

As a result of the trip, Banyan was chosen as one of 12 sites in the United States, and the southernmost, to hold the bentgrass national trials. The other southern site was the Augusta National Golf Club. We also were selected for the national trials on zoysiagrass.

In April 1989 we received six varieties of zoysiagrass which we planted and replicated three times. Two of the varieties have performed very well: Cashmere and 8502. The latter cut at 1/8-inch looks excellent and survived 25-degree temperature Dec. 23 without going off color. Zoysia holds a lot of promise for tees, shaded areas and non-irrigated areas on golf courses.

In October 1989 we prepared a 4,000-square-foot green with 12 inches of sterilized greens mix. Engelke then came to the club with 24 varieties of hope-

fully heat-tolerant bentgrass seed. Each variety was replicated three times.

He planted the 72 5-by-10-foot plots using a sand/seed mixture and spreading it by hand, a back-breaking chore that took two days. All of the bentgrass germinated and by this past January, it was looking excellent when cut to 9/64-inch.

Engelke told us not to water the bentgrass any differently from the normal routine for our bermudagrass greens. He also asked that we apply no fungicides to the experimental green. We have had some fungus damage from time to time, but all except one variety has survived.

It is really difficult for a superintendent to stand by and watch grass die.

When I called Dr. Engelke to express my concerns, he was elated. "That is

exactly what we want!" he said. "If one variety survives, we will be happy."

Scientists and superintendents sometimes think differently. Working together is the key to successful experiments, each one operating in his own area of expertise.

At Banyan we are also doing tests on hybrid buffalograss (prairie) to see if it will survive in southern Florida. After one year, with no water or fertilizer, it has doubled the original planted area and is surviving quite well.

Buffalograss could be used in Florida in non-irrigated roughs, along roadsides, overpasses and even on home lawns and it could be part of the answer to water restrictions in South Florida. It matures at 4 inches and tolerates no cutting or frequent cutting. I may plant buffalograss in my own lawn because



*Planting the 72 plots of bentgrass was a back-breaking chore that took two days.*

of its low maintenance and great looks.

Mole crickets are enemy number one at Banyan. We lose large areas of grass to this pest every summer. Our only hope of controlling the mole cricket in the past was to spray the entire golf course with Nematicur every July at a cost of about \$30,000.

The University of Florida is conducting research on controlling the mole cricket with biological parasites. They are using a nematode and red-eyed fly from South America, both of which are specific to the mole cricket.

By supporting the research of Drs. Howard Frank and Pat Parkman through the Florida Turfgrass Association, we are participating in this important biological research. To date, we have received a million nematodes and 200 red-eyed flies at Banyan. We hope that within two years, we will be able to control 85 percent of our mole cricket population without pesticides.

And finally, Dr. Monica Elliott, pathologist at the UF's Research and Education Center in Fort Lauderdale, is conducting field research on mushroom fairy rings using Benlate and Prostar.

Four major projects on one golf course. And it wasn't very difficult to get involved. And we are on the cutting edge of research for the 90s.

## Mole cricket project wins science fair

The University of Florida's drive to unearth natural enemies of mole crickets has uncovered several promising fungi.

Now Donna Jaworsky has won science fairs in Palm Coast, Flagler County and at the state level by demonstrating that a fungus delivered by a bait can kill mole crickets.



Donna Jaworsky

She didn't use the real enemy fungi. They are native to Brazil, just like the pests themselves (mole crickets native to the U.S. are not pests) and you can't be bringing in strange organisms without a lot of careful scientific folderol.

Using a similar fungus, however, Jaworsky demonstrated that a fungus delivered through a bait can kill short-winged mole crickets. *Beauveria bassiana* kills a variety of turf pests.

Earlier research at IFAS had demonstrated that one Florida strain of *B. bassiana* could kill mole crickets in the lab. If it would work in the field, there would be a lot of advantages: for one, a native fungus would already be adapted to Florida's cooler-than-Brazil winters. A fungus-water mixture had been poured on buckets of sand and mole crickets, and the mole crickets hadn't died.

Would a bait work?

Jaworsky set out to find out, with help from Howard Frank at the university and Dan Schrader at the IFAS Flagler County Extension Office.

