of 33 graduated on March 7 at the Nittany Lion Inn. Dr. James Mortensen, associate dean for undergraduate education, addressed the graduates, while the keynote speaker was Dr. John Rogers III from Michigan State University.

Timothy C. Glorioso was honored with the Zimmerman Memorial Award for Outstanding Turfgrass Student as selected by fellow classmates. The award is sponsored by Lesco, Inc.

Meanwhile, Eric D. Cederstrom, Jeffrey L. Ische and Eric C. Puls won Trans-Mississippi Golf Association scholarships, and Ische, Puls, Scott E. Carrier, Arthur J. Petrone, Scott E. Pieper and Owen G. Russell were presented Penncross Bentgrass Growers Association scholarships.

Also, Glorioso was presented the Pennsylvania Turfgrass Council award; Dan E. Stockdale the Duff Shaw Memorial; Cederstrom the D.M. Boyd award; Ann M. Paulisich the Myles Adderly Technical Report Writing Award sponsored by Denis Griffiths and Associates; and Ann M. Paulisich the PSU Alumni Outstanding Student Award.

Poa annua

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biological fungicide while naming BioJect an application device.

Eco Soil has asked the EPA for an expanded Experimental Use Permit (EUP) for *Xanthomonas campestris* and expects approval in July, Johnson said. Until now, Ironwood Country Club and Bighorn Golf Club in Palm Desert, Tamarisk Country Club in Rancho Mirage and Del Mar have been the only golf courses allowed to use the product. The new EUP would allow the company to use it on 5,000 acres.

That translates to 100 courses, Johnson said. There are about 400 BioJect systems in operation domestically and they have been approved in 12 states: Arizona, California, Connecticut, Florida, Illinois, Indiana, Massachusetts, Michigan, Nevada, New York, Pennsylvania and Texas.

Eco Soil may add states to this list, said Vice President of Product Development John Doyle.

"Our plan is to get 100 field sites actively involved as soon as possible," Johnson said. "The results will be very apparent within the first growing season. They will either see wilting [of *poa annua*] or not. It will not necessarily kill all their *poa*. It may be a longer-term process than that."

Thus far, he said, "We're very encouraged by the results. I can't say there isn't room for improvement. There have been several obstacles, and the results have varied by site. Del Mar showed the most immediate results. Tamarisk showed the program to be effective in keeping the population of *poa* in check as compared to control areas where population levels increased over time.

"We didn't see the wilting at Tamarisk that we would liked to have seen. That was probably a function of not beginning applications until December. We think it's most effective when it's applied when *poa* is in its germination stage; so one of the times we want it applied in California is in the fall when they're overseeding."

Johnson said Eco Soil will probably recommend applications during six to seven months a year in the South, starting in the overseeding time and proceeding through spring.

Just how expensive will *poa annua* control be with this program?

Eco Soil leases the BioJect Systems for $6,000 per year. The average annual cost of the program is between $16,000 and $20,000 because of a monthly charge for the course's biological program.

"We're trying to be realistic and not raise the expectations in the marketplace through the roof," said Doyle. "There is no silver bullet, but this definitely prevents efficacy in the field trials. So we're optimistic."

"This obviously is a huge opportunity for us and we're devoting a lot of resources to it," Johnson added.

No one in the business would argue that a control for *poa annua* is a revolutionary development.

And Johnson even hinted that another great advancement lies over the horizon: a control for perennial annual bluegrass.