She used a bait recipe IFAS had used before for delivering malathion to mole crickets. To the mixture of chickenfeed, crude cottonseed oil, sugar and water, she added varying doses of *B. bassiana*.

Her conclusion: The fungus-laced

bait killed one third of the mole crickets.

Jaworsky finished by identifying questions that still need to be addressed:

- Would adding paraffin to the bait help preserve it and make it more effective?
- Will *B. bassiana* delivered through the bait system also kill other mole cricket pests?
- How do light, temperature, moisture and other environmental conditions affect the effectiveness of this control system?
- Is reproduction affected in mole crickets who eat the bait and don't die?

- Darcy Meeker

## Three projects tapped for FGCSA research green

Grass has been planted on the research green, a joint project of the FGCSA and the University of Florida's Institute of Food and Agricultural Sciences at the Fort Lauderdale Research and Education Center.

Planted Aug. 1, it should be grown in by the first of November and the committee is already meeting to set priorities on research projects.

Says Kevin Downing, golf course manager at Willoughby GC in Stuart and chairman of the research committee, "Of 20,000 square feet in the research green, 10,000 are dedicated to IFAS for pure research. The other 10,000 are to be used directly by the FGCSA for product evaluation."

Tifdwarf covers 15,000 square feet and Tifgreen 328 covers the rest.

About 8,000 square feet are built to USGA specifications and another 2,000 square feet substitutes a geotextile fabric for coarse sand in the so-called

"choker" layer. The choker layer was omitted on the other 10,000 square feet.

Dr. Monica Elliott has put forth two proposals to research bermudagrass decline and diseases. In one, she will monitor bermudagrass roots in fumigated and non-fumigated areas for signs of these organisms which she thinks are introduced by sprigs.

Another project will look at what happens when you apply, time and time again, the new fungicides such as Bayleton, Banner and Rubigan. Called EBI fungicides for Ergosterol Biosynthesis Inhibiting, these compounds are used often because they work on bermudagrass decline. On the other hand, they can burn grass in hot weather.

A third project is the first step on the long road to develop biotechnological tools to improve bermudagrass. She will trace root-colonizing bacteria in fumigated and non-fumigated soil.

"The long-term goal is to genetically engineer these bacteria so they would have a beneficial effect on bermudagrass," Elliott said.

- Darcy Meeker

## Commercial nematodes lack stamina

Good guy nematodes are starting to look like green pastures to commercial producers, and superintendents are beginning to hear about this or that *Steinernema* nematode that can kill mole crickets.

But not all *Steinernema* are created equal, say Howard Frank and Grover Smart at IFAS. They offer this scorecard so you can tell the players.

*Steinernema scapterisci* are the ones that are working so well in the IFAS mole cricket experiment. Not available commercially, they were brought from

Uruguay by IFAS researchers and are strictly experimental. Their advantage is that they reproduce in the tawny mole cricket, the southern mole cricket and the short-winged mole cricket. *S. scapterisci* (say SKAPTter-ISSky) start epidemics with continued killing power in mole cricket populations, Frank says.

By contrast, *S. glaseri*, *S. Bibionis*, and *S. carpocapsae* cannot.

Says Frank, "If these (non-*scapterisci*) nematodes are alive and healthy, they should be able to kill mole crickets about as effectively as a chemical pesticide, but there would be no lasting effect." *Steinernema carpocapsae* strains include Breton, Agriotos and all strains. Appropriate dosage would be about 800 million per acre, applied at dusk, and watered in well.

Because these good-guy nematodes cannot reproduce in the bodies of mole cricket pests, their white hat is small. They cannot multiply their killing power through the mole cricket popu-

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**RESEARCH REPORT**



IFAS / CHUCK WOODS

**Patents fire ant fungus**

IFAS entomology professor Dr. Jerry Stimac, above, recently gained a U.S. patent for a biological control for fire ants: a mixture of *Beauveria bassiana* fungus and rice. The patent, which is good for 17 years, covers not only its use, but also Stimac's method of isolation, formulation and introduction as a control organism.

Stimac, who has signed over the rights to the patent to the University of Florida, and UF officials have been negotiating with major pesticide firms to develop the fungus for commercial use.

The State of Florida has contributed more than \$500,000 to Stimac's research over the past seven years.

lations.

Some superintendents attract mole crickets with a caller. Then they distribute *S. scapteriski* from the IFAS project by distributing mole crickets they have infected. It is a good delivery system for these microbe-bearing nematodes.

It has no benefits with the other nematodes.

"If you're using a caller, you might as well just drown the mole crickets you catch as use these commercial nematodes," said Frank. - Darcy Meeker

# READ

...the fine print.

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5.6% Water Insoluble Nitrogen	
9.6% Ammoniacal Nitrogen	
3.5% Urea Nitrogen	
Available Phosphoric Acid (P <sub>2</sub> O <sub>5</sub> )	5%
Soluble Potash (K <sub>2</sub> O)	9%
Magnesium (Mg)	10%
Sulfur (S)	6.0%
Iron (Fe)	1.0%
Manganese (Mn)	0.9%
Nutrient Sources: Urea, Methylene Ureas, Ammonium Phosphate, Ammonium Sulfate, Ammoniated Superphosphate, Sulfate of Potash, Oxides, Ferrous Sulfate, Sulfates.	
Potential Acidity Equivalent 1300 lbs. Calcium Carbonate per Ton.	

Lebanon Country Club

GUARANTEED ANALYSIS	
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11.6% Urea Nitrogen	
10.8% Water Insoluble Nitrogen	
AVAILABLE PHOSPHORIC ACID (P <sub>2</sub> O <sub>5</sub> )	4.0%
SOLUBLE POTASH (K <sub>2</sub> O)	12.0%
Magnesium (Mg)	0.7%
Sulfur (S)	5.0%
Iron (Fe)	0.4%
Derived from ammonium phosphate, isobutylidene diurea, urea, sulfate of potash, sulfate of potash-magnesia and iron sulfate. Potential Acidity 1000 lbs. Calcium Carbonate Equivalent per ton.	
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# Her job is to get the details right

*Jan Beljan has parlayed a stint as an assistant superintendent and a GCSAA scholarship into a position with one of the world's foremost architects*

BY BRADLEY S. KLEIN

**J**an Beljan's job is to get the details right. She's a design associate with Tom Fazio and spends a lot of time at her drafting table. From her office in Jupiter, she draws up routing plans, specifies the clearing, grading and bulk earth moving, works on irrigation and landscaping, and keeps track of everything from cart paths to environmental regulations.

She also heads off into the field. Whether knee-deep in the mud or back at the office with pen, pencil and paper, Beljan is at home putting together all those things that must work well if a course is to make it from sketch board to playing field.

Today, Beljan shares credit for such achievements as PGA National in Palm Beach Gardens, Pelican's Nest in Naples, and Lake Nona in Orlando. She's also a careful student of her craft, having taken extended visits to Asia and the British Isles, where she explored classical and contemporary architecture.

She grew up on golf courses and now she's

making her life with them. This past spring, her career received a big boost when the American Society of Golf Course Architects, meeting at Spanish Bay in California, voted her in as an associate member, a status she shares with Jay Morrish, Jack Nicklaus and 18 other designers.

In a way, she has been preparing for the job since childhood. Next to the Palmers, the Beljan family is western Pennsylvania's best-known golfing clan. When Jan was born in Pittsburgh in 1953, her father, George, was pro at a driving range. His four brothers — Jan's uncles Willie, Carl, Andy and Joe — were all renowned golf pros. In 1955, Jan's dad left his job to take up a new project — the design and construction of Mannitto Haven golf course in New Alexandria, Pa.

"Nine holes were opened," recalls Beljan, "but the second nine fell through because of a change of ownership. Dad stayed on and ran the whole show and that's where I learned golf."

Jan lent a hand anywhere she could.

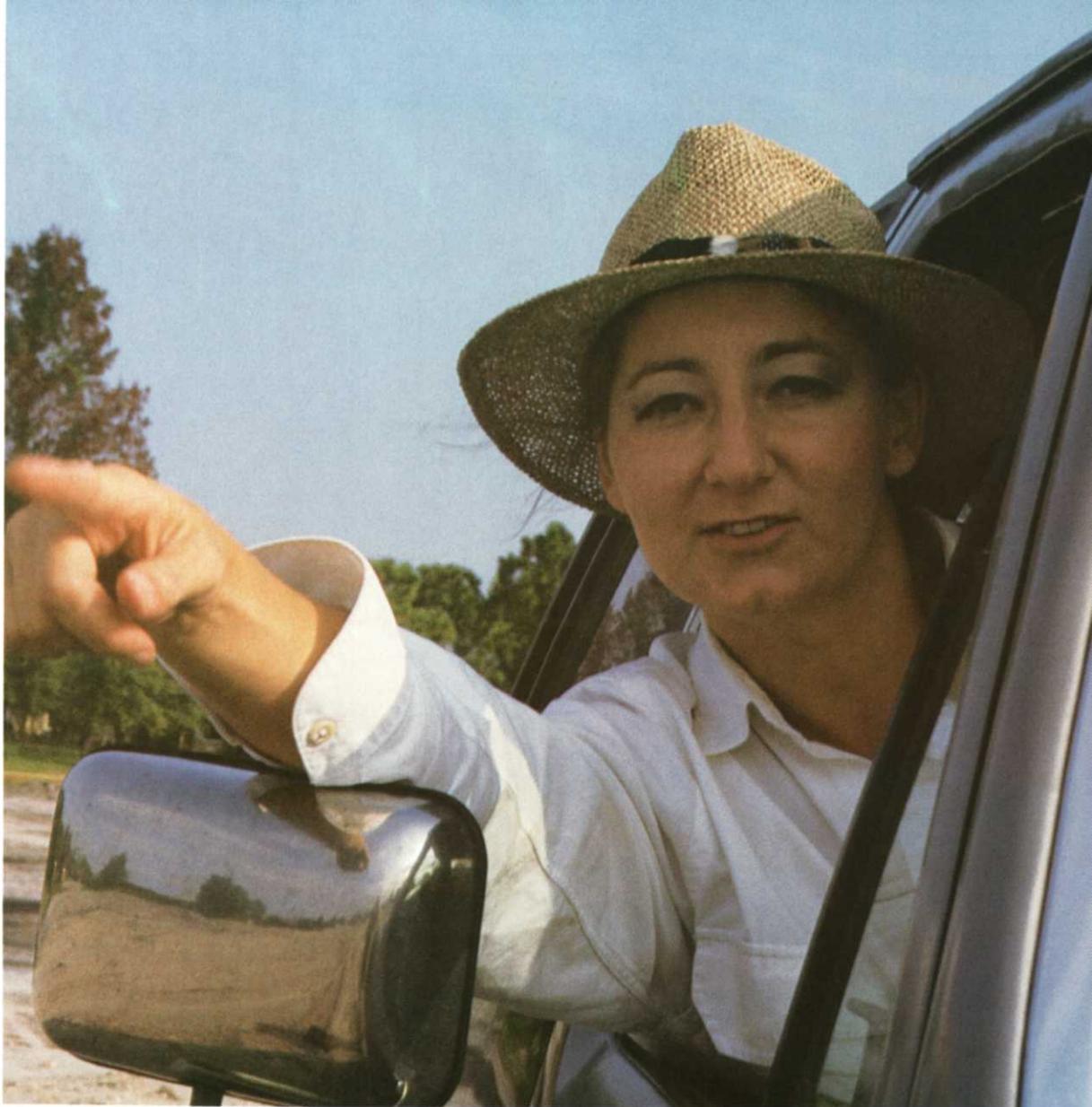
"It was a year-round family club, a weekend retreat for Pittsburghers. First I ran the riding stable, then I began my work in golf. Mornings I would mow greens, then I'd shower and make a quick change and spend afternoons and evenings in the pro shop, doing the typical routine.

This was before the computer, so I had to figure handicaps."

Beljan says that the experience taught her a lesson that has helped her to this day.

"Golf is not just how the course looks. It's planning, maintenance, employee relations. It's being friendly and customer service. Golf operations are successful when all of these facts are recognized."

After completing high school, she attended West Virginia University in Morgantown. Among the scholarships she had was one from the GCSAA. In 1976 she graduated *cum laude* with a degree in landscape architecture. All through college she worked at Preston CC in Kingwood, W. Va. Initially, Jan worked in the pro shop. She soon moved on to become assistant superintendent.



During summers she was out there seven days a week, 14 hours a day. The only break from this routine was an hour spent in church on Sunday.

The practical skills she developed in the field complemented her formal studies. She was working with grasses, equipment, chemicals and all the other day-to-day matters that golf courses call for. What had been part of her family lore was now part of her everyday routine.

With college behind her and while still working at Preston CC, Beljan took an additional job with a professional lawn care company. Besides working as a sales representative, she was applying pesticides and fertilizers. One of her clients, Jack Mahaffey, turned out to be greens chairman at Oakmont CC, and he introduced Beljan to Tom Fazio during the 1978 PGA champion-

*Jan Beljan's been preparing for her job all her life. In Western Pennsylvania, her family name, like Arnold Palmer's, is synonymous with golf.*

Photo by:  
Larry Kieffer

*continued on page 39*

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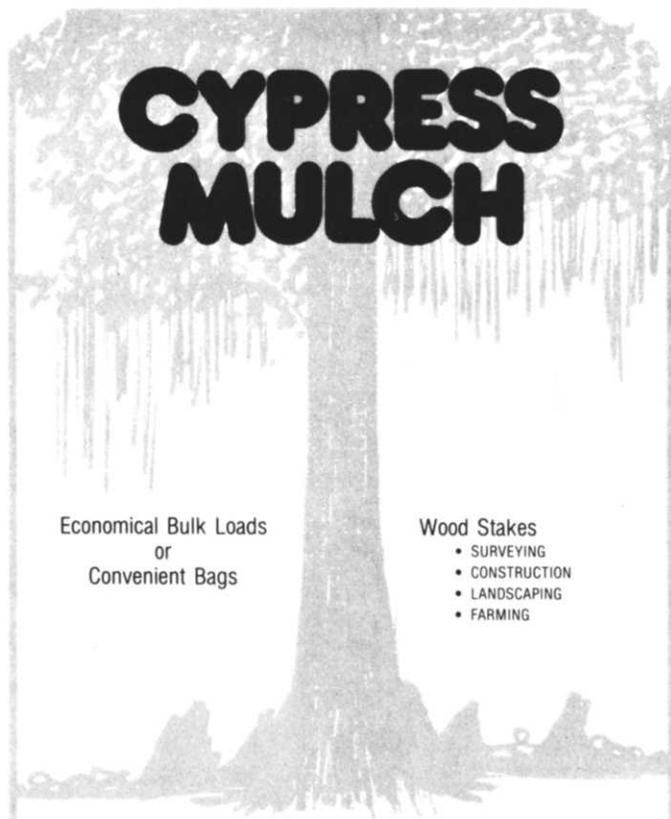
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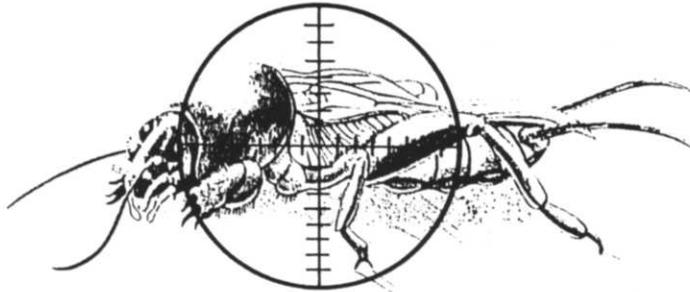
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from page 37

ship. A few weeks later, Fazio called and offered her a job. Beljan has been with him ever since.

From the very beginning, Beljan has been immersed in every aspect of golf course development. Her intimate understanding of what goes on in the maintenance yard serves her well not only at the drafting table but also in the field. Beljan explains that in the Fazio shop, "we spend a lot of time drawing plans and writing specs.

But in design work, you have to be prepared to make changes in the field and work with the land and the client. The only way to do that is to work closely with the contractors and shapers. Ultimately, you have to keep in mind how it's all going to be maintained.

"We couldn't have golf courses without superintendents," she says. "They maintain the integrity of the architect's design. They are responsible for the course appearing in its best light of all times. Without proper mowing and maintenance, you wouldn't see all those beautiful pictures. The ultimate sales person for any development is the superintendent."

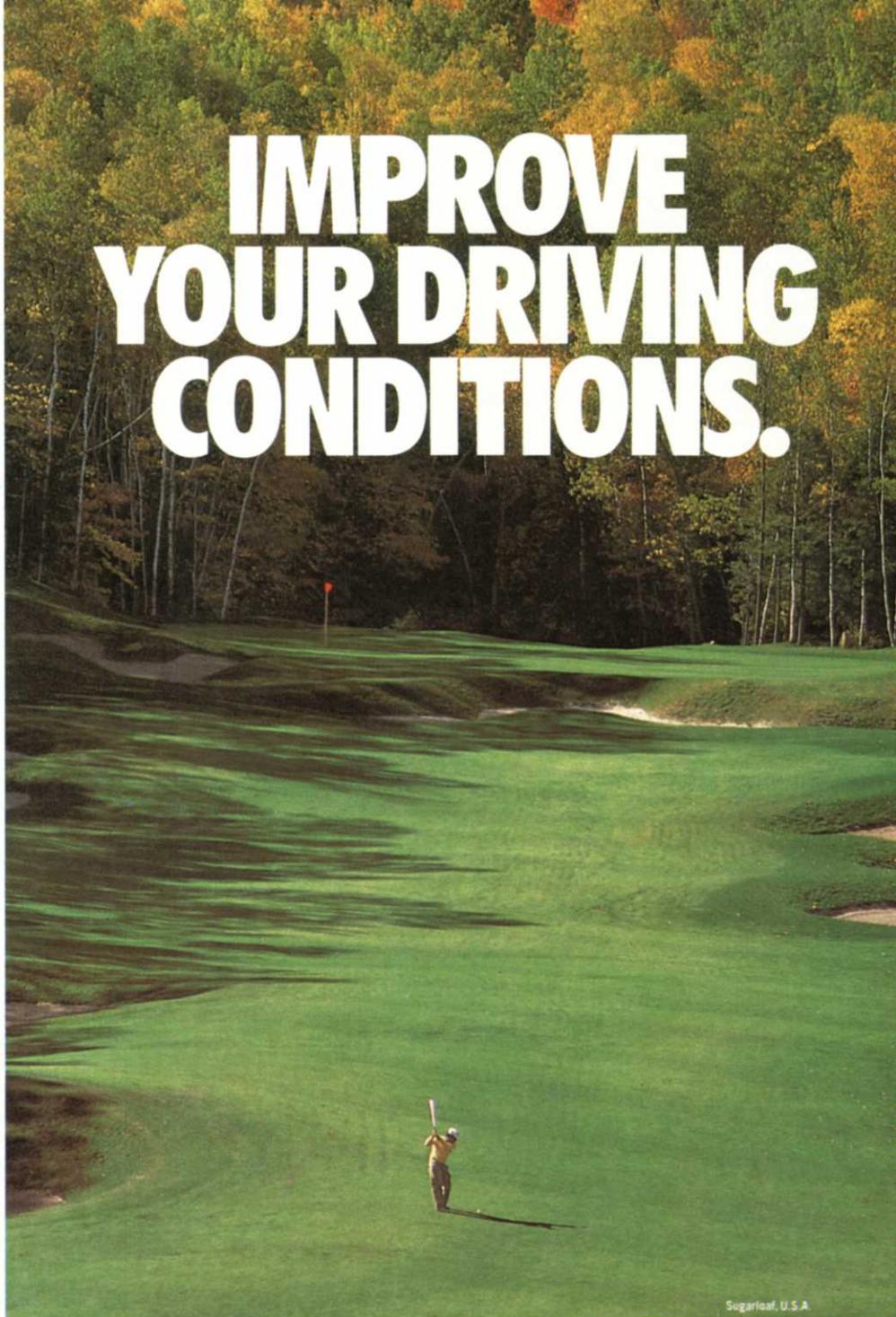
Fazio courses have been well-received because they are designed with maintenance in mind. Beljan, like the whole Fazio operation, receives high marks in the industry for a willingness to work carefully at the outset with superintendents. After all, they are the ones who are held responsible for how the course plays.

Frank Cook, superintendent at both the Bardmoor North GC and the Bayou Club in Largo (until this year the home of the LPGA/PGA Tour's mixed championship, the JCPenney Classic) has been working with the Fazio company on a new nine for the Bayou.

"They confer with us on maintenance all the time. Jan is in here every two

*continued on page 41*

